# PLAIN LANGUAGE SUMMARY OF CLINICAL STUDY RESULTS

**Study Sponsor:** Gilead Sciences

**Gilead Protocol Number:** GS-US-540-5823

**Dates of Trial:** July 2020 to June 2023

**Short Study Title:** Study of Remdesivir in Participants Less than 18 Years Old With COVID-19

**Study Nickname:** CARAVAN

**Date of this Report:** October 2023

The information in this summary does not include any information available after this date.

## Thank you

Thank you to the participants who took part in the clinical study for **remdesivir**, brand name: **Veklury**. In addition, thank you to the parents and caregivers of the participants.

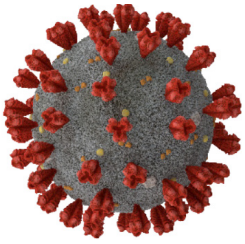
Gilead Sciences sponsored this study. We believe it is important to share the results with study participants and the general public.

If you participated in the study and have questions about the results, please speak with a doctor or staff member at the study site.

Always talk to a doctor or healthcare provider before making any treatment changes.

This document is a short summary of this study written for a general audience. Links to scientific summaries of this study can be found at the end of this document.

# What was the purpose of the study?



## What is COVID-19?

**Coronavirus disease 2019 (COVID-19)** is a respiratory disease caused by a virus called severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). The virus was the cause of the spread of COVID-19 disease around the world in late 2019. **COVID-19 may damage the lungs permanently and cause difficulty in breathing**. It may also affect other organs. The symptoms range from mild to very severe and may even lead to death. The **most common symptoms** are fever or chills, cough, difficulty in breathing, feeling tired, and headache. **Other symptoms** include new loss of taste or smell, sore throat, runny nose, throwing up, muscle or body aches, and diarrhea. COVID-19 has caused millions of deaths worldwide.

**COVID-19 can affect people of all ages including the pediatric population, which means newborns, infants, children, and adolescents less than 18 years of age.** Overall, the COVID-19 cases noted in the pediatric population were less severe. However, those with severe disease showed symptoms similar to adults. Individuals with certain medical conditions are expected to get more severe COVID-19 symptoms.

Since COVID-19 is an emerging disease, researchers are still trying to find treatment options for COVID-19 disease in the pediatric population.

## What is remdesivir?

Remdesivir is a prescription medicine used for the treatment of COVID-19 in adults and children 28 days of age and older and weighing at least 7 pounds (lbs, 3 kg) who are:

- Hospitalized, or
- Not hospitalized and have mild-to-moderate COVID-19, and are at a high risk for progression to severe COVID-19, including hospitalization or death.

The main purpose of this study was to learn about the safety and dosing of remdesivir in participants less than 18 years old with COVID-19 and who were hospitalized.

**The main questions the researchers wanted to answer in this study were:**

- How many participants had unwanted medical events during the study, if any?
- How many participants had laboratory tests abnormalities during the study, if any?
- How much remdesivir and its breakdown products were found in participants' blood after taking the medicine for up to 10 days?
- What side effects did participants have during the study, if any?

# Who took part in the study?

In total, 59 participants infected with COVID-19 living in Italy, Spain, the United Kingdom, and the United States took part in this study.

**Pediatric participants took part in the study if they:**

Were less than 18 years of age and met the required criteria for weight

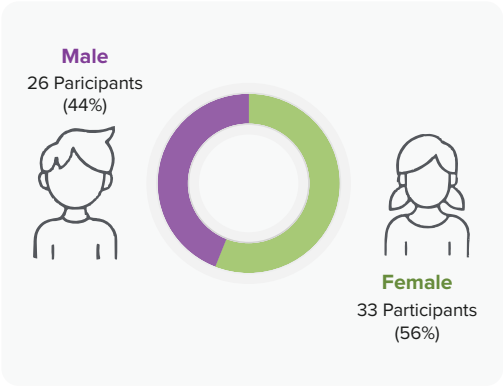
Had COVID-19 disease confirmed by a laboratory test

Were hospitalized and required medical care for COVID-19

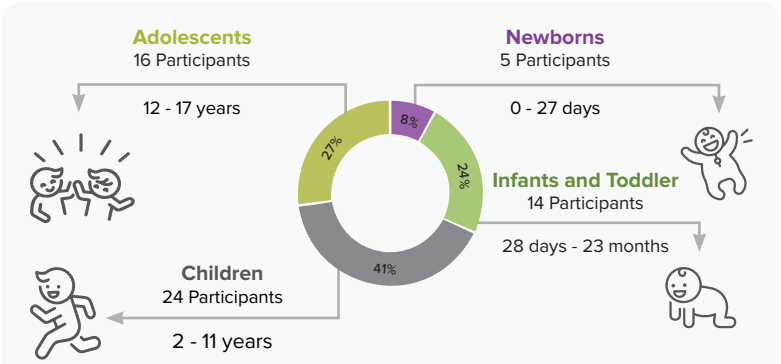
The map below shows how many study participants were from each country.


