

Introduction of a care pathway for people with type 2 diabetes starting on insulin

Anne Cartwright, Ann Woodward,
Maureen Wallymahmed

Article points

1. Care pathways can be a useful tool in standardising care for patients.
2. Nursing documentation improved with the introduction of a care pathway.
3. Structured education can be offered to all patients with diabetes requiring insulin therapy.
4. The nursing team have now been encouraged to develop more care pathways.

Key words

- Structured education
- Care pathway
- Nurse-led

Anne Cartwright and Ann Woodward are Diabetes Specialist Nurses, and Maureen Wallymahmed is a Nurse Consultant at University Hospital, Aintree, Liverpool.

The incidence of diabetes in the UK has been estimated at over 2 million (Diabetes UK, 2005) and is expected to rise dramatically by 2010 (Diabetes UK, 2004). The UK Prospective Diabetes Study (UKPDS) confirmed that improving glycaemic control and reducing HbA_{1c} by 1% can effectively reduce the relative risk of microvascular complications by 37% in those with type 2 diabetes (UKPDS Group, 1998). To achieve a target HbA_{1c} of 7% it is estimated that 50% of people with diabetes will require insulin therapy (Winocour, 2002). This has resource implications for diabetes care teams who are struggling to cope with the demands of delivering diabetes care. Structured education is an important element of insulin initiation. This article describes how the introduction of a care pathway helped to improve both the standardisation of structured education and the quality of nursing documentation.

At Walton Hospital Diabetes Centre, Liverpool, during the period 2002–2003, approximately 500 people with type 2 diabetes were started on insulin therapy as outpatients. Traditionally, these people have been assessed for insulin therapy by a diabetes specialist nurse (DSN) then referred onto the diabetes nurse educators (DNEs) to continue the plan of education and support. An education checklist was used as a guide for the nursing team to follow and to aid the standardisation of care, which can provide an optimal level of diabetes care with consistency for all people with the condition. The aim was to complete insulin initiation and education over a 3-month

period. The nursing team at Walton consists of a nurse consultant, four DSNs and three DNEs. The role of the DNE evolved from the pressure on specialist nurse time to cope with the number of people starting on insulin. The following standards were included in the education checklist and agreed by the nursing team for people initiated onto insulin.

- Injection technique is to be reassessed within 1 week.
- Blood glucose monitoring technique is to be reassessed within 1 week.
- If dietary issues resulted in poor glycaemic control then those patients were reassessed for insulin initiation, then seen for a dietary review. Others who are initiated

onto insulin are to be referred to a dietitian and seen within, due to pressures on the dietetic department, 6 weeks.

- Patients are to be offered five appointments over 3 months.
- HbA_{1c} and weight are to be recorded pre- and 3 months post-insulin therapy.
- Patients are to be discharged from nurse-led insulin clinic at 3 months.

In 2004 a retrospective audit was undertaken to compare documented care against the agreed standards.

Aims of the audit

The aims of the retrospective audit were as follows.

- To establish whether people with diabetes were offered an equitable nursing service when starting insulin therapy, therefore adhering to the audit standards.
- To determine the average duration of nursing time spent, on all aspects of care, from assessment to discharge.
- To review the educational aspects (such

as advice on hypoglycaemia, driving and sick day rules; *Table 1*) covered during the process.

- To assess the current standard of documentation.

Methods

The case notes of 20 people with type 2 diabetes, who had been started on insulin therapy as an outpatient, were retrospectively audited. Data were collected for the following: age, sex, duration of diabetes, pre- and post-insulin initiation levels of HbA_{1c}, and pre- and post-insulin initiation body mass index (BMI), the frequency of contacts between the care team and the person with diabetes, review of practical skills, referral to dietitian and duration of care (*Table 2*).

Results of first audit

Mean age was 60 years (range 38–80), mean duration of diabetes was 7.5 years (range 1.5–18), 11 patients were female. Following

Page points

1. The case notes of 20 people with type 2 diabetes, who had been started on insulin therapy as an outpatient, were retrospectively audited.
2. Data were collected for the following: age, sex, duration of diabetes, pre- and post-insulin initiation levels of HbA_{1c}, and pre- and post-insulin initiation body mass index (BMI), the frequency of contacts between the care team and the person with diabetes, review of practical skills, referral to dietitian and duration of care.

