Can collaboration between primary and secondary care reduce diabetes complications?

Karen Marchant

Article points

1. In 2007 a local surgery wished to improve the service offered to people with diabetes in the local community.
2. The surgery management team procured sponsorship for a 3-year project to be undertaken, enabling the project to commence.
3. As a result of this pilot study, referrals to the hospital for insulin initiation and elevated HbA_{1c} levels ceased, thereby meeting one of the initial aims of the study.

Key words

- Audit
- Diabetes
- Education
- Primary care
- Team work

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Historically, people with type 2 diabetes controlled on diet and oral antidiabetes agents have been managed in primary care, while those with type 1 diabetes, or type 2 diabetes requiring insulin initiation, are managed in secondary care. Although good glycaemic control has been proven to reduce the development of diabetes complications, not all of those managed in primary care receive timely regimen adjustments and there is often a delay in accessing secondary care services. This pilot study looked at whether a primary care surgery could improve the standard of diabetes care provided to their local community with the support of secondary care. Such collaboration is essential if the *Diabetes in Adults Quality Standard* (NICE, 2011) is to be achieved. As a result of this study, a higher standard of care is now being provided to people with diabetes in the local community.

It is estimated that there will be 552 million people with diabetes worldwide by 2030 (International Diabetes Federation, 2012), mainly as a result of the growing obesity epidemic and people living longer.

Interest has been shown in improving the management of diabetes in primary care to reduce the incidence of chronic kidney disease (CKD), which is an important complication of having diabetes and a significant cause of renal failure (Hippisley-Cox and Coupland, 2010). The Eurodiab Prospective Complications Study (1991) recognised that people with type 1 diabetes may be developing microalbuminuria much earlier than was originally anticipated; according to NHS Diabetes and NHS Kidney Disease (2011) women with diabetes have an eight times greater risk and men a 12 times greater risk of developing CKD than the general UK population. To have microalbuminuria and diabetes is a marker for increased mortality and morbidity from cardiovascular disease, and the number of people with diabetes who have CKD and require dialysis or a kidney transplant is rising (NHS Information Centre, 2010).

As the main providers of care, community teams have historically managed people with type 2 diabetes controlled on diet and oral antidiabetes drugs (OADs), while secondary care traditionally managed people with type 1 diabetes and those with type 2 diabetes requiring insulin therapy. Good glycaemic control can reduce the complications of diabetes (DCCT [Diabetes Control and Complications Trial] Research Group, 1993; UKPDS [United Kingdom Prospective Diabetes Study] Group, 1998),

but not all individuals receive timely regimen adjustments and there is often delay in accessing secondary care services.

Collaboration between primary and secondary care is essential if the *Diabetes in Adults Quality Standard* (NICE, 2011) is to be achieved (*Box 1*). Primary care teams are best placed to provide this expert programme of care for the vast majority of their patients; only a minority have such complex needs that they require specialist intervention.

In 2009, the number of people aged 16 years or older estimated to have diabetes (diagnosed and undiagnosed) in the Bristol area was 21 813, giving a prevalence of 6.3% (Yorkshire and Humber Public Health Observatory [YHPHO], 2011) and the percentage of people admitted with CKD in 2010/11 was 3.4% (YHPHO, 2012). The number of people with diabetes in the Bristol area is predicted to rise to 33 773 by 2030, giving a prevalence of 7.8% (YHPHO, 2011).

In 2007 a local surgery wished to improve the service offered to people with diabetes in the local community. The primary care team wanted to initiate insulin and raise the standard of the overall diabetes service they provided so that only those with the most complex medical needs required referral to the secondary care hospital diabetes team. This team was committed to providing a high level of holistic care, since it had been shown that "teams with greater cohesiveness are associated with better clinical outcome measures and higher patient satisfaction" (Grumbach and Bodenheimer, 2004). The surgery management team procured sponsorship for a 3-year project to be undertaken, enabling the project to commence.

Aims

The aims of the project were to:

- Develop a specialist primary care diabetes service within the primary care team.
- Provide a comprehensive service to people with diabetes and renal patients that would avoid hospitalisation for all but the most sick.
- Achieve the 12 standards of the diabetes National Service Framework (NSF) (Department of Health [DH], 2001) .
- Provide information on the initiation and use of insulin to people with type 2 diabetes and the management of uncomplicated type 1 diabetes.
- Raise the overall standard of care and meet the *Diabetes in Adults Quality Standard* (NICE, 2011).

