Implementation of Joint Society Guidance on Diabetes (COVID:Diabetes): Dexamethasone/Glucocorticosteroid Therapy In Covid-19 Patients during the COVID-19 Pandemic in a District General Hospital

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Introduction

High-dose corticosteroids reduce mortality in COVID-19 patients requiring oxygen therapy.[1] Yet, a triple insult of corticosteroid-impaired glucose metabolism, COVID-19 impaired insulin production and increased insulin resistance, could cause significant hyperglycaemia increasing morbidity and mortality.[2]

Diabetes UK, ABCD, and JBDS produced guidance on blood glucose control COVID-19 patients receiving corticosteroid therapy - *"COncise adVice on Inpatient Diabetes (COVID:Diabetes): Dexamethasone therapy in COVID-19 patients: implications and guidance for the management of blood glucose in people with and without diabetes"* (latest version June 2020).[3]

Aim

To assess and improve the implementation of the Joint Society guidance regarding Corticosteroid use in COVID-19 in our hospital.

Methods

Patient Selection and Setting

Sample of patients who were admitted to our hospital, a UK district general hospital, and received Dexamethasone for hypoxia-inducing COVID-19 during two admission peaks—October/November 2020 and January/February 2021. 30 patients were selected randomly from both peaks. Education was provided between peaks. An increase in diabetes team ward-rounds were implanted in the subsequent peak. An easily accessible summary of the joint society guidance was uploaded to the Microguide® smartphone-app between the peaks. Our trust had already established use of Microguide® for our antimicrobial guidelines, and a COVID-19 section was added during the pandemic (*Microguide® app>>South Eastern Health and Social Care Trust >> COVID-19>>Glycaemic control).*

Data Collection

Retrospective data was collected through case note review. Recommendations from the guidance were used as the basis for collection.

Selected Recommendations from Joint Society Guidance for COVID Patients Receiving Dexamethasone

- **Glucose Monitoring. Unknown to have diabetes: 6-hourly for 48 hours, then if no hyperglycaemia, once daily. Known diabetes: 6 hourly.**
- **Correct hyperglycaemia (capillary blood glucose (CBG)>12.0mmol/L) with rapid acting insulin (correction table in guidance based on CBG + weight or total daily dose.**
- **If insulin naïve and CBG>12.0mmol/L, start on intermediate acting insulin—dosing advice provided in guidance.**
- **Dose adjustment guide provided for once daily long-acting and twice daily regimens.**

References

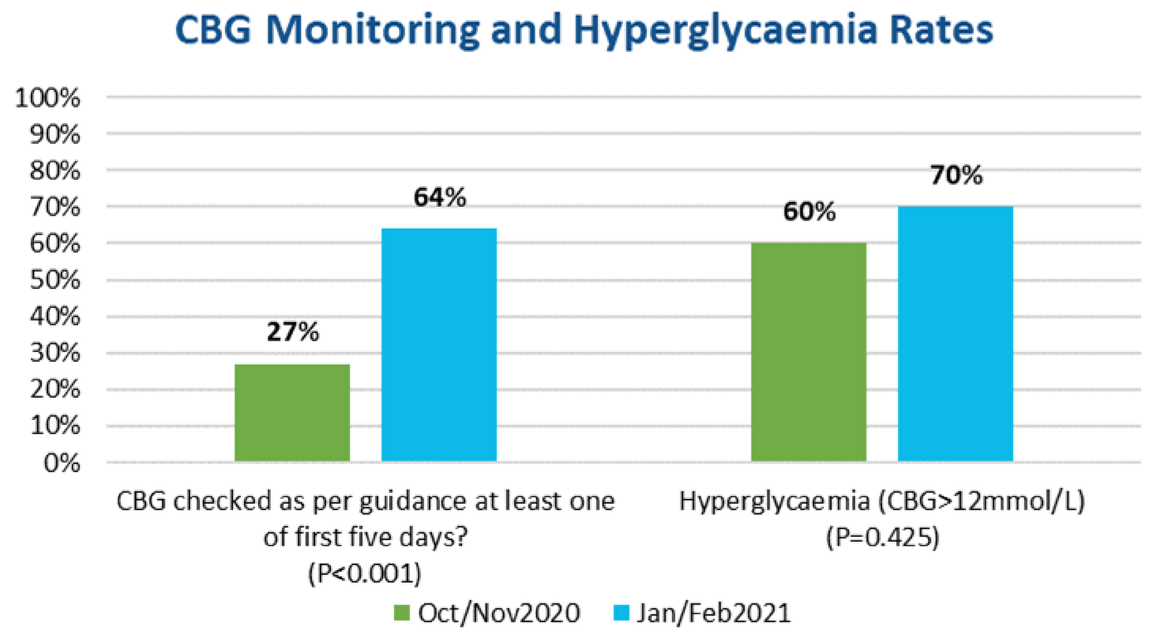
1. Horby P, Lim WS, Emberson JR et al. Dexamethasone in Hospitalized Patients with Covid-19. N Engl J Med 2021; 384: 693–704.
2. Rayman G, Lumb AN, Kennon B et al. Dexamethasone therapy in COVID-19 patients: implications and guidance for the management of blood glucose in people with and without diabetes. Diabet Med 2021; 38.
3. National Inpatient Diabetes COVID-19 Response Group. COncise adVice on Inpatient Diabetes (COVID:Diabetes): Dexamethasone Therapy in COVID-19 Patients: Implications and Guidance for the Management of Blood Glucose in People With and Without Diabetes. Version 1.4 June 2020.

