Implementing the Steroid Emergency Card National Patient Safety Alert - January 2021, updated July 2021

Background

A National Patient Safety Alert (NatPSA) has been issued by NHS England and NHS Improvement's national patient safety team, this is supported by the Royal College of General Practitioners (RCGP), the Royal College of Physicians (RCP) and the Society for Endocrinology. The directive is to issue an NHS Steroid Emergency Card to all patients with adrenal insufficiency or steroid dependence as they are at risk of an adrenal crisis during intercurrent illness or an invasive procedure/surgery if not managed appropriately. The steroid emergency card has been designed to support early recognition and treatment of adrenal crisis in adults.[1,2] This bulletin mainly discusses implementation of this alert in adults and signposts to resources for children where they are available.

Recommendations

- Prescribers need to review their processes, policies, digital systems, and software to ensure the recommendations from the NatPSA are embedded as soon as possible, and no later than **13th May 2021.**
- Prescribers need to ensure all eligible patients are assessed, reviewed, and issued with an NHS Steroid Emergency Card where appropriate.
- NHS Steroid Emergency Cards should be given to:
    - All adults with adrenal insufficiency, such as those with Addison's disease, congenital adrenal hyperplasia, and hypothalamo-pituitary damage from tumours or surgery that are steroid dependent.
    - All patients receiving exogenous steroids at a dose of prednisolone 5mg/day or equivalent for 4 weeks or longer. This is across all routes of administration (oral, topical, inhaled or intranasal) as they are also at risk of adrenal insufficiency.
    - Patients taking inhaled beclomethasone >1000mcg/day or equivalent or fluticasone >500mcg/day or equivalent this is because they are at risk of adrenal insufficiency due to hypothalamo-pituitary axis suppression.
    - Patients taking more than 40mg prednisolone per day or equivalent for longer than 1 week or repeated short courses of oral doses. e.g. patients on rescue treatment for asthma or COPD.
    - Patients taking a course of oral glucocorticoid within a year of stopping long term (months or years) therapy.
    - Patients taking drugs that affect CYP3A4 (CP450) metabolism with a steroid treatment. Clinicians should have a high degree of clinical suspicion and give stress doses of hydrocortisone if there is any concern with regards to the development of an adrenal crisis during an intercurrent illness or a procedure in these patients.
- Use the conversion charts included in this bulletin, to identify which patients need to be issued with an NHS Steroid Emergency Card.
- NHS Steroid Emergency Cards can be issued at a community pharmacy, hospital, or GP practice. The SNOMED code 1326871000000108 steroid treatment card can be used to indicate that a card has been given.
- When starting patients on a steroid treatment or reviewing patients it is important to consider the cumulative effects of all individual steroid treatments, and whether the total daily dose and

length of treatment will exceed the threshold where an NHS Steroid Emergency Card should be issued.

- The blue Steroid Treatment Card and the London Respiratory Network Card are unaffected by the introduction of the NHS Steroid Emergency Card. Patients should keep these if advised by their healthcare professional team whilst implementation of the new NHS Steroid Emergency Card takes place. Patients being prescribed steroids outside the scope of this alert would still be eligible for the blue standard Steroid Treatment Card.
- Patient education is a key part of management. Signpost patients to the patient resources available on the Addison's Disease Self Help Group (www.addisonsdisease.org.uk) and Pituitary Foundation websites (www.pituitary.org.uk)
- NHS Steroid Emergency Cards can be obtained from:
    - NHS Forms at NHS Business Services Authority (NHS BSA) http://www.nhsforms.co.uk/
    - Primary Care Support England PCSE online https://secure.pcse.england.nhs.uk/_forms/pcsssignin.aspx

Introduction

A NatPSA alert has been issued to support the management of patients who are steroid dependent. Omitting steroids for patients with adrenal insufficiency can lead to adrenal crisis, if left untreated, this can be fatal. To prevent an adrenal crisis, patients with adrenal insufficiency (AI) require higher doses of steroids if they become acutely ill or if they are subject to major body stressors, such as trauma or surgery. Reports submitted to the National Reporting and Learning System (NRLS) suggest that some clinical staff are not aware of the risk of adrenal crisis or of the correct response or treatment pathway to follow should an adrenal crisis occur.[1,2]

A new NHS Steroid Emergency Card has been developed by the Society for Endocrinology, the Royal College of Physicians and NHS England and NHS Improvement. This is to be carried by patients at risk of adrenal crisis. It was first released in March 2020, to keep patients with Addison's disease or adrenal insufficiency safe during the COVID pandemic. This is now being rolled-out on a wider basis. This NHS Steroid Emergency Card (figure 1) is a prompt to healthcare professionals when patients are admitted in crisis/as an emergency, or when undergoing surgery/procedure, it ensures steroid treatment is given appropriately and promptly. The card clearly outlines first management steps in an emergency. In addition, the card contains a QR code that links to further specialist advice.[1,2]

National Guidance

The NatPSA reported that a search of the NRLS for a recent two-year period identified four deaths, four patients admitted to critical care and around 320 other incidents, describing issues with steroid replacement therapy for patients with adrenal insufficiency or emergency treatment for adrenal crisis.[1]

The NatPSA states that all patients with primary adrenal insufficiency are steroid dependent. Some patients who take oral, inhaled, or topical steroids for other medical conditions, may develop secondary adrenal insufficiency and become steroid dependent. Omission of steroids for patients with adrenal insufficiency can lead to adrenal crisis; a medical emergency which if left untreated can be fatal.[1,2]

Who should be given a steroid emergency card?

