University Hospitals Birmingham NHS
NHS Foundation Trust

MANAGEMENT OF GLUCOCORTICOID REQUIREMENT DURING SURGERY/INVASIVE PROCEDURE

Important Information for Surgical, Medical and Nursing Staff

AFFIX PATIENT'S LABEL

To Whom This May Concern:

The above named patient is known to have adrenal insufficiency (AI) and is taking daily steroid replacement. Any surgery/procedure can precipitate a life-threatening adrenal crisis.

The tables below summarise the recommended dose of peri-operative glucocorticoid cover based on recent guidelines. They are not to replace good clinical judgement but to ensure that patients with adrenal insufficiency are optimally managed peri-operatively.

1 Glucocorticoid Cover

A. Peri-operative Glucocorticoid Requirement of Patients with Known Adrenal Insufficiency (Primary or Secondary

Type of Surgery	Pre and intra-operative glucocorticoid requirement	Post-operative glucocorticoid requirement
MINOR/LOW RISK SURGERY/PROCEDURE (e.g. superficial skin operation and procedure under local anaesthesia, cataract surgery, hernia repair, laparoscopy with local anaesthetic).	• Patient should take double dose of PO hydrocortisone on the morning of surgery*. • If patient is nil by mouth, administer single bolus dose of hydrocortisone 100 mg (IV or IM) prior to the start of surgery/procedure. • **Overnight hospital admission prior to the surgery/invasive procedure is NOT required.**	• Patient should continue with double dose of PO hydrocortisone until clinically stable (usually within 24-48 hours). • Patient's glucocorticoid should revert back to normal replacement dose (pre-operative dose) once clinically stable.

MODERATE SURGERY/PROCEDURE (e.g. any procedure under general or regional anaesthesia with rapid recovery time, including joint reduction, IVF egg extraction)	• Administer hydrocortisone 100 mg bolus injection (IV) at induction of anaesthesia. • Followed by immediate initiation of a continuous IV infusion of hydrocortisone 200 mg in 250 ml of 5% glucose over 24 hrs**. • **Overnight hospital admission prior to the surgery/invasive procedure is usually not required. The need for overnight hospital admission is decided on an individual case basis and should be discussed with the endocrinologist and surgeon.**	• Hydrocortisone 200mg in 250 ml of 5% glucose over 24 hours by IV infusion whist the patient is nil by mouth or for patients with post-operative vomiting. • Resume PO hydrocortisone at a double dose for 24 hours (or until patient is clinically stable). • Once patient is clinically stable, glucocorticoid dose can be reduced to normal replacement dose (pre-operative dose).
MAJOR/HIGH RISK SURGERY/PROCEDURE (e.g. any procedure under general anaesthesia with long recovery time [such as major bowel surgery, heart surgery, diagnostic]).	• Administer hydrocortisone 100 mg bolus injection (IV) at induction of anaesthesia. • Followed by immediate initiation of hydrocortisone 200 mg in 250 ml of 5% glucose as a continuous IV infusion over 24 hrs. • ***Overnight admission prior to the surgery/invasive should be considered to allow adequate fluid hydration prior to the surgery/procedure.**	• Continue hydrocortisone 200mg continuous IV infusion over 24 hours whilst the patient is nil by mouth or for those patients with post-operative vomiting. • Once patient is no longer nil by mouth, glucocorticoid cover can be switched to PO hydrocortisone at a double dose for 48 hours (or for up to a week). • Once patient is clinical stable, glucocorticoid dose can be reduced to normal replacement dose (pre-operative dose), usually within 1-2 weeks of surgery except in Cushing's. • Endocrine consult/review should be sought for post-operative advice.
SURGERY/PROCEDURE REQUIRING BOWEL PREPARATION	• **See separate SOP (See Section B)**	• **See separate SOP (See Section B)**

Labour and vaginal delivery	• Administer hydrocortisone 100 mg bolus injection (IV) at onset of labour. • Followed by immediate initiation of hydrocortisone 200 mg in 250 mls of 5% glucose as a continuous IV infusion over 24 hrs.	• Resume PO hydrocortisone at a double dose for 48 hours (or until patient is clinically stable). • Once patient is clinical stable, glucocorticoid dose can be reduced to normal replacement dose (pre-operative dose).
Caesarean section	See section on **MODERATE SURGERY/PROCEDURE**	

Note:
***** ***Patients who are NBM from midnight pre-op can usually take morning glucocorticoid with minimal clear water (please check with the surgeon/anaesthetist).***
**** If administering hydrocortisone by continuous IV infusion is not possible (i.e. due to lack/absence of IV access), administer hydrocortisone 50 mg as IM injection every 6 hours (not QDS).**

B. Peri-operative Glucocorticoid Replacement of Patients Undergoing Bowel Procedure

Detailed in the table below are the peri-operative glucocorticoid requirements of patients with adrenal insufficiency during bowel procedure.

