

# Role of the diabetes inpatient specialist nurse in preventing hospital admission from A&E

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People with diabetes are admitted to hospital twice as often as those without the condition, and once admitted stay twice as long and can occupy 20% of hospital beds. If people with diabetes had an early review in A&E by the diabetes inpatient specialist nurse, some of these hospital admissions could be prevented. This study identified which people with diabetes attending A&E were suitable to treat and discharge home without hospital admission. A&E staff were asked to refer all patients admitted with diabetes during regular working hours to the diabetes inpatient specialist nurse. Over 3.5 years, 104 people were seen and sent home, where they continued their diabetes care safely in an outpatient setting. Prevention of admission of a sizeable number of cases with diabetes is feasible and safe. This service effectively saved £35 000 over this time through reduced bed occupancy and provided patient-focused care.

It is increasingly recognised that people with diabetes are admitted to hospital twice as often as those without the condition, and once admitted stay twice as long and can occupy 10–20% of hospital beds (Samson et al, 2007; National Diabetes Support Team, 2008; Yorkshire and Humber Public Health Observatory, 2010). If these people receive an early review by the diabetes

inpatient specialist nurse (DISN), some of these admissions to hospital could be prevented (Department of Health, 2001).

Previous studies show that people with diabetes attend A&E more frequently than the general population and their management is not always appropriate (Goyder et al, 1997; Egede, 2004; Brackenridge et al, 2006). In recent years, admissions to A&E in the UK have been

## Article points

1. Hospital admissions for people with diabetes are costly and, in many cases, avoidable.
2. Early review in A&E by a diabetes inpatient specialist nurse enables people to be discharged without admission.
3. In this study, 104 hospital admissions were avoided, saving the trust £35 000.
4. All the people with diabetes in this study left A&E with follow-up arranged for their diabetes care, along with the contact details of a diabetes healthcare professional they could phone for help.

## Key words

- A&E
- Cost savings
- Hospital admissions

Authors' details can be found at the end of the article.

### Page points

1. The main aim of this study was to identify which people with diabetes attending the A&E department were suitable to treat and discharge home without hospital admission.
2. The largest group of patients seen had newly diagnosed type 1 diabetes; this group was also the most time-consuming.
3. The second largest group presented with non-severe hyperglycaemia. These were people with existing type 1 or type 2 diabetes and they had the widest age range, from 22–92 years.

increasing, and represent more than 65% of hospital bed days in England (Hospital Episode Statistics, 2009).

The NHS is now very concerned about these increasing emergency admissions, not only due to the rising costs of this type of admission compared with other forms of care, but also because of the disruption they cause to elective health care, particularly inpatient waiting lists (Audit Commission, 2009). With the financial pressures on hospital budgets at an all-time high, the emphasis must be on reducing unplanned hospital admissions (Gillam, 2010).

### Setting

The setting for this study was within an acute trust in the south-east of England, consisting of two district general hospitals 15 miles apart with a bed total of 800. The trust's catchment area is a mixture of urban and rural areas in close proximity to London. The population is around 600 000 people who are generally healthy and affluent compared with England averages, although there are some pockets of deprivation.

There is one full-time band 7 DISN working on each hospital site since 2004 and both have undertaken the non-medical prescribing course.

The National Diabetes Inpatient Audit showed that people with diabetes accounted for 18.9% of inpatient beds within the trust, which is above the national average of 15% (Yorkshire and Humber Public Health Observatory, 2010).

The trust had recently redesigned the diabetes service, with the aim of managing 70% of people with diabetes in primary care, 20% in the community diabetes teams and 10% in the acute trust.

### Aim

The main aim of this study was to identify which people with diabetes attending the A&E department were suitable to treat and discharge home without hospital admission.

### Methods

From 2007 until June 2010, the A&E nursing staff were asked to refer all patients admitted with diabetes during regular working hours to

the DISN. The referral process was either by phoning or paging the DISN. A paper referral was also completed in some cases and these were collected on a daily basis.

All the referred patients were seen by either the DISN or one of the other DSNs. The majority were referred directly from A&E, with a few referred from their GP and one person was referred from the antenatal clinic.