Box 1. *Diabetes in Adults Quality Standard* (NICE, 2011).

The standard comprises 13 quality statements. The team focused on the following eight statements:

1. Structured educational programme from diagnosis.
2. Annual care planning with agreed goals.
3. Personalised HbA_{1c} target to minimise hypoglycaemia.
4. Psychological care and treatment of problems.
5. Screening for complications and management of these risks.
6. Trained healthcare professionals initiate and manage insulin therapy.
7. Medication review in discussion with a healthcare professional.
8. Those with severe hypoglycaemia requiring intervention referred for specialist help.

Methods

The surgery management team drew up a business plan to obtain sponsorship that would enable the employment of a diabetes specialist nurse (DSN) to work with the practice for 10 hours per week over a 3-year period.

After the DSN had met with the multidisciplinary team (MDT), which comprised a lead GP and three practice nurses, it was decided that one practice nurse would head the nursing team, shadowing the DSN in clinic for one shift each week to observe the interaction with people with diabetes and learn which oral medications or insulin regimens or a combination of both were appropriate for individual situations or scenarios and how to administer them. Over the course of time this nurse then "swapped" places with the DSN as her confidence and competence grew.

The other two nurses have taken a more active role by joining the DSN in clinic and have received training in the past 6 months. Staff education was instigated with each staff member taking a turn to teach a topic to the rest of the group. Monthly teaching sessions were held for an hour, either before or after lunch, and were kept informal and open to the whole team.

The team audited and reviewed their practice, which was to monitor individuals' HbA_{1c} level

Page points

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2. The primary care team wanted to be able to initiate insulin and raise the standard of the diabetes service provided, so that only the most sick required referral to secondary care.
3. The surgery management team drew up a business plan to obtain sponsorship that would enable the employment of a diabetes specialist nurse to work with the practice for 10 hours a week over a 3-year period.

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1. Traditionally, blood tests were done at the time of the annual review and results were not available for discussion.
2. As a result of the audit, blood tests are now performed before the annual review, at a prior appointment, so that results are available at the review for discussion with the patient .
3. The audit highlighted that residents with diabetes in local nursing homes were not receiving their annual reviews.
4. The diabetes team organised a half-day training session for the nursing staff in the homes by sending a letter to each of the homes informing them of the session, and following it up with a phone call to help ensure a good response.

every 6 months together with their blood pressure on a regular recall system, along with their annual diabetes review. People with diabetes received up to three letters asking them to make an appointment. This fitted nicely into standard 4 of the diabetes NSF.

For the purposes of the audit the nurse administration team searched the records of people with diabetes for HbA_{1c} levels, and arranged for those with elevated levels >53 mmol/mol (>7.0%) to be given an appointment in the DSN clinic, prioritising those with HbA_{1c} levels >75 mmol/mol (>9.0%). Those on medication and with an HbA_{1c} <37 mmol/mol (<5.5%) were given appointments to discuss whether medication was still required. The nurse administration team contacted people with diabetes by letter, asking them to make an appointment at their convenience.

The computer templates were not being used to their full potential. The team discussed what data should be captured at the annual diabetes review and what other information it would be useful to have, such as hospital attendances. The templates were then adapted to capture these additional data by means of dropdown boxes.

A single template was being used for both type 1 and type 2 diabetes, leading to misdiagnoses. This template was therefore split into separate templates to reduce this risk.

Standard 1 of the diabetes NSF concerns opportunistic screening, and this was lacking at the surgery. This pathway was re-visited and included as part of the template proforma.

Filling in patients' CKD status allowed an audit to be carried out of those on metformin with CKD stage 4/5. The nurses then reviewed these data and letters were sent to those patients asking them to arrange an appointment to discuss whether metformin was the most appropriate medication for them.

