

Older people with diabetes in hospital: Results of a staff knowledge audit

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Owing to an aging UK population and an increasing prevalence of diabetes, many older people's wards, where the admission age is ≥ 75 years, are now caring for more individuals with diabetes who are much older and who often have complex underlying comorbidities. It is therefore integral that nursing staff and multidisciplinary team members have up-to-date knowledge and skills to provide the best inpatient care for this vulnerable group. A pilot audit investigating nursing staff's ($n=12$) knowledge of diabetes was undertaken and the results and implications for practice are presented.

It is estimated that in England there are over 3 million people aged >16 years with either diagnosed or undiagnosed diabetes (Yorkshire and Humber Public Health Observatory [YHPHO], 2010). Moreover, the prevalence of diabetes is expected to increase due to rising rates of obesity and an aging population (YHPHO, 2010): by 2050, it is estimated that there will be approximately 250 000 people in the UK aged >100 years (Nursing and Midwifery Council, 2009). Currently, 14.3% of people with diabetes in England are aged 55–74 years, and 16.5% are aged >75 years (YHPHO, 2010).

As a result, older persons' wards are now caring for people with diabetes who are much older and who often have complex comorbidities. In 2008, the National Diabetes Support Team (now NHS Diabetes) indicated that more than 20% of hospital beds are taken up by older people with diabetes, and that their stay in hospital is generally longer, regardless of the reason

for admission, than people without diabetes. Furthermore, it is predicted that the prevalence of diabetes among adults aged >18 years is likely to rise to 9.5% by 2030 (YHPHO, 2010), which would indicate that more people with diabetes are likely to be admitted to hospital in years to come. It is therefore key that all healthcare professionals caring for older people with diabetes in hospitals have adequate training to ensure high-quality care for this population.

Pilot audit

On the ward where the present pilot audit was undertaken there has been very little formal staff training with regard to diabetes management. As a result, inpatients with diabetes are potentially being put at risk, and poor diabetes management is likely to extend their admission.

Aim

A small pilot audit was undertaken to gain a better understanding of ward staff awareness

Article points

1. It is key that all healthcare professionals caring for older people in hospitals have adequate training in diabetes care to ensure high-quality care for this vulnerable population.
2. A pilot audit was undertaken to assess ward staff knowledge of the care of older people with diabetes.
3. The results show that there was a limited understanding of type 1 and type 2 diabetes, with two-thirds of staff able to explain the "basic" principles for both.
4. Ward staff knowledge of hypoglycaemia and its treatment was poor, and all of the staff felt that they would benefit from further education in diabetes.

Key words

- Inpatient care
- Older people
- Pilot audit
- Staff knowledge

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Page points

1. A series of questions for staff members to fill in during their shift was designed. All members of the nursing staff ($n=12$) filled these in over three shifts, which commenced at 14.30 on day one and finished at 20.30 on day two, thus incorporating night staff.
2. There was a limited understanding of type 1 and type 2 diabetes, with 66.7% ($n=8$) of staff able to explain the “basic” principles for both, and 33.3% ($n=4$) of respondents not having even a basic awareness.
3. Regarding hypoglycaemia, 58.4% ($n=7$) knew that hypoglycaemia was a “low blood sugar” with 25.0% ($n=3$) correctly stating this as <4 mmol/L; 8.3% ($n=1$) did not know, and 8.3% ($n=1$) thought it was <3 mmol/L.

with regard to diabetes care and inpatients with the condition.

Methods

A series of questions for staff members to fill in during their shift was designed (*Box 1*). All members of the nursing staff ($n=12$) filled these in over three shifts, which commenced at 14.30 on day one and finished at 20.30 on day two, thus incorporating night staff. There were 30 inpatients on the ward at this time (minimum age 75 years). Two had type 2 diabetes; one was receiving insulin therapy and the other was receiving oral antidiabetes drugs. All staff had received a full handover prior to completing the audit forms. Of the 12 members of staff who answered the questions, seven were healthcare assistants and five were registered nurses.

The questions were constructed as a pilot “fact-finding” audit, to assess knowledge and understanding. They were written as open questions in the hope that more detailed answers might ensue. This was the first audit of its type, hence the style of questions were broad to assess feedback.

Results

There was a limited understanding of type 1 and type 2 diabetes, with 66.7% ($n=8$) of staff able to explain the “basic” principles for both,

and 33.3% ($n=4$) of respondents not having even a basic awareness (*Figure 1*).

