

Safe steroid prescribing and deprescribing in respiratory medicine

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Estimated GP prescribing data for NHS Lothian

~6000 prescription pred in Jan 2026

50,000 patients with asthma

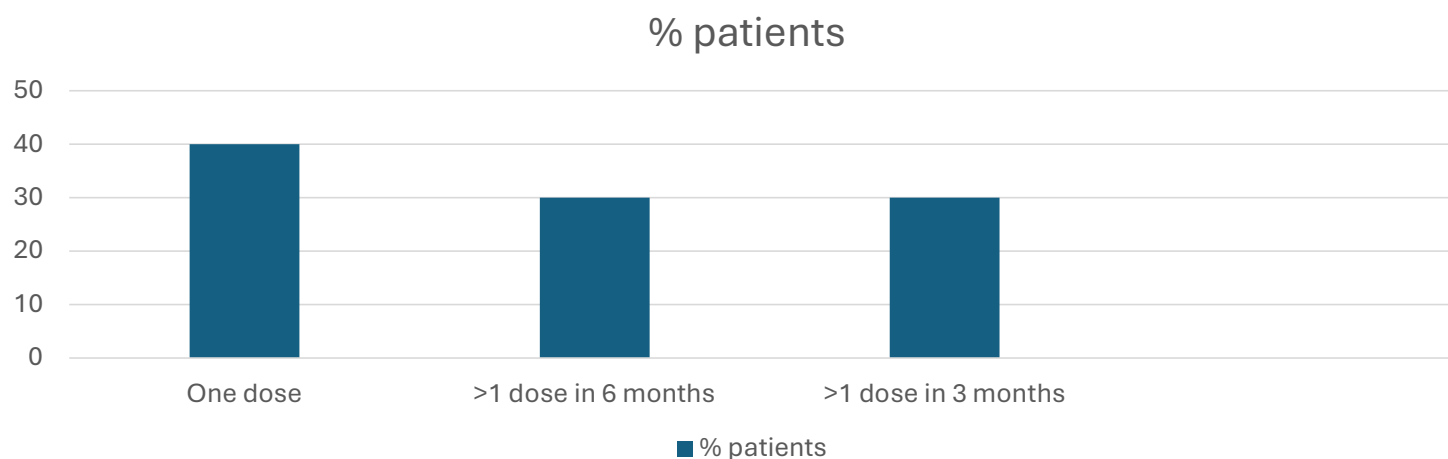
14,000 patients with COPD

90% of these prescribed ICS

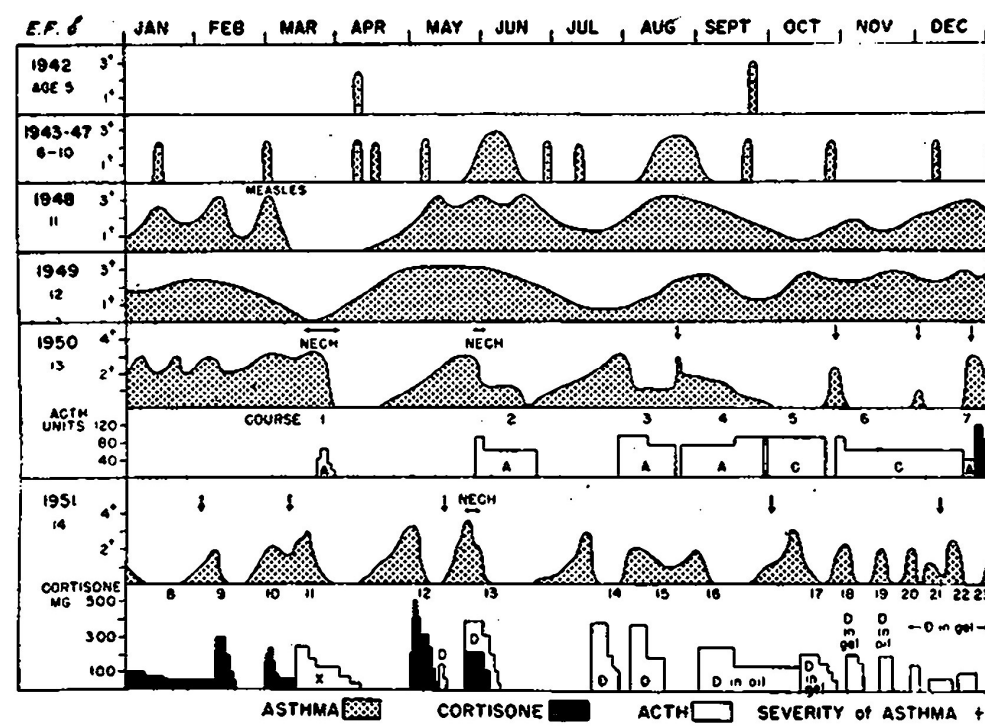
80% of these prescribed ICS

22% (~10k) of these received at least one course of prednisolone

49% (~7k) of these received at least one course of prednisolone



Why do we use steroids?