The annual diabetes review appointment was restricted to 30 minutes. Education was "crammed in" and a "one size fits all" approach was taken, with education not individualised as blood tests were done at the time of the review and the results were not available for discussion. Following this appointment, patients had to phone for their HbA_{1c} results and, if these were elevated, would ask to speak to a DSN, thus taking up a phone consultation. Blood tests are now performed before the annual review, at a prior appointment, so that results are available at the review for discussion with the patient.

The audit highlighted that residents with diabetes in local nursing homes were not receiving their annual reviews. The diabetes team organised a half-day training session for the nursing staff by sending a letter to each of the homes informing them of the session, and following it up with a phone call to help ensure a good response.

The *Diabetes in Adults Quality Standard* (NICE, 2011) encourages patient involvement. People with diabetes were therefore sent a questionnaire to determine whether they would like to receive a series of three education sessions on diabetes. They were asked to indicate which sessions they would be interested in attending by ticking the boxes alongside a long list of sessions, including diet, exercise, driving, oral medication, insulin and sick-day rules; a variety of topics were offered and respondents were encouraged to add their own suggestions. They were also asked to state which time of day they could attend.

The education programme was divided into two groups called: "What is type 1 diabetes and its complications?" and "What is type 2 diabetes and its complications?" Both groups were given a session on healthy eating from a dietitian and another on exercise from a health trainer. The health trainer signed people up to appropriate exercise sessions, which ranged from simple group walks to gym sessions. The remainder of the sessions were given by the diabetes team using a combination of slide presentations, informal discussion and practical exercises, broken up by refreshment breaks.

The team wanted patient information to be stored on computers in each consultation room as well as in the waiting room. Leaflets were adapted and published in-house so that they could be updated easily.

The medical team had difficulty ensuring that the blood glucose strips issued were the correct ones for the particular meter used by the person requesting the strips. To overcome this, the diabetes team reviewed the clinical benefits of

the meters available and chose four meters to use within the surgery that, between them, allowed the following five clinical options:

- One for the partially sighted.
- One that allowed blood ketone testing.
- One for use with icodextrin peritoneal dialysis solution.
- One that allowed for a low haematocrit level.
- One non-coded meter.

Staff were educated appropriately about these meters to reduce the risk of harm through prescription error. People with diabetes who used other meters received a letter informing them that they needed a free upgrade of their meter when they next requested test strips, and were encouraged to book a nurse appointment to discuss this further.

A search of the records for people who were capillary glucose testing and whose diabetes was controlled either by diet or by medication that did not induce hypoglycaemia was carried out. These individuals were then invited by letter to a meeting at the surgery to discuss how they felt about discontinuing this monitoring.

Glucagon-like peptide-1 (GLP-1) receptor agonist initiations are not undertaken at the surgery as there is agreement with secondary care that they do these. However, once people with diabetes are established on this medication, and provided they are not on insulin, they are discharged back to the surgery. A pathway for the safe management of these individuals had to be written as previously there was no such documentation in place.

The practice nurses were not trained to adjust medication at these consultations, having instead either to ask the GP to see the patient, which meant a second appointment, or to ask for the GP's advice and then have a prescription written, which often meant a time delay. The GPs themselves were often not updated in the current treatments in diabetes, although the lead GP was keen to educate them by way of GP meetings, practice protocols and other forms of communication. The team proceeded to write a medication adjustment protocol for the nurses to use, which allowed them to adjust medication once it had been prescribed by the nurse prescriber or GP.

Box 2. Main working goals agreed as a result of the audits.

1. Send all people with diabetes involved in the project a questionnaire about the type of education sessions they were interested in attending; once the questionnaire was received back, participants were invited to attend a series of informal patient education sessions to be held on a rolling programme divided into those for people with type 1 diabetes and those for people with type 2 diabetes.
2. Train the practice nurses to manage oral medication more effectively and to adjust this medication using a medication adjustment protocol.
3. Review the diabetes medication of all those whose HbA_{1c} was <37 mmol/mol (<5.5%) to ensure that it was still required.
4. Convert those on maximum oral medication and with HbA_{1c} >53 mmol/mol (>7%) to insulin if appropriate.
5. Review all people with HbA_{1c} >75 mmol/mol (>9%) in an attempt to prevent hyperglycaemia.
6. Target of 48–58 mmol/mol (6.5–7.5%) if holistically appropriate, individualising oral and insulin regimens. To achieve Quality and Outcomes Framework 100%.
7. Reduce the number of blood glucose meters provided by the surgery and ensure that patients are performing capillary blood tests appropriate for their individual needs.
8. Liaise with and teach nursing home staff to carry out annual reviews on their residents with diabetes.
9. Review all templates, policies and procedures to ultimately improve communication among the multidisciplinary team.
10. Offer regular staff training in all aspects of managing people with diabetes.