Bowel Procedure	Patients with Known Adrenal Insufficiency (Primary or Secondary AI)	Patients on Adreno-suppressive Dose of Glucocorticoid (not known AI)
A. Low risk bowel procedure (e.g. OGD).	**i. Before the procedure:** • Hospital admission is usually not required. • Patient should be advised to take PO hydrocortisone 20mg in the morning, 20mg at lunch time and 10mg in the afternoon (or if on prednisolone, 10mg once a day) 24 hours before the procedure*. **ii. During the procedure:** • Administer hydrocortisone 100mg IV or IM immediately prior to the procedure. **iii. After the procedure:** • If clinically stable, patient should resume PO hydrocortisone or prednisolone at the usual pre-operative (maintenance) dose otherwise, resume PO hydrocortisone at double dose (or prednisolone at 10mg once a day) until clinically stable. **Patients who are on fludrocortisone should continue with their daily maintenance dose uninterrupted without the need for dose increase.**	**1. Before the procedure:** • Hospital admission is usually **not** required. • Patient should be advised to take usual daily dose of glucocorticoid*. **2. During the procedure:** • Patient should be advised to take usual daily dose of glucocorticoid on the morning of the procedure. •Endoscopy staff should have easy access to hydrocortisone 100mg IV or IM for administration if any concerns **iv. After the procedure:** • Patient should continue with their usual daily dose of glucocorticoid. • Equivalent intravenous dose should be prescribed if patient is to remain nil by mouth.

B. Medium risk bowel procedure (e.g. diagnostic colonoscopy and all other procedure requiring bowel preparation).	**i. Before the procedure:** • Hospital admission is usually not required the night before the procedure unless patient has history of adrenal crisis in the last 2 years or deemed high risk of adrenal crisis (e.g. on fludrocortisone and/or vasopressin-dependent patients)[+/++]. • Patient should be advised to take PO hydrocortisone 20mg in the morning, 20mg at lunch time and 10mg in the afternoon (or if on prednisolone, 10mg once a day) 24 hours before the procedure (this is usually during the bowel prep)*. • Patient should be encouraged to take fluids and low residual diet as normal. **ii. During the procedure:** • Administer hydrocortisone 100mg IV or IM immediately prior to the procedure. **iii. After the procedure:** • Resume PO hydrocortisone at double the pre-operative maintenance dose (or prednisolone 10mg once a day) for 24 hours then resume usual daily maintenance dose. **[+]Patients who are on fludrocortisone should continue with their daily maintenance dose uninterrupted without the need for dose increase.** **[++] If hospital admission is required, patient should be advised that discharge will usually be done within 24 hours of the completion of the procedure.**	**1. Before the procedure:** • Hospital admission is usually **not** required. • Patient should be advised to take usual daily dose of glucocorticoid*. **2. During the procedure:** • Patient should be advised to take usual daily dose of glucocorticoid on the morning of the procedure. • Endoscopy staff should have easy access to hydrocortisone 100mg IV or IM for administration if any concerns **3. After the procedure:** • Patient should continue with their usual daily dose of glucocorticoid. • Equivalent intravenous dose should be prescribed if patient is to remain nil by mouth.

Note:

*** *Patients who are NBM from midnight pre-op can usually take morning glucocorticoid with minimal clear water (please check with the surgeon/anaesthetist).***

**** If administering hydrocortisone by continuous IV infusion is not possible (i.e. due to lack/absence of IV access), administer hydrocortisone 50 mg as IM injection every 6 hours (not QDS).**

2 Mineralocorticoid Cover

- Patients who are taking mineralocorticoid (i.e. fludrocortisone) do not require peri-operative supplementation of mineralocorticoid provided that their hydrocortisone dose is > 50 mg/24 hours.
- If patients' hydrocortisone dose is to be reduced to less than 50 mg/24 hours, advice from the Endocrine team must be sought regarding patient's mineralocorticoid medication.

For full details of the clinical guideline on the management of patients with adrenal insufficiency, please refer to UHB Clinical Guideline CG1106: http://uhbpolicies/assets/AdrenalInsufficiency.pdf

3 Useful Contact Numbers

Consultant Endocrinologist	**Queen Elizabeth Hospital Birmingham** • **Contact via switchboard (0121-371-2000)** **Birmingham Heartlands Hospital** • **Contact via switchboard (0121-424-2000)**
Endocrine SpR	**Queen Elizabeth Hospital Birmingham** • **Contact via switchboard (0121-371-2000)** **Birmingham Heartlands Hospital** • **Contact via switchboard (0121-424-2000)**
Endocrine Clinical Nurse Specialist	**Queen Elizabeth Hospital Birmingham** • **Email (preferred method): EndocrineNurses@uhb.nhs.uk** • **Phone: 0121-371-6950** **(we will aim to return telephone call within 3-5 working days)** **Birmingham Heartlands, Solihull and Good Hope Hospitals** • **Email (preferred method): EndocrineCNSreferral@heartofengland.nhs.uk** • **Phone: 0121-424-2487** **(we will aim to return telephone call within 3-5 working days)**