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Original Article

Study of a structured action pathway and persistent monitoring tool among nurses to achieve cent percent management of hypoglycaemia in in-patients: A measure of quality of healthcare



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ABSTRACT

Background: Reporting and management of hypoglycaemia is a reflection of quality of healthcare delivery. The study evaluates success of a structured plan implemented in a tertiary care hospital in terms of an evidence-based hypoglycaemia management protocol, training and awareness among all nurses in the organisation to achieve 100% reporting of hypoglycaemia.

Methods: A prospective study was conducted over a 3-year period. An in-house hypoglycaemia management protocol was designed, included in the induction training programme of nurses and implemented in wards under the guidance of master trainers. Each episode of hypoglycaemia was reported, managed and logged into centralised database, Quality Flash Matrix (QF). The QF was analysed at end of each 24 h cycle to carry out a root cause analyses and appropriate correction in training modules. Data were extracted from hospital records, patient case records and QF in terms of total number of cases receiving insulin and total number of episodes of hypoglycaemia documented and reported.

Results: Incidence of hypoglycaemia recorded was 6.4, 5.3 and 4.7 per 1000 patient hours for the years 2011, 2012 and 2013, respectively. The percentage of episodes of hypoglycaemia reported improved from 78% (1st quarter 2011) to 100% (4th quarter 2012). Root cause analysis showed change in diet of patient with no corresponding change in insulin and vice versa being the commonest cause for hypoglycaemia consistent over the study period.

Conclusion: Constant structured training of nurses, constant surveillance and appropriate feedback analysis result in decreased incidence of hypoglycaemia and increased reporting of episodes of hypoglycaemia.

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Introduction

Hypoglycaemia is one of the most feared complications of diabetes treatment. The incidence of hypoglycaemia is increased when attempts are made to achieve euglycaemia, as recommended by current treatment guidelines. It is estimated that approximately 90% of all patients who receive insulin experience episodes of hypoglycaemia.¹ It is also known that there is a threefold increase in severe hypoglycaemia and coma in intensively treated patients, as compared to conventionally treated patients.² Therefore, measures should be undertaken to decrease the frequency of hypoglycaemia in this high-risk patient population.³ American Diabetic Association (ADA) recommends the creation of a multidisciplinary steering committee guided by local diabetes experts. This committee can establish reasonable and achievable glycaemic management goals with use of protocols and order sets.⁴ However, it has been seen that in-patient providers often have insufficient knowledge about the many aspects of in-patient diabetes care and physicians do worse than attending nurses.⁵ Hence, there is a recent trend towards nurse-initiated hypoglycaemia treatment (NIHT) in hospitals. We describe one such programme implemented in a tertiary care hospital wherein a structured plan was initiated. This included designing an evidence-based hypoglycaemia management protocol, introducing structured training and awareness among all nurses in the organisation and promoting a reward-based reporting system. This study analyses the results obtained from the said programme. The study aims to analyse whether the ibid protocol results in improvement in nursing care in terms of reportage of hypoglycaemia incidents in in-patients and successful management of the same.

Material & methods

This was a single centre, prospective, observational study carried out at a tertiary care hospital over a 3-year period, from January 2011 to December 2013. Clearance was sought and obtained from the Institutional ethical committee. At the beginning of the study period, following sequence of events were implemented by a Diabetes Inpatient Safety Committee (DPSC). This was a multidisciplinary team, which included an endocrinologist, head nurse, diabetic educators, dietician and pharmacist.

Development and implementation of a Hypoglycaemia Treatment Protocol (HTP)

The DPSC defined hypoglycaemia as blood sugar level <70 mg/dL. This is based on studies, which demonstrates that counter-regulatory hormone responses are initiated at a plasma glucose level of 65–70 mg/dL in non-diabetic individuals and this definition is consistent with recommendations of the ADA Workgroup on Hypoglycaemia. Based on ADA Formula 15,⁶ the DPSC developed a nurse-directed HTP, which was made available in each department of the hospital (Fig. 1). A hypoglycaemia resuscitation kit was constituted, which included Sugar, Inj Dextrose and Inj Glucagon. This kit was made part of the crash cart available in each ward. The protocol was run as a pilot project in two ICU units and revised based on recommendations of attending physicians. Thereafter, the HTP was approved by the hospital Medical Executive Committee for use as a standing order to be implemented by nursing personnel for any bedside BG <70 mg/dL. It was then universally implemented across all wards of the hospital.

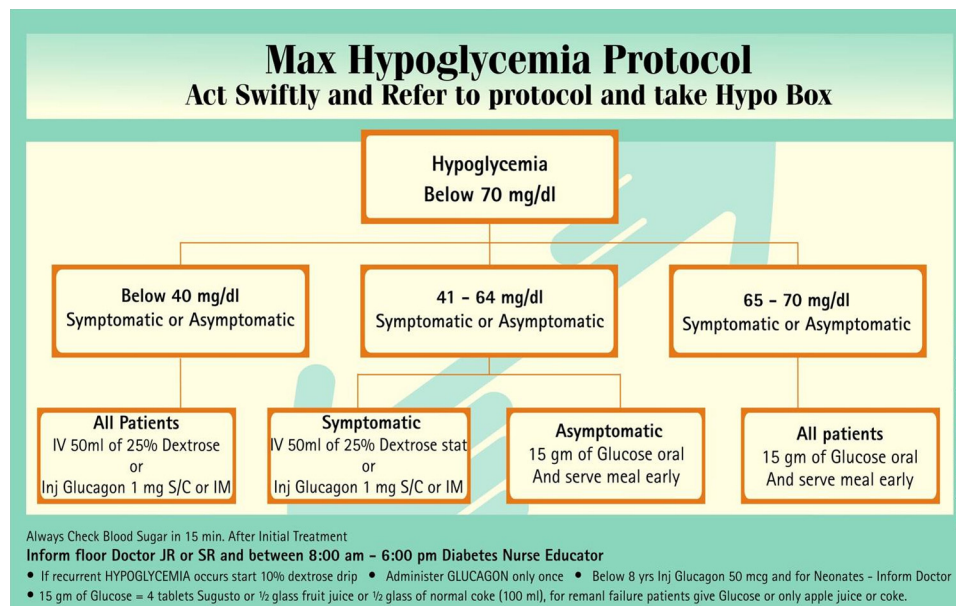


Fig. 1 – In-house hypoglycaemia management protocol.

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