Role of Remdesivir in Covid-19: A Review of Pharmacology, Preclinical and Clinical Studies of Drug

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Abstract: In December 2019 the outbreak of corona virus, occurred in Wuhan City, China. COVID-19, which has affected at least 114 countries and more than 608K people dead. On 11 march 2020 the WHO officially declares it a pandemic. As the world scrambles to find a way to prevent corona virus infections, medical experts are evaluating and working on every available lead. Health workers are currently making efforts to control further disease outbreaks caused by the novel CoV-19. Remdesivir shows the therapeutic approach in numerous clinical trials. Remdesivir is a nucleotide analogue prodrug that rattled the viral replication, originally evaluated in clinical trials to oblique the Ebola outbreak in 2014. There are almost ten clinical trials of remdesivir are investigated against COVID-19. The dose for remdesivir is administered through IV route which is 200 mg on day 1 followed by daily IV maintenance doses of 100 mg for 5-9 days. In this study we overviewed the discovery of remdesivir, mechanism of action, the current clinical trials and the effectiveness of remdesivir.

Keywords: Corona virus, Remdesivir, (GS-5734), SARS-CoV2.

Data Source:
We systematically search the literature on PubMed, clinicalTrials.org, the World Health Organization (WHO), the global biodefence, the European Medicines Agency (EMA), and the US Food and Drug Administration (FDA) using the specific keywords such as “remdesivir”; “GS-573400”; “SARS-COV-2”; “Corona virus”; “covid-19”. Results were limited to articles available in English. The reference lists of this article were also examined to identify sources not captured in the literature search.

1] Corona Virus
Corona viruses are important human and animal pathogens that have the ability to emerge and cross the species barrier, causing novel and occasionally fatal diseases [1]. Human corona virus first discovered on the 1960 by Tyrrell and Bynoe in children’s upper respiratory tract. Since 2003 at least 5 new human corona viruses have been identified including the sever acute respiratory syndrome corona virus [2]. In December 2019 the outbreak of novel corona virus occurred in Wuhan city of China. The most of the patients have history as they are worked at or lived around the local Huanan Seafood Wholesale Market [3].

Figure 1: Structure of Covid-19
recently discovered avian coronavirus [10]. Corona virus is large enveloped viruses with a large single-stranded RNA; 5'-capped, non-segmented genome with positive polarity ranging from 26 to 32 kilobases in size [7]. The coronaviral genome encodes four major structural proteins: the spike protein, nucleocapsid protein, membrane protein, and the envelope protein, all of which are required to produce a structurally complete viral particle (figure: 1) [9]. SARS-CoV-2 enters in a host cell via binding its spike proteins, which determine host tropism, to host cell receptors [11]. Spike glycoprotein composed of units S1 and S2. S1 binds to the receptor-binding domain and S2 mediates the fusion of viral cell membrane [12]. Preliminary researches suggested that SARS-CoV-2 might share a host cell receptor with SARS-CoV, because the 2 strains have similar receptor-binding protein structures [13]. SARS-CoV-2 binds to angiotensin converting enzyme 2 (ACE2) as SARS-CoV HCoV NL63 also binds to ACE2, but with less affinity than SARS-CoV; HCoV 229E binds to amino peptidase N (CD-13); receptor for HCoV OC43 is still unknown; MERS-CoV binds to dipeptidyl peptidase-4. [14]. RNA of the virus was also detected in nasopharyngeal and throat swabs as well as blood, stool, urine, and saliva [15]. According to the WHO report there have been 13,876,441 confirmed cases of COVID-19, including 593,087 deaths till 18 July 2020 [6].

As the world scrambles to find a way to prevent corona virus infections, medical experts are evaluating and working on every available lead. Global efforts are taken to evaluate new antiviral and therapeutic strategies to treat COVID-19 have intensified. Health workers are currently making efforts to control further disease outbreaks caused by the novel CoV-19. After the outbreak of covid-19 lots of medications are been used alone or in combination to treat the patients in many countries [20].