Regarding staff awareness of the number of inpatients on the ward with diabetes, 58.4% ($n=7$) were “not sure” and 41.7% ($n=5$) were incorrect; one thought there were 10 patients on the ward with type 2 diabetes.

Regarding hypoglycaemia, 58.4% ($n=7$) knew that hypoglycaemia was a “low blood sugar” with 25.0% ($n=3$) correctly stating this as <4 mmol/L; 8.3% ($n=1$) did not know, and 8.3% ($n=1$) thought it was <3 mmol/L (*Figure 2*). Furthermore, 41.7% ($n=5$) were not aware of how to effectively treat a hypoglycaemic episode (citing giving Lucozade or glucose as their answer), with only 25.0% ($n=3$) following the hypoglycaemia protocol using the “hypo-box”, which was introduced in 2008 (all staff on the ward have received training for either from the inpatient DSNs or the ward diabetes link nurse). The remaining 33.3% ($n=4$) did treat hypoglycaemic events effectively with glucose and a biscuit/snack, but did not refer to the hypo-box.

Discussion

Hypoglycaemia

Hypoglycaemia is one of the most common side-effects of insulin and sulphonylurea (SU) therapy (Fowler and Rayman, 2010; MacArthur, 2010). Although all people with diabetes receiving insulin or SU therapy are at risk of hypoglycaemia, older people on SUs have been shown to be significantly more at risk of developing severe hypoglycaemia than their younger counterparts (Ng et al, 2010).

Hypoglycaemia is a serious condition in all ages; however, it can be underestimated in the older person, as symptoms may be attributed to other conditions (such as confusion due to dementia and/or communication difficulties post-cerebral vascular accident, for example) and the consequences can be catastrophic (Sinclair, 2009). Underlying macrovascular disease may lead to cerebral vascular accident or myocardial infarction as a direct result of the hypoglycaemia (Sinclair, 2009). Repeated episodes of hypoglycaemia can lead to a high risk of falls and lack of self-confidence and

Box 1. Pilot audit questions.

- What is your position/job title?
- What is your understanding of type 1 diabetes mellitus?
- What is your understanding of type 2 diabetes mellitus?
- What is your understanding of hypoglycaemia?
- How would you recognise an episode of hypoglycaemia?
- How would you treat an episode of hypoglycaemia?
- What do you understand about hyperglycaemia?
- How would you treat an episode of hyperglycaemia?
- How many patients do you have on the ward today with:
 - Type 1 diabetes... (not sure...)
 - Type 2 diabetes... (not sure...)
- Do you feel that you have adequate up-to-date knowledge of diabetes?
- Would you like further training/education on diabetes?

