

CICU/CA/2021-22/04: Perioperative replacement of exogenous corticosteroids

UPDATE DETAILS NEXT STEP: PRO FORMA

Registration Pro forma Data Results & criteria Guidance Conclusions & assurance Key successes & concerns Presentations
Action plans & reaudit Reports & certificates Sign off & re-audit Post project impact Notes

Audit speciality

Speciality: Cardiac Anaesthesia & Intensive Care

Other associated specialities: N/A

Business unit: Cardiac Services

Division: Specialised Services

Audit participants

Lead participant: Ben Gibbison

Other participants: No additional participants have been selected

Audit mentor: No audit mentor has been selected.

Audit facilitator: Damian Jones

Will you be leaving the trust in the next 12 months?: No

Audit details

Audit title: Perioperative replacement of exogenous corticosteroids

Project type: Clinical Audit Project

Audit rationale: Corticosteroid use is common in the UK. In England alone in 2020 over 50 million corticosteroid prescriptions were dispensed, of which over 22 million were inhaled formulations, and around 8 million oral, with use rising in the last decade [1]. Clinical indications for corticosteroid can broadly be divided into two groups; those with endogenous corticosteroid deficiency who require replacement, and therapeutic corticosteroid for a range of diagnoses including inflammatory and malignant conditions, as well as after organ transplantation. Endogenous deficiency may be further classified; primary due to diseases of the adrenal gland, secondary due to reduced pituitary action, or tertiary from reduced hypothalamic release of CRH. Importantly long-term exogenous steroids can result in iatrogenic tertiary adrenal insufficiency in people with previously normal function, and ultimately adrenal atrophy over time. Any patient prescribed equivalent oral daily doses of prednisolone greater than 5mg in adults, or 10-15mg/m2 in children, when administered for greater than 1 month, may result in tertiary insufficiency [2,3]. When assessed by a short synacthen test, up to a third of patients receiving glucocorticoid therapy can show evidence of adrenal insufficiency when well, but whether this translates into clinical changes is not known [4].

Physiological stresses such as surgery or acute illness induce the hypothalamic-pituitary-adrenal(HPA) axis and daily cortisol production may quadruple in major surgery, with levels typically returning to normal at 24-48 hours [5]. Insufficient production may precipitate metabolic derangements, hypoglycaemia and ultimately life threatening circulatory failure termed an adrenal crisis, mitigated clinically by the concept of supplementary corticosteroids. In theory, a significant proportion of those receiving therapeutic glucocorticoids are at risk of this, and therefore recent consensus guidelines published in the UK by a collaborative of the Association of Anaesthetists, the Society for Endocrinology and the Royal College of Physicians advise additional supplementation for both patient groups in the peri-operative period [6]. The authors acknowledge the paucity of evidence for supplementation in the therapeutic patient group, and the guidelines specifically highlight the need for high-quality studies to inform future guidance. Glucocorticoids have a plethora of side effects including poor wound healing, susceptibility to infections and hyperglycaemia; unnecessary doses peri-operatively may increase the risk of potentially avoidable complications [6].

A survey on behalf of the RCOA in 2019 demonstrated, prior to the present consensus statement, significant heterogeneity in UK anaesthetic practice [7]. This included the dose threshold of routinely prescribed glucocorticoids that triggered supplementation, nature of surgical procedure, and the actual supplementary dose to prescribe. Importantly the majority of respondents would not administer supplementation in those receiving topical or inhaled glucocorticoids, and had an oral dose threshold of 10mg prednisolone, a clear discrepancy from the latest guidelines.

There is no question that those who are glucocorticoid deficient need an increased dose in the peri-operative period. There remains substantial uncertainties however for those patients receiving therapeutic glucocorticoids, including exactly who should receive supplemental dosing, as well as the most appropriate dose and timing. Understanding the number of patients on therapeutic glucocorticoids presenting for surgery who are at risk of adrenal insufficiency, and the true peri-operative consequences, is clearly desirable. Prior to the COVID-19 pandemic greater than 12 million operations were performed in England alone per year, and therefore this presents a potentially very large cohort of patients requiring peri-operative steroid supplementation [8].

