NHS LOTHIAN STEROID SAFETY BUNDLE

WHO IS THIS GUIDELINE FOR?

This guideline is aimed at all clinical health care professionals and nursing staff in NHS Lothian. It is designed to provide safe, practical guidance in the screening, diagnosis and management of complications related to **long term high dose steroid therapy** initiated in primary or secondary care.

Abbreviations: PPI = proton pump inhibitor, BGM = blood glucose monitoring, CGM = continuous blood glucose monitoring (such as dexcom or libre devices), BG = blood glucose, SU = sulphonylurea.

LONG TERM HIGH DOSE STEROID THERAPY = ≥ 10mg prednisolone (or equivalent) for > 14 days

Prednisolone 10mg approx equivalent to
Hydrocortisone 40mg
Dexamethasone 2mg
Methylprednisolone 8mg
Betamethasone 2mg

THINGS TO DO AT COMMENCEMENT OF LONG TERM STEROID THERAPY

☐ **PERFORM an HbA1c and warn patient of symptoms of hyperglycaemia**
- Hyperglycaemia is a potentially severe side effect of long-term steroid therapy particularly in the elderly and those with pre-existing diabetes.
- See screening and treatment guidance pages 2-3. Give patient information leaflet *appendix 1*

☐ **GIVE ADVICE ON 'SICK DAY RULES' and give STEROID EMERGENCY CARD** ***(see patient information letter)*** - For advice on how to safely withdraw long term steroids **see page 5**

☐ **GASTROPROTECTION.**
- PPI therapy should not be given routinely but should be considered for people at high risk of gastrointestinal bleeding or dyspepsia. (e.g. previous GI bleed, known GORD/peptic ulcer disease, currently on anticoagulation or active cancer).

☐ **BONE PROTECTION**
- Bisphosphate should be considered to prevent vertebral fractures in men and women on prednisolone doses of 7.5 mg daily or greater (or equivalent) for three months or more. For those intolerants of bisphosphonate see SIGN guidance 142 (www.sign.ac.uk/our-guidelines/management-of-osteoporosis-and-the-prevention-of-fragility-fractures/).

RECOMMENDATIONS FOR SCREENING AND MONITORING FOR STEROID INDUCED DIABETES

- HbA1c < 42mmol/mol
  = LOW RISK
  - Warn regarding osmotic symptoms
  - Issue patient information leaflet - appendix 1
  - If symptomatic, BG >12 mol/l or HbA1c > 43mmol/l begin BGM before evening meal.

- HbA1c 42 - 47mmol/mol
  = PRE DIABETES
  - commencing BGM once daily PRE- evening meal.
  - Issue patient information leaflet - appendix 1
  - encourage dietary modification to reduce excess dietary sugars
  - If BG consistently > 12mmol/l increase to twice daily monitoring.
  - If BG consistently <10mmol/l stop monitoring.

- HbA1c ≥ 48 mmol/mol
  =DIABETES
  - Start BGM twice daily
  - Investigate and treat diabetes mellitus as per standard national guidance

If BG > 12mmol/l on 3 continuous days initiate treatment as per treatment algorithm below

All hospitalised inpatients on high dose steroids should have minimum of 2xdaily blood glucose monitoring regardless of diabetes status. Treatment is identical to outpatient care.

ALL patients on high dose steroid therapy should have a 3 monthly HbA1c.

