

Letter

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Institutional factors in the management of adults with diabetic ketoacidosis in the UK: results of a national survey

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Determining what obstacles diabetes specialist teams face when providing services for patients with diabetic ketoacidosis has not previously been determined on a national scale.

Between May and November 2014 a survey of all 220 UK diabetes specialist teams was conducted to assess their ability to provide comprehensive care for adult patients presenting with ketoacidosis [1] (see Appendix S1).

Sixty-seven hospitals returned the questionnaire. Appendix S2 shows the list of contributors.

Treatment pathways

All hospitals had an up-to-date ketoacidosis treatment pathway, with just under 80% using the Joint British Diabetes Societies (JBDS) guideline; 62.5% of teams also had an integrated care pathway. Previous work has shown that the adoption of a management protocol is associated with improved outcomes, in particular reducing length of stay [2,3]. Further work needs to be done to see if there are differences in outcomes among diabetes specialist teams who use an integrated care pathway, compared with those who do not.

Meters

Of the 67 hospitals returning the questionnaire, 76.1% reported the ability to measure blood ketones at the bedside; however, 25.4% of teams did not have a healthcare professional available 24 h per day to perform point-of-care testing using a handheld ketone meter, 59.7% said that their handheld blood glucose testing meters were centrally connected to their laboratory; 3% reported that they had no quality assurance scheme for their glucose meters and 17.9% had none for their ketone meters.

The move to focusing on treating blood ketones rather than glucose has become more prevalent since the publication of the initial JBDS guideline [4]. With the advent of newer technology allowing point-of-care ketone testing, this move seems appropriate. The current data suggest that diabetes specialist teams regularly use them and they have become an integral part of ketoacidosis management [5]. However, the use of handheld point-of-care ketone monitors has been questioned recently, due to concerns about their accuracy, and a lack of data showing that their use is

associated with clinical benefit [6]. Although no apparent harm has been reported as a result of using ketone monitors, the apparent lack of regular quality assurance in almost one in five institutions is of concern.

Staffing

In 11.9% of teams there was no clinical lead responsible for implementing and auditing local ketoacidosis guidelines.

Diabetes UK and others have previously suggested that an appropriate level of diabetes inpatient specialist nurse staffing should be 1 nurse per 300 beds [7,8]. However, only 49.3% of teams had a diabetes inpatient specialist nurse staffing at this level. Of the remainder, mean staffing levels were 0.62 nurses (SD \pm 0.26) per 300 beds.

Despite evidence showing that input from the diabetes specialist teams is associated with a shorter length of hospital stay [9], only 65.7% reported that patients admitted with ketoacidosis had access to a member of the team within 24 h of admission.

Audit and performance monitoring

Among the diabetes specialist teams, 46.3% reported that they had audited their ketoacidosis outcomes in the previous year, with 52.2% saying that they used standard performance indicators. In addition, 44.8% of units reported not routinely discussing ketoacidosis cases at their departmental morbidity and mortality meetings.

Staff education

In 20.9% and 26.9% of teams no rolling education was provided to junior medical or nursing staff, respectively. However, 80.6% and 88.1% of teams reported giving feedback to junior medical and nursing staff. This inability to provide education may reflect the low number of specialist nurses, who often provide this.

Patient self-management

Of the diabetes specialist teams, 82.1% reported that their institution gave their patients the option to self-manage their diabetes.

Limitations

There are several limitations to our data. We asked for voluntary contributions from teams across the UK, and we have no way of knowing whether the data that has been returned has been subject to some 'reporting bias'. In

addition, only 67 of 220 hospitals returned data, and this limits the degree to which these findings can be extrapolated to the rest of the UK. However, because we were asking about process issues and many similar themes emerged, the data are likely to be more widely applicable.

In summary, this large national survey on the institutional factors that influence diabetes specialist teams' ability to provide care for people admitted with diabetic ketoacidosis has found that although many specialist teams have moved to using the national guidelines, there remain several areas for potential concern. These include inadequate staffing levels, or the inability to provide handheld ketone monitors to help patient management 24 h per day. In addition, the lack of quality assurance for ketone meters is of concern. Given several questions remain unanswered, further work remains.

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Competing interests

None declared.

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Supporting Information

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Questionnaire sent to all adult diabetes teams in all UK hospitals.

Appendix S2. List of institutions and individuals that returned forms.