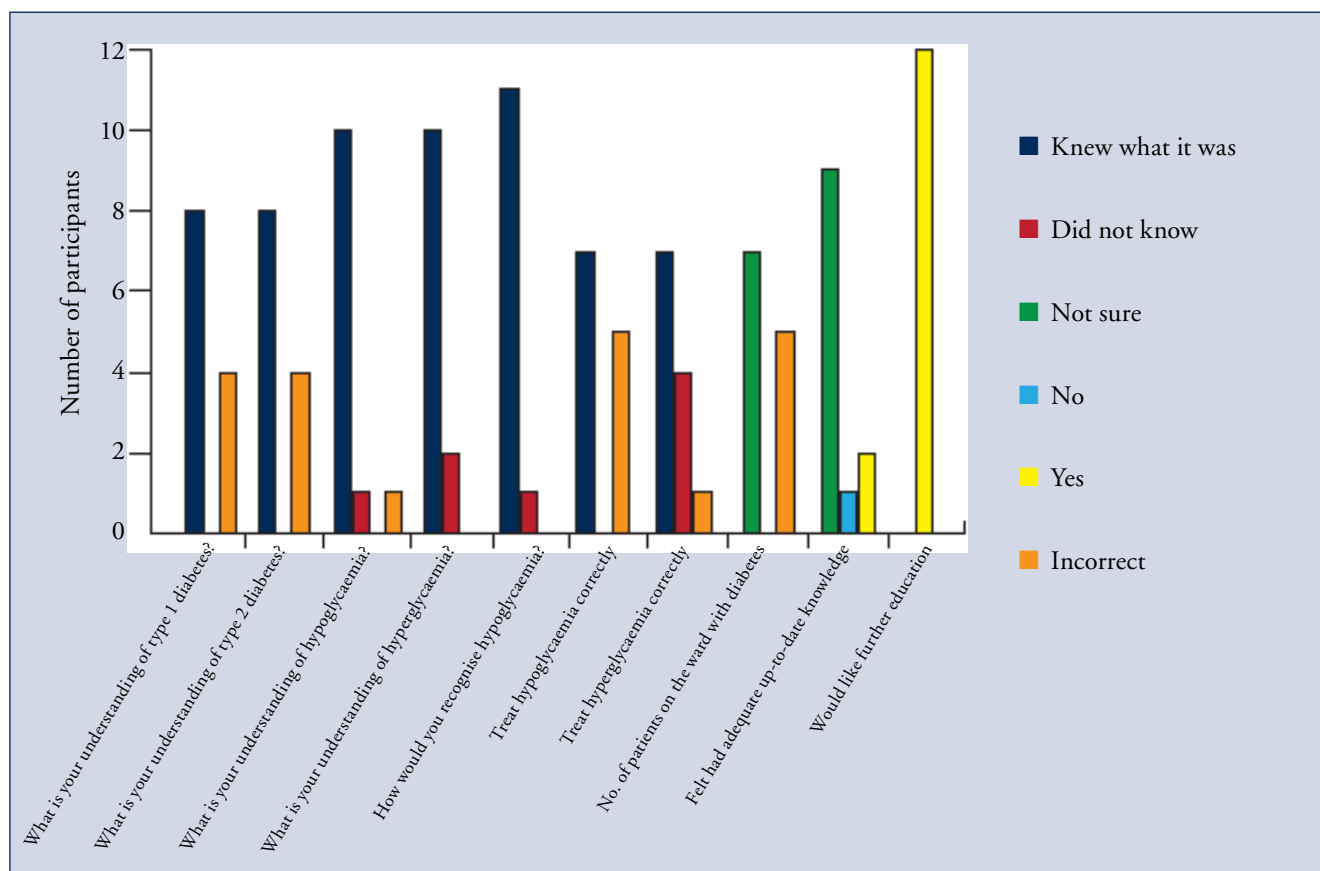


Figure 1. Results of the pilot audit of staff knowledge of diabetes.

ultimately the reduction of independence in the older person with diabetes (Sinclair, 2009).

Another aspect of potential hypoglycaemia in hospital, especially in older adults, is that pre-admission their nutritional status might have been compromised and their cognitive ability to self-medicate might have been deficient. Consequently, when medications are prescribed and provided while in hospital, their effects can exacerbate hypoglycaemia.

Hypoglycaemia in hospital

There are many factors that can lead to hypoglycaemia in hospital, some of which are medical, some circumstantial. Medical factors include:

- The inappropriate use of “one-off” or “as and when required” insulin.
- The incorrect insulin prescribed and given.
- Medications given at the wrong time in relation to meals.
- Incorrect mixing of long- and short-acting insulin.

- Intravenous insulin given without glucose (Fowler and Rayman, 2010).

- Side-effects of SUs (Cohen et al, 2007; MacArthur, 2010).

All of these issues could lead to hypoglycaemia and, if left untreated, death. Other risk factors include recovery and increased activity after illness, major amputation and abrupt discontinuation of steroid therapy. The timing of meals (Ng et al, 2010), lack of access to snacks, reduced oral intake, for example when unwell, vomiting and prolonged starvation when nil by mouth, further complicate risk factors for hypoglycaemia in hospital (Fowler and Rayman, 2010). Poorly fitting dentures is also a frequently underestimated problem for older adults, especially if recent weight loss has ensued.

All these factors must be taken into consideration when caring for an older person with diabetes as they are likely to be admitted with conditions that occur secondary to their diabetes, affecting their functional status, such

as eyesight problems, falls, depression, and poor oral intake, which could mean closer monitoring is required (Sinclair, 2009). If these individuals are to be monitored closely, ward staff need to be aware that people with diabetes, and what type of diabetes they have, are on the ward.