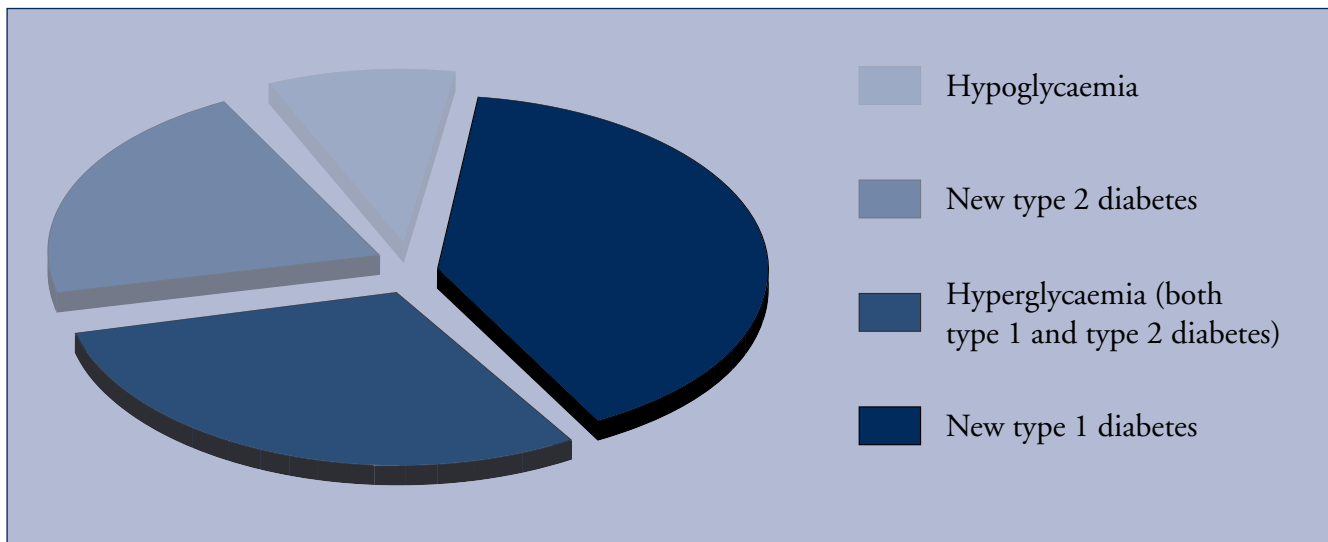
### Patient demographics

A total of 104 people were seen across both hospital sites over a period of 3.5 years. These were people with existing diabetes or with a new diagnosis of diabetes. They had an age range of 17–92 years and there were 49 women and 55 men.

### Results

The problems people were experiencing when they were seen by the diabetes inpatient specialist nurse is shown in *Figure 1*. The largest group of patients (40%;  $n=42$ ), were newly diagnosed with probable type 1 diabetes and were in the younger age range (17–42 years). This particular group were often the most time-consuming, taking up to 4 hours of DISN time, because they required a significant amount of education after they had a blood test to confirm diagnosis and to rule out diabetic ketoacidosis (DKA). They all had to be started on insulin, taught self-injection, capillary blood glucose (CBG) testing and the basics of a diabetes diet. This often involved their immediate family requesting to be present. They were also given an appointment to see one of the DSNs in the nurse-led clinic the next day.

The second largest group (30%;  $n=31$ ) presented with non-severe hyperglycaemia. These were people with existing type 1 or type 2 diabetes and they had the widest age range, from 22–92 years. They all had hyperglycaemia that was treatable following a blood test to confirm that they were not at risk of DKA or hyperosmolar hyperglycaemic state. A third of these people had been started on intravenous insulin and intravenous fluids, which in half of cases was not always necessary. All of these



*Figure 1. Breakdown of the problems people were experiencing when they were seen by the diabetes inpatient specialist nurse.*

people had their medication altered by the DISN following discussion with the medical team involved.

Some people required education on managing their hyperglycaemia in the post-discharge period. Of this group, 28% required insulin therapy and needed education to learn self-injection and CBG testing, with DSN follow-up the next day and/or a district nurse referral if supervision was needed or the patient was unable to self-inject. Some of this group were referred to the community diabetes teams or community DSN.