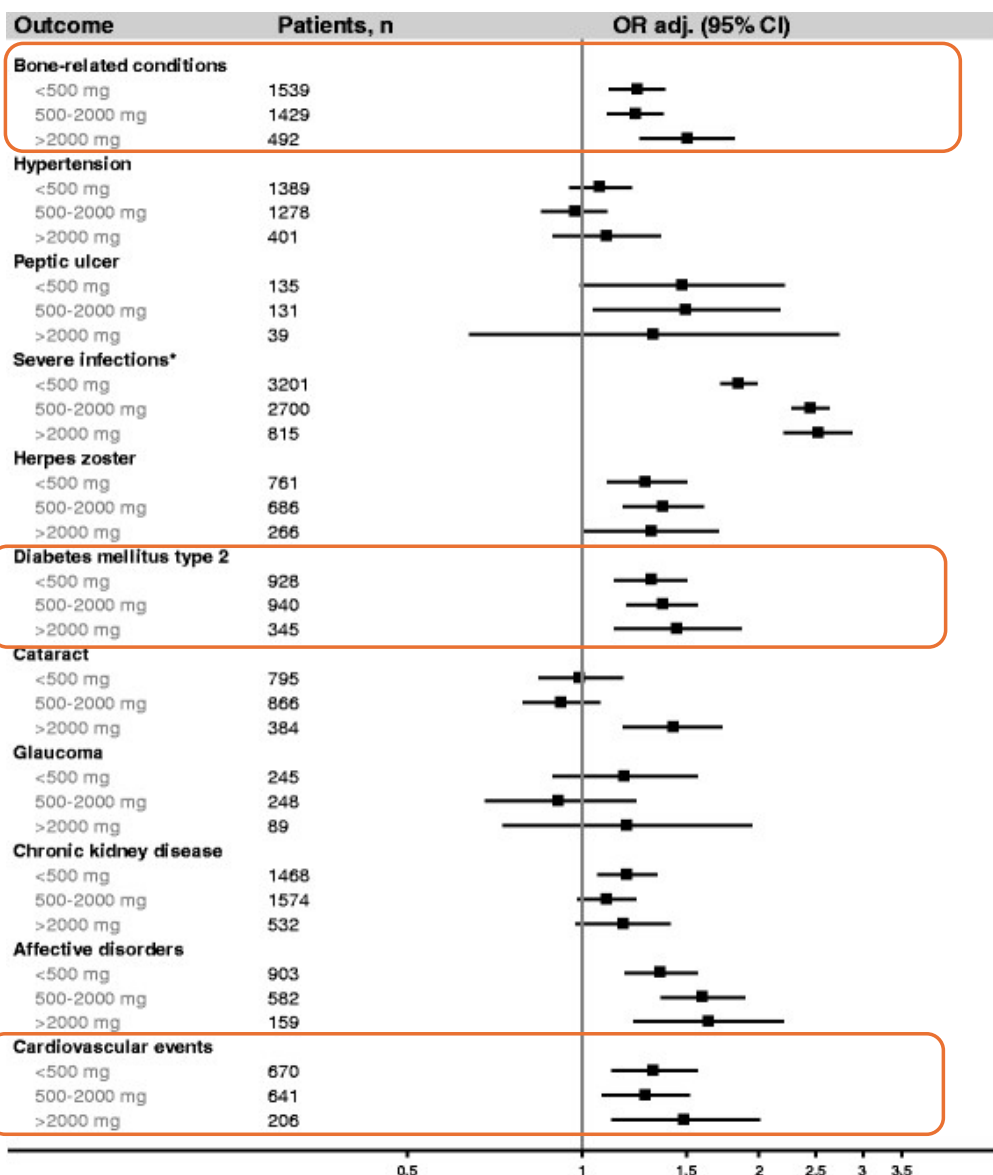


‘Signs of Cushing's syndrome were not encountered in these patients while they were repeating short courses of hormone therapy, but during some of the more prolonged courses there was occasional evidence of acne, facial rounding and slight hirsutism. ..Furthermore, with short courses of therapy, water retention and edema constituted no problem... When edema occurred it quickly disappeared when hormone treatment was withdrawn. Potassium depletion was not encountered. Patients were advised to take fruit juices freely because of their high potassium content.’

