

Introduction

This is the 6th Summary of Main Results report from the [COVID-NMA initiative](#). It provides an overview of the results as of **September 5th, 2022**, summarizing the evidence regarding treatment of hospitalized Covid-19 patients for which there is high or moderate certainty.

Since March 2022, the COVID-NMA initiative has focused its scope on vaccines, immunomodulators, and antivirals (results for other interventions up to that date are still available on the website), updating the results every two weeks. Therefore, the most up to date results are available on covid-nma.com, and the list of studies pending data extraction is available [here](#). Feel free to get in touch with us using our [contact form](#) and to disseminate this document on twitter ([@Covid-NMA](#)).

Updates since the previous report

- Since the previous report (updated on August 3rd) there have been the following relevant changes: After pooling the latest studies assessing **Anakinra** the updated evidence suggest that this intervention probably results in little to no difference on clinical improvement around 28 days. The current evidence for the other outcomes remains the same: In hospitalized patients, Anakinra probably reduces the risk of WHO score ≥ 7 (i.e. mechanical ventilation or death) around 28 days and around 60 days, but it probably results in little to no difference in the likelihood of clinical improvement around 60 days and in the risk of adverse events.
- There is now moderate certainty regarding the effect **Convalescent plasma** on the risk of WHO score ≥ 7 (i.e. mechanical ventilation or death) around 28 days and on the risk of adverse events, which are probably little to no different than in standard care/placebo. Convalescent plasma probably results in little to no difference on clinical improvement around 28 days or all-cause mortality (around 28 days).
- Other minimal changes in some of the values regarding Baricitinib and Corticosteroids, but they resulted in no changes in their certainty or interpretation.

What is the current evidence regarding treatment of hospitalized Covid-19 patients?

Updated on September 5th, 2022

Pharmacologic treatments in hospitalized patients

Critical outcomes of interest: Clinical improvement (around day 28 or day 60), WHO Clinical Progression Score ≥ 7 (around day 28 or day 60), all-cause mortality (around day 28 or day 60), viral negative conversion (around day 7), adverse events and serious adverse events.

For most pharmacological treatments in hospitalized patients, the certainty of the evidence is still low or very low. Below is a summary of pharmacological interventions that have **results in favor of a beneficial effect** so far compared with placebo or standard care. We only highlight outcomes of moderate and high certainty; other outcomes are of low or very low certainty.

- **Anakinra** (a monoclonal antibody) probably reduces the risk of WHO score ≥ 7 (i.e. mechanical ventilation or death) around 28 days and around 60 days in hospitalized patients. It probably results in little to no

difference in the likelihood of clinical improvement around 28 days and around 60 days and in the risk of adverse events. It is one of the interventions that have been authorized in the EU to treat Covid-19.

- **Baricitinib** (a kinase inhibitor) reduces the risk of WHO score ≥ 7 (i.e. mechanical ventilation or death, around 28 days) in hospitalized patients, although it results in little to no difference in clinical improvement around 28 days. It is likely to reduce the risk of all-cause mortality (around 28 days and around 60 days). It probably does not increase the risk of adverse events but probably decreases the risk of serious adverse events.
- **Casirivimab + Imdevimab (REGN-COV2)** (Monoclonal antibody combination) probably reduces the risk of all-cause mortality (around 28 days), although the likelihood of clinical improvement around 28 days and around 60 days probably is not improved. It is one of the interventions that have been authorized in the EU to treat Covid-19.
- **Corticosteroids** probably increase clinical improvement (around 28 days) slightly and reduce the risk of all-cause mortality (around 28 days) in hospitalized patients. We pooled together oral and intravenous corticosteroids of participants with various disease severity. Of note, the largest study (the RECOVERY trial) found in subgroup analysis that “differences in mortality varied considerably according to the level of respiratory support that the patients were receiving at the time of randomization”, and that “the use dexamethasone resulted in lower 28-day mortality among those who were receiving either invasive mechanical ventilation or oxygen alone at randomization but not among those receiving no respiratory support.”
- **Tocilizumab** (a monoclonal antibody) is likely to reduce the risk of all-cause mortality (around 28 days) in hospitalized patients, although it probably results in little to no difference on clinical improvement around 28 days. It probably results in little to no difference in the risk of adverse events. It is one of the interventions that have been authorized in the EU to treat Covid-19.

For the treatments below there are outcomes with moderate or high certainty indicating **uncertainty of benefit or harm**

- **Remdesivir** (an anti-viral), which is one of the interventions recommended by the NIH and which has been authorized in the EU to treat COVID-19, we found that the risk estimate for all-cause mortality (around 28 days) and its wide confidence interval (RR 0.91, 95% CI 0.74 to 1.11) point to uncertainty of benefit or harm.