2) REMDESVIR:
Structure of remdesivir:

![Chemical Structure of Remdesivir](https://pubchem.ncbi.nlm.nih.gov/compound/cid-121304016)

Remdesivir is a nucleotide analogue (figure: 2) having a molecular weight 602.585 gm/mol−1 and cumulative formula is C_{27}H_{35}N_{6}O_{8}P. The IUPAC (International Union of Pure and Applied Chemistry) name for the remdesivir is 2-ethylbutyl(2S)-2-[[[2R,3S,4R,5R]-5-(4-aminopyrrolo[2,1-f][1,2,4]triazin-7-yl)-5-cyano-3,4-dihydroxyoxolan-2-yl]methoxy-phenoxyporphoryl]amino]propanoate [19]. Remdesivir (GS-5734) is a broad-spectrum antiviral medication developed by the biopharmaceutical company Gilead Sciences in 2009 for the treatment of Ebola and Marburg disease [16]. In October 2015, Travis Warren the principle of United States Army Medical Research Institute of Infectious Diseases (USAMRIID) and Gilead Sciences announced preclinical results that remdesivir had blocked the Ebola virus in the Rhesus monkeys [17]. In January 2020, Gilead Sciences started the laboratory testing of remdesivir against SARS-CoV-2 and the remdesivir had been shown the positive results against severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS) in animal models [18].
Mechanism of Action:
Remdesivir is a nucleotide analogue which acts as an inhibitor of RNA dependent RNA polymerase (RdRp), targeting the viral genome replication process. The RdRp is the protein complex Covid-19 use to replicate their RNA-based genomes. When host metabolizes remdesivir into active nucleotide triphosphate, for incorporation into the nascent RNA strand the metabolite competes with adenosine triphosphate [21]. The premature terminations of RNA synthesis occur due to incorporation of substitute, when few more nucleotide are added stumbling occur in growth of RNA strand. Although Covid-19 possess the proofreading process that is able to detect and remove other nucleoside analogs, rendering them resistant to numerous of these drugs. As it maintains antiviral activity remdesivir seems to outpace this viral proofreading [22]. According to M.L. Agostini, E.L study a mutant murine hepatitis virus (MHV) vacuous the proofreading ability which was more sensitive to remdesivir [23]. The opposite is also possible that mutations which improve proofreading or otherwise increase fidelity of the base-pairing process may result in remdesivir resistance [24]. In fact, Agostini E.L also states that mutations which occur in MHV (through passage in remdesivir) conferred strong resistance against the drug, but these mutated strains were outperformed by wild-type MHV in coinfected cell cultures that were not exposed to remdesivir [23]. How well this experiment would represent a situation in which a resistance mutation developed naturally, though, it is not clear. Some studies suggests that remdesivir may have an additional mechanism of action that has been not yet discovered, which may allow for partial antiviral activity to continue despite viral mutations that enhance replication fidelity [23-25].

DOSE
According to the FDA’s storage, preparation and administration instructions the Remdesivir is available in two bioequivalent formulations: a concentrated solution (5 mg/mL) and a lyophilized powder formulation. Vials contain 100 mg of remdesivir and are preservative free[26-27] For adults and children whose weight ≥ 40 kg requires invasive mechanical ventilation or ECMO, the recommended dose is 200 mg IV on day 1 and for 2-10 days daily dose is 100 mg IV once daily. For those not requiring invasive mechanical ventilation or ECMO, a 5-day regimen is recommended. Doses should be administered over 30 minutes to 2 hours [27].

Alternative Names: Captisol-enabled remdesivir; Captisol-enabled GS 5734; GS-5734; Veklury

Clinical Trials:
In 19 April 2019 some clinical trials are being conducted in the United States using Remdesivir to treat covid-19 [28]. Lots of clinical trials of remdesivir has been takes place in the different regions (Table : 1).

Table: 1 : clinical studies of remdesivir according to region

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia</td>
<td>6</td>
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<tr>
<td>Japan</td>
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<tr>
<td>Europe</td>
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<td>Middle East</td>
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<td>North America</td>
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<td>Canada</td>
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<td>Mexico</td>
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<td>United States</td>
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<tr>
<td>North Asia</td>
<td>1</td>
</tr>
<tr>
<td>Pacific</td>
<td>1</td>
</tr>
<tr>
<td>South Asia</td>
<td>2</td>
</tr>
<tr>
<td>South America</td>
<td>4</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>5</td>
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<tr>
<td>World</td>
<td>42</td>
</tr>
</tbody>
</table>