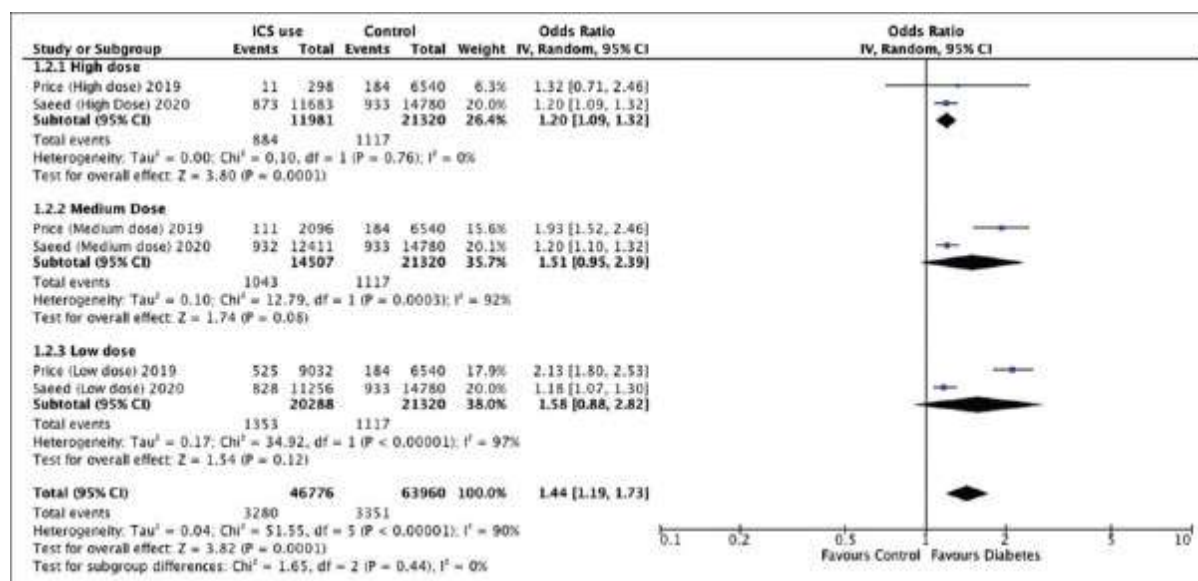
And now...

- 1,3,10 courses (roughly)
- Incident DM2 increase

adjusted for alcohol consumption, smoking status, body mass index, current or past use of inhaled bronchodilators, nonsteroidal anti-inflammatory drugs, platelet aggregation inhibitors, anticoagulants, proton pump inhibitors, vitamin D/calcium, bisphosphonates, immunosuppressants, number of prescriptions of inhaled corticosteroids (as a continuous variable), and Charlson Comorbidity Index (as a continuous variable)