For the treatments below there are outcomes with moderate or high certainty indicating **no evidence of beneficial effects** (e.g. clinical improvement or reduction in mortality) or an increase in the risks of negative effects (e.g. serious adverse events) compared with placebo or standard care:

- **Auxora** (an immunomodulator) probably results in little to no difference in the risk of adverse events and probably decreases the risk of serious adverse events.
- **Bamlanivimab** (a monoclonal antibody) probably results in little to no difference on clinical improvement around day 60.
- **Camostat Mesilate** (an anti-viral) probably results in little to no difference on clinical improvement around 28 days.
- **Canakinumab** (a monoclonal antibody) probably results in little to no difference on clinical improvement around 28 days and in little to no difference in the risk of adverse events.
- **Convalescent plasma** probably results in little to no difference on clinical improvement around 28 days, the risk of WHO score ≥ 7 (i.e. mechanical ventilation or death) around 28 days, the risk of adverse events or all-cause mortality (around 28 days).
- **Lopinavir + Ritonavir** (an anti-viral) probably results in little to no difference on viral negative conversion (around day 7), clinical improvement (around 28 days) or all-cause mortality (around 28 days).
- **Ruxolitinib** (a kinase inhibitor) probably results in little to no difference in the risk of adverse events.
- **Sotrovimab** (a monoclonal antibody) probably results in little to no difference in clinical improvement around day 60. Furthermore, it probably increases the risk of serious adverse events. While the NIH recommends this intervention for outpatients, it has not been recommended for hospitalized patients.

Similarly, this intervention has been authorized in the EU to treat COVID-19, but only in patients who do not require supplemental oxygen and are at increased risk of the disease becoming severe.

For another intervention authorized by the European Medicines Association (Ritonavir alone) we have not yet identified randomized controlled trials reporting its effectiveness.

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Summary Table: Pharmacologic treatments in hospitalized patients
(Updated on September 5th , 2022)

Legend:

Moderate/ High certainty of benefit
Moderate/ High certainty of little or no difference
Moderate/ High certainty of harm

Treatment (vs standard care or placebo)	Treatment effectiveness							Adverse events	
	Clinical improvement (D28)	Clinical improvement (D60)	WHO progression score (level ≥7) (D28)	WHO progression score (level ≥7) (D60)	All-cause mortality (D28)	All-cause mortality (D60)	Viral negative conversion (D7)	Adverse events	Serious adverse events
Anakinra	1.04 (0.93-1.17)	0.94 (0.79 - 1.11)	0.64 (0.42 - 0.98)	0.54 (0.3 - 0.96)	low certainty	low certainty	low certainty	1.02 (0.94-1.10)	low certainty
Auxora		very low certainty	very low certainty	very low certainty	very low certainty	very low certainty		1.04 (0.87 - 1.25)	0.68 (0.47 - 0.99)
Bamlanivimab (LY-CoV555)		0.98 (0.90 - 1.07)	low certainty		low certainty	low certainty		low certainty	low certainty
Baricitinib	1.02 (1.00 - 1.05)		0.87 (0.78 - 0.97)		0.75 (0.58 - 0.99)	0.69 (0.56 - 0.86)		0.96 (0.88 - 1.05)	0.77 (0.64 - 0.94)
Camostat Mesilate	1.03 (0.94 - 1.13)		low certainty		low certainty		very low certainty	very low certainty	very low certainty
Canakinumab	1.05 (0.96-1.14)		low certainty		low certainty	very low certainty		1.02 (0.86-1.21)	low certainty
Casirivimab + Imdevimab (REGN-COV2)	1.02 (0.99 - 1.04)	1.04 (0.97 - 1.12)	low certainty		0.93 (0.86 - 1.01)	low certainty			
Convalescent plasma	1.00 (0.98-1.02)	low certainty	1.07 (0.95-1.20)	very low certainty	0.98 (0.93 - 1.03)	very low certainty	very low certainty	1.06 (0.96-1.17)	low certainty
Corticosteroids	1.05 (1.02 – 1.08)	low certainty	very low certainty		0.91 (0.85-0.98)	very low certainty	very low certainty	low certainty	very low certainty
Lopinavir + Ritonavir	0.99 (0.90 - 1.09)		low certainty	very low certainty	1.02 (0.92-1.12)	low certainty	1.05 (0.88 - 1.25)	low certainty	very low certainty
Remdesivir	low certainty		low certainty		0.91 (0.74-1.11)	very low certainty	low certainty	very low certainty	very low certainty
Ruxolitinib	low certainty		low certainty		low certainty			1.01 (0.85 - 1.19)	low certainty
Sotrovimab		1.05 (0.97 - 1.15)	low certainty		low certainty	low certainty		low certainty	2.03 (1.32 - 3.13)
Tocilizumab	1.05 (1.00-1.11)	very low certainty	low certainty		0.88 (0.81-0.94)	low certainty		1.03 (0.95 - 1.12)	very low certainty

All values are RR (95% CI). Bolded results have a high level of certainty, while non-bolded results have a moderate level of certainty. Last updated: September 5th 2022. Click on the treatment to access the corresponding site at covid-nma.com.

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