The recent study published in New England Journal of Medicine, investigators have used Remdesivir on a compassionate use basis to patients hospitalized with Covid-19. Patients are the confirmed case of SARS-CoV-2 infection and who had an oxygen saturation of 94%. Patients were from the United States, Europe, Canada, and Japan. Patients received a 10-day course of Remdesivir. On the first day 200 mg intravenous administration of remdesivir and for 2-9 days of management dose is 100 mg daily. Overall, 61 patients were selected but only data from 53 patients were analyzed. Almost 50% of patients were receiving mechanical ventilation and 10% were receiving extracorporeal membrane oxygenation. On follow-up 68% patients had amelioration in oxygen-support, including 57% patients getting mechanical ventilation. Moreover, 47% patients were discharged, and 13% patients are expired. The authors concluded that 68% patients lead the clinical improvement by using the remdesivir against the COVID-19. In terms of safety, 60% patients reported adverse events during follow-up. The most common side effects of remdesivir are renal impairment, diarrhea, increased hepatic enzymes, rashes, and hypotension. These side effects are more common in patients on invasive ventilation. A total of patients 23% had grave adverse events, most commonly septic shock, multiple-organ-dysfunction syndrome, hypotension, and acute kidney injury. In 8% patients are Remdesivir treatment is terminated prematurely because of deteriorating the one patient having a pre-existing renal failure, one patient having a multiple organ failure, and two because of transaminitis, including one patient with a maculopapular rash [29].

Another clinical trial was held by National Institute of Allergy and Infectious Diseases (NIAID) on 21 February 2020 which involves the 1063 patients. The mortality rate for the group of individuals who received Remdesivir was 8% as compared to placebo group.
it is 11.6%. For patients who survived the illness, the median time to recovery was 31% quicker for patients who received Remdesivir compared with those who received placebo (p < 0.001), According to the preliminary results which are published by NIAID on 29 April 2020 [30].

On April 29, 2020, Gilead announced the results from the open label, Phase 3 simple trial in hospitalized patients with moderate COVID-19 pneumonia. This open-label study evaluated investigational antiviral remdesivir of 5-day and 10-day courses with the plus standard of care, versus standard of care alone. Eligible patients were adult men and non-pregnant women whose ages > 18 years and diagnosed with COVID-19 with RT-PCR. This patients are confirmed case of pneumonia by chest imaging, had oxygen saturation of 94% or lower on room air or a ratio of arterial oxygen partial pressure to fractional inspired oxygen of 300 mm Hg or less, and were within 12 days of symptom. Exclusion criteria included pregnant or breast feeding women, liver cirrhosis; alanine amino-transferase or aspartate amino-transferase more than five times the upper limit of normal; known severe renal impairment (estimated glomerular filtration rate <30 mL/min per 1.73 m²) or after continuing the renal replacement therapy and haemodialysis; possibility of transfer to a non-study hospital within 72 hrs; and enrolment into an investigational treatment study for COVID-19 in the 30 days before screening. This study states that patients who received remdesivir for 10-day treatment course attained better improvement in clinical status compared with those taking a 5-day treatment course (Odds Ratio: 0.75 [95% CI 0.51 – 1.12] on day 14). In 50% of patients who receive the remdesivir for 5-days clinical improvement was 10 days and 11 days in the 10-day treatment group. More than 50% of patients in both treatment groups were discharged from the hospital by Day 14 (5-day: 60.0%, n ¼ 120/200 vs. 10-day: 52.3% n ¼ 103/197; p ¼ 0.14). At Day 14, 64.5 percent (n ¼ 129/200) of patients in the 5-day treatment group and 53.8 percent (n ¼ 106/197) of patients in the 10-day treatment group achieved clinical recovery. The overall mortality rate at Day 14 was 7 percent (n ¼ 23/320) across both treatment groups, at Day 14 the 64 percent (n ¼ 205/320) of patients showing clinical improvement and 61 percent (n ¼ 196/320) of patients discharged from the hospital. No unforeseen side effects were detected with the use of remdesivir across either treatment group [31].

On 1 May 2020, the Food and Drug Administration (FDA) issued an Emergency Use Authorization (EUA) for emergency use of remdesivir for the treatment of hospitalized coronavirus disease (COVID-19) patients based on review of the top line data from the Gilead-sponsored open-label trial that evaluated different durations of remdesivir (NCT04292899) (Table :2), and from the randomized, double-blinded, placebo-controlled trial conducted by NIAID (NCT04280705) [32].