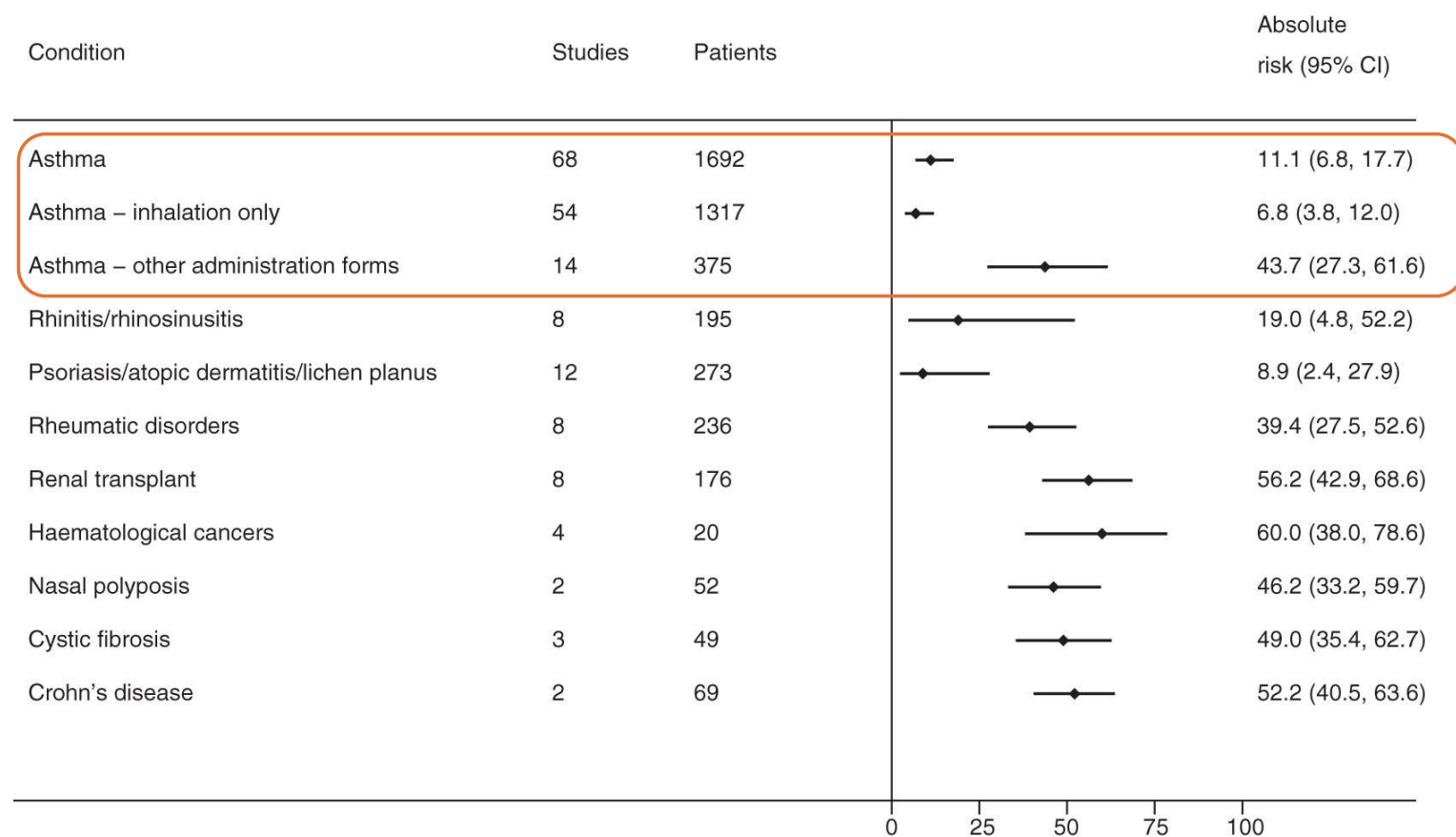
And with inhaled?