The below graphics show sex and age of participants who took part in the study.

**Participant breakdown by sex**




**Participant breakdown by age**




Race and ethnicity of participants who took part are shown below.

**Participant breakdown by race**

| | Percentage of participants | No. of participants |
|---|---|---|
| White | 63% | 37 |
| Black or African American | 25% | 15 |
| Other | 12% | 7 |

**Participant breakdown by ethnicity**

| | Percentage of participants | No. of participants |
|---|---|---|
| Not Hispanic or Latino | 58% | 34 |
| Hispanic or Latino | 41% | 24 |
| Unknown or Not Reported | less than 2% | 1 |

## What happened during the study?

This was a **single-arm**, **open-label** study. All participants received remdesivir at a dose based on their age and weight for a maximum of 10 days.

**Single-arm** - This means all participants received the same drug, remdesivir.

**Open-label** - This means the participant's parent or caregiver, doctors, and study staff knew the treatment the participants took.

**The study enrolled participants in 8 groups based on their age and weight to receive:**

## Remdesivir as an infusion into a vein (fluid put directly into a vein)

### Pediatric Participants Between 28 Days to Less Than 18 Years of Age

| | | | | |
|---|---|---|---|---|
| **Group 1**<br>**12 participants** | Age: Between 12 to less than 18 years<br>Weight: At least 40 kg (at least 88 lbs) | Remdesivir 200 mg on Day 1 followed by Remdesivir 100 mg daily up to 10 days | **Follow-up after treatment (30 days)** |
| **Group 2**<br>**12 participants** | Age: Between 28 days to less than 18 years<br>Weight: 20 to less than 40 kg (44 to less than 88 lbs) | Remdesivir 5 mg/kg on Day 1 followed by Remdesivir 2.5 mg/kg daily up to 10 days | |
| **Group 3**<br>**12 participants** | Age: Between 28 days to less than 18 years<br>Weight: 12 to less than 20 kg (around 26 to less than 44 lbs) | | |
| **Group 4**<br>**12 participants** | Age: Between 28 days to less than 18 years<br>Weight: 3 to less than 12 kg (around 6 to less than 26 lbs) | | |

### Full-Term Newborn Participants Between 0 Days to Less Than 28 Days of Age

| | | | |
|---|---|---|---|
| **Group 5**<br>**4 participants** | Age: Between 14 to less than 28 days<br>Weight: At least 2.5 kg (around 6 lbs) | Remdesivir 5 mg/kg on Day 1 followed by Remdesivir 2.5 mg/kg daily up to 10 days | **Follow-up after treatment (30 days)** |
| **Group 6**<br>**1 participant** | Age: 0 days to less than 14 days<br>Birth Weight: At least 2.5 kg (around 6 lbs) | Remdesivir 2.5 mg/kg on Day 1 followed by Remdesivir 1.25 mg/kg daily up to 10 days | |

### Preterm Newborn Participants and Infants Between 0 to Less Than 56 Days of Age

| | | | |
|---|---|---|---|
| **Group 7**<br>**1 participant** | Age: 0 days to less than 56 days<br>Birth Weight: At least 1.5 kg (around 3 lbs) | Remdesivir 2.5 mg/kg on Day 1 followed by Remdesivir 1.25 mg/kg daily up to 10 days | **Follow-up after treatment (30 days)** |

### Additional Group of Pediatric Participants Less Than 12 Years of Age

| | | | |
|---|---|---|---|
| **Group 8**<br>**5 participants** | Age: Less than 12 years<br>Weight: At least 40 kg (at least 88 lbs) | Remdesivir 200 mg on Day 1 followed by Remdesivir 100 mg daily up to 10 days | **Follow-up after treatment (30 days)** |

# What were the results of the study?

This is a summary of the main results of this study. The individual results of each participant might be different and are not in this summary. A detailed presentation of the results can be found on the websites listed at the end of this summary.

Of the 59 participants who started the study, there was 1 participant who left the study before taking any study treatment. So, the safety results related to unwanted medical events and laboratory tests abnormalities shown below only include **58 participants**.

Data for Groups 6 and 7 are not included in this summary to protect the privacy/confidentiality of the participant, because there was only 1 participant in each of these groups.