Hypoglycaemia unawareness

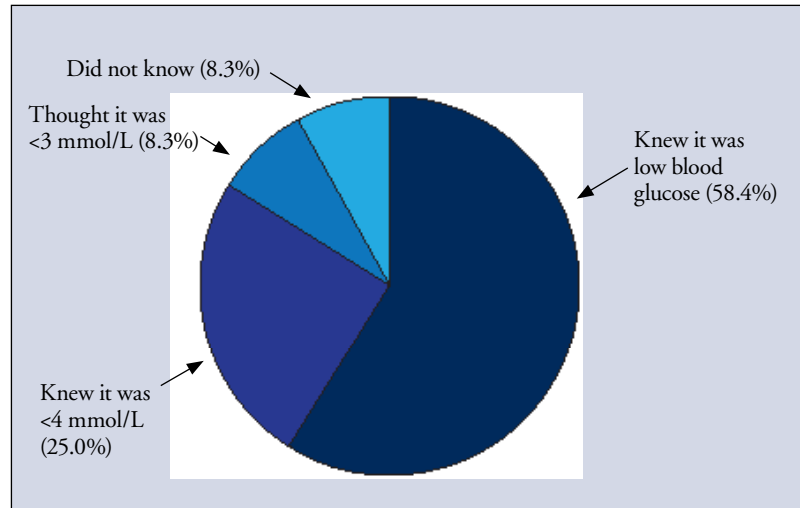
It is the symptoms of hypoglycaemia that warn an individual that their blood glucose level is becoming low (Fowler and Rayman, 2010). In the older person, these symptoms can be suppressed, leading to a lower blood glucose level being reached before the response mechanism takes effect. Often the intensity of all symptoms is low and the person's cognitive function impaired; therefore, the individual may not be aware of their symptoms (reduced hypoglycaemia awareness) or not be physically able to self-treat (Sinclair, 2009).

Hypoglycaemia unawareness, which results from the loss of autonomic warning signs, often goes undetected and can be mismanaged by healthcare professionals and patients (Gibson, 2009; MacArthur, 2010). This means that close monitoring and awareness by all the staff on the ward with regard to these patients who are at risk is of the utmost importance.

The results of the pilot audit are of concern as not one member of staff was aware of which patients had diabetes on the ward, let alone were they closely monitoring them. People with diabetes on the ward are potentially at risk of problems as staff may not recognise and treat diabetes-related complications promptly. Staff awareness of this is paramount and multidisciplinary team (MDT) involvement is essential in addressing the person holistically.

Cohen et al (2007) suggest that the various members of the MDT should be able to work well together to provide quality care. Linked with administrative support and the education of staff and patients, better outcomes should be achieved. Therefore, "older person issues", such as poor eyesight, poly-pharmacy, nutrition, mobility, mood and activities of daily living, should be addressed by the MDT as they are all relevant to improving the

Figure 2. Staff knowledge regarding hypoglycaemia.



quality of inpatient diabetes care for the older person. This should not be aspirational.

Safe management of diabetes in hospital

Education and knowledge is of recurring importance in the safe management of diabetes in hospital. Nine staff in this pilot audit were not sure if they had adequate knowledge of diabetes, one felt they did not, and two felt they did. One of the staff nurses who felt they did have adequate knowledge stated that hypoglycaemia, on testing, was a capillary blood glucose level of <3 mmol/L – this is incorrect and implies a lack of insight into their own knowledge and competency, which further training would benefit. More training in the signs and symptoms of hypoglycaemia, and the correct policy and protocol for treating hypoglycaemia, is evidently required on the ward.

In 2010, the National Patient Safety Agency (NPSA) released a Rapid Response Report on the safer administration of insulin because death and incidents of serious harm have resulted from errors in administering insulin. The report goes on to outline that omitted or delayed medication, abbreviations for units on prescriptions, and the incorrect use of equipment can all lead to serious insulin errors (NPSA, 2010).

Fowler and Rayman (2010) reported that on insulin administration in hospital:

Page points

1. On the authors' ward, it is not a requirement that two members of staff check insulin prior to administration. Concerns were expressed by two staff nurses in the pilot audit about this and, in view of the risks, it would make sense to adopt a double-check policy to reduce the risk.
2. Outcomes for people with diabetes in hospital are improved with tighter glycaemic control of hyperglycaemia, which may potentially lead to an increased risk of treatment-related hypoglycaemia.
3. It would be useful to provide update sessions for all the ward team on the use of the hypo-box and on hypoglycaemia, linking training in with the ThinkGlucose campaign.
4. All of the staff who undertook this pilot audit felt that they would benefit from further education in diabetes.

"The central reason for error is the lack of healthcare professional experience and knowledge of the use of insulin. This may cause direct harm to patients and lead to patient dissatisfaction, prolonged lengths of stay and potential litigation."

On the authors' ward, it is not a requirement that two members of staff check insulin prior to administration. Concerns were expressed by two staff nurses in the pilot audit about this and, in view of the risks, it would make sense to adopt a double-check policy to reduce the risk. This is a principle advised by NHS Diabetes, and there are now clear guidelines on the safe and effective use of insulin in hospital (Fowler and Rayman, 2010).