Patients with the following conditions who are steroid dependant should be issued with a Steroid Emergency Card (see full guideline for further information):[2]
https://www.rcpjournals.org/content/clinmedicine/20/4/371

Primary adrenal insufficiency

- Autoimmune/Addison's disease
- Autoimmune Polyglandular Syndrome type 1 (APS-1)
- Autoimmune Polyglandular Syndrome type 1 (APS-2)
- Infections (adrenalitis) e.g. TB, HIV/AIDS, CMV fungal infections, syphilis
- Bilateral adrenal haemorrhage e.g. adrenal haemorrhage, sepsis, anticoagulants, anti-phospholipid syndrome
- Bilateral adrenal metastases e.g. primarily metastases from lung, stomach, breast and colon cancers
- Bilateral adrenal infiltration e.g. primary adrenal lymphoma amyloidosis, haemochromatosis
- Bilateral adrenalectomy
- Drug induced (when co-prescribed with a steroid treatment) e.g. anticoagulants, adrenal enzyme inhibitors, mitotane, ketoconazole, itraconazole, voriconazole, metyrapone, etomidate, aminoglutethimide, phenobarbital, phenytoin, rifampicin
- Genetic disorders e.g. congenital adrenal hyperplasia (commonest cause in children), adrenoleukodystrophy.

Secondary adrenal insufficiency/pituitary disorders

- Pituitary tumours e.g. adenoma, cysts, craniopharyngioma, ependymoma, meningioma, pituitary metastases
- Pituitary surgery
- Pituitary irradiation
- Trauma
- Infections/infiltration e.g. lymphocytic hypophysitis, sarcoidosis, histiocytosis X, haemochromatosis, TB
- Pituitary apoplexy
- Sheehan's syndrome
- Genetic disorders e.g. transcription factors involved in pituitary development

Tertiary adrenal insufficiency

- Hypothalamic tumours e.g. craniopharyngiomas, germinomas, meningiomas
- Hypothalamic surgery e.g. primary brain tumours or nasopharyngeal tumours
- Hypothalamic irradiation e.g. primary brain tumours or nasopharyngeal
- Infections/infiltration e.g. lymphocytic hypophysitis, sarcoidosis, histiocytosis X, haemochromatosis, TB
- Trauma e.g. traumatic brain injury, particularly base of skull fracture
- Cushings disease/syndrome
- Drug induced e.g. glucocorticoid therapy (any route), mifepristone, chlorpromazine, imipramine

Glucocorticoid treatment

Patients taking exogenous steroids at a dose of prednisolone 5mg/day or equivalent for 4 weeks or longer across all routes of administration (oral, topical, inhaled, or intranasal) are also at risk of adrenal insufficiency and should be given a steroid emergency card.[1,2]

The Society of Endocrinology and the Royal College of Physicians guidance also suggests the following patients should also be given a steroid emergency card.[2]

- Patients taking more that 40mg prednisolone or equivalent for longer than 1 week or repeated courses of short oral doses.
- Patients taking a course of oral glucocorticoid within a year of stopping long term therapy.

The conversion tables in this bulletin have been developed to help identify patients who may need to be issued with an NHS Steroid Emergency Card.

Patients on drugs affecting steroid metabolism

The RCP guidance states that certain drugs affect glucocorticoid metabolism. The commonest group are those affecting the activity of the drug-xenobiotic-metabolising enzyme CYP3A4.[2]

Anticonvulsants, rifampicin, topiramate and mitotane are well known to increase downstream metabolism of cortisol through induction of CYP3A4 activity. If a drug induces CYP3A4 activity and is administered together with exogenous glucocorticoids which suppress the HPA axis suppression, stopping the exogenous glucocorticoids but continuing the CYP3A4-inducing drug can result in adrenal crisis.[2]

Similarly, drugs that delay steroid metabolism by inhibiting CYP3A4 activity, such as antifungals including itraconazole and voriconazole, can result in iatrogenic Cushing's. Antiretroviral therapy using protease inhibitors such as ritonavir can also inhibit glucocorticoid metabolism, leading to iatrogenic Cushing's Syndrome. This has also been reported for steroid eye drops, fluticasone, triamcinolone and budesonide. Hence, if these CYP3A4-inhibiting drugs are stopped, the HPA axis of these patients is suppressed and they can experience adrenal crisis, which can be prevented by initiation of hydrocortisone replacement.[2]

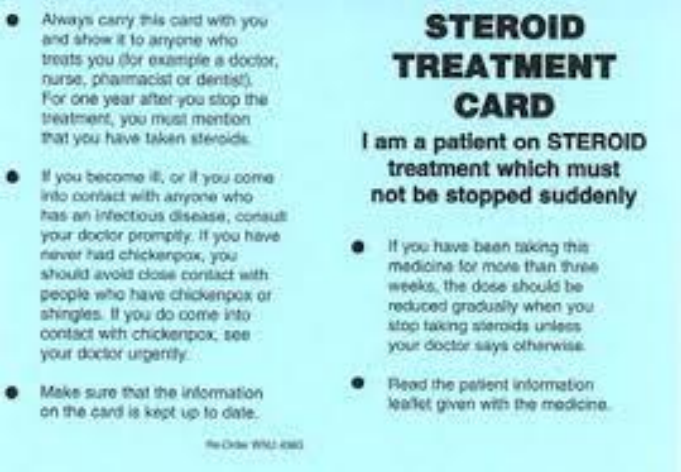
There is currently little evidence to support increased doses of glucocorticoids in all patients on drugs affecting CYP3A4 with a steroid treatment, but clinicians should have a high degree of clinical suspicion and give stress doses of hydrocortisone if there is any concern with regards to the development of an adrenal crisis during an intercurrent illness or a procedure.[2]

Blue Steroid treatment cards and the London respiratory network card.