Following the audits the team reviewed the various pathways that a person with diabetes followed when he or she needed to be seen by various members of the MDT. As a result, 14 goals were agreed for the 3 years of the project. The main ones are listed in *Box 2*.

At the end of the project, all participants were sent a questionnaire asking their opinion of the diabetes service they had received, in particular what they felt was useful or not useful. They were asked whether their knowledge of diabetes had increased and whether they felt more empowered to self-manage their diabetes as a result of the help received. They were also asked whether they felt that the surgery was the best place to receive help, or whether a non-clinical environment would be better. Any additional comments about the development of the service were invited.

Results

The staff education programme improved individual team members' knowledge of diabetes and strengthened team cohesiveness.

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1. Following the audits the team reviewed the various pathways that a person with diabetes followed when he or she needed to be seen by various members of the multidisciplinary team.
2. This review resulted in 14 goals being agreed for the 3 years of the project.

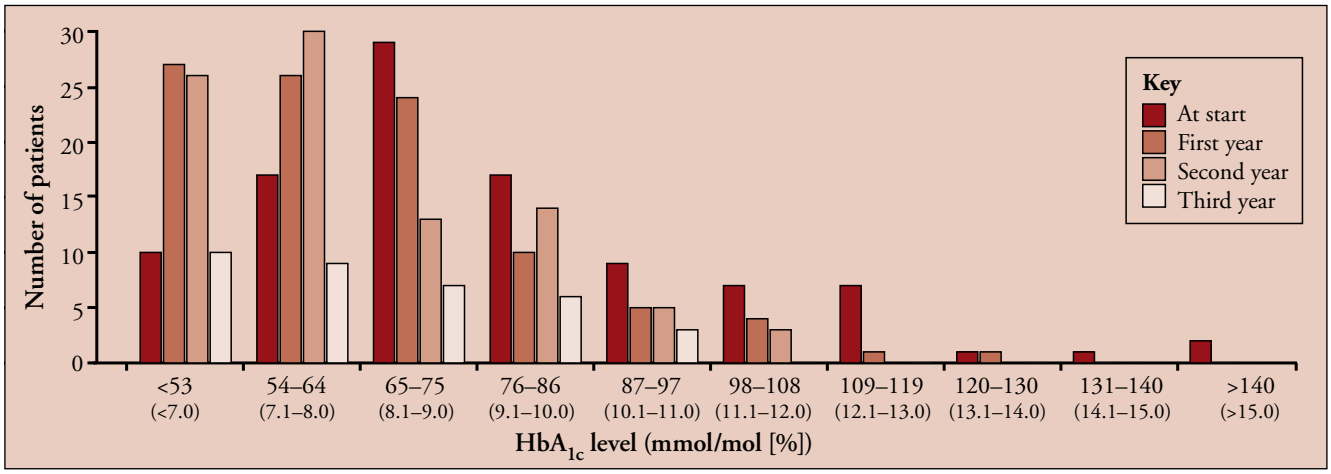

Figure 1. People with diabetes receiving help year on year. HbA_{1c} levels for 100 participants seen between November 2007 and July 2011. Average HbA_{1c} at the start=78 mmol/mol (9.3%); first year (2008–2009), average HbA_{1c}=65 mmol/mol (8.1%) (n=99; 1 died); second year (2009–2010), average HbA_{1c}=64 mmol/mol (8.0%) (n=91; 1 missing result, 3 died, 1 impaired fasting glucose, 4 moved); third year (2010–2011), average HbA_{1c}=63 mmol/mol (7.9%) (n=91 so far).

