

# “My diabetes, my insulin”: Self-administration of insulin in hospital

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## Article points

1. Some people with diabetes can be prevented from managing their own insulin administration in hospital and this can lead to serious errors.
2. This article outlines a “cascade” training programme for ward nurses and a subsequent audit, carried out in Aintree University Hospital NHS Foundation Trust.

## Key words

- Cascade training
- Competency assessment
- Self administration of insulin

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**People with diabetes are encouraged to manage their own diabetes on a day-to-day basis; however, when they are admitted to hospital, this is often not the case and dangerous errors can occur. If the self-management of diabetes is to be successfully implemented in hospital, then ward-based staff need to develop the skills and knowledge required to support this. This article describes a cascade training programme in Aintree University Hospital NHS Foundation Trust to enable ward-based nurses to assess their patients’ ability to administer their own insulin and support self management. In addition, the authors audited compliance with Trust guidance for the self-administration of insulin.**

It is well known that insulin is an effective, life-saving medication. Whilst people with diabetes are encouraged to manage their own diabetes, in many cases they are prevented from managing their own diabetes and giving their own insulin while in hospital; this can result in errors, such as the wrong type or dose of insulin being given. Many people with insulin-treated diabetes alter their insulin dose according to the amount of carbohydrate eaten and this is frequently not reflected in inpatient insulin prescriptions. To optimise the safe use of insulin in hospital and to avoid problematic hypoglycaemia and hyperglycaemia, it is important that the self-management of diabetes is encouraged and supported in willing patients with diabetes.

## Self-management of diabetes in hospital

In 2012, NHS Diabetes published the Joint British Diabetes Societies (JBDS) guidelines for the self-management of diabetes in hospital (JBDS, 2012). This document outlines nine main recommendations for acute trusts to consider. Several of these recommendations are specifically related to self-administration of insulin including:

- Trusts should provide written information to explain the responsibilities of self-management to

both people with diabetes and hospital staff.

- The nurse and person with diabetes should agree when the individual should self-manage and an agreement form should be signed.
- The individual’s ability to self-manage should be assessed on a regular basis.
- If there is disagreement about self-management, the diabetes team should be involved.
- Self-administered insulin dose should be recorded.
- The hospital should ensure that the timing and content of meals are suitable.
- Safe storage facilities for insulin should be available.

In addition, trusts should have a policy for diabetes self-management that is clear, patient-centred and flexible. If the self-management of diabetes is to be successfully implemented then ward-based staff need the skills and knowledge required to support this.

## Pilot project

In Aintree University Hospital NHS Foundation Trust, we piloted a “self-administration of insulin” project on two acute wards. The project took place 18 months ago and involved training the ward staff on use of insulin pens and insulin injection technique to enable them to accurately assess the competency of each patient in safely administering their own insulin.

To support the process, a locally developed competency assessment form and a patient agreement form (adapted from JBDS, 2012) were implemented. Following the training, the staff in the diabetes and endocrinology ward felt confident to take on the role of assessing the patients’ ability to administer their insulin. On the cardiology ward, however, the staff reported that they did not see many patients using insulin pens, therefore, did not feel confident in use of the pens, nor did they feel equipped to assess the patients’ ability. As a result of this pilot and due to a number of incidents involving insulin pens, we have since implemented a “cascade training project” aimed at training ward staff on the use of insulin pens, pen needles and other aspects of insulin injection technique, for example, rotation of insulin injection sites and lipohypertrophy. The aim was to train nurses to assess competence for self-administration of insulin.

### Cascade training project

The cascade training project was agreed by the Trust’s Insulin Error Group, the Nurse Consultant (Diabetes) and the Assistant Director of Nursing for Patient Safety and Infection Prevention and Control. In addition, the Trust’s medicines policy was amended to include a section on self-administration of medicines. In preparation for roll-out of the self-administration of insulin project, the Trust agreed to invest in secure lockers for the storage of insulin and delivery devices.

It was agreed that people with diabetes who asked to administer their own insulin whilst in hospital would be permitted to do so following assessment of competence by a registered general nurse (RGN). Such individuals would be those who normally self-medicate at home and those who are started on insulin in hospital and would be self-medicating on discharge. It was agreed that the assessment of competency would be the responsibility of an RGN on the ward. Therefore, the diabetes link nurses and patient safety officers (RGNs with a responsibility for patient safety) were trained to use insulin pens, assess the patients’ ability to self-administer insulin, and then cascade this training down to other RGNs in their clinical area. This training was delivered by the DSN team and included the correct use of insulin pens, insulin injection technique, side effects of insulin and relevant documentation of patient assessment.