The blue Steroid Treatment Card (figure 2) and the London Respiratory Network Card (https://www.networks.nhs.uk/nhs-networks/london-lungs/documents/high-dose-inhaled-corticosteroid-alert-card-order-form) are unaffected by the introduction of the NHS Steroid Emergency Card (figure 1). Patients should keep these, if advised by their healthcare team whilst implementation of the new Steroid Emergency Card takes place. Patients being prescribed steroids outside the scope of this alert, would still be eligible for the blue standard Steroid Treatment Card.[3] The blue Steroid Treatment Card gives patients guidance on minimising the risks when taking steroids and also provides details of the prescriber, drug, dosage and duration of treatment.

Figure 1: Steroid Emergency Card

Figure 2: Steroid treatment card (blue)



- Always carry this card with you and show it to anyone who treats you (for example a doctor, nurse, pharmacist or dentist). For one year after you stop the treatment, you must mention that you have taken steroids.
- If you become ill, or if you come into contact with anyone who has an infectious disease, consult your doctor promptly. If you have never had chickenpox, you should avoid close contact with people who have chickenpox or shingles. If you do come into contact with chickenpox, see your doctor urgently.
- Make sure that the information on the card is kept up to date.

STEROID TREATMENT CARD

I am a patient on STEROID treatment which must not be stopped suddenly

- If you have been taking this medicine for more than three weeks, the dose should be reduced gradually when you stop taking steroids unless your doctor says otherwise.
- Read the patient information leaflet given with the medicine.

Although the NatPSA alert does not cover children, a new steroid card for children with adrenal insufficiency has been developed by the British Society for Paediatric Endocrinology and Diabetes (BSPED). The card is designed to improve uniformity across NHS trusts and improve the treatment patients receive. The paediatric Steroid Treatment Card is available here - https://www.bsped.org.uk/media/1823/bsped-adrenal-insufficiency-card-v31.pdf

SNOMED Codes

In July 2021, a series of SNOMED codes were released relating to the Steroid Emergency Card. These are as follows:

1326871000000108: Provision of steroid emergency card (procedure) - a code for clinicians to record that they are issuing a steroid emergency card

1326891000000107: Has steroid emergency card (finding) - a code to record that a patient already has a steroid emergency card

1326881000000105: Provision of steroid emergency card not indicated (situation) - a code to represent that the provision of this card is not indicated at the time.

1362411000000108: Referral for provision of steroid emergency card (procedure) – a code used to record when a clinician/prescriber has assessed the patient in line with the new national guidance and made the clinical decision that that the card is required and who does not have a supply of steroid emergency cards to issue to patients and has to refer a patient to the agreed provider of the steroid emergency card.

Long-term steroid treatment doses needing a Steroid Emergency Card

Please note the conversions and doses in the tables below are for adults only. The NatPSA alert and current guidance supporting the NHS Steroid Emergency Card applies to adults only. Doses will need to be worked out on an individual patient basis when reviewing children.

Table 1: Oral steroids

Oral steroids	Equivalent dose to prednisolone 5 mg	Dose per day (and 4-week quantity) for which NHS Steroid Emergency Card should be issued
Betamethasone 500 microgram soluble tablets	750mcg[4]	1.5 soluble tablets daily (42 tablets over 4 weeks)
Beclometasone dipropionate 5mg gastro-resistant modified-release tablets Brand: Clipper®	625mcg/0.63mg[5]	1 tablet daily (28 tablets over 4 weeks)
Budesonide 3mg capsules, 9mg tablets/granules Brands: Entocort®, Budenofalk®, Cortiment®	1.5mg[6]	3mg - 1 tablet daily (28 tablets over 4 weeks) 9mg capsules/granules - 1 tablet daily (28 tablets over 4 weeks)
Deflazacort 6mg tablets Brand: Calcort ®	6mg[4]	1 tablet daily (28 tablets over 4 weeks)
Dexamethasone 500mcg/0.5mg, 2mg, 4mg & 40mg tablets Brand: Neofordex® Dexamethasone 2mg, 4mg, 8mg soluble tablets Brand: Glensoludex® Dexamethasone oral solution 2mg/5ml, 10mg/5ml, 20mg/5ml Brands: Martapan®, Dexsol®	750mcg/0.75mg[4] RCP article states 500mcg/0.5mg[2]	**Tablets/soluble tablets** 500mcg/0.5mg: 1 to 2 tablets daily (28 to 56 tablets over 4 weeks) 2mg: 1 tablet daily (28 tablets over 4 weeks) 4mg:1 tablet daily (28 tablets over 4 weeks) 8mg: 1 tablet daily (28 tablets over 4 weeks) 40mg: 1 tablet daily (28 tablets over 4 weeks) **Oral solution** 2mg/5ml or 0.4mg/1ml: 1.9ml daily (53mls over 4 weeks) 10mg/5ml or 2mg/1ml: 0.38ml daily (10.64mls over 4 weeks) 20mg/5ml or 4mg/1ml: 0.19ml daily (5.32mls over 4 weeks)
Hydrocortisone 10mg, 20mg tablets Hydrocortisone 10mg soluble tablets Hydrocortisone 2.5mg buccal tablets Hydrocortisone modified-release 5mg, 20mg tablets Brand: Plenadren® Hydrocortisone 0.5mg, 1mg, 2mg, 5mg granules in capsules for opening Brand: Alkindi®	20mg[4] RCP article suggests 25mg[2]	**Tablets/soluble tablets** 2.5mg: 8 tablets daily (224 tablets over 4 weeks) 5mg: 4 tablets daily (112 tablets over 4 weeks) 10mg: 2 tablets daily (56 tablets over 4 weeks) 20mg: 1 tablet daily (28 tablets over 4 weeks) **Granules in capsules for opening (please note it is unlikely these quantities will be prescribed)** 0.5mg: 40 capsules daily (1120 capsules over 4 weeks) 1mg: 20 capsules daily (560 capsules over 4 weeks) 2mg: 10 capsules daily (280 capsules over 4 weeks) 5mg: 4 capsules daily (112 capsules over 4 weeks)
Methylprednisolone 2mg, 4mg, 16mg, 100mg tablets Brand: Medrone®	4mg[4]	2mg: 2 tablets daily (56 tablets over 4 weeks) 4mg: 1 tablet daily (28 tablets over 4 weeks) 16mg: 1 tablet daily (28 tablets over 4 weeks) 100mg: 1 tablet daily (28 tablets over 4 weeks)