**How many participants had unwanted medical events during the study?**

The researchers kept track of any **unwanted medical events** that the participants had during the study. **An unwanted medical event is any unwanted sign or symptom that participants had during a study.**

An unwanted medical event is considered "**serious**" if it:

- results in death
- is life-threatening
- is considered by the study doctor to be medically important
- causes lasting problems
- requires hospital care

The table below shows how many participants had any **unwanted medical events** during the study:

**Unwanted Medical Events**

| | Group 1 (Out of 12 participants) | Group 2 (Out of 12 participants) | Group 3 (Out of 12 participants) | Group 4 (Out of 12 participants) | Group 5 (Out of 3 participants) | Group 8 (Out of 5 participants) | Total (Out of 58 participants) |
|---|---|---|---|---|---|---|---|
| | Number of participants (%) | | | | | | |
| Participants with any unwanted medical events | 11 (92%) | 7 (58%) | 9 (75%) | 7 (58%) | 2 (67%) | 4 (80%) | 41 (71%) |
| Participants with any serious medical events | 5 (42%) | 2 (17%) | 0 | 3 (25%) | 1 (33%) | 1 (20%) | 13 (22%) |

**How many participants had laboratory tests abnormalities during the study, if any?**

The researchers did tests and measurements of participants before and after taking the treatment. The researchers checked to find out if the changes in laboratory test values were laboratory abnormalities, meaning they were out of laboratory reference range. The researchers classified the laboratory abnormalities, as mild, moderate, severe or a potentially life-threatening event.

The table below shows participants with any laboratory abnormalities and participants with **severe** or **potentially life-threatening** laboratory abnormalities.

**Laboratory Abnormalities**

| | Group 1 (Out of 12 participants) | Group 2 (Out of 12 participants) | Group 3 (Out of 12 participants) | Group 4 (Out of 12 participants) | Group 5 (Out of 3 participants) | Group 8 (Out of 5 participants) | Total (Out of 58 participants) |
|---|---|---|---|---|---|---|---|
| | Number of participants (%) | | | | | | |
| Any laboratory abnormalities | 12 (100%) | 10 (83%) | 11 (92%) | 10 (91%) | 3 (100%) | 4 (80%) | 52 (91%) |
| Serious or potentially life threatening laboratory abnormalities | 9 (75%) | 2 (17%) | 5 (42%) | 4 (36%) | 3 (100%) | 3 (60%) | 26 (46%) |

**How much remdesivir and its breakdown products were found in participants' blood after taking the medicine for up to 10 days?**

To answer this question, the researchers took blood samples from the participants before and after taking remdesivir. Out of 58 participants who took remdesivir, blood samples were available only for 55 participants. Therefore, these results are available only for 55 participants.

In these blood samples, the researchers measured:

The **average highest amount** and the **average total amount** of remdesivir and 2 of its breakdown products called GS-704277 and GS-441524, found in participants' blood as shown in the graphic below.

| Pediatric Participants Between 28 Days to Less Than 18 Years of Age | | | | | Average highest amount ng/mL | Average total amount h x ng/mL |
|---|---|---|---|---|---|---|
| **Group 1**<br>**12 participants** | Age<br>Weight | Between 12 to less than 18 years<br>At least 40 kg (at least 88 lbs) | Remdesivir 200 mg on Day 1 followed by Remdesivir 100 mg daily up to 10 days | Remdesivir<br>GS-704277<br>GS-441524 | 4109<br>361<br>276 | 2630<br>1223<br>5486 |
| **Group 2**<br>**12 participants** | Age<br>Weight | Between 28 days to less than 18 years<br>20 to less than 40 kg (44 to less than 88 lbs) | Remdesivir 5 mg/kg on Day 1 followed by Remdesivir 2.5 mg/kg daily up to 10 days | Remdesivir<br>GS-704277<br>GS-441524 | 6004<br>469<br>211 | 3938<br>860<br>3016 |
| **Group 3**<br>**11 participants** | Age<br>Weight | Between 28 days to less than 18 years<br>12 to less than 20 kg (around 26 to less than 44 lbs) | | Remdesivir<br>GS-704277<br>GS-441524 | 5980<br>485<br>187 | 6752<br>876<br>2752 |
| **Group 4**<br>**10 participants** | Age<br>Weight | Between 28 days to less than 18 years<br>3 to less than 12 kg (around 6 to less than 26 lbs) | | Remdesivir<br>GS-704277<br>GS-441524 | 5193<br>408<br>210 | 3626<br>776<br>2969 |
| Full-Term Newborn Participants Between 0 Days to Less Than 28 Days of Age | | | | | | |
| **Group 5**<br>**3 participants** | Age<br>Weight | Between 14 to less than 28 days<br>At least 2.5 kg (around 6 lbs) | Remdesivir 5 mg/kg on Day 1 followed by Remdesivir 2.5 mg/kg daily up to 10 days | Remdesivir<br>GS-704277<br>GS-441524 | 4829<br>466<br>372 | 2650<br>1049<br>6899 |
| Additional Group of Pediatric Participants Less Than 12 Years of Age | | | | | | |
| **Group 8**<br>**5 participants** | Age<br>Weight | Less than 12 years<br>At least 40 kg (at least 88 lbs) | Remdesivir 200 mg on Day 1 followed by Remdesivir 100 mg daily up to 10 days | Remdesivir<br>GS-704277<br>GS-441524 | 4236<br>298<br>230 | 2520<br>671<br>4337 |