Table : 2 clinical studies of remdesivir in covid-19

<table>
<thead>
<tr>
<th>NCT Number</th>
<th>Title</th>
<th>Status</th>
<th>Condition</th>
<th>Interventions</th>
<th>Characteristics</th>
<th>Population</th>
<th>Dates</th>
<th>Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCT04365725</td>
<td>Drug: Remdesivir</td>
<td>Recruiting</td>
<td>COVID-19</td>
<td>Drug: Remdesivir</td>
<td>Phase: Study Design: •Observational Model: Cohort •Time Perspective: Retrospective Outcome Measures: •Clinical course on Day 15, •Clinical course on Day 3, •Clinical course on Day 8, •Clinical course on Day 11, •Clinical course on Day 29, •Duration of treatment •Sepsis-related Organ Failure Assessment score •Duration without mechanical ventilation •Mortality •cumulative incidence of grade 3 and 4</td>
<td>Enrollment: 200</td>
<td>Study Start: May 5, 2020</td>
<td>Study Completion: June 2020</td>
</tr>
<tr>
<td>NCT04431453</td>
<td>Study to evaluate the safety, tolerability, pharmacokinetics and efficacy of Remdesivir (GS-5734) in participants from birth to &lt;18 years of age with coronavirus disease 2019 (COVID-19)</td>
<td>Recruiting</td>
<td>•COVID-19</td>
<td>Drug: Remdesivir</td>
<td>Phase: •Phase 2 •Phase 3</td>
<td>Study Design: •Allocation: N/A •Intervention Model: Single Group Assignment •Masking: None (Open Label)</td>
<td>Primary Purpose: Treatment Outcome Measures: •Proportion of Participants Experiencing any Treatment Emergent Adverse Events •Proportion of Participants Experiencing any Treatment Emergent Graded Laboratory Abnormalities •Plasma Concentrations of Remdesivir (RDV) and Metabolites •Change From Baseline in Oxygenation Use •Change From Baseline in the Use of Mechanical Ventilation or Extracorporeal Membrane Oxygenation (ECMO) •Clinical Improvement on a 7-point Ordinal Scale •Time (days) to Discharge From Hospital •Days to First Confirmed Negative Polymerase</td>
<td>Enrollments: 52</td>
</tr>
<tr>
<td>NCT04252664</td>
<td>A Trial of Remdesivir in Adults With Mild and Moderate COVID-19</td>
<td>Suspended</td>
<td>COVID-19 • SARS-CoV-2</td>
<td>Drug: Remdesivir • Drug: Remdesivir placebo</td>
<td>Phase: Phase 3 Study Design: • Allocation: Randomized • Intervention Model: Parallel Assignment • Masking: Quadruple (Participant, Care Provider, Investigator, Outcomes Assessor) • Primary Purpose: Treatment Outcome Measures: • Time to Clinical recovery Time to Clinical Recovery (TTCR) • All cause mortality • Frequency of respiratory progression • Time to defervescence (in those with fever at enrolment) • Time to cough reported as mild or absent (in those with cough at enrolment rated severe or moderate) • Time to dyspnea reported as mild or absent (on a scale of severe, moderate, mild)</td>
<td>Enrollmen t: 308</td>
<td>study Start: February 12, 2020 Study Completion: April 27, 2020</td>
<td>Jin Yin-tan hospital, Wuhan, Hubei, China</td>
</tr>
<tr>
<td>NCT04410354</td>
<td>Study of Merimepodib in Combination With Remdesivir in Adult Patients With Advanced COVID-19</td>
<td>Recruiting</td>
<td>COVID-19</td>
<td>Drug: Merimepodib</td>
<td>Drug: Matching Placebo</td>
<td>Drug: Remdesivir</td>
<td>Phase: Phase 2</td>
<td>Study Design:</td>
</tr>
<tr>
<td>NCT04292899</td>
<td>Study to Evaluate the Safety and Antiviral Activity of Remdesivir (GS-5734™) in Participants With Severe Coronavirus Disease (COVID-19)</td>
<td>Completed</td>
<td>COVID-19</td>
<td>Drug: Remdesivir</td>
<td>Drug: Standard of Care</td>
<td>Phase: Phase 3 Study Design: • Allocation: Randomized • Intervention Model: Parallel Assignment • Masking: None (Open Label) • Primary Purpose: Treatment Outcome Measures: • The Odds of Ratio for Improvement on a 7-point Ordinal Scale on Day 14 • Proportion of Participants Experiencing any Treatment Emergent Adverse Event</td>
<td>Enrollmen t: 4891</td>
<td>Study Start: March 6, 2020 Study Completion: June 30, 2020</td>
</tr>
</tbody>
</table>

