COVID-19 prescribing briefing: corticosteroids

About dexamethasone and hydrocortisone

- Dexamethasone and hydrocortisone are both **corticosteroids**; they have a role in treating COVID-19 in certain people.
- For treating COVID-19:
  - **dexamethasone** can be given **orally** or **intraveously**
  - **hydrocortisone** can only be given **intravenously**.
- The **marketing authorisations** cover treating COVID-19 as described in this briefing (use is **not** off-label).

See MHRA CAS alert: 3 September for full details

Place in therapy

Offer dexamethasone or hydrocortisone to people with **severe** or **critical** COVID-19 (in line with updated WHO guidance); that is, people with any of the following:

- acute respiratory distress syndrome (ARDS)
- sepsis or septic shock
- other conditions that would normally need life-sustaining therapies such as ventilation or vasopressor therapy
- signs of severe respiratory distress
- oxygen saturation <90% (or deteriorating) on room air
- increased respiratory rate (>30 breaths per minute in adults and children over 5 years).

Corticosteroids should **not** normally be used in people with COVID-19 that is not severe or critical, because there is the possibility of harm to such people.

These recommendations are based on a meta-analysis of 7 randomised controlled trials. The strongest evidence came from the UK-based RECOVERY trial of dexamethasone (see page 3). This contributed 59% of patient data in the meta-analysis.

There is no evidence directly comparing dexamethasone and hydrocortisone in COVID-19.

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Dosages

The recommended dosage and duration of treatment for adults is:

- For **dexamethasone**:
  6 mg once a day **orally** for 7 to 10 days
  (three 2 mg tablets or 15 ml of 2 mg/5 ml oral solution)
  or
  6 mg once a day **intravenously** for 7 to 10 days
  (1.8 ml of 3.3 mg/ml ampoules [5.94 mg]).
- For **hydrocortisone**:
  50 mg every 8 hours **intravenously** (0.5 ml of 100 mg/ml solution, powder for solution for injection/infusion is also available). This may be continued for up to 28 days for patients with septic shock.

Treatment should **stop** if the person is discharged from hospital before the 10 day course is completed.

Note: The CAS alert states that there may be occasions when UK patients have COVID-19 that meets the WHO criteria of severe or critical but are not hospitalised, in which case the WHO guidance for treatment would apply.

For the dosage in children and young people, see the manufacturers' summaries of product characteristics and the BNF for Children.

See MHRA CAS alert: 3 September 2020 for full details

Treatment considerations

Follow local policies on **gastroprotection** during corticosteroid treatment.

If a person is **pregnant** or **breastfeeding**, the benefits of corticosteroids are thought to outweigh the risks. There is no convincing evidence that systemic corticosteroids increase the incidence of congenital abnormalities.

Coadministration of corticosteroids with other medicines for treating COVID-19 has not been studied - see the COVID-19 drug interactions checker

- No clinically significant interaction is likely between remdesivir and dexamethasone or hydrocortisone.
- Atazanavir and lopinavir/ritonavir may increase concentrations of hydrocortisone.

Useful links

For side effects, cautions and contraindications, see the BNF and BNF for Children.

Any **suspected adverse drug reactions (ADRs)** for corticosteroids in COVID-19 should be reported via the COVID-19 Yellow Card reporting site.

Outcome data for all people with COVID-19 should be captured through the ISARIC 4C Clinical Characterisation Protocol case report forms.

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The RECOVERY trial: dexamethasone

Study details

- Phase 3, open label, randomised controlled trial.
- UKRI/NIHR funded.

Setting

- 176 UK hospitals.

Population

- 6425 hospitalised patients of any age with known or suspected SARS-CoV-2 infection.
- Mean age was 66 years, 36% were female, 89% had laboratory-confirmed SARS-CoV-2 infection.
- 24% were not receiving respiratory support at study entry, 60% were receiving supplementary oxygen without invasive ventilation, and 16% were receiving invasive mechanical ventilation (of whom 83% were aged under 70 years).
- 25% also received azithromycin, 3% or fewer received lopinavir/ritonavir, hydroxychloroquine, sarilumab or tocilizumab.

Treatment and comparison

- Usual care plus either dexamethasone 6 mg once a day (orally or intravenous) for up to 10 days or until discharge if sooner (median duration 7 days) or placebo.