ng/mL: nanogram per milliliter; h: hour

These assessments help researchers, doctors or heath care providers to decide the **dose** and the **dosing regimen** of remdesivir in **participants less than 18 years old with COVID-19**.

# What side effects did the participants have during the study?

For the purpose of this summary, "**side effects**" are defined as unwanted medical events that the study doctors thought might be related to the study treatment.

The results from several studies are usually needed to help decide if a treatment actually causes a side effect.

The table below shows how many participants had **side effects** during the study. Data for Groups 6 and 7 are not included in this summary to protect the privacy of the participants, as there was only 1 participant in each of these groups.

**Overall Side Effects**

| | Group 1 (Out of 12 participants) | Group 2 (Out of 12 participants) | Group 3 (Out of 12 participants) | Group 4 (Out of 12 participants) | Group 5 (Out of 3 participants) | Group 8 (Out of 5 participants) | Total (Out of 58 participants) |
|---|---|---|---|---|---|---|---|
| | Number of participants (%) | | | | | | |
| **How many participants had any side effects?** | 4 (33%) | 1 (8%) | 0 | 1 (8%) | 0 | 2 (40%) | 8 (14) |
| **How many participants stopped taking study treatment because of side effects?** | 2 (17%) | 0 | 0 | 0 | 0 | 0 | 2 (3%) |

**None of the participants had any serious side effects or died due to any side effects during this study.**

The table below shows the **most common non-serious side effects** that occurred during the study. There were other side effects, but those occurred in fewer participants. Some participants may have had more than 1 side effect.

**Most Common Non-serious Side effects**

| | Group 1 (Out of 12 participants) | Group 2 (Out of 12 participants) | Group 3 (Out of 12 participants) | Group 4 (Out of 12 participants) | Group 5 (Out of 3 participants) | Group 8 (Out of 5 participants) | Total (Out of 58 participants) |
|---|---|---|---|---|---|---|---|
| | Number of participants (%) | | | | | | |
| **Increased level of liver protein in the blood (Alanine aminotransferase increased)** | 2 (17%) | 0 | 0 | 1 (8%) | 0 | 0 | 3 (5%) |
| **Increased level of liver protein in the blood (Aspartate aminotransferase increased)** | 1 (8%) | 0 | 0 | 1 (8%) | 0 | 0 | 2 (3%) |

## How has this study helped researchers?

This study helped the researchers in understanding the dose and dosing regimen of remdesivir and to learn more about how well-tolerated and safe treatment with remdesivir is in participants less than 18 years old with COVID-19.

The results from several studies are needed to help decide which treatments work and are safe. This summary shows only the main results from this one study. Other studies may provide new information or different results. Always talk to a doctor or healthcare provider before making any treatment changes.

The study will further support the research of remdesivir in people with COVID-19, including pediatric population.

Gilead Sciences has ongoing clinical studies with remdesivir.

## Where can I learn more about this study?

You can find more information about this study on the websites listed below.

**www.clinicaltrials.gov**

Once you are on this website, type "**NCT04431453**" into the search box and click "**Search**"

**www.clinicaltrialsregister.eu**

Once you are on the website, click "Home and Search", then type "**2020-001803-17**" into the search box and click "**Search**"

**Company Website:** www.gileadclinicaltrials.com
**National Clinical Trials Number: NCT04431453**
**EU Clinical Trials Number: 2020-001803-17**

Please note that information on these websites may be presented in a different way from this summary.

**Full Study Title:** A Phase 2/3 Single-Arm, Open-Label Study to Evaluate the Safety, Tolerability, Pharmacokinetics, and Efficacy of Remdesivir (GS-5734™) in Participants From Birth to < 18 Years of Age With COVID-19

For more information about clinical trials, click here.

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Clinical study participants belong to a large community of people who take part in clinical research around the world. They help researchers answer important health questions and find medical treatments for patients.

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