Oral steroids	Equivalent dose to prednisolone 5 mg	Dose per day (and 4-week quantity) for which NHS Steroid Emergency Card should be issued
Prednisolone 1mg, 2.5mg, 5mg, 10mg, 20mg, 25mg, 30mg tablets Brand: Pevanti® Prednisolone 1mg, 2.5mg, 5mg gastro-resistant tablets Brand: Dilacort® Prednisolone 5mg soluble tablets Prednisolone 5mg/5ml, 10mg/ml oral solution	5mg[2,4]	1mg: 5 tablets/gastro resistant tablets daily (140 tablets over 4 weeks) 2.5mg: 2 tablets/gastro resistant tablets daily (56 tablets over 4 weeks) 5mg: 1 tablet/gastro resistant tablet/soluble tablet daily (28 tablets over 4 weeks) 10mg: 1 tablet daily (28 tablets over 4 weeks) 20mg: 1 tablet daily (28 tablets over 4 weeks) 25mg: 1 tablet daily (28 tablets over 4 weeks) 30mg: 1 tablet daily (28 tablets over 4 weeks) 5mg/5ml oral solution: 5ml daily (140ml over 4 weeks) 10mg/ml oral solution : 0.5ml daily (14ml over 4 weeks)
Prednisone 5mg tablets Brand: Decortin® (imported)	5mg[4]	1 tablet daily (28 tablets over 4 weeks)
Fludrocortisone acetate 0.1 mg tablets	≥0.1mg[7]	1 tablet daily (28 tablets over 4 weeks)

Please note: Fludrocortisone acetate is a mineralocorticoid and therefore the glucocorticoid effects are lower. Patients should be reviewed on an individual basis to decide whether an NHS Steroid Emergency Card is needed. The SPC states that fludrocortisone does have glucocorticoid side effects and that patients on long term treatment may require supportive treatment in times of stress. It also states that patients should carry steroid treatment cards (blue card) which give clear guidance on the precautions to be taken to minimise risk and which provides details of prescriber, drug, dosage and the duration of treatment.[8]

Table 2 Oral steroids for short courses/rescue treatment

These quantities have been calculated for40mg prednisolone per day or equivalent for longer than 1 week, or repeated short courses of oral doses. e.g. patients on rescue treatment for COPD, multiple IBD flares, asthma etc. Any patient receiving more than 3 courses per year will need to be issued with a steroid treatment card

Oral steroids	Equivalent dose to prednisolone 40mg	Dose at which steroid card should be issued (if more than 3 issues per year)
Betamethasone 500 microgram soluble tablets	6mg	84 or more tablets
Beclometasone dipropionate 5mg gastro-resistant modified-release tablets Brand: Clipper®	5mg	7 tablets or more
Budesonide 3mg capsules, 9mg tablets/granules Brands: Entocort®, Budenofalk®, Cortiment®	12mg	3mg: 28 capsules or more 9mg: 14 tablets or more
Deflazacort 6mg tablets Brand: Calcort ®	48mg	56 tablets or more
Dexamethasone, 2mg, 4mg & 40mg tablets Brand: Neofordex®	4mg	**Tablets/soluble tablets** 2mg: 14 tablets or more 4mg: 7 tablets or more 8mg: 7 tablets or more 40mg: 7 tablets or more

