Improving steroid and immunosuppressant prescribing and treatment plans: quality improvement project on an intensive care unit

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Introduction

Steroids are commonly used in critical care for a broad range of conditions: COVID-19, respiratory, cardiovascular, neurological and additionally, in our patient cohort, haematological and for those who are immunosuppressed post-organ transplantation.[1] Each patient should have an individual treatment regime, guided by known best practice guidelines or specialist advice. Adherence is important as exogenous steroid use has well-known complications (such as hyperglycaemia and nosocomial infections) and appropriate weaning is key in avoiding relapse cortisol insufficiency in those on long courses.[1] We conducted a quality improvement project (QIP) on our 35-bed general intensive care unit (ICU) with the aim to assess whether clear steroid regimes were indicated (including appropriate dose and duration for indications and, if necessary, weaning instructions) and whether interventions could be introduced to improve quality and patient safety. During the second cycle, we introduced long-term immunosuppressant prescribing and monitoring as a secondary outcome.

Materials and methods

Data were collected from electronic drug charts and medical notes, team handover lists and junior doctor surveys via Google Forms. Anonymised information was collected on patient demographics, admission, indication for steroid and/ or immunosuppressant, dosage, duration, medication plan and monitoring instructions. Data were analysed on MS Excel. The small step changes per cycle are outlined as below:

> Cycle 1: Addition of section on manually updated Microsoft Word handover list
> Cycle 2: Addition of individual subheadings on self-generating handover list
> Cycle 3: Teaching and circulation of drug chart functions to assist in duration regimes and monitoring instructions

Results and discussion

In the initial data collection in September–October 2021, 15 patients were prescribed steroids and six were on long-

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Table 1. Steroid indications in our patient cohort	
Steroid indication	**Frequency**
COVID-19	3
Shock	4
Asthma	1
Intracranial lesion	1
Haematological malignancy	1
Haemophagocytic lymphohistiocytosis (HLH)	2
Unclear/mixed indications	3
Long-term immunosuppression indication	
Kidney transplant	2
Bone marrow transplant	2
Haemophagocytic lymphohistiocytosis (HLH)	2

term immunosuppressive therapy. Indications are outlined in Table 1. In 40% (6/15) of patients on steroids, there was no clear documentation of indication, proposed duration or plan, and one-third of patients on tacrolimus or ciclosporin immunosuppression had clear therapeutic drug target levels indicated. Changes from the first two cycles were minimal and a junior doctor survey of proposed changes guided the next steps, as 50% of responders preferred to utilise electronic medical notes and drug charts on the IntelliSpace Critical Care and Anaesthesia (ICCA) system. Third-cycle data recollection in January–February 2022 (n=8 for steroids, n=3 on immunosuppressants) indicates that performance improved, with 100% patients on steroids with clear indications (correct doses as per guidelines) and 50% with clear plans (weaning instructions or stop dates) and, for those on immunosuppression, 66% had clear monitoring instructions and target levels. Utilising electronic drug chart and medical notes features has an increasing role in reducing errors and improving patient safety.[2] Remaining points of improvements for next cycles will be on setting a unit protocol for viral titre monitoring for patients on long-term immunosuppression.

Conclusion

We have shown that quality of steroid and immunosuppressant prescribing and monitoring can be improved using local measures and team involvement. This is beneficial for patients and staff to reduce unnecessary dosing and complications. ∎

References

1 Young A, Marsh S. Steroid use in critical care. *BJA Educ* 2018;18:129.
2 Brown CL, Mulcaster HL, Triffitt KL *et al.* A systematic review of the types and causes of prescribing errors generated from using computerized provider order entry systems in primary and secondary care. *J Am Med Inform Assoc* 2017;24:432–40.