Results

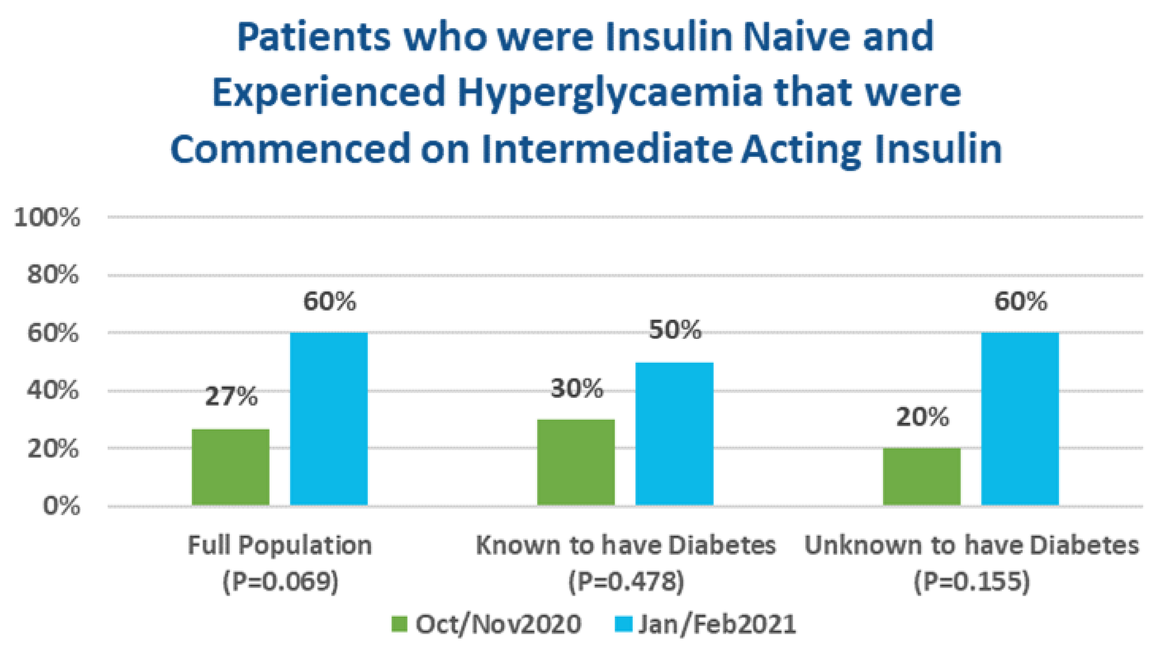
Oct/Nov 2020 cohort: 15 had known diabetes (KD) vs. 15 unknown to have diabetes (UD). Jan/Feb 2021 cohort: 11 KD vs. 19 UD.

CBG checks were carried out as per guidance on at least one of the first five admission days in 27% of patients Oct/Nov 2020, compared to 64% of patients in Jan/Feb 2021.

60% experienced hyperglycaemia at least once (CBG>12mmol/L) in Oct/Nov 2020, compared with 70% in Jan/Feb 2021.



15 patients in each cohort who experienced hyperglycaemia were insulin naïve. Of those, 27% were commenced on intermediate acting insulin in Oct/Nov 2020 compared to 60% in Jan/Feb 2021.



Discussion & Conclusion

Blood glucose control is associated with increased morbidity and mortality in patients with COVID-19 infection.[2]

Our audit showed early hyperglycaemia was observed in those with COVID -19 infection, particularly those requiring dexamethasone therapy.

With the introduction of national guidelines, enhanced support from diabetes team and use of the Microguide® smartphone app, improvements in outcomes were observed. Of note glucose monitoring and the transition from corrective quick acting insulin to intermediate insulin improved. Interestingly improvements were more marked in those not known to have had diabetes.

This audit demonstrated the benefits of National Diabetes guidelines by the National Inpatient Diabetes COVID-19 Response Group and the challenges of staff training during the pandemic. Support from the diabetes team and use of technology such as the Microguide® smartphone app mitigated some of these challenges and these resources are being explored for other diabetes hospital guidelines.