It is advised that good glycaemic control is important for patient safety, and that this control should not be secondary to the primary cause of hospital admission (Fowler and Rayman, 2010). This can often be the case on an older person's ward due to the variety of acute medical and social issues that the individual may present with; this, in turn, may disrupt good glycaemic control. Glycaemic control is often managed later in older people than in their younger counterparts, possibly compromising the effectiveness of treatment and prognosis of the primary condition (Fowler and Rayman, 2010).

Practice recommendations

Outcomes for people with diabetes in hospital are improved with tighter glycaemic control of hyperglycaemia (Fowler and Rayman, 2010), which may potentially lead to an increased risk of treatment-related hypoglycaemia. It is suggested that for non-critically-ill patients, a pre-meal blood glucose level of <7.8 mmol/L is desirable (Fowler and Rayman, 2010). However, due to the nature of the complications of hypoglycaemia in older people and their comorbidities, the targets on wards for older people are usually less stringent than this. Fowler and Rayman (2010) concur that as long as there are no uncomfortable osmotic symptoms, this may be appropriate in certain individuals, such as terminally ill patients and those with severe comorbidities.

The National Service Framework (NSF) for diabetes (Department of Health [DH], 2001) recommended that every person with diabetes deserves the highest standards of care, which should be provided by healthcare professionals who have been properly trained, know their limitations and have access to further professional development. It would be useful to provide update sessions for all the ward team on the use of the hypo-box and on hypoglycaemia, linking training in with the ThinkGlucose campaign (NHS Institute for Innovation and Improvement, 2009). There is a clear protocol to follow in the authors' hospital, as expected in Standard 7 of the NSF (DH, 2010), however all staff need to be made aware of this.

As part of the Safer Patient Initiative Step 3, "to develop processes to manage, instigate and assess changes, to reduce risk" (NPSA, 2004), the authors propose that the following information is cascaded to all staff members at the ward safety briefing:

- Which patients currently on the ward have diabetes?
- What type of diabetes is it (1 or 2)?
- What medication are they on?
- Who is at particular risk of hypo- or hyperglycaemia?

The briefing is carried out twice daily, is a formal procedure that all staff are involved in, and aims to highlight any issues or potential problems that all staff need to be aware of. This would help overcome the issue of patient confidentiality and labelling, while ensuring that the safety of inpatients with diabetes is maintained.

Conclusion

All of the staff who undertook this pilot audit felt that they would benefit from further education in diabetes. It is positive that staff would be willing to undergo training if the opportunity arose, and that most are somewhat aware of their limitations. It is recognised that more can be done to improve the quality of care delivered, and that appropriate specialist training for healthcare professionals is important when caring for people with diabetes (DH, 2010).

The authors acknowledge that this was a pilot audit with a small number of respondents; nevertheless, it is of concern that the results obtained do mirror the national picture for diabetes inpatient care on many older person's units. The open questions asked were broad to try to elicit a wide range of responses, and if undertaking an audit of this type again, more specific questions in theme could be used to elicit a deeper level of understanding.

A solution to the problems highlighted for older people with diabetes in hospital might be to adopt the guidance from Diabetes UK (2009), which suggested that on admission to hospital, a person with diabetes should have their needs assessed (including a foot assessment) and a plan of care agreed with healthcare professionals and the patient, which should be regularly updated. On an acute, older person's medical ward, this is often not the primary concern and can be missed. Staff are often not trained adequately enough to manage diabetes, they do not appear to know which patients in their care have diabetes and, as a result, patients may be put at risk. This needs addressing urgently.

There are many guidelines and standards available, for which there is a need to aspire to, such as the NSF for diabetes (DH, 2001). However, to achieve these standards, training of staff at ward level is paramount. As a result of the small pilot audit discussed in this article, it is clear that the ward staff lack essential knowledge regarding diabetes care, but desire the education to rectify this; training should therefore be provided as a matter of urgency. Information about patients with diabetes on the ward should be incorporated into the ward safety briefing, so all staff are formally aware of who may be at risk at any one time.

It would be useful to carry out a further audit, following education and the instigation of formal patient handover at the ward safety briefing, to ascertain if these simple measures have increased staff awareness and knowledge.

The development of inpatient DSNs and the development and support for diabetes link nurses is a crucial opportunity in MDT working to support the communication, enhancement and motivation of nurses working in acute non-

diabetes-specialised areas. As the UK population is aging, and diabetes incidence is increasing, it is essential that all staff are able to correctly monitor, and plan the care for people with diabetes, without disempowering individuals. ■

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