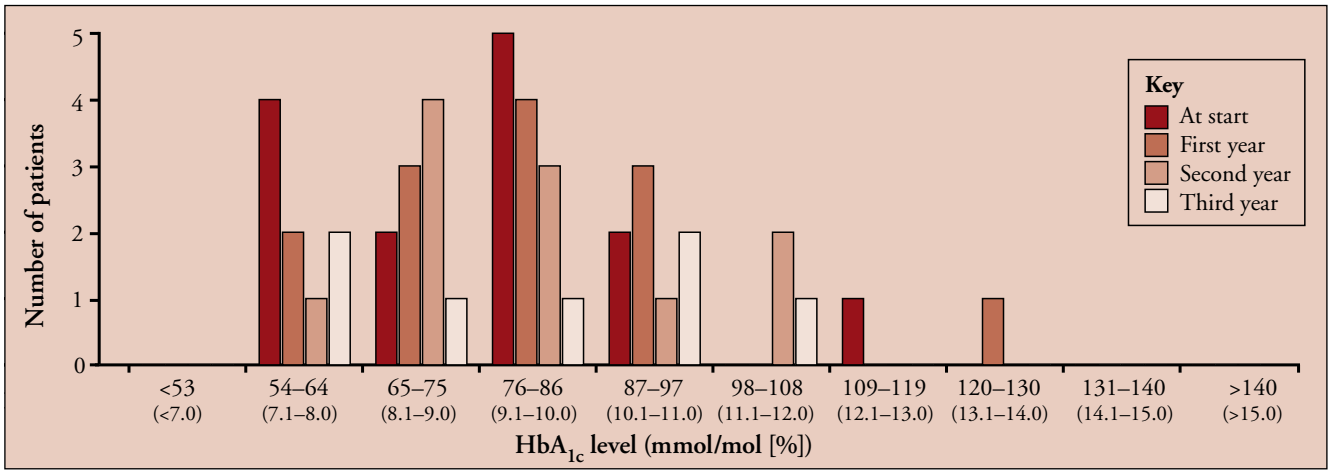

Figure 2. People with diabetes who declined help. At the start (2007–2008) average HbA_{1c}=78 mmol/mol (9.3%) (n=14); first year (2008–2009), average HbA_{1c}=80 mmol/mol (9.5%) (n=13; 1 had moved surgery); second year (2009–2010), average HbA_{1c}=79 mmol/mol (9.4%) (n=11; 2 moved, 1 died); third year (2010–2011), average HbA_{1c}=79 mmol/mol (9.4%) (n=7; 5 moved, 1 died, 1 missing result).

Staff gained the confidence to write a policy for the administration and adjustment of OADs and insulin, for use by nurses within their level of competence, enabling them to adjust medication according to clinical need. All initiation of medication still comes under the auspices of the DSN, as an independent nurse prescriber, or the GP.

Nursing staff from the local nursing homes attended a half-day teaching session on how to perform an annual diabetes review for residents with diabetes. They have successfully carried out these reviews, thereby improving the standards of care provided to their residents.

Although participants were asked what topics they wanted to learn about and the best time to hold the sessions, the numbers attending the sessions were low. However, those who did attend rated the sessions highly and commented that they had learned a lot about their condition.

People with diabetes who discontinued blood glucose monitoring following their education session remained well with good HbA_{1c} levels. They were aware that this would be reviewed if medication was commenced or altered.

Since having separate templates on the computer for people with type 1 diabetes and those with type 2 diabetes, the risk of the wrong

diagnosis of diabetes has reduced (Royal College of General Practitioners and NHS Diabetes, 2011). The templates now gather audit data of a person's health outcomes to prompt an individual healthcare plan for that person.

Written information is now easily accessible in every consultation room. One of the team is responsible for ordering external leaflets and a leaflet rack has been established in the waiting room for ease of access by people with diabetes.

HbA_{1c} levels

HbA_{1c} levels in the study group (n=119) improved by an average of 15.3 mmol/mol (1.4 percentage point; from a baseline of 77 mmol/mol [9.2%]) in the 3 years and 8 months to July 2011.

In those with type 1 diabetes (n=26), HbA_{1c} levels improved marginally from a starting average of 78 to 70 mmol/mol (9.3 to 8.6%), with fear of hypos and a lack of acceptance of having diabetes being the main stumbling blocks to improving control. This mean HbA_{1c} level contains data from people who originally declined help with their diabetes (*Figures 1* and *2*) but later accessed help and have therefore had less than a year, in some cases, of much-needed help with their condition.