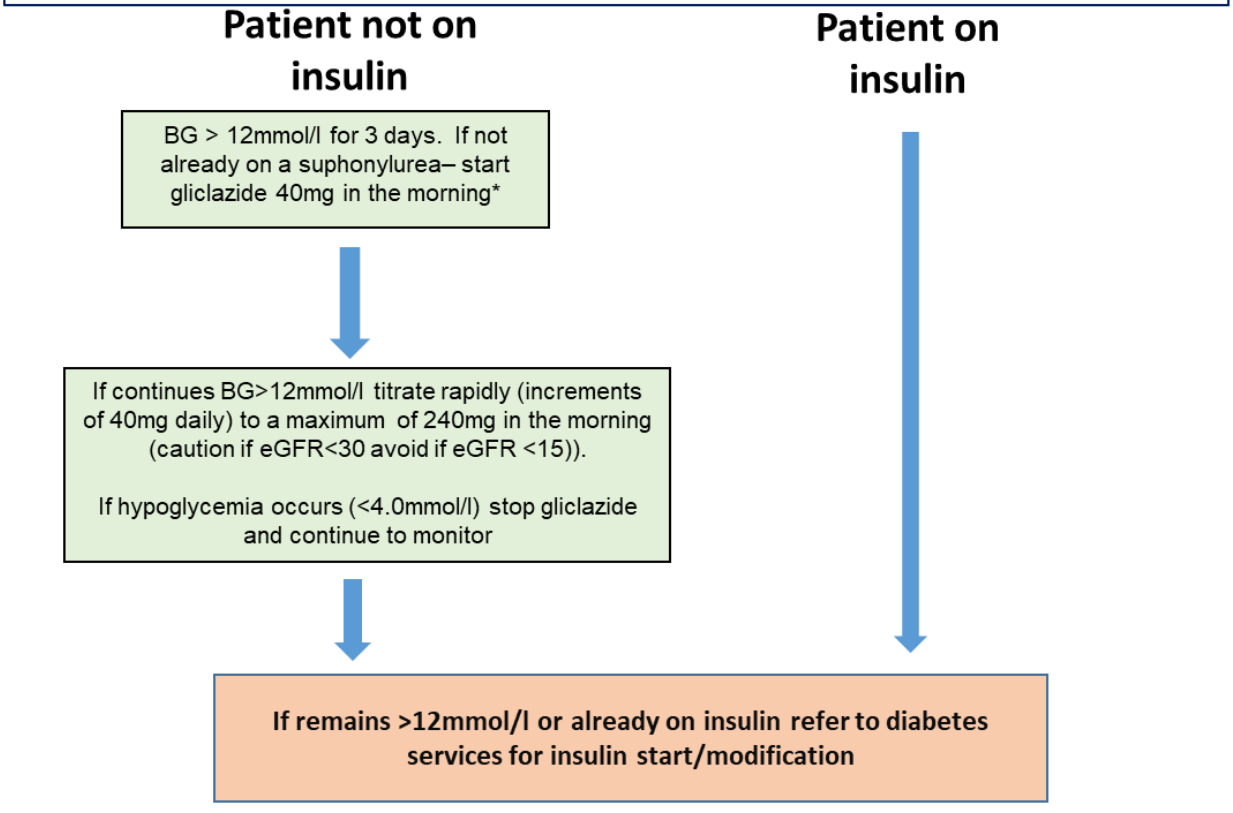
IF ALREADY KNOWN PRE-EXISTING DIABETES MELLITUS

- Type 1 Diabetes: ENSURE USING CGM (eg freestyle libre) or blood glucose monitoring 4x daily AND ADVISE TO CONTACT DIABETES NURSES TO AID TITRATION.
- Type 2 Diabetes: INITIATE BGM TWICE DAILY (BEFORE BREAKFAST BEFORE EVENING MEAL) – USE TREATMENT ALGORITHM BELOW
- Diabetes Nurses: RIE – 01312421471 SJH - 01506 523856 WGH - 0131 537 1746/3157
- Diabetes registrar can be contacted through switchboard

date

TREATMENT ALGORITHM FOR HYPERGLYCAEMIA IN THE CONTEXT OF STEROID USE

- **SAFETY POINTS** Prior to commencing on gliclazide or insulin therapy, patients should be equipped with BGM and relevant education regarding hypoglycaemia management and driving responsibilities.
- **GLUCOSE TARGETS:** Glucose target is 6 – 10mmol/l (6 – 12mmol/l is acceptable) pre evening meal. Patients who are elderly, frail, at risk of falling, eating variably or with impaired hypoglycaemia awareness may require a higher target (6-15mmol/l).
- **WHEN STEROIDS ARE DISCONTINUED:** Reduction in insulin or SU therapy **will** be required following reduction or cessation of high dose steroids. This should be guided by HBGM readings **with particular emphasis on the avoidance of hypoglycaemia**. As a guide a 20% reduction in insulin or 40mg reduction in gliclazide weekly as steroids are weaned is reasonable.



* if hyperglycaemia is severe (>20 mmol/l) – start gliclazide immediately and titrate rapidly by 80mg daily. If patient clinically unwell **or** glucose >20 for 3 days refer to diabetes service for insulin start via Diabetes registrar through switchboard (WGH/RIE) or through diabetes nurses (SJH-01506 523856)

- **FOLLOW UP:** HbA1c level should be done 3 months after stopping steroids and annually thereafter.