A new diagnosis of type 2 diabetes represented 21% ( $n=22$ ) of those seen. In this group, half required insulin, which required education on injection and CBG testing, and a community DSN referral. The remainder received education and were treated with oral medication then referred back to their GP. Those who expressed interest were referred to a local DESMOND (Diabetes Education and Self Management for Ongoing and Diagnosed) course.

Only 9% ( $n=9$ ) of people had hypoglycaemia that was deemed serious enough to be included in the study. All these people with hypoglycaemia were potentially going to be admitted. There were many others who attended A&E with hypoglycaemia who were not included in the study. Those left out had easily treated mild to moderate hypoglycaemia and were not deemed as potential admissions

to hospital by the A&E staff or the medical registrar on call. The people seen by the DISN required alteration of their medication in the short term, along with hypoglycaemia education, and then were referred to either the community diabetes team or the secondary care DSN.

#### Activity

The number of patients referred increased over the 3.5 years of the study (Figure 2). In 2007 one hospital was involved and only nine patients were included, but by 2008 the number had almost doubled to 16 people. In 2009 data were collected from both hospital sites and the numbers increased on the first hospital site to 32 patients and to 18 patients from the second hospital, a total of 50 people. In the first 6 months of 2010 there were 29 people referred across both sites, which showed a slight increase from 2009.

In 2007 and 2008 the majority of the people seen ( $n=23$ ) had a new diagnosis of diabetes and, of these, 15 were probable type 1 and eight were type 2 diabetes. By 2009, over half of the patients ( $n=27$ ) had a new diagnosis, 21 with type 1 and six with type 2 diabetes. But by 2010, this upward trend of new diagnosis had slowed and was slightly less than half of the total seen in the first 6 months of the year. There was a significant decrease in newly diagnosed type 1 diabetes, with only six people presenting, and an increase to eight people with type 2 diabetes.

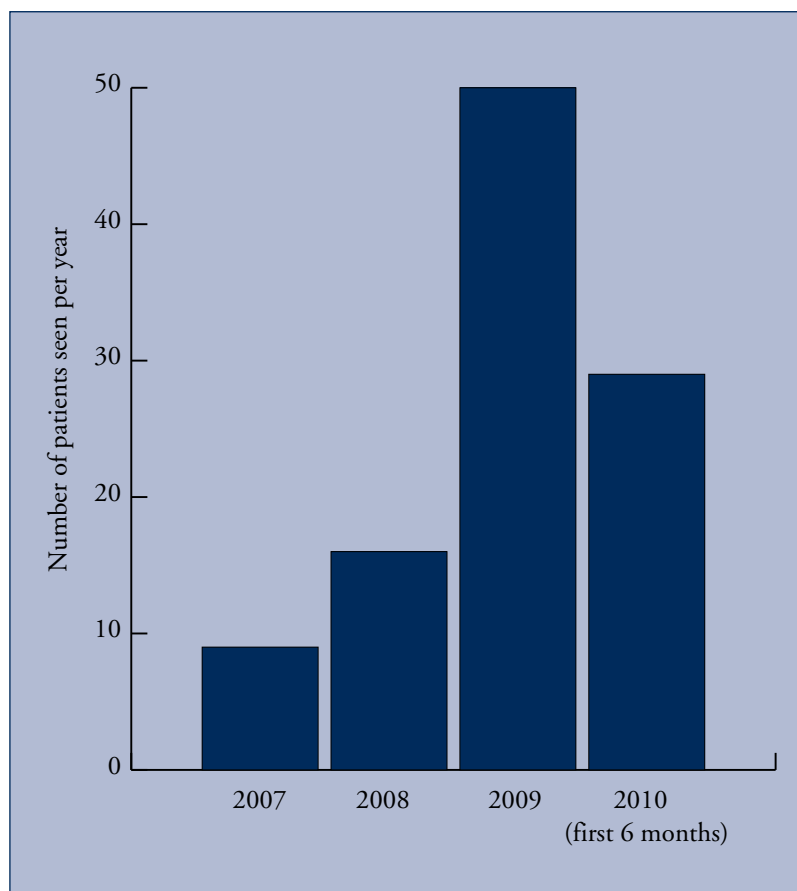


Figure 2. The number of people seen each year over the course of the study.