Oral steroids	Equivalent dose to prednisolone 40mg	Dose at which steroid card should be issued (if more than 3 issues per year)
Dexamethasone 2mg, 4mg, 8mg soluble tablets Brand: Glensoludex® Dexamethasone oral solution 2mg/5ml, 10mg/5ml, 20mg/5ml Brands: Martapan®, Dexsol®		**Oral solution** 2mg/5ml: 70ml or more 10mg/5ml: 14ml or more 20mg/5ml: 7ml or more
Hydrocortisone 10mg, 20mg tablets Hydrocortisone 10mg soluble tablets	160mg	**Tablets/soluble tablets** 10mg: 112 tablets or more 20mg: 56 tablets or more
Methylprednisolone 2mg, 4mg, 16mg, 100mg tablets Brand: Medrone®	32mg [4]	2mg: 112 tablets or more 4mg: 56 tablets or more 16mg: 14 tablets or more 100mg: 7 tablets or more
Prednisolone 5mg, 10mg, 20mg, 25mg, 30mg tablets Brand: Pevanti® Prednisolone, 5mg gastro-resistant tablets Brand: Dilacort®	40mg [2,4]	5mg: 56 tablets or more 10mg: 28 tablets or more 20mg: 14 tablets or more 25mg: 7 tablets or more 30mg: 7 tablets or more
Prednisone 5mg tablets Brand: Decortin (imported)	40mg [4]	56 tablets or more

Table 3: Injectable steroids (local)*

Injectable steroids	Equivalent dose to prednisolone 5 mg	Dose per day (and 4-week quantity) for which NHS Steroid Emergency Card should be issued
Methylprednisolone suspension for injection 40mg/ml (1ml, 2ml and 3ml injections) Brand: Depo-Medrone®	4mg[4]	0.8ml (32mg) every 8 days or 2.8ml (112mg) over 4 weeks
Triamcinolone hexacetonide suspension for injection 20mg/ml	4mg[4]	5.6ml (112mg) over 4 weeks
Triamcinolone acetonide 50mg/5ml suspension for injection (10mg/ml) Triamcinolone acetonide 40mg/ml suspension for injection	4mg[4]	10mg/ml injection: 11.2ml (112mg over 4 weeks) 40mg/ml injection 2.8ml (112mg over 4 weeks)

Injectable steroids	Equivalent dose to prednisolone 5 mg	Dose per day (and 4-week quantity) for which NHS Steroid Emergency Card should be issued
Brands: Adcortyl® Intra-articular/intradermal, Kenalog® intra-articular/intramuscular		
Hydrocortisone intra-articular injection 25mg/ml Brand: Hydrocortistab®	20mg[4] RCP article suggests 25mg[2]	0.8ml to 1ml per day (20mg to 25mg) or 22.4ml to 28ml (560mg to 700mg over 4 weeks) Note: licenced dose is 5mg - 50mg injected into a maximum of 3 areas every 3 weeks[9] which is unlikely to reach the threshold

* Note that these preparations are generally not used daily; single doses which are not repeated within a three week period are unlikely to lead to clinically relevant HPA-axis suppression in the majority of patients. Patients should be given a blue steroid treatment card.[9-11]
Consider also giving an NHS Steroid Emergency Card if the patient is also within one of the other groups listed in the NatPSA and the RCP guidance.

Table 4: Inhaled corticosteroids

Inhaled corticosteroids	Threshold dose	Dose per day (and 4 week quantity) for which NHS Steroid Emergency Card should be issued Note if the patient is on more than one steroid, work out the steroid equivalence manually.
Beclometasone dipropionate		
Dry powder inhaler: Easyhaler® Beclometasone	>1000mcg[2]	200mcg inhaler - six or more puffs per day (1 inhaler)
Aerosol Inhaler: Clenil Modulite® Soprobec®	>1000mcg[2]	200mcg inhaler - six or more puffs per day (1 inhaler) 250mcg inhaler – five or more puffs per day (1 inhaler)
Extra fine particle products: Qvar®, Qvar® Autohaler, Qvar® Easi-Breathe, Fostair®, Kelhale®	>500mcg[2]	100mcg inhaler – six or more puffs per day (1 inhaler)
Budesonide		
Dry Powder Inhaler: Easyhaler® Budesonide, Budelin Novolizer® Fobumix® DuoResp Spiromax®	>1000mcg[2]	200 or 160mcg inhaler – six or more puffs per day (1 inhaler for Easyhaler Budesonide, 1.7 inhalers for Budelin Novolizer, 1.4 inhalers for Fobumix & DuoResp Spiromax) 400 or 320mcg inhaler – three or more puffs per day (1 inhaler, 1.4 inhalers for Fobumix and DuoResp Spiromax)
Turbohaler: Pulmicort®, Symbicort®	>1000mcg[2]	200mcg inhaler – six or more puffs per day (1.7 inhalers for Pulmicort, 1.4 inhalers for Symbicort) 400mcg inhaler – three or more puffs per day (1.7 inhalers for Pulmicort, 1.4 inhalers for Symbicort)
Nebules: Pulmicort® Respules	>1000mcg[2]	250mcg/ml – five or more ml per day (70 Respules per month) 500mcg/ml – three or more ml per day (42 Respules per month)
Ciclesonide		
Aerosol Inhaler: Alvesco®	>320mcg[12]	160mcg inhaler – three or more puffs per day (1 inhaler (120 dose) or 1.4 inhalers (60 dose)) 80 mcg inhaler- 5 or more puffs per day (1.16 inhalers)