Following the training session, cascade trainers

**Table 1. Self administration of insulin assessment record.**

Level of self-administration (if circumstances change amend record by signing the relevant stop/start boxes).				
Level	Start date	Signature of nurse	Stop date	Signature of nurse

Assessment checklist	Date	Date	Date
Name of insulin and expiry date			
Correct use of insulin pen/vial & syringe			
Correct timing of insulin			
Needle change at each injection			
Mixing of insulin			
2 unit air shot/test dose			
Dial up correct dose			
Check injection sites for lipohypertrophy (abdomen, thighs & buttocks)			
Skin lift & inject at 90 degree angle			
Leave needle in for count of 10 seconds			
Dispose of needle safely			

**Patient has to be competent in all of the checklist before being able to self administer insulin independently (Level 3).**

were responsible for assessing their own competency to use insulin pens and were urged to refer themselves to the diabetes nursing team for ongoing training as required. Patients who requested to give their own insulin would then have their competency assessed by an RGN using a locally developed competency assessment form (Table 1).

Three levels of insulin administration were identified (adapted from the Nursing and Midwifery Council, 2007):

- **Level 1: The nurse administers insulin.** The nurse is responsible for medication storage and the supervision of the administration process, ensuring the patient understands the medications being administered. The nurse should explain insulin dose and the effect it has on the body.
- **Level 2: Patient self-administers insulin under nurse supervision.** The nurse is responsible for safe storage of insulin and the patient self-administers

**Page points**

1. The aims of the audit were to assess whether individuals administering their own insulin had been assessed as competent and to assess the effectiveness of the staff education programme.
2. The audit took place on one day and included 28 wards. A total of 30 patients were identified as being prescribed insulin, including nine who were self-administering insulin.

under the supervision of a nurse. The nurse can still provide information to the patient. The patient can be moved onto level 3 once the nurse is satisfied. This should not be considered before the patient has taken their insulin correctly for at least one day.

- **Level 3: Patient self-administers independently.** The patient demonstrates sufficient knowledge of their insulin and self-medicates unsupervised. Insulin will be kept by the patient in a secure location. The patient administers insulin without direct supervision and confirms the dose taken. The Electronic Prescribing Medicines Administration (EPMA) chart is annotated with “self medication (patient confirmed dose)” and the nurse’s signature. Nurses should inform a DSN if visual/dexterity problems are affecting the patient’s ability to safe administer safely.

In addition, exclusion criteria for self-administration of insulin was included on the assessment form. This included patients who prefer a staff member to administer their insulin, those at risk of self-harm or those deemed to lack capacity. People were also excluded if they were admitted due to poor glycaemic control, or if they were not due to self-administer on discharge. Level-3 patients were made aware of their responsibility to make sure insulin is stored safely and sharps disposed of correctly. The patients had to inform staff that insulin had been administered and were asked to give permission for staff to make decisions about their insulin if they were unable to do so. All of this information was recorded on a signed patient agreement form.

Cascade trainers were given a resource folder to

support the training received in the sessions and the presentations from the training sessions and all relevant documentation were available electronically in the “Diabetes and Insulin” folder available centrally.

Five half-day training sessions were delivered and feedback from attendees was positive. Feedback forms asked about the relevance of the training to the individual’s role and asked about the sessions that were most useful. Twenty-three forms were returned and all were positive. The two aspects of the session that staff found most useful were the practical insulin pen demonstration and the practical demonstration of the safety insulin pen needles. Staff from 37 clinical areas were invited to the training sessions and 36 sent at least one member of staff for training (21 clinical areas sent 1 member of staff, 15 clinical areas sent 2 or more members of staff and 1 area did not attend despite several reminders and contact with the matron).

**Audit of self administration of insulin**

**Aims and methods**

The aims of the audit were:

- To assess whether individuals administering their own insulin had been assessed as competent.
- To assess the effectiveness of the staff education programme.

We developed an in-house audit tool consisting of seven questions about the assessment of competency to self-administer insulin (Table 2). On a single morning in March 2014, the diabetes nursing team visited all inpatient wards, and the case notes and nursing documentations of all patients identified as self-administering insulin were audited. On the morning of the audit, the hospital pharmacy was able to provide the audit team with data from the EPMA system identifying all patients who were being prescribed insulin and those who were recorded as “self-administering”. In addition, on arrival on the ward, the audit team asked nursing staff to identify all patients taking insulin and those who were self-administering their own insulin; this was then cross-referenced with the information already provided by the pharmacy department.