- St. David's South Austin Medical Center, Austin, Texas, United States
- St. Joseph Hospital
| NCT04292730 | Study to Evaluate the Safety and Antiviral Activity of Remdesivir (GS-5734™) in Participants With Moderately Severe Coronavirus Disease (COVID-19) Compared to Standard of Care Treatment | Completed | •COVID-19 | •Drug: Remdesivir | •Drug: Standard of Care | Phase: Phase 3 Study Design: | Allocation: Randomized | Intervention Model: Parallel Assignment | •Masking: None (Open Label) | •Primary Purpose: Treatment Outcome Measures: | •The Odds of Ratio for Improvement on a 7-point Ordinal Scale on Day 11 | •Proportion of Participants experiencing Treatment Emergent Adverse Events | Enrollment: 1113 | Study Start: March 15, 2020 | Study Completion: June 26, 2020 | •Kaiser Permanente Los Angeles Medical Center, 25825 S. Vermont Ave., Harbor City, California, United States •Kaiser Permanente Los Angeles Medical Center, Los Angeles, California, United States •Kaiser Permanente Los Angeles Medical Center, 6041 Cadillac Ave., Los Angeles, California, United States •and 173 more
| NCT04409262 | A Study to Evaluate the Efficacy and Safety of Remdesivir Plus Tocilizumab Compared With Remdesivir Plus Placebo in Hospitalized Participants | Recruiting | •COVID-19 Pneumonia  
•Drug: Remdesivir  
•Drug: Tocilizumab  
•Drug: Placebo | Phase: Phase 3  
Study Design:  
•Allocation: Randomized  
•Intervention Model: Parallel Assignment  
•Masking: Double (Participant, Investigator)  
•Primary Purpose: Treatment  
Outcome Measures:  
•Clinical Status as Assessed by the Investigator Using a 7-Category | Enrollmen: 450 | Study Start: June 16, 2020  
Study Completion: July 31, 2020 | California, United States  
•Kaiser Permanente Los Angeles Medical Center, 9961 Sierra Ave, Fontana, California, United States  
•St Joseph Hospital Eureka, Fortuna, California, United States  
•Kaiser Permanente Los Angeles Medical Center, 25825 S. Vermont Ave., Harbor City, California, United States  
•Kaiser Permanente Los Angeles Medical Center, Los Angeles, California, United States  
•Kaiser Permanente Los Angeles Medical Center, 6041 Cadillac Ave., Los Angeles, California, United States  
•and 174 more

Valleywise Health Medical Center, Phoenix, Arizona, United States  
•study Site - Chula Vista - PPDS, Chula Vista, California, United States  
•Hoag Hospital Irvine, Irvine, California, United States  
•Providence St John's Health Center, Santa Monica, California, United States  
•and 174 more

Calif...
<table>
<thead>
<tr>
<th>Study ID</th>
<th>Title</th>
<th>Terminated</th>
<th>Drug/Remdesivir</th>
<th>Phase/Study Design</th>
<th>Enrollments</th>
<th>Study Start</th>
<th>Study Completion</th>
</tr>
</thead>
</table>

- **Ants With Severe COVID-19 Pneumonia**
- **Ordinal Scale of Clinical Status on Day 28**
- **Time to Clinical Improvement (TTCI)** Defined as Time from Randomization to National Early Warning Score 2 (NEWS2) Score of

California, United States
- Stanford University, Stanford, California
- United States
- Yale University School of Medicine; HIV Clinical Trials Program, New Haven, Connecticut, United States
- Medstar Georgetown University Hospital, Washington, District of Columbia, United States
- Holy Cross Hospital Inc, Fort Lauderdale, Florida, United States
- University of Miami Miller School of Medicine; Clinical Research Building, Miami, Florida, United States
- St Luke's Health System; Rheumatology Research, Boise, Idaho, United States
- and 43 more