Inhaled corticosteroids	Threshold dose	Dose per day (and 4 week quantity) for which NHS Steroid Emergency Card should be issued Note if the patient is on more than one steroid, work out the steroid equivalence manually.
Fluticasone propionate		
Aerosol Inhaler: AirFluSal®, Aloflute®, Combisal®, Flixotide®, Flutiform®, Flutiform K®, Sereflo®, Seretide® Evohaler®, Sirdupla®	>500mcg[2]	100mcg inhaler – 6 puffs or more per day (2.8 inhalers) 125mcg inhaler – 5 puffs or more per day (1.16 inhalers) 250mcg inhaler – 3 puffs or more per day (1 inhaler for Flixotide, Seretide & Flutiform) 500mcg inhaler – 2 puffs or more per day (1 inhaler)
Dry Powder Inhaler: AirFluSal® Forspiro®, Flixotide Accuhaler®, Fusacomb® Easyhaler®, Seretide® Accuhaler®, Stalpex®	>500mcg[2]	100mcg inhaler – 6 puffs or more per day (2.8 inhalers) 250mcg inhaler – 3 puffs or more per day (1.4 inhalers) 500mcg inhaler – 2 puffs or more per day (1 inhaler)
Nebules: Flixotide®,	>500mcg[2]	250mcg/ml –three or more ml per day (42 nebules per month) 1mg/ml –(28 nebules per month)
Fluticasone Furoate		
Dry powder inhaler: Relvar Ellipta®,	>100mcg[13]	184mcg inhaler – 1 puff per day (1 inhaler)
Mometasone furoate		
Dry Powder Inhaler: Asmanex®	>400mcg[12]	200mcg inhaler – 3 puffs or more per day (1.4 inhalers (60 dose) or 2.8 inhalers (30 dose)) 400mcg inhaler – 2 puffs or more per day (1 inhaler (60 dose) or 2 inhalers (30 dose))

Table 5: Nasal sprays

Note: Nasal sprays are often used with inhaled corticosteroids in allergic conditions, although individual use of most products would not exceed the threshold, it is important to consider the combined effect on an individual patient basis when nasal sprays are used with inhaled corticosteroids or any other steroid containing products.

Nasal sprays	Threshold dose	Dose per day for which NHS Steroid Emergency Card must be issued Note if the patient is on more than one steroid, work out the steroid equivalence manually.
Beclometasone 50mcg/dose Brands: Beconase®, Nasobec®	>1000mcg[2]	The maximum daily dose **would not exceed 1000mcg**
Budesonide 64 micrograms Brand: Rhinocort Aqua®	>1000mcg[2]	The maximum daily dose **would not exceed 1000mcg**
Fluticasone furoate 27.5mcg/dose Brand: Avamys®	>100 mcg[13]	4 sprays per day (110mcg) if used for longer than 7 days
Flixonase propionate 50mcg/dose Brands: Flixonase®, Nasofan®, Pirinase®	>500mcg[2]	The maximum daily dose **would not exceed 500mcg**
Triamcinolone 55mcg/dose Brand: Nasacort®	4mg[4]	The maximum daily dose **would not exceed 4mg**
Mometasone furoate 50 mcg/actuation Brand: Nasonex®	>500mcg[2]	The maximum daily dose would **not exceed 500mcg**

Table 6: Ear, Eye and Nose drops

Note - nasal drops more likely to cause systemic adverse effects than nasal sprays.[14]

Eye/ear/nose drops	Equivalent dose to prednisolone 5 mg	Dose per day (and 4-week quantity) for which NHS Steroid Emergency Card should be issued Note if the patient is on more than one steroid, work out the steroid equivalence manually.
Hydrocortisone acetate ear drops 1% Brand: Gentisone HC® Hydrocortisone 1%, neomycin 3400unit/ml and polymyxin B sulfate 10,000unit/ml (10mg/ml) Brand: Otosporin® Hydrocortisone 3.35mg/ml eye drops Brands: Softacort®	20mg[4] RCP article suggests 25mg[2]	The maximum daily dose for the 1% ear drop products **would not exceed 20mg** The maximum daily dose for the 3.35mg/ml eye drop products **would not exceed 20mg**
Betamethasone Eye, Ear and Nose Drops Solution 0.1% (1mg/per ml/gram) Brands: Betnesol®, Betnesol N®, Vistamethasone®	750mcg[4]	The maximum daily dose for the 1% ear drop products **would not exceed 750 mcg**
Dexamethasone eye ointment (1mg /gram) Brand: Maxitrol® Dexamethasone 1mg/1ml eye drops, ear drops/sprays Brands: Cilodex®, Dexafree®, Dropodex®, Eythalm®, Maxidex®, Minims®, Otomize ®, Sofradex®, Tobradex®	750mcg[4]	The maximum daily doses **would not exceed 750mcg**
Fluticasone proprionate 400microgram/unit nasal drops Brand: Flixonase Nasule®	>500mcg[2]	One nasule used twice a day (56 nasules over 4 weeks)
Fluocinolone acetonide 190 microgram intravitreal implant Brand: Iluvien®	Not available	SPC states no systemic effects anticipated[15]
Prednisolone sodium phosphate 0.5% ear/eye drops (5mg/1ml) Prednisolone 0.5% eye drops 0.5ml unit dose vial Brand: Minims® Prednisolone 1% eye drops (10mg/ml) Brand: Pred Forte®	5mg	Use of 1ml (~20 drops) per day for more than 7 days (28ml over 4 weeks) Use of 5 or more vials per day where 2 drops are put in each eye, ~20 drops (140 vials over 4 weeks) Use of 0.5ml (~10 drops) per day for more than 7 days (14ml over 4 weeks)