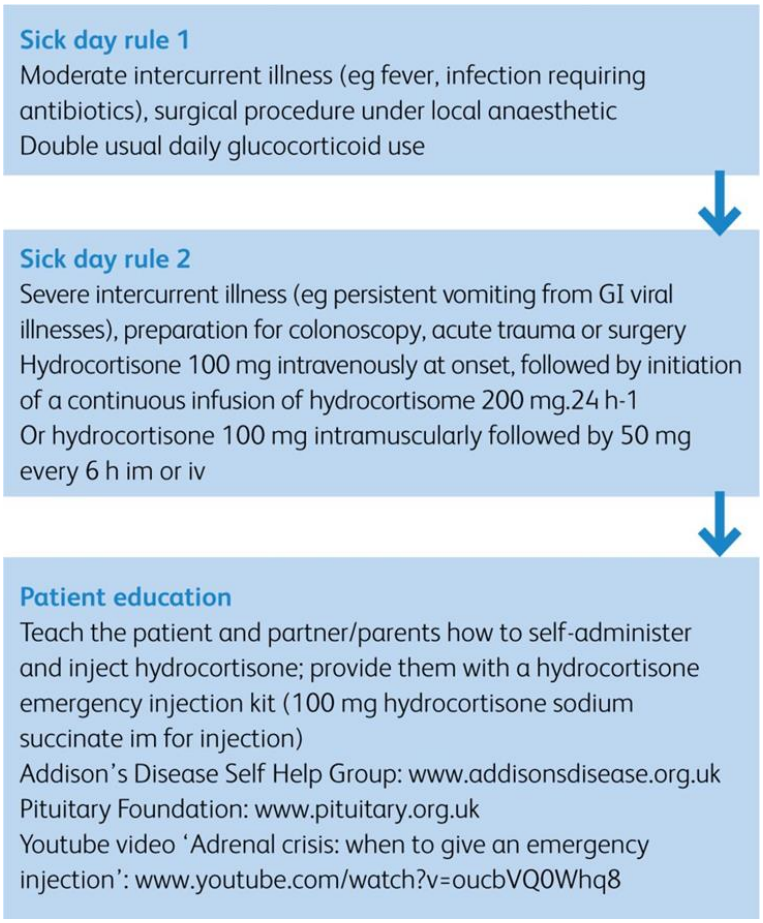
STEROID 'SICK DAY RULES' AND SAFE STEROID WITHDRAWAL

Patients prescribed steroids at **>5mg/day prednisolone** (or equivalent) for over **4 weeks** are at risk of adrenal suppression and therefore may be at risk of adrenal crisis.

Steroid	Dose Equivalent
Prednisolone	5mg per day or more
Methylprednisolone	4mg per day or more
Hydrocortisone	15mg per day or more
Dexamethasone	500 microgram per day or more

Patients at risk of adrenal crisis should be issued a STEROID EMERGENCY CARD (**found in patient information leaflet appendix 1** and can be found at www.endocrinology.org/adrenal-crisis)

Sick day rule dosing for patients at risk of adrenal crisis is as follows *(nb – if taking prednisolone 10mg daily or more, this is sufficient for rule 1 'moderate intercurrent illness' cover and double dose not required)* - :



See (https://www.rcpjournals.org/content/clinmedicine/20/4/371)

For perioperative and obstetric management please discuss with the anaesthetic team and consult national guidance (Management of glucocorticoids during the peri-operative period for patients with adrenal insufficiency | Association of Anaesthetists – www.anaesthetists.org).

STEROID WITHDRAWAL ADVICE

- When weaning down and withdrawing long term steroids, patients can be risk stratified by a morning cortisol sample (brown tube, order on Trak or by handwritten form) taken prior to steroid dose. This should be done once prednisolone dose reaches 4mg or less.

RISK	MORNING CORTISOL (nmol/l)	ACTION
HIGH RISK	**<275**	**Continue 4mg prednisolone and refer to endocrinology services. (If already in secondary care, perform short synacthen test pre morning steroid dose if possible)**
MODERATE RISK	275 - 425	Can stop prednisolone Sick day dosing of 10mg prednisolone (or seek medical attention if unable to take) as per steroid emergency card for 3 months.
LOW RISK	>425	Can stop prednisolone.