**Drug:** Remdesivir
**Placebo:** Remdesivir placebo

**Study Participants:**
- Bin Cao, Beijing, China
<table>
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<tr>
<th>NCT04323761</th>
<th>Expanded Access Treatment Protocol: Remdesivir</th>
<th>Available</th>
<th>SARS-CoV2 Infection</th>
<th>Drug: Remdesivir</th>
<th>Not mentioned</th>
<th>Not mentioned</th>
<th>Not mentioned</th>
<th>University of Alabama-Birmingham, Birmingham, Alabama, United States • Banner-University Medical Center</th>
</tr>
</thead>
</table>

**Outcome Measures:**
- Time to Clinical Improvement (TTCI) [Censored at Day 28]
- Clinical status
- Time to Hospital Discharge OR NEWS2 (National Early Warning Score 2) of # 2 maintained for 24 hours.
- All cause mortality
- Duration (days) of mechanical ventilation
- Duration (days) of extracorporeal membrane oxygenation
- Length of hospital stay (days)
- Time to 2019-nCoV RT-PCR negativity in upper and lower respiratory tract specimens
- Change (reduction) in 2019-nCoV viral load in upper and lower respiratory tract specimens as assessed by area under viral load curve
- Frequency of serious adverse drug events
(RDV; GS-5734) for the Treatment of SARS-CoV2 (CoV) Infection (COVID-19) for the Treatment of SARS-CoV2 (CoV) Infection (COVID-19)

Phoenix, Phoenix, Arizona, United States
• Community Regional Medical Centers (CRMC), Fresno, California, United States
• St. Jude Medical Center, Fullerton, California, United States
• Scripps Memorial Hospital La Jolla, La Jolla, California, United States
• Long Beach Memorial Medical Center, Long Beach, California, United States
• Huntington Hospital, Pasadena, California, United States
• Scripps Mercy Hospital, San Diego, California, United States
• California Pacific Medical Center, San Francisco, California, United States
• University of California, Medical Center (Parnassus Campus), San Francisco, California, United States
• and 257 more

NCT04401579 Adaptiv e COVID-19 Treatme nt Trial 2 (ACTT-2) Active, not recruiti ng • COVID-19 • Other: Placebo • Drug: Remdesiv ir • Drug: Baricitini b Phase: Phase 3 Study Design: • Allocation: Randomized • Intervention Model: Parallel Assignment • Masking: Double Enrollmen t: 1034 Study Start: May 8, 2020 Study Completion: August 1, 2023 University of Alabama at Birmingham School of Medicine - Infectious Disease, Birmingham, University of Alabama at Birmingham School of Medicine - Infectious Disease, Birmingham,
(Participant, Investigator)
- Primary Purpose: Treatment

**Outcome Measures:**
- Time to recovery
- Change from baseline in alanine transaminase (ALT)
- Change from baseline in aspartate transaminase (AST)
- Change from baseline in creatinine
- Change from baseline in glucose
- Change from baseline in hemoglobin
- Change from baseline in platelets
- Change from baseline in prothrombin time (PT)
- Change from baseline in total bilirubin
- Change from baseline in white blood cell count (WBC) with differential
- and 22 more

Alabama, United States
- University of California San Diego Health - Jacobs Medical Center, La Jolla, California, United States
- University of California Los Angeles Medical Center - Westwood Clinic, Los Angeles, California, United States
- University of California Irvine Medical Center - Infectious Disease, Orange, California, United States
- VA Palo Alto Health Care System - Infectious Diseases, Palo Alto, California, United States
- Stanford University - Stanford Hospital and Clinics - Pediatrics - Infectious Diseases, Palo Alto, California, United States
- University of California Davis Medical Center - Internal Medicine - Infectious Disease, Sacramento, California, United States
- Naval Medical Center San Diego - Infectious Disease Clinic,
Conclusion:
Viral diseases like COVID-19 can be catastrophic, which is having both social and economic issues. Clinical trials of Remdesivir ensuring an efficient treatment also decrease mortality and it allows early discharge of patients in relation to Covid-19. So, it is to ensure that the drug is produced on a commercial scale which is capable of meeting the demands which generated by both the current pandemic situation and such future outbreaks.

References:


[27] Factsheet for health care providers emergency use authorization (EUA) of remdesivir (GS-5734TM). May 1, 2020https://www.fda.gov/media/137566/download