Table 7: Rectal treatments

Rectal treatments	Equivalent dose to prednisolone 5 mg	Dose per day (and 4-week quantity) for which NHS Steroid Emergency Card should be issued Note if patient is on more than one steroid, work out the steroid equivalence manually.
Hydrocortisone acetate suppositories, cream or ointment containing 5 or 10mg Brands : Anusol Plus HC®, Uniroid-HC	20mg[4]	Note the maximum licenced doses and treatment lengths (7 days) of these treatments is unlikely to exceed 20mg per day of hydrocortisone over 4 weeks.[16]
Budesonide enema 0.02mg/ml budesonide (2mg budesonide/100 ml) Brand: Entocort® Budesonide rectal foam 2mg/dose (1.2 g foam contains 2mg) Brand: Budenofalk®	No conversion available	Initial treatment course is one enema (2mg) to be administered daily for 4 weeks (28 enemas). Treatment may continue for up to 8 weeks if necessary. At recommended doses, budesonide causes no or small suppression of plasma cortisol.[17] Rectal foam 2mg/dose is administered daily (28 doses over 4 weeks). Maximum treatment length 6 to 8 weeks. Budenofalk 2mg rectal foam investigated up to the daily dosage of 4 mg budesonide showed virtually no influence on the plasma cortisol level.[18]
Prednisolone 20mg/application foam enema Prednisolone 5mg suppositories Prednisolone 20mg/100ml rectal solution	5mg[4]	Foam enema- one metered dose application daily (28 applications over 4 weeks) Suppositories – one suppository to be used daily (28 suppositories in 4 weeks) Enema - one enema daily (28 enemas over 4 weeks)
Cinchocaine hydrochloride 1mg/ Fluocortolone caproate 630 microgram/Fluocortolone pivalate 610microgram suppositories Cinchocaine hydrochloride 5mg/g, Fluocortolone caproate 950microgramgram/g, Fluocortolone pivalate 920 microgram/g ointment Brand: Ultraproct	No conversion available	Note the maximum licenced doses and treatment lengths (7 days) of these treatments is unlikely to exceed 5mg prednisolone equivalence over 4 weeks.[16]

Topical steroids

It is not possible to map topical steroid use in terms of prednisolone dose equivalence because of the different factors that affect steroid absorption. When reviewing patients, prescribers should bear in mind that although topical steroids primarily act at the site of administration, there is a risk of some systemic absorption of topical steroids. It is difficult to quantify the amount of systemic absorption, there have been estimates of 0.25% to 3%[19] and 0.5% to 30%[20] of the dose applied. Several factors can influence the absorption of steroids in individual patients, these include:[19-24]

- Age of the patient (children and infants are at greater risk)
- Potency of the steroid which is determined by:[21]
    - The extent to which the steroid inhibits inflammation
    - The salt (e.g. hydrocortisone butyrate is more potent than hydrocortisone acetate)
    - The formulation
    - The presence of other ingredients (e.g. salicylic acid or urea may increase absorption of the steroid)
- Body surface area treated
- Length of treatment and quantity used
- Nature of the condition being treated and integrity of the skin
- Use of occlusive dressings
- Area of body being treated - skin thickness and location, the greatest absorption is through areas of thick skin and highly vascular areas associated with greater systemic absorption.[19,21,22] The suggested rates of systemic absorption for different parts of the body are:[20]
    - soles of the feet - 0.5%
    - palms of the hands - 0.1%
    - forearms - 1%
    - armpits - 4%
    - face - 7%
    - eyelids and genitals - 30%.

When reviewing whether a patient will need an NHS Steroid Emergency Card, all these factors need to be taken into consideration on an individual patient basis. National guidance recommends the following quantities of steroid are suitable for a once daily application for 2 weeks of treatment for specific areas of the body.[16]

Area of body	**Quantity suitable for a once daily application for 2 weeks**
Face and neck	15 to 30 g
Both hands	15 to 30 g
Scalp	15 to 30 g
Both arms	30 to 60g
Both legs	100 g
Trunk	100 g
Groins and genitalia	15 to 30 g

Length of treatment should be as short as possible and using the lowest effecting potency of steroid available. The table below shows the potencies and formulations available for the different topical steroids. Combination products are included in these lists.

HPA axis suppression and topical steroids

There are very limited case studies available looking at HPA axis suppression in individual patients. A review of the literature available on the systemic side effects of topical steroids discussed some of these cases. Studies showed that the use of clobetasol propionate (0.05%) in a dose of 2g/day can decrease morning cortisol level after a few days and the use over 100g/week can result in features of Cushing's syndrome and symptoms of adrenal insufficiency. Other studies found that adrenal suppression could occur with the use of clobetasol propionate in a dose of more than 50g/week.[21]

Clobetasol is not recommended for use at a weekly dose greater than 50 grams, for more than 2 weeks or in children younger than 12 years.[22] Most adult patients with features of Cushing's syndrome have used clobetasol in excess of these guidelines.[22] However, it has also been shown that much smaller amounts of topical steroid or less potent steroids could lead to adrenal suppression and this could be due to very long term usage (several months or years) or other factors such as the use of occlusion.[21,22] Occlusion increases absorption by up to 10 times.[21]

Based on potency and recommended quantities to prescribe, consider giving an NHS Steroid Emergency Card to any patient using one or more of the following preparations for 4 weeks or longer: review patients in line with the considerations discussed around absorption of topical steroids.

50g per week (200g per month) of very potent steroid
75g per week (300g per month) of potent steroid

If the topical steroids have been used very long term (several months or years continually) and/or under occlusion, consider reviewing patients prescribed the following quantities and consider giving an NHS Steroid Emergency Card:
30 to 60g per month of very potent steroids
60 to 120g per month of potent steroid

Consider giving an NHS Steroid Emergency Card to patients getting regular intermittent courses of potent and very potent topical steroid treatment.