Table 1. Sample of contents of care pathway at each nurse visit.

Visit 1	<p>Assessment. Home circumstances, dexterity, vision, suitability for glucose monitoring, pen device chosen, quality of life assessment.</p> <p>Education. Why insulin is needed, action of insulin, use of oral hypoglycaemic agents, assessment of injection technique and use of blood glucose monitor.</p> <p>Life style issues. Meal pattern, driving, insurance.</p> <p>Written information. Leaflets on diabetes and insulin appointment date to start insulin (visit 2).</p>
Visit 2 Initiation	<p>Assessment. Questions from last visit, practical skills reassessed, first injection observed.</p> <p>Education. Importance of glycaemic control, hypoglycaemia, prescription exemption.</p> <p>Written information. Smoking cessation, employment, activity, alcohol, aid memoir for injections, ID card.</p>
Visit 3 At 1 week	<p>Assessment. Questions from visit 2, knowledge of oral hypoglycaemic agents, if applicable.</p> <p>Education. Target levels discussed, titration of doses, illness management, scenario 1 – managing hypoglycaemic episodes.</p> <p>Written information. Travel, activity, Diabetes UK, foot care.</p>
Visit 4 4–6 weeks later	<p>Assessment. Questions from visit 3, symptoms, hypoglycaemic episodes, blood glucose profile.</p> <p>Education. Scenario 2 – illness management, self adjustment of insulin doses.</p>
Visit 5 At 3 months	<p>Assessment. Questions from visit 4, symptoms, quality of life assessment.</p> <p>Equipment check. Pens and meters.</p> <p>Education. Scenario 3 – foot care, importance of clinic review.</p> <p>Measurements. Body mass index, HbA_{1c}, waist circumference, lipid profile.</p>

Assessment of need is continuous throughout the care pathway. For a copy of the care pathway please contact Anne Cartwright, details at end.

Page points

1. The quality of care, compared with the standards, was variable.
2. Documentation of education provided was recorded by the completion of a checklist. This made it difficult to determine the content of education provided or whether individual needs were addressed.

insulin initiation, seven (35 %) people had injection technique reassessed and only five (25 %) had monitoring technique reassessed (as per audit standard; these techniques were initially assessed at the first DSN visit). Fourteen (70 %) people were referred to the dietitian but only 10 (50 %) were seen within 6 weeks of referral. The mean number of visits to the DSN was three (range 1–6). Average duration of care was 4 months. Mean BMI before insulin initiation was 31.7 kg/m² and 32.9 kg/m² following insulin initiation. Mean HbA_{1c} before insulin initiation was 9.9 % and which fell to 8.2 % after insulin initiation (*Table 2*).

Conclusion of first audit

The quality of care, compared with the standards, was variable: only 13 (65 %) people were reviewed at the clinic after 1 month of insulin initiation and reassessment of the practical aspects of self-monitoring of blood glucose levels and self-injecting fell short of our expectations. Thirteen (65 %) people did not have a review of injection technique and 15 (75 %)

did not have blood glucose monitoring skills reassessed. This was a cause of great concern as titration of insulin doses by DSNs relies on the individual’s skills of measuring and recording blood glucose levels and self-injecting.

Documentation of education provided was recorded by the completion of a checklist. This made it difficult to determine the content of education provided or whether individual needs were addressed. The checklist merely served as a prompt for topics to be discussed, which allowed differences in interpretation of what details should be covered and in what depth. It was also not clear from the documentation why some people were seen more frequently than others by the nursing team. There was also a concern that a dietitian had seen only 10 (50 %) people following insulin initiation. This is well below the standard.

