

# New guidance paves the way for inpatient diabetes care



Gerry Rayman

The 2010 Diabetes UK Annual Professional Conference in Liverpool saw the launch of the first national guideline documents on the treatment of diabetic ketoacidosis (DKA) and hypoglycaemia and a document containing recommendations for the safe use of insulin. The guidelines have been written by the Joint British Diabetes Societies (JBDS) and published by NHS Diabetes. The document *Safe and Effective Use of Insulin in Hospitalised Patients* (Fowler and Rayman, 2010), also published by NHS Diabetes, was commissioned by the National Clinical Director of Diabetes.

## Inpatient audit

The National Inpatient Diabetes Audit Day revealed that a staggering 1% of inpatients with diabetes develop DKA during their hospital stay (Rayman, 2010a; 2010b). Additionally, one in four people with diabetes suffers a hypoglycaemic episode while in hospital; one in 30 of these hypoglycaemic episodes are considered severe enough to require glucagon or intravenous glucose administration (Rayman, 2010a; 2010b). Inpatient hypoglycaemia not only increases hospital length of stay but is also associated with an increased mortality. Prevention of hypoglycaemia, and indeed DKA, in a hospital setting, and its prompt and effective treatment, is therefore extremely important.

## Inpatient hypoglycaemia management

*The Hospital Management of Hypoglycaemia in Adults with Diabetes Mellitus* (Stanisstreet et al, 2010) guideline has been written by practicing clinicians and draws from their experiences of managing hypoglycaemia in UK hospitals. It outlines the risk factors for, and causes of, hypoglycaemia in a hospital setting, recognising that these are often quite different from those in the community, such as a dislodged enteral feeding tube in a patient receiving insulin.

The guideline provides comprehensive and detailed advice regarding the management of

hypoglycaemia in a variety of clinical situations, from the fully conscious, to the conscious but confused, through to the unconscious patient. It also recommends that “hypo boxes” containing equipment to treat hypoglycaemia should be available in all hospital trusts. Additionally, audit of the management of hypoglycaemia is encouraged, and a useful audit tool is provided within the document.

This guideline is clearly written and accompanied by a practical and easy to follow visual treatment algorithm which many will find useful. A comprehensive overview of this guideline and its development can be found on page 184.

## Diabetic ketoacidosis

DKA, although preventable, remains a frequent and life-threatening complication of type 1 diabetes. Unfortunately, errors in its management are not uncommon and are associated with significant morbidity and mortality. Most acute hospitals have guidelines in place for the management of DKA but it is not unusual to find these out of date and at variance to those of other hospitals.

Even when specific hospital guidelines are available, audits have shown that adherence to, and indeed the use of, these is variable among the admitting team. These admitting teams infrequently refer early to the diabetes specialist team and it is not uncommon for the most junior member of the admitting team, who is least likely to be aware of the hospital guidance, to be given responsibility for the initial management of this complex and challenging condition.

The DKA guideline, *The Management of Diabetic Ketoacidosis in Adults* (Savage et al, 2010), has been developed by practicing specialists with considerable experience in this area. Where possible, the guidance has been evidence based but also draws from accumulated professional experience. A number of new recommendations have been introduced, including the use of bedside ketone

Gerry Rayman is NHS Clinical Lead for Inpatient Diabetes and Consultant Diabetologist, Ipswich Hospital NHS Trust, Ipswich.

*“The guidelines have been very widely publicised, and it is of paramount importance that they are implemented throughout the country.”*

meters (management based on bicarbonate and glucose is retained for those hospitals yet to introduce ketone meters), the use of fixed-rate intravenous insulin infusions, and mandatory and prompt referral to the diabetes specialist team in all cases.

The management is clearly presented and divided into a number of steps in the care pathway: the first hour, the next 6 hours, the next 12 hours, etc. Importantly, guidelines regarding the conversion to subcutaneous insulin and preparing for discharge home are included. Audit against defined standards is encouraged. The guideline is clearly written and accompanied by a practical and easy-to-follow flow chart to be used in admitting departments and wards managing DKA. Their widespread introduction should significantly improve the care of people admitted with DKA.

#### Insulin use in inpatients

The document *Safe and Effective Use of Insulin in Hospitalised Patients* (Fowler and Rayman, 2010), which was commissioned by the National Clinical Director of Diabetes, recognises that insulin is a potent, life-saving medication. It is used widely in hospitalised individuals with diabetes, but if prescribed or administered inappropriately or inaccurately has the potential to cause harm.

Ensuring the safe use of insulin presents a challenge for patients, healthcare professionals and hospital managers alike. The central reason for error is the lack of healthcare professional experience and knowledge regarding the use of insulin. This may cause direct harm to patients and lead to patient dissatisfaction, prolonged lengths of stay and potential litigation.

With mounting evidence that tighter glycaemic control improves outcomes in hospitalised patients with hyperglycaemia, and with the rise in the prevalence of diabetes, these issues will gain even greater importance. The document states that it is essential for all hospital trusts to have systems in place to minimise these errors and to improve clinical outcomes.

The document considers the evidence and makes 34 recommendations for trusts to follow to ensure that insulin is used effectively and safely in hospitalised patients. These include the training of junior doctors and ward

nurses, patient self-management, meal timing, safe prescribing and administration of insulin, glycaemic targets and recommendations for national guidelines and protocols covering a number of common areas of inpatient diabetes care, two of which (DKA and hypoglycaemia) have been addressed by the JBDS documents.

#### Conclusion

These national guidelines have been endorsed by the relevant organisations involved in diabetes care, including the Association of British Clinical Diabetologists, the Diabetes Inpatient Specialist Nurse UK Group, Diabetes UK, the Royal College of Physicians, and the Scottish, Welsh and Northern Diabetes societies, among others.

The guidelines have been very widely publicised, and it is of paramount importance that they are implemented throughout the country. Auditing their use and the outcomes, including clinical incidents arising from non-use and non-adherence, may be important ways of effecting change. I would recommend that all those involved in diabetes inpatient care read these invaluable documents which are available on the NHS Diabetes website. ■

*An electronic version of each of the three guidelines is available to download from the NHS Diabetes website at <http://www.diabetes.nhs.uk/>*

Fowler D, Rayman G (2010) *Safe and Effective Use of Insulin in Hospitalised Patients*. NHS Diabetes, London. Available at: <http://tinyurl.com/3yrc3s6> (accessed 16.06.2010)

Rayman G (2010a) Audit of inpatient care: Key findings. *Diabetes UK Annual Professional Conference*, Liverpool, 3–5 March

Rayman G (2010b) Diabetes inpatient audit. *National Diabetes Inpatient Specialist Nurse UK Group Meeting*, London, 29 April

Savage MW, Sinclair-Hammersley M, Rayman G et al (2010) *The Management of Diabetic Ketoacidosis in Adults*. NHS Diabetes, London. Available at: <http://tinyurl.com/33ppw97> (accessed 16.06.2010)

Stanisstreet D, Walden E, Jones C et al (2010) *The Hospital Management of Hypoglycemia in Adults with Diabetes Mellitus*. NHS Diabetes, London. Available at: <http://tinyurl.com/334rt95> (accessed 16.06.2010)