**Results**

Twenty-eight wards were audited. Other clinical areas that sent staff for training, such as day case endoscopy, theatre recovery area, day surgery and an

<b>Audit questions</b>	<b>YES (n=9)</b>	<b>NO (n=9)</b>
Patient highlighted on EPMA as “self administering”	7	2
Lockable locker by patient’s bedside	4	5
Sharps box by patient’s bedside	4	5
Trust self-administration assessment form completed	4	5
Consent form signed	4	5
Self administration of insulin assessment completed	4	5
Level of self administration documented	4	5

off-site dialysis unit were not audited, as the focus was on hospital inpatients. On the day of the audit, a total of 30 patients were identified via EPMA as being prescribed insulin. Of these 30 patients, nine patients (30%) were self-administering their insulin. Five of the nine patients were male and the mean age was 69.6 years (range, 51–80 years). Seven patients had type 2 diabetes. Self-administration of insulin was recorded on EPMA in seven of the nine patients who were self-administering (78%) and two (22%) patients were self-administering their insulin but this was not documented on EPMA. Of the nine patients administering their own insulin, four (44%) had documentation of formal competency assessment and had access to a safe-storage locker and sharps box (Table 2). Furthermore, only fourteen of the 30 patients (46.6%) who were being prescribed insulin had been reviewed by the inpatient diabetes specialist nurse team on this admission.

## Discussion

The training took much longer than anticipated due to poor attendance from some of the ward areas. Initially, it was planned to deliver the training in three allocated sessions, but due to poor attendance, a further two sessions were required. The first two sessions were delivered to the diabetes link nurses and patient safety officers, with the remaining three sessions aimed at registered nurses who were nominated by their managers to attend.

Securing protected time for staff training is a challenge for most trusts. In the past, we have tried ward-based training but have found that on arrival on the ward the staff are often too busy to be released for training. On this occasion we opted for half-day training sessions, which could be planned in rosters; despite this, attendance was still a challenge. We were very interested to discover that staff who attended the training felt that the two most useful aspects of the session were the practical demonstrations of the insulin pens and safety needles. This may indicate a need for more training in practical issues associated with diabetes.

On the audit day, we found that only 30% of people prescribed insulin were self-administering their insulin in hospital. This is a surprisingly small number, however, it may be that some patients were too unwell or did not want to self-administer insulin. Furthermore, the audit did not assess how many

patients prescribed insulin had been asked if they wanted to give their own insulin and this could be the focus of a future project. In addition, this was a snapshot audit, which, if conducted on another day may reveal more patients being prescribed insulin. Data from Aintree Hospital submitted to the National Diabetes Inpatient Audit in 2013 revealed that 43 inpatients with diabetes were managed on insulin injections on the audit day (National Diabetes Inpatient Audit, 2013).

Only 44% of the patients who were self-administering their insulin in hospital had been assessed to do so; however, it is encouraging that all of these people had the relevant documentation completed and the correct equipment by their bedside. Over half (55.6%) of the patients self administering their insulin had not been formally assessed and, therefore, had no documentation completed and did not have the relevant equipment by their bed-sides. It is possible that some of these patients had only just been admitted and assessment of competence was planned for later in the day. Two patients had only been admitted the previous day. Despite this, the Trust's guidelines suggest that competency assessment should take place at the first injection after admission, so this guidance was not being met.

Considering the amount of work and resources given to this education programme, the results are disappointing, but, of course, the numbers of patients who are self administering their insulin is relatively small. It is possible that training has not been cascaded to all staff following the initial training sessions and we will investigate this in the future. In addition, staff turnover needs to be considered and further sessions planned for new diabetes link nurses and patient safety officers. Also, annual update sessions for current cascade trainers needs to be planned. This training could be incorporated within other diabetes education sessions organised for the ward staff to attend.

This article focuses only on self-administration of insulin and other aspects of self-management, such as blood glucose monitoring need to be considered in the future. Initially, we plan to investigate how many clinical areas have received cascade training and if the training has prepared the cascade trainers for the role. The self-administration of insulin is now included in other diabetes training days run by Aintree University Hospital NHS Foundation Trust. ■

## Page points

1. The results of the audit were disappointing; for example, of the nine patients administering their own insulin, only four (44%) had documentation of formal competency assessment and had access to a safe-storage locker and sharps box.
2. The training took much longer than anticipated due to poor attendance from some of the ward areas. Initially, it was planned to deliver the training in three allocated sessions, but due to poor attendance, a further two sessions were required.
3. There are a number of factors that potentially contributed to the disappointing audit results, for example, there were only a small number of patients self-administering insulin on the day. Furthermore, it is possible that the learning from the training sessions had not been cascaded down to all staff members.

Joint British Societies for Inpatient Care Group (2012) *Self-management of diabetes in hospital*. NHS Diabetes. Available at: <http://bit.ly/1mHivCy> (accessed 07.07.14)

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