The anabolic effect of insulin in people with type 2 diabetes can result in weight gain (Makimattila et al, 1999). It is therefore generally accepted that people with type 2 diabetes should be offered

Demographic details	First audit	Second audit
Total number of people audited	20	20
Number of whom were females	11	11
Mean age (years)	60	62
Mean duration of type 2 diabetes (years)	7.5	7.5
Number of people seen within one month of starting insulin	13	19
Number of contacts between the care team and the person with diabetes	3.4 (range 1–6)	4.5 (range 3–5)
Review of injection technique (number of people)	7	19
Review of monitoring equipment (number of people)	5	18
Referral to dietitian (number of people)	14	17
Number of people seen by dietitian within 6 weeks of referral	10	7
Average duration of care (months)	4 (range 1.5–6)	3.7 (range 3–9)
Mean HbA _{1c} pre-insulin initiation (%)	9.9 (range 8.1–12.6)	10.5 (range 7.9–13.5)
Mean HbA _{1c} post-insulin initiation (%)	8.2 (range 5.9–10.7)	8.8 (range 7.5–11.3)
Mean body mass index pre-insulin initiation (kg/m ²)	31.7	28.6
Mean body mass index post-insulin initiation (kg/m ²)	32.9	32.9

support and dietary review. However, from the nursing documentation it was not clear how many people had actually been referred to the dietetic service.

Production of the care pathway

As a result of this audit it was decided to introduce a care pathway for people with type 2 diabetes starting on insulin therapy. Care pathways have been used successfully in other areas of nursing, such as continence care, and have been reported to improve the standard and consistency of care (Bayliss and Salter, 2004). Care pathways have been developed and shown to be effective in delivering high standards of evidence-based care, such as the individual's experience of outpatient clinics and education programmes (O'Brien and Hardy, 2003). The aim of the pathway was to define a minimal standard of care for all individuals starting on insulin therapy and to include elements of self-care, as described by the National Service Framework for diabetes (Department of Health, 2001). National Institute for Health and Clinical Excellence guidelines (2003) advocate the use of patient education models for diabetes – recommending that all people with diabetes should be offered structured education, including individuals starting on insulin.

The pathway consisted of a series of five appointments over a 3-month period. The first appointment was with a DSN for an initial assessment, followed by three appointments with a DNE for education on titration of doses as well as other on other topics, and then a final appointment with the DSN for a review and discharge after 3 months (*Table 1*).

The pathway encouraged a structured assessment of each person by the specialist nurse, including physical and social factors, which may impact on the individual's ability to safely administer insulin. The format also involved a series of clinic visits to focus on education, support and evaluation of the individual's needs.

A problem-solving approach utilising

scenarios was included in the pathway to provide practical examples (of, for example, hypoglycaemia and foot care) for discussion. It also incorporated a section for specific questions and indicated the support literature to be given and explained at each visit. At the end of a 3-month period individuals were reviewed by the DSN and discharged from the nurse-led clinic if appropriate. The care pathway was piloted for 6 months then a further audit was completed.

Results of second audit

The use of the care pathway improved the overall standard of documentation of nurse and patient contacts. All individuals had been offered an equal number of appointments within their 3-month period. Telephone contact was still variable, however, this was patient-driven as each person on the care pathway had agreed that telephone contact would be initiated by the patients themselves. Of 20 individuals, 16 were discharged from the care pathway after 3 months. The remaining four were reviewed in poor-control clinics because their HbA_{1c} levels did not improve enough after 3 months – defined as HbA_{1c} reduction of less than 1% and remaining over 8%, calculated by laboratory assays aligned to the Diabetes Control and Complications Trial, therefore allowing comparison between centres.

Focusing on the standards that were set, only one person (5%) did not have injection technique reviewed and only two people (10%) did not have blood glucose monitoring skills reassessed. Referral rate to the dietetic service increased; however, 13 individuals (65%) did not have a dietary review within 6 weeks of referral (*Table 2*) This was associated with a lack of resources in the department at that time, and some of the dietitians covering the service were not familiar with the care pathway so had documented in clinical notes instead. Glycaemic control improved with insulin therapy in those who were audited prior to

Page points

1. As a result of this audit it was decided to introduce a care pathway for people with type 2 diabetes starting on insulin therapy.
2. The aim of the pathway was to define a minimal standard of care for all individuals starting on insulin therapy and to include elements of self-care, as described by the national service framework for diabetes.
3. A problem solving approach utilising scenarios was included in the pathway to provide practical examples (of, for example, hypoglycaemia and foot care) for discussion.
4. The use of the care pathway improved the overall standard of documentation of nurse and patient contacts.