Those with type 2 diabetes (n=79) also started with an average HbA_{1c} level of 77 mmol/mol (9.2%) and currently have an average HbA_{1c} level of 61 mmol/mol (7.7%).

People with diabetes commenced on a GLP-1 receptor agonist by secondary care and discharged to the surgery follow a GLP-1 pathway that is successfully used by all members of the MDT. The initial problem was recognising those individuals who were taking a GLP-1 receptor agonist as they were often discharged before communication was received from the hospital; this process is being further tightened. All other medication and insulin initiations are now instigated by the surgery. As a result of the project, only three people with diabetes have been referred to secondary care for a medication review: one was newly diagnosed with type 1 diabetes and the other two were acutely unwell and required insulin initiation. These referrals occurred early on in the project when the practice nurses lacked confidence; provided that one of them is on duty this is unlikely to happen now and there has not been a referral to secondary care in the past 18 months.

Outcomes

The practice nurses are not trained as non-medical prescribers. At the time of writing, the possibility of training practice nurses is being considered as the medication administration adjustment policy that was written for the project remains very restricted. As a non-medical prescriber, nurses can adapt the new skills learnt to enhance their other nursing roles within the surgery.

Questionnaire results showed that those people with diabetes involved in the study felt that their knowledge of diabetes had increased since attending this service (*Figure 3*).

As a result of this pilot study, referrals to the hospital for insulin initiation and elevated HbA_{1c} levels ceased, thereby meeting one of the initial aims of the study.

Discussion

The practice nurses now lead the diabetes clinic, with the DSN available for advice and support. Using their new medication policy, they are adjusting medication at the point of patient review, thus offering a more streamlined consultation (Stenner et al, 2011). People with diabetes have verbally expressed their satisfaction with the service, enhancing nurse satisfaction with the quality of care they are able to deliver to their patients and reducing unnecessary GP appointments.

Nursing home staff perform annual diabetes reviews. The challenge for the diabetes team is to build into their education programme an annual update session to ensure that these staff remain competent to perform this procedure, and so maintain the high standards (Sinclair and Task and Finish Group of Diabetes UK, 2011).

Low attendance of people with diabetes at the education sessions was disappointing. Knowledge of their diabetes may slow the progression to kidney disease and dialysis, so a close working relationship between the person with diabetes and their primary care team is essential (Fhärm et al, 2009). Standard 3 of the diabetes NSF is

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2. Those with type 2 diabetes (n=79) also started with an average HbA_{1c} level of 77 mmol/mol (9.2%) and currently have an average HbA_{1c} level of 61 mmol/mol (7.7%).
3. The practice nurses now lead the diabetes clinic, with the diabetes specialist nurse available for advice and support.

Page points

1. Reducing the number of available blood glucose meters to just four proved very successful.
2. Prescription errors were eliminated almost overnight and people were generally happy to swap to the new meters and understood the rationale behind the move.
3. All elevated HbA_{1c} levels are now flagged for review by the diabetes team as they are received from the laboratory, ensuring a swift response and appropriate medical intervention.