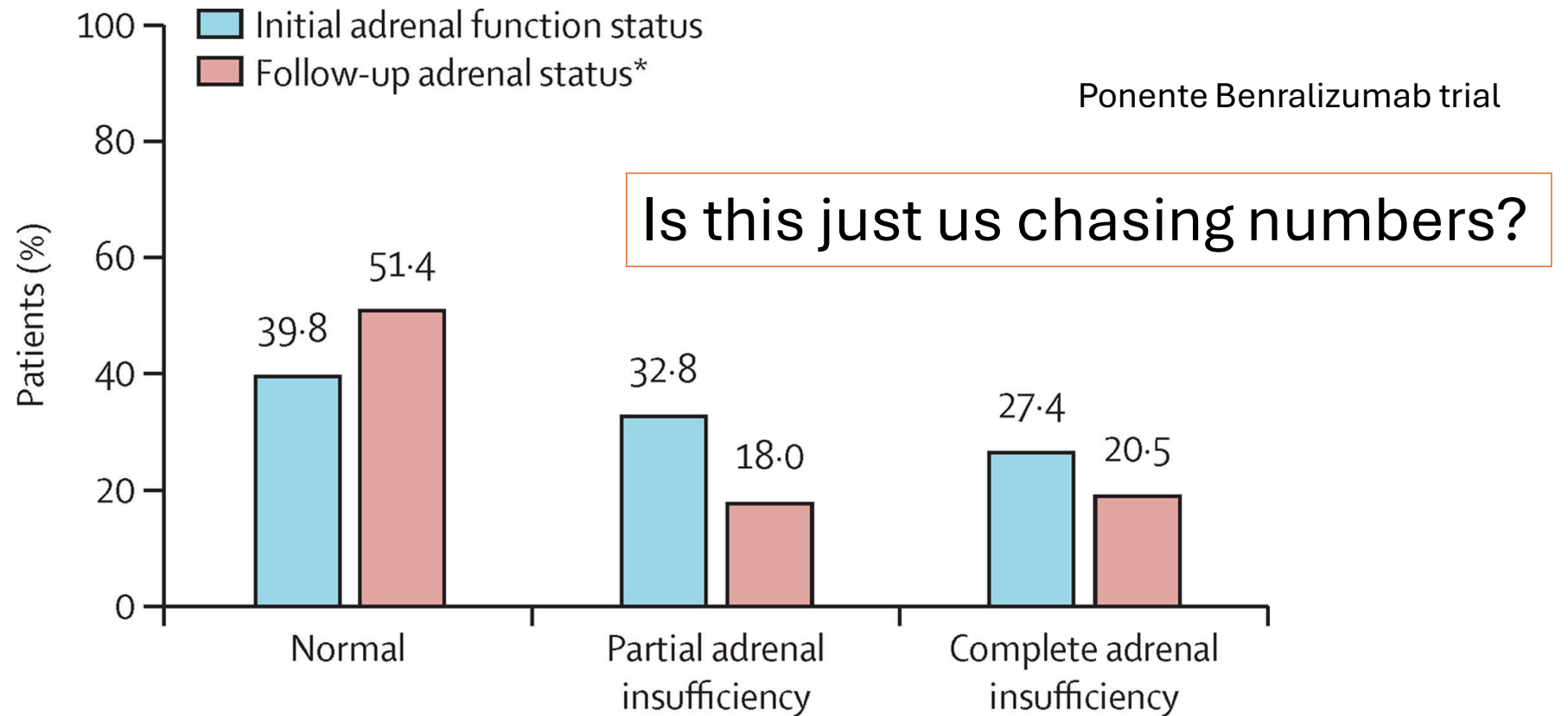
>1 year

What about stopping steroids?