Page points

1. Any nurse in the team would be able to follow the pathway and know how the individual is coping with insulin therapy.
2. As a result of using the care pathway nurses were able to have more contacts with the patients, cover more educational topics and scenarios, and assess the individual's quality of life.
3. The inclusion of educational scenarios helped individuals express their understanding of particular aspects of advice given throughout the 3-month period.
4. Although the nursing time did not differ with either type of education model, the feedback from the team reinforced that the pathway was more efficient use of nursing time.

the implementation of the care pathway and those after.

Feedback from the nurses using the pathway

Structured education split over five visits was a more comprehensive method of delivering education. Any nurse in the team would be able to follow the pathway and know how the individual is coping with insulin therapy. As a result of using the care pathway nurses were able to have more contacts with the patients, cover more educational topics and scenarios, and assess the individual's quality of life. Therefore the pathway made the consultations more time efficient. The inclusion of educational scenarios helped individuals express their understanding of particular aspects of advice given throughout the 3-month period. The nursing team enjoy using the pathways.

Conclusion

The use of a care pathway helps to achieve a minimum standard of care for people with type 2 diabetes starting on insulin therapy by individual's needs being assessed on a continual basis at each visit. There is flexibility within the pathway to address the individual's needs. Although the nursing time did not differ with either type of education model, the feedback from the team reinforced that the pathway was more efficient use of nursing time. The nursing documentation using the pathway was clear, concise and in chronological order, all in line with Nursing and Midwifery Council (NMC) standards of accurate record keeping (NMC, 2005). Both audits confirmed that insulin therapy improved glycaemic control in the people studied. The successful results illustrated by the audit of the care pathway has encouraged the development of other care pathways to be used at Walton Diabetes Centre. ■

Bayliss V, Salter L (2004) Pathways for evidence-based continence care. *Nursing Standard* **19**(9): 45–51

Department of Health (DoH; 2001) *National Service Framework for Diabetes: Standards*. DoH, London

Diabetes UK (2004) *Diabetes in the UK 2004*. Diabetes UK, London. Available at www.diabetes.org.uk/infocentre/reports/in_the_UK_2004.doc (accessed 03.01.2006)

Diabetes UK (2005) *Diabetes affects record numbers*. Diabetes UK, London. Available at www.diabetes.org.uk/news/sept05/record.htm (accessed 03.01.2006)

Makimattila S, Nikkila K, Yki-Jarvinen H (1999) Causes of weight gain during insulin therapy with and without metformin in patients with Type II diabetes mellitus. *Diabetologia* **42**(4): 406–12

National Institute for Clinical Excellence (NICE; 2003) *Guidance on the use of patient education models for diabetes*. NICE, London. Available at www.nice.org.uk/pdf/60Patienteducationmodelsfullguidance.pdf (accessed 03.01.2006)

Nursing and Midwifery Council (NMC; 2005) *Guidelines for records and record keeping*. NMC, London. Available at [http://www.nmc-uk.org/\(rge0fy3v5jaszk2jkzcbstr55\)/aFrameDisplay.aspx?DocumentID=516](http://www.nmc-uk.org/(rge0fy3v5jaszk2jkzcbstr55)/aFrameDisplay.aspx?DocumentID=516) (accessed 03.01.2006)

O'Brien S, Hardy K (2003) Developing and implementing diabetes care pathways. *Journal of Diabetes Nursing* **7**(2): 53–6

UK Prospective Diabetes Study Group (UKPDS; 1998) Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). *Lancet* **352**(9131): 837–53

Winocour PH (2002) Effective diabetes care: a need for realistic targets. *British Medical Journal* **324**(7353): 1577–80

For a copy of the care pathway discussed in this article please contact:

Anne Cartwright
Walton Diabetes Centre
University Hospital Aintree
Walton Hospital
Rice Lane
Liverpool
L9 1AE

email: anne.cartwright@aht.nwest.nhs.uk

tel: 0151 529 4873

fax: 0151 529 4852