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Impact of the 2010 Diabetic Ketoacidosis (DKA) Guidelines (based on the 2010 Joint British Diabetes Societies Inpatient Care Group Standards of Care) and IV Insulin and Fluid Prescription Chart on DKA management at University Hospitals Bristol NHS Foundation Trust

A Thomson-Moore, A Low, J Williams, K Bradley and N Thorogood

Diabetes and Endocrinology, University Hospitals Bristol NHS Foundation Trust, Bristol, UK

Objective: To assess understanding and management of diabetic ketoacidosis (DKA) since introducing the 2010 DKA Guidelines and IV Insulin and Fluid Prescription Chart.

Methods: Three methods of assessment were used: assessment of DKA admission notes for concordance with guidelines; separate medical and nursing personnel knowledge questionnaires; incident forms analysis.

Results: Sixty-three doctors and 14 nurses were surveyed, and 34 sets of notes were scrutinised. Diagnosis of DKA and appropriate initial management was 100 per cent optimal in both theory and delivery of care. Theoretical knowledge and concordance with the guidelines diminished once treatment was under way. Infusion of 10 per cent dextrose with capillary blood glucose (CBG) < 13 mmol/l, and correct application of the resolution criteria, was managed inappropriately in 50 per cent of cases. All six incident forms arose at night and were centred around hypoglycaemia.

Conclusions: Management of resolving DKA needs improvement. The challenges are multifactorial and include insufficient understanding, especially by nursing staff, of how insulin, dextrose and the resolution criteria interlock; an incorrect perception that the IV Insulin and Fluid Prescription Chart is a comprehensive integrated care pathway; a culture in which doctors do not regularly reassess patients once they have completed their clerking, nor suggest criteria by which they should be recalled; diminished continuity, visibility and accessibility of doctors out of hours because of the European Working Time Directive and rapid patient transfers from the medical assessment unit. These concerns are being addressed through targeted education, amending the prescription chart and challenging current culture around re-reviewing patients.

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Transcribing errors in insulin prescriptions: are our patients in safe hands?

HJ Roderick¹ and MA Saeed²

¹School of Medical and Dental Sciences, University of Birmingham, Birmingham, UK, ²Department of Diabetes, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK

Aims: Insulin is commonly prescribed for the treatment of diabetes. Insulin errors are likely to cause harm due to its narrow therapeutic range; however, despite this, dosing is commonly incorrect. The National Patient Safety Agency received 3,881 wrong dose insulin reports (2003–2009), which included a death due to a 10-fold dosing error. The aim of this audit was to investigate the incidence of transcribing errors in the prescription of insulin from diabetes clinics at a large teaching hospital.

Methods: The records of 100 patients on insulin attending diabetes clinics between January and July 2011 were retrospectively analysed

(male:female ratio 56:44 per cent; Type 1 to Type 2 diabetes, 48 to 52 per cent). Details of insulin therapy in the clinic notes were compared with the clinic letter and discrepancies were noted.

Results: Transcribing errors occurred in 18 per cent ($n = 18$) of insulin prescriptions in our study sample and were more frequent in patients receiving two insulin types compared with one (21.3 per cent vs. 15.1 per cent). The most frequently occurring error involved incorrect insulin dosage (13 per cent, $n = 13$). Some errors were due to similar sounding digits, eg 14 units transcribed as 40 and 7–9 units as 79.

Conclusions: Greater care needs to be taken when dictating letters to avoid insulin errors, particularly with commonly confused digits. Special attention should be taken with patients on multiple insulin types. Letters should be thoroughly checked before being sent to the patient's general practitioner. Educational initiatives to increase the awareness of these potential errors are important to ensure the safety of people living with diabetes under our care.

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Introduction of a hyperglycaemia management pathway safely reduces hospital admissions

R Herring, C Pengilly, H Hopkins, B Tuthill and S Davidson

Centre for Endocrinology, Diabetes and Research, Royal Surrey County Hospital, Guildford, UK

Background: Patients are frequently admitted to hospital with hyperglycaemia. Our aim was to introduce a hyperglycaemia management pathway for use in the medical assessment unit (MAU) as an admission avoidance initiative.

Method: Clinical practice was evaluated in phase 1. All patients presenting to the MAU with a blood glucose meter reading > 11.1 were identified (11.1 was based on the World Health Organisation diagnostic criteria for diabetes). Data were collected on acute assessment, diagnosis and management. The hyperglycaemia management pathway was then introduced and impact assessed in phase 2. Key pathway requirements included plasma glucose, plasma ketones and urea and electrolytes. Patients who did not require admission were provided with an information leaflet and contacted by a diabetes specialist nurse the next working day.

Results: *Phase 1:* Seventy-two patients were identified over a period of 156 days; 100 per cent were admitted and 63 per cent were started on an insulin infusion. Hyperglycaemia was the primary admitting diagnosis in 32 patients, of whom 15 patients had new or known Type 1 diabetes and 17 Type 2 diabetes. The diagnosis hyperglycaemia included hyperglycaemia hyperosmolar state and diabetic ketoacidosis. *Phase 2:* The pathway has been used for 40 patients. Hyperglycaemia was the primary diagnosis in 14 patients. Admission was avoided in six of the 14 patients (43 per cent). Patients with Type 2 diabetes had the greatest potential for admission avoidance.

Conclusion: The hyperglycaemia pathway can be used by medical professionals to safely reduce hospital admissions. Crucial to the success is the patient information leaflet and the prompt completion and faxing of the hyperglycaemia pathway referral form to the diabetes specialist nurses.