Risk of adrenal insufficiency

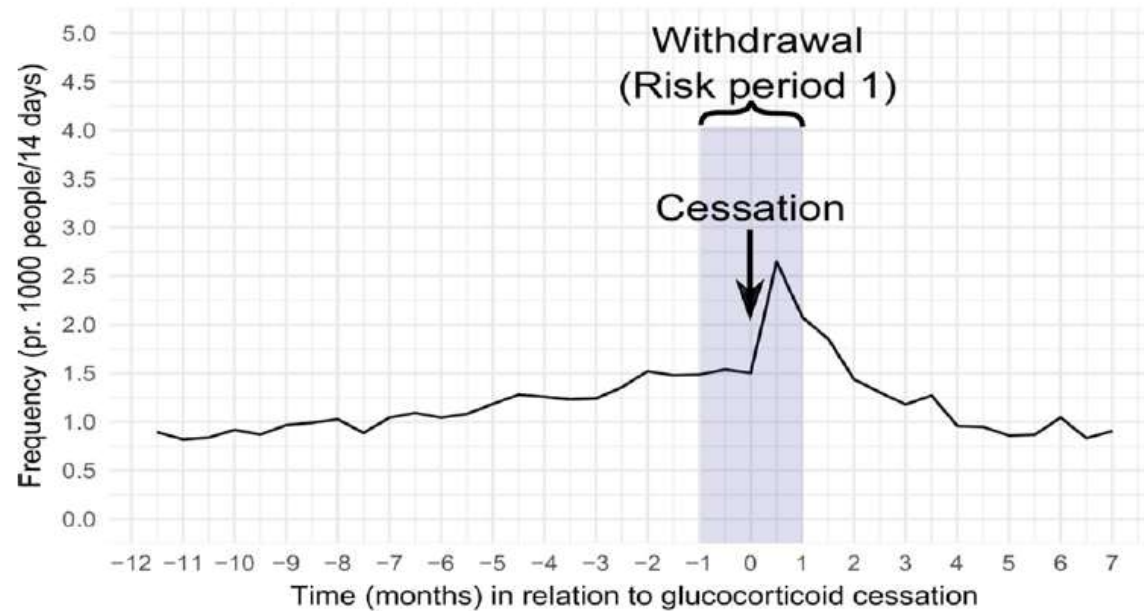


Risk of adrenal insufficiency



Menzies-Gow Lancet Resp 2022

Do steroids cause any harm?



- Hyponatraemia
- Hypotension
- Cardiovascular collapse
- Hypoglycaemia
- Abdo pain

Is steroid treatment safe?

Can we do better?

Steroid safety bundle

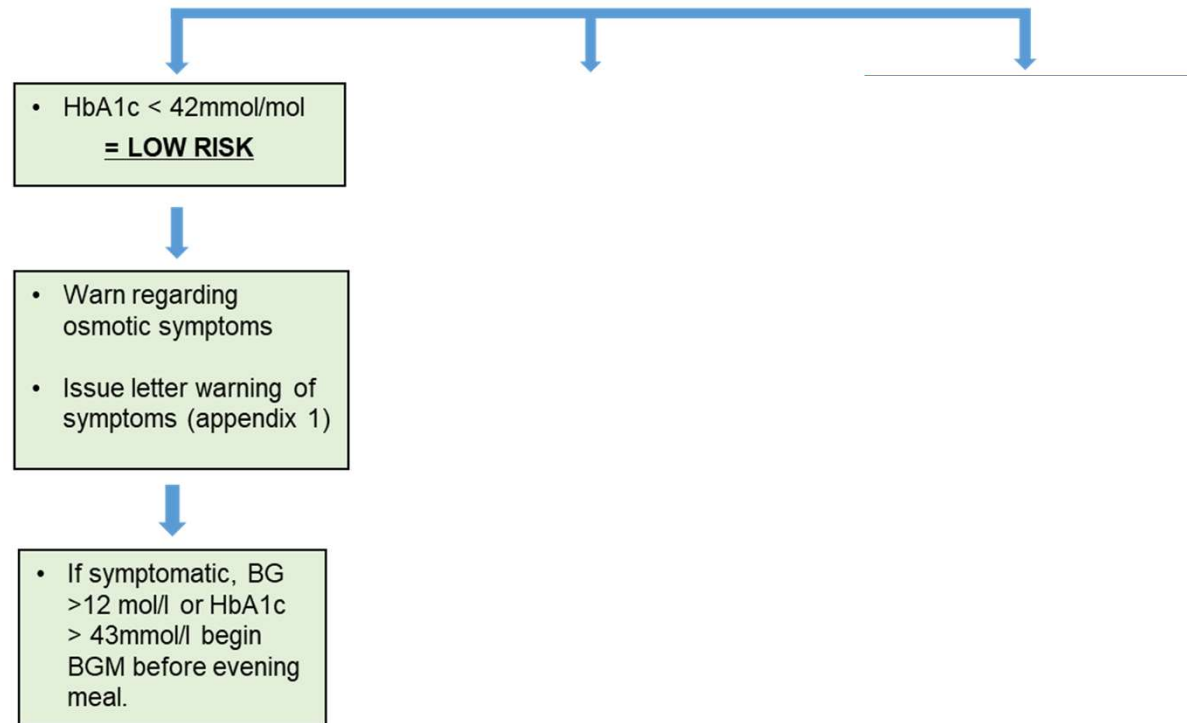
- Patients Rx Pred 10mg (or equivalent) for >14 days

