

23.04.2020: **Managing adrenal insufficiency in patients with acute infection (suspected or confirmed) with COVID-19:**

Dear Colleagues,

There has been recent change in recommendation from the European Society of Endocrinology and the Society for endocrinology (UK) about the treatment of patients with adrenal insufficiency with confirmed or suspected COVID-19 infection. This is aimed at avoiding the precipitation of adrenal crisis.

This recommendation applies to patients with **primary** (adrenal), **secondary** (pituitary) or **tertiary** (due to exogenous steroids- *> 5 mg of prednisolone for >4weeks*) **adrenal insufficiency**.

ADVICE AT HOME:

- If a patient with adrenal insufficiency develops signs and symptoms suggestive of COVID-19, they should immediately take a double hydrocortisone morning dose and then increase their hydrocortisone replacement to **20mg hydrocortisone every 6 hours**.
- Patients normally taking modified release hydrocortisone preparations should switch to taking 20mg immediate release hydrocortisone every 6 hours.
- Patients taking **prednisolone** doses of 5-15mg daily should immediately take **10mg prednisolone every 12-hours**.
- **Patients on daily prednisolone doses >15mg** should continue to take their usual daily prednisolone dose but **split it into a morning and late afternoon dose** of at least 10mg each time.

- Patients should rest and try to keep well hydrated by drinking regularly, even during the night. They should monitor how much urine they pass; the excretion of only little amounts of dark, concentrated urine indicates insufficient hydration, which should prompt further increased oral fluid intake.
- In addition, patients should seek medical advice regarding the management of their suspected or confirmed COVID-19 infection, either over the internet (e.g. the NHS 111 online coronavirus service <https://111.nhs.uk/covid-19/>) or by a phone call to their general practitioner.
- Under no circumstances should patients hesitate to contact medical emergency services if the clinical signs and symptoms of COVID-19 significantly worsen. Patients (or their carers) should contact medical emergency services without delay and immediately administer their hydrocortisone emergency injection (100mg i.m.).
- If for any reason they cannot administer the injection, they should immediately take 50-100mg hydrocortisone orally, if possible, while waiting for medical emergency services to arrive. If need be, patients and their carers should consider making their own way to hospital and continue to take 50mg of hydrocortisone every 6-hours.
- **Recovery:** Once the patient no longer has fever and starts to show significant clinical improvement the six-hourly oral administration of 20 mg hydrocortisone can be tapered back to double dose of the routine replacement regimen and then normal routine doses once fully recovered. Asymptomatic patients who tested COVID-19 positive, e.g. due to family screening, do not need to increase their routine replacement dose.

If any doubt or any questions, there is endocrinology advice available 24 hours per day, 7 days per week (registrar and consultant). For urgent queries please bleep the endocrinology registrar through the Oxford University Hospitals NHS Foundation trust.

A table of suggested algorithm is included below:

Table 1: Suggested management and hydrocortisone stress dose cover in patients with adrenal insufficiency and suspected or confirmed COVID-19 infection.

Clinical Scenario	Suggested Management
At home	
Onset of signs and symptoms suggestive of COVID-19 (fever >38°C (>100 F), a new or continuous dry cough, sore throat, loss of sense of smell or taste, aches and pains, fatigue)	<ul style="list-style-type: none"> Adults and adolescents should take 20 mg hydrocortisone orally every 6 hours (in children, their usual daily dose should be trebled (i.e. 3fold increase) and administered in four equal doses every 6 hours) Patients on modified release hydrocortisone should switch to immediate release hydrocortisone and take 20 mg orally every 6 hours Patients on 5-15 mg prednisolone daily should take 10 mg prednisolone every 12 hours; patients on oral prednisolone >15 mg should continue their usual dose but take it split into two equal doses of at least 10 mg each. If on fludrocortisone, continue at usual dose Take paracetamol 1000 mg every 6 hours for fever (adjust dose appropriately for infants and children) Rest, drink regularly and monitor how concentrated (dark) urine looks is to guide further fluid intake Request medical advice on the suspected COVID-19 infection
Onset of signs and symptoms of clinical deterioration (dizziness; intense thirst; shaking uncontrollably; drowsiness, confusion, lethargy; vomiting; severe diarrhoea; increasing shortness of breath, respiratory rate >24/min, difficulty speaking)	<ul style="list-style-type: none"> Immediately inject (patient or carer) 100 mg hydrocortisone per intramuscular injection in adults and adolescents (25 mg in infants, 50 mg in school children) Call for emergency medical attention for treatment and transfer to hospital, consider making their own way to hospital If patients cannot be taken or kept in hospital, then they should take 50 mg hydrocortisone every 6 hours orally at home; if possible, they should receive i.v. hydrocortisone and an isotonic saline infusion in the admissions unit
At hospital	
On regular ward or intensive care ward, irrespective of whether breathing unaided or supported by continuous positive airway pressure (CPAP) respiration or mechanically ventilated	<ul style="list-style-type: none"> Hydrocortisone 100 mg per iv injection in adults and adolescents, followed by continuous iv infusion of 200 mg hydrocortisone/24h (alternatively 50 mg every 6 h per intravenous or intramuscular bolus injection) Infants and children should receive an initial parenteral injection of 50 mg hydrocortisone/m² (usually 25mg in infants and 50 mg in children) followed by 50 mg/24h in infants and 100 mg/24 h in children Pause fludrocortisone in adults Continuous intravenous fluid resuscitation with isotonic saline; regularly check urea & electrolytes
Recovery; improving respiratory function, reducing or normal temperature	<ul style="list-style-type: none"> Gradual tapering of stress dose hydrocortisone down to double regular replacement dose at time of discharge (endocrinologist to advise) Re-start usual fludrocortisone dose in adults when total daily hydrocortisone dose <50 mg

Other resources:

The UK version of the emergency steroid card is downloadable at <https://www.endocrinology.org/media/3563/new-nhs-emergency-steroid-card.pdf> and includes a QR code that guides healthcare staff to a website with detailed instructions on how to manage a patient suffering from adrenal crisis <https://www.endocrinology.org/adrenal-crisis>.

Advice leaflet for patients is available here <https://www.endocrinology.org/clinical-practice/clinical-guidance/adrenal-crisis/covid-19-adrenal-crisis-information/>

Yours Sincerely,

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