Over the course of the study, 64 people were newly diagnosed with type 1 or type 2 diabetes.

#### Cost savings

The DISN costs £20 per hour, which for 4 hours gives a total of £80, plus one set of bloods at £7, so an approximate cost for each patient seen is £87. In comparison, the approximate cost of a one night stay for bed and food is £205 with medical costs upwards of £200 and two sets of bloods £14, totalling £419. These figures show that this service has saved approximately £332 per person and in total over the 3.5 years the savings to the trust of more than £35 000. (These approximate figures were obtained from the hospital finance department in 2007.)

#### Limitations

This service started in 2007–2008 when only one hospital site was recording this information, so relatively few people were

referred to the DISN. The level of referral increased over time and, like many new processes within a large organisation, took many months for all the A&E staff to refer the right patients. There was no formal algorithm developed to help the A&E staff decide which patients to refer – only verbal or paper referral forms.

It was also felt that there were still a proportion of patients who were missed, but it was concluded that by 2010 this was a relatively small number, and most arrived as admissions over the weekend or bank holidays when there was no DISN on duty.

These limitations to the study have led to a diabetes working party being set up in the trust to work towards developing a hospital guideline to facilitate early discharge for people with a new diagnosis of diabetes who do not require admission, and an algorithm for all people with diabetes seen in A&E. This will include out-of-hours guidance.

#### Discussion

This study proves that preventing the admission of a sizeable number of patients is both feasible and safe and provides substantial savings to the NHS. It reduced patient bed occupancy and was greatly appreciated by the bed management team during days when bed pressures were high. It also emphasises the need for the DISNs to concentrate their efforts at the hospital front door, i.e. A&E.

Most of these patient referrals were time-consuming for the DISN. The main issues were waiting for blood results and liaising with other healthcare professionals, in particular the inpatient diabetes team, pharmacy, A&E staff, the on-call medical registrar, the secondary care and community DSNs, GP and the district nurse.

The patients and relatives often needed educating and reassuring, and these demands on the DISN could take up to 4 hours. Sometimes other inpatient referrals had to be deferred or passed on to the diabetes team or DSN colleagues. Occasionally flexible hours were worked to fit this in.

In A&E there were pressures to move people

through the department within 4 hours, so some of the patients had to be moved to the clinical decision unit or ambulatory care.

Overall, patients benefited from this service. They were seen quickly by a healthcare professional who understood their condition and whom was able to make appropriate clinical decisions. All the patients were extremely pleased to go home the same day.

There were 64 patients with a new diagnosis of diabetes and they all went home well-informed and educated from the start with excellent follow-up plans in place.

If they had been referred following a severe hypoglycaemia attack, they were usually very frightened and bewildered by the whole event. Some were terrified of it recurring, anxious about future treatment and medication adjustments. These people went home with clear plans for their insulin titration, phone numbers to call for help and education about future hypoglycaemia treatments.

A proportion of the people seen within the study with hypoglycaemia or hyperglycaemia had been lost to any sort of diabetes follow-up. These patients were successfully referred back to the secondary care diabetes team or DSN, or to the community DSN or GP.

Sometimes an enlightening phone call from the DSN to a healthcare professional who knew the patient in the community would solve the problem of their admission to A&E in the first place and their normal diabetes control and medication doses could be confirmed.

All the patients left A&E with follow-up for their diabetes, plus the contact details of a diabetes healthcare professional they could phone for help.

### Conclusion

Hospital admissions for people with diabetes are costly and, in many cases, avoidable. In this study, early review in A&E by a diabetes inpatient specialist nurse enabled a significant number of people with diabetes to be discharged without admission. This service has saved the trust more than £35 000 over a 3.5-year period, reduced bed occupancy and provided patient-focused care. ■

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***“This service has saved the trust more than £35 000 over a 3.5-year period, reduced bed occupancy and provided patient-focused care.”***

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