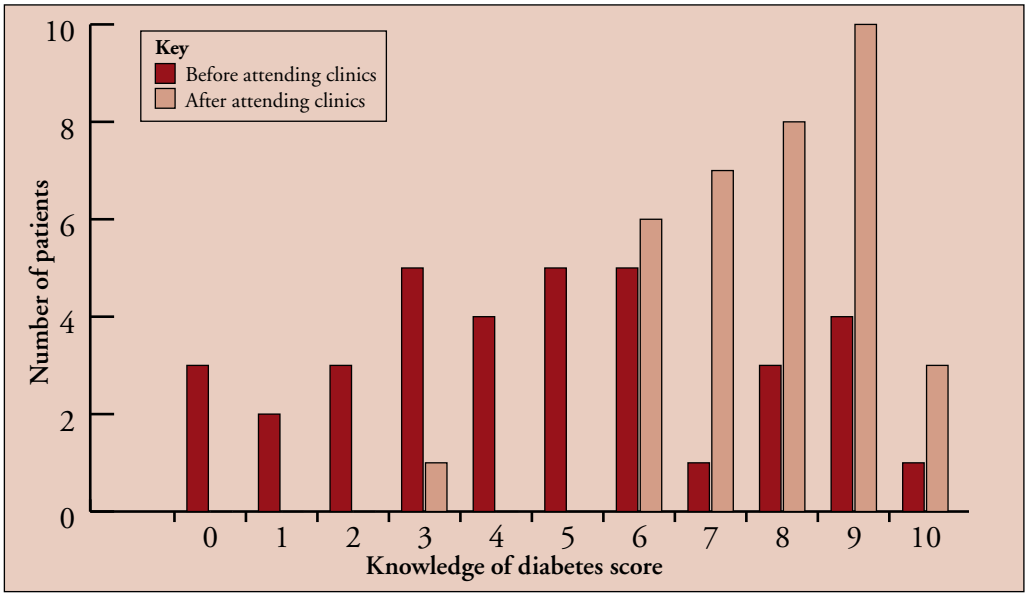

Figure 3. Knowledge of diabetes before attending the education sessions. Knowledge is graded on a scale of 0–9 where 0=no knowledge and 10=expert knowledge.

about empowering the individual and our aim is to reinstate annual education sessions for people with diabetes.

Reducing the number of available blood glucose meters to just four proved very successful. Prescription errors were eliminated almost overnight and patients on the whole were happy to swap to the new meters and understood the rationale behind the move.

Adjusting the computer template did not involve any financial cost other than time. Capture of clinical data will assist with audits. Indeed, audit of the procedures carried out revealed that some results, such as elevated HbA_{1c} levels, were not always filtered through to the diabetes nurses in a timely fashion, with patients being left with elevated levels until their next review, which was often 6 months later.

Early identification and management of disease is key (National Collaborating Centre for Chronic Conditions, 2008). The route by which the doctors send results through or enter them into the patient's medical notes was therefore reviewed. This resulted in all elevated HbA_{1c} levels being flagged for review by the diabetes team as they are received from the laboratory, ensuring a swift response and appropriate medical intervention. Hence the database is now more accurate, the audit tool is more effective when responding to medical alerts such as drug concerns, and individuals can be reviewed more promptly.

Written information is available and located in a leaflet rack in the outpatient area. One of the diabetes team is responsible for keeping this stocked and for ensuring that any new leaflets are brought to the attention of the rest of the team. Leaflets are also given out before commencing insulin and along with other procedures as required. As a result, communication between people with diabetes and staff has improved.

The achievement of an average 15.3 mmol/mol (1.4 percentage point) improvement in HbA_{1c} levels within the study group suggests that the intervention was successful. This project has shown that strategies can be put into place to achieve the aims of the NHS Quality and Outcomes Framework (*Box 3*) in primary care, provided that teams have commitment and are prepared to set aside protected time for education and continuing professional development for the MDT and ongoing education for patients.

Individually, people with type 2 diabetes showed the greater improvement (17.5 mmol/mol [1.6 percentage points]); improvements in those with type 1 diabetes were less impressive, at 7.1 mmol/mol (0.65 percentage points).

Type 1 diabetes is a more complex psychological disease, with people initially

Box 3. The five Quality and Outcomes Framework (2010) domains.

1. Preventing people from dying prematurely.
2. Enhancing quality of life for people with long-term conditions.
3. Helping people recover from episodes of ill health following injury.
4. Ensuring that people have a positive experience of care.
5. Treating and caring for people in a safe environment and protecting them from avoidable harm.

Department of Health (2001) *National Service Framework for Diabetes: Standards*. DH, London.
Department of Health (2003) *National Service Framework for Diabetes: Delivery Strategy*. DH, London.
Department of Health (2010) *The NHS Outcomes Framework 2011/12*. DH, London.
Diabetes Control and Complications Trial Research Group (1993) *N Engl J Med* **329**: 977–86
Eurodiab Prospective Complications Study (1991) Available at: http://bit.ly/II4Dby (accessed 21.05.12)
Fhärm E et al (2009) *Fam Pract* **26**: 109–14.
Funnell MM et al (2009) *Diabetes Care* **32**(Suppl 1): S87–94
Grumbach K