1. NHS Business Services Authority. Prescription Cost Analysis - England 2020/21. 2021; https://www.nhsbsa.nhs.uk/statistical-collections/prescription-cost-analysis-england/prescription-cost-analysis-england-202021 (accessed 08/11/2021)
2. Woods CP, Argese N, Chapman M, et al. Adrenal suppression in patients taking inhaled glucocorticoids is highly prevalent and management can be guided by morning cortisol. European Journal of Endocrinology 2015; 173(5): 633-642
3. Husebye ES, Alolio B, Arlt W, et al. Consensus statement on the diagnosis, treatment and follow-up of patients with primary adrenal insufficiency. Journal of Internal Medicine 2014; 275: 104-15.
4. Bancos I, Hahner S, Tomlinson J, Arlt W. Diagnosis and management of adrenal insufficiency. Lancet Diabetes and Endocrinology 2015; 3: 216-26.
5. Prete A, Yan Q, Al-Tarrah K, et al. The cortisol stress response induced by surgery: A systematic review and meta-analysis. Clinical Endocrinology 2018; 89: 554-67.
6. Woodcock T, Barker P, Daniel S et al. Guidelines for the management of glucocorticoids during the peri-operative period for patients with adrenal insufficiency. Anaesthesia 2020; 75(5): 654-663
7. Ramesh AV, Pufulete M, Reeves BC, et al. Peri-operative corticosteroid supplementation for patients on therapeutic glucocorticoids: a national survey. Anaesthesia 2020; 75: 1394-1397
8. NHS Digital. Provisional Hospital Monthly Statistics for Admitted Patient Care, Outpatient and Accident and Emergency data April 2019 - March 2020 (M13). 2020; https://digital.nhs.uk/data-and-information/publications/statistical/hospital-episode-statistics-for-admitted-patient-care-outpatient-and-accident-and-emergency-data/april-2019---march-2020-m13 (accessed 08/11/2021)

Audit objectives:

Primary objectives

To identify the number of patients presenting for surgery taking therapeutic glucocorticoids.

Secondary objectives:

Collection of patient demographics, diagnoses, regular steroid prescription, procedure, peri-operative supplementation practices, and compliance with consensus guidelines

Methodology & Data collection

Methodology and source of data:

We will use Redcap to collect data of patients via NHS numbers. Corresponding operation codes and outcome data will be retrieved from NHS Digital commissioning data returns. Data collectors will only need retrieve whether practice conforms to AAGBI Guidelines (January 2021). Data will be collected and analysed using R statistical package.

Data time frame from: Not Set to: Not Set

Type of patients:

Sample selection criteria All patients under the care of an anaesthetist (including sedation and monitoring), ≥18 years of age, presenting for elective, urgent or emergency operations.

Retrospective/prospective: Prospective

Has the data already been collected? No

Will you be collecting sensitive patient data for this project? No

Guidance

Selected guidance: 1 item has been selected.

Criteria

Order	Criteria	Numerator/Denominator/Exceptions	Target	Current	Status	Guidance
1	Adherence to guidance	Compliance with guidelines / All patients on > 7.5mg Prednisolone equivalent for > 1 months in the last 3 months. / None	>=75.00%	N/A	N/A	0

Governance

Governance: N/A

Reference details: N/A

Service line

Service line: Medication/prescribing

All audits/projects will be visible to your Trust

All audits/projects will be visible to your Trust.

- Users in your organisation will have **VIEW ONLY** access to this project on AMaT
- The only persons able to update and make changes to this project will be yourself and those persons listed in the project/audit

Do you want to **RESTRICT** access to this audit?

- Restricting access means that users in your organisation will **ONLY** be able to see the project/audit registration details
- Restricting access should only be requested when the project may contain sensitive topics or findings

Audit restricted?: No

Assistance

ID of patients: No

Retrieval of case notes: No

Pro-forma design: No

Presentation: No

Data analysis: No

Poster design: No

Training/Project advice: No

Presentation and Action Plan ?

When and where you plan to present?

No presentations selected

When do you propose to have an action plan in place?: 01/02/2023

Action plan completion date: This will be derived by AMaT once you have set up an 'Action plan'

Admin

Additional activity: 2021-2022

Audit category: Local Audit

Audit priority: 3

Audit officer: No audit officer has been selected.

Audit code: CICU/CA/2021-22/04

CQC domains: Safe, Effective

Keywords: N/A

Reported: Specialty audit/governance meeting

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