Results

All-cause mortality at 28 days (primary outcome)

Dexamethasone **statistically significantly reduced all-cause mortality** at 28 days compared with usual care alone:

- In patients ventilated at study entry: 29.3% (dexamethasone) compared with 41.4% (control), rate ratio 0.64, 95% confidence interval (CI) 0.51 to 0.81.
- In patients receiving oxygen without invasive ventilation at study entry: 23.3% (dexamethasone) compared with 26.2% (control), rate ratio 0.82, 95% CI 0.72 to 0.94.

There was no **statistically significant benefit** in all-cause mortality in patients who did not need respiratory support at the start of the study, and the results include the possibility of harm in such people (17.8% compared with 14.0%, rate ratio 1.19, 95%CI 0.91 to 1.55).

Findings were similar in analyses restricted to patients with confirmed SARS-CoV-2 infection and without adjustment for age.

Information on adverse effects was not reported.

References

MHRA: CAS Alert 3 September 2020.
World Health Organization: Corticosteroids for COVID-19. Interim guidance. 2 September 2020.
WHO REACT Working Group: Association between administration of systemic corticosteroids and mortality among critically ill patients with COVID-19: A meta-analysis. JAMA, September 2020.
The RECOVERY Collaborative Group: Dexamethasone in hospitalized patients with Covid-19 — Preliminary Report. New Eng J Med, July 2020.

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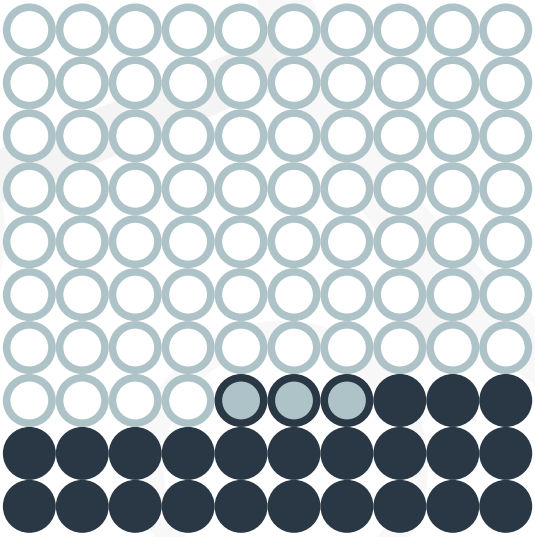
Communicating benefits with patients, their families, and carers

For patients who did not need respiratory support at the start of the study

Dexamethasone was **not shown to reduce the risk of dying**, and an increase in the risk of dying from dexamethasone cannot be ruled out.

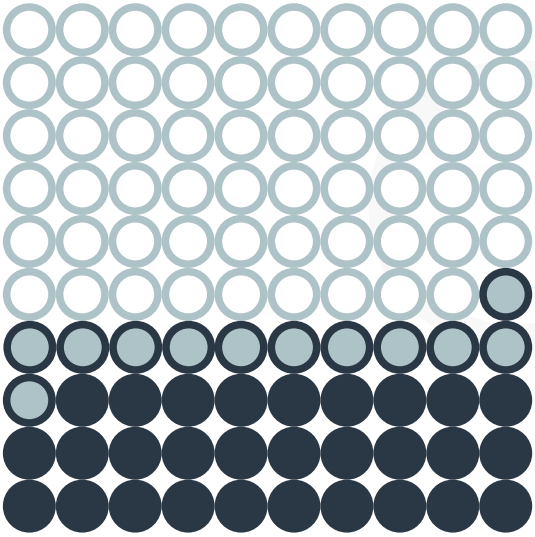
For patients who were on oxygen, but not mechanical ventilation, at the start of the study



On average, for every 100 patients who had dexamethasone:

- 3 patients **did not die** within 28 days, **because they had dexamethasone**.
- 74 patients **did not die** within 28 days, but would not have died whether they had dexamethasone or not.
- 23 patients **died** even though they had dexamethasone.

For patients who were on mechanical ventilation at the start of the study



On average, for every 100 patients who had dexamethasone:

- 12 patients **did not die** within 28 days, **because they had dexamethasone**.
- 59 patients **did not die** within 28 days, but would not have died whether they had dexamethasone or not.
- 29 patients **died** even though they had dexamethasone.

These risks and benefits were based on data from The RECOVERY Trial (see page 3 for more information)