Starting checklist

1. Check HbA1c
2. Give sick day rules
3. Consider GI protection in those at risk
 - previous GI bleed, known GORD/peptic ulcer disease, currently on anticoagulation or active cancer
4. Consider 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 (esp. if >65 years/previous#)

Steroid induced diabetes

RECOMMENDATIONS FOR SCREENING AND MONITORING FOR STEROID INDUCED DIABETES



Starting treatment

Patient not on insulin

BG > 12mmol/l for 3 days. If not already on a sulphonylurea– start gliclazide 40mg in the morning*



If continues BG>12mmol/l titrate rapidly (increments of 40mg daily) to a maximum of 240mg in the morning (caution if eGFR<30 avoid if eGFR <15)).
If hypoglycemia occurs (<4.0mmol/l) stop gliclazide and continue to monitor



Patient on insulin



If remains >12mmol/l or already on insulin refer to diabetes services for insulin start/modification

Safety points

- If starting gliclazide or insulin
 - Pts will need way to monitor blood glucose for safety
 - Available from metabolic unit/some GP practices
 - Pts will need education regarding hypo risk and Rx

Targets

- 6-10mmol/L pre evening meal
- Relax target in frail pts 6-15mmol/L

Severe hyperglycaemia

- Glucose over 20mmol/L needs urgent Rx
 - Start gliclazide and titrate 80mg/day to max 240mg am
 - If 'clinically unwell' (osmotic symptoms) consider insulin start
 - If >20mmol/L 3 days in row will need discussion with DM on call

Weaning

- DM treatment will need reducing

As rough guide:

- Reduce gliclazide by 40mg
- Reduce insulin by 20% each time prednisolone is weaned

Follow up

- HbA1c should be check 3 months later
- Suggest annual HbA1c thereafter

Sick day rules

- Patients prescribed >5mg for >4weeks are deemed at risk (or >2 courses in 3 months)
 - 10-15% of these might fail SST
- Patients should be given 'steroid emergency card' and 'sick day rules'

Your current steroid dose	Recommended dose when unwell
Prednisolone 10mgs or more <u>or</u> Dexamethasone 2mg or more	Continue on your usual dose
Prednisolone dose less than 10mgs <u>or</u> Dexamethasone less than 2mg	Increase to prednisolone 10mgs per day <u>or</u> Increase to dexamethasone 2mg per day

Safe withdrawal of steroids

- Risk stratify by morning cortisol (once down to 4mg pred)

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.

Synacthen test

- Adequate response $>430\text{nmol/L}$ No further steroid/sick day advice needed
- Inadequate response $<430\text{nmol/L}$
 - Continue with 4mg pred or equivalent and ***sick day advice***
 - Reassess am cortisol at 3-4 month
- If stimulated cortisol $<430\text{nmol/L}$ at this point refer to us.

Summary

- Steroid prescriptions are common
 - Some oversight/thought about steroid load is necessary
- There is an increased risk of hyperglycaemia- especially with OCS
- Patients with large OCS exposure have increased risk of adrenal insufficiency
 - Clinical risk here lacks certainty
- Think glucose
- In those with 'high exposure' Think sick day rules/ 'is it safe to stop?'