Topical steroid treatments (Quantity of steroid as w/w or w/v)	Potency of steroid[16]
Hydrocortisone acetate Hydrocortisone 0.1% cream (1mg/g) Brands: Dermacort®, Dioderm® Hydrocortisone 0.5% cream and ointment (5mg/g) Hydrocortisone 1% cream and ointment (10mg/g) Brands: HC45®, Mildison Lipocream® Hydrocortisone 2.5% cream and ointment (25mg/g) Hydrocortisone 1% with clotrimazole 1% (10mg/g) Brand: Canesten HC® Hydrocortisone 1% with miconazole nitrate 2% (10mg/g) Brand: Daktacort® Hydrocortisone 0.25% with crotamiton 10% (2.5mg/g) Brand: Eurax HC® Hydrocortisone 1% with fusidic acid 2% (10mg/g) Brand: Fucidin H® Hydrocortisone 1% with nystatin 100,000IU/g and chlorhexidine acetate 1% (10mg/g) Brand: Nystaform HC® Hydrocortisone 1% with oxytetracycline 3% (10mg/g) Brand: Terra-Cortril® Hydrocortisone 0.5% with nystatin 100,000IU/g, benzalkonium chloride 0.1% and dimeticone 350 10% (5mg/g) Brand: Timodine®	Mild
Alclometasone dipropionate 0.05% cream (500microgram/g)	Moderate
Betamethasone valerate 0.025% cream and ointment: (250mcg/g) Brands: Betnovate RD®, Audavate RD®	Moderate
Fluocinolone acetonide 1 in 4 dilution 0.00625% cream and ointment (62.5 microgram/g) Brand: Synalar 1 in 4 Dilution®	Moderate
Clobetasone butyrate 0.05% cream and ointment (500microgram/g) Brands: Eumovate®, Clobavate®, Eumovate Eczema and Dermatitis® Clobetasone butyrate 0.05% with nystatin 100,000IU/g and oxytetracycline 3% Brand: Trimovate®	Moderate
Fludroxycortide 0.0125% cream or ointment (125microgram/g) Fludroxycortide impregnated dressing tape 4microgram/square cm Brand: Haelan®	Moderate
Beclometasone diproprionate 0.025% cream or ointment (250microgram/g)	Potent Should not be used continuously on any site for more than 8 weeks[14]

Betamethasone dipropionate 0.05% cream, lotion and ointment and scalp application (500microgram/g) Brand: Diprosone® Betamethasone valerate 0.1% cream, lotion, ointment and scalp application (1mg/g) Brands: Betnovate®, Betacap®, Audavate® Betamethasone valerate 0.1% foam (1mg/g) Brand: Bettamouse® Betamethasone dipropionate and salicylic acid (0.05%/2%) scalp application and (0.05%/3%) ointment (500microgram/ml and 500microgram/g) Brand: Diprosalic® Betamethasone 2.25mg medicated plasters Brand: Betesil® Betamethasone with clioquinol (0.1%/3%) cream and ointment Betamethasone and neomycin (0.1%/0.5%) cream and ointment Betamethasone valerate 1mg/g and fusidic acid 20mg/g Brands: Fucibet®, Xemacort® Betamethasone dipropionate 640microgram/g and clotrimazole 10mg/g cream Brand: Lotriderm® Betamethasone dipropionate 500microgram/g and calcipotriol 50microgram/g gel, ointment and foam Brands: Dalonev®, Dovobet®, Enstilar®	Potent Should not be used continuously on any site for more than 8 weeks[14]
Diflucortolone valerate 0.1% cream, oily cream and ointment (1mg/gram) Brand: Nerisone®	Potent Should not be used continuously on any site for more than 8 weeks[14]
Fluocinolone acetonide 0.025% cream, gel and ointment (250microgram/g) Brand: Synalar® Fluocinolone acetonide 0.025% and clioquinol 3% cream and ointment (250microgram/g) Brand: Synalar C®	Potent Should not be used continuously on any site for more than 8 weeks[14]
Fluocinonide 0.05% cream and ointment (500microgram/g) Brands: Metosyn®, Metosyn FAPG®	Potent Should not be used continuously on any site for more than 8 weeks[14]
Fluticasone propionate 0.05% cream and ointment (500microgram/g) Brand: Cutivate®	Potent Should not be used continuously on any site for more than 8 weeks[14]

Hydrocortisone butyrate Hydrocortisone butyrate 0.1% topical emulsion, cream, ointment and scalp lotion (1mg/g) Brands: Locoid Crelo®, Locoid Lipocream®, Locoid®	Potent Should not be used continuously on any site for more than 8 weeks[14]
Mometasone furoate 0.1% cream, ointment and scalp lotion (1mg/g) Brand: Elocon®	Potent Should not be used continuously on any site for more than 8 weeks[14]
Clobetasol proprionate 0.05% liquid, cream, ointment and shampoo (500 microgram/g) Brands: ClobaDerm®, Dermovate®, Dermovate® scalp application, Etrivex® Clobetasol with neomycin and nystatin (500microgram/5mg/100,000 units)	Very Potent Should not be used continuously on any site for more than 4 weeks[14]
Diflucortolone valerate 0.3% oily cream and ointment (3mg/g) Brand: Nerisone Forte®	Very Potent Should not be used continuously on any site for more than 4 weeks[14]

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