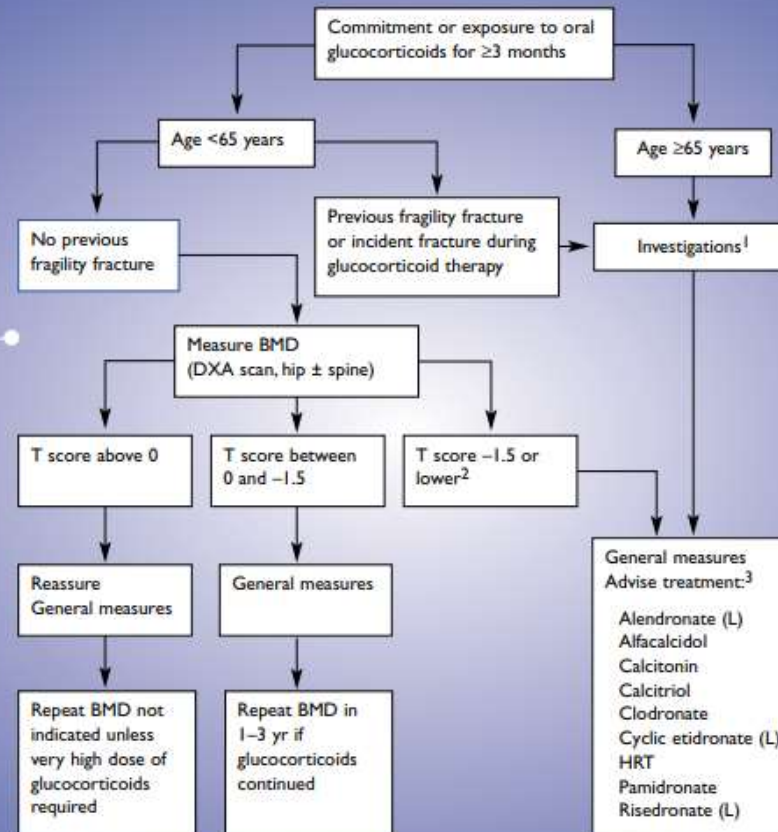
Management of glucocorticoid-induced osteoporosis in men and women

Fragility fracture

- ▶ Defined as a fracture occurring on minimal trauma after age 40 years and includes forearm, spine, hip, ribs and pelvis

General measures

- ▶ Reduce dose of glucocorticoid when possible
- ▶ Consider glucocorticoid-sparing therapy, eg azathioprine, if appropriate
- ▶ Consider alternative route of glucocorticoid administration
- ▶ Recommend good nutrition especially with adequate calcium and vitamin D
- ▶ Recommend regular weight-bearing exercise
- ▶ Maintain body weight
- ▶ Avoid tobacco use and alcohol abuse
- ▶ Assess falls risk and give advice if appropriate



¹In patients with previous fragility fracture:

- ▶ FBC, ESR
- ▶ Bone and liver function tests (Ca, P, alk phos, albumin, ALT/γGT)
- ▶ Serum creatinine
- ▶ Serum TSH.

If indicated:

- ▶ Lateral thoracic and lumbar spine X-rays
- ▶ Serum paraproteins and urine Bence Jones protein
- ▶ Isotope bone scan
- ▶ Serum FSH if hormonal status unclear (women)
- ▶ Serum testosterone, LH and SHBG (men)
- ▶ Serum 25OHD and PTH
- ▶ BMD if monitoring required.

²Consider treatment depending on age and fracture probability.

³Treatments listed in alphabetical order. Vitamin D and calcium are generally regarded as adjuncts to treatment. HRT: oestrogen in postmenopausal women and testosterone in men. (L) indicates that the agent is licensed for glucocorticoid-induced osteoporosis.

Key to abbreviations

ALT alanine transferase
BMD bone mineral density
ESR erythrocyte sedimentation rate

FBC full blood count
FSH follicle-stimulating hormone
γGT gamma glutamyl transferase
LH luteinising hormone

25OHD 25-hydroxyvitamin D
PTH parathyroid hormone
SHBG sex hormone binding globulin
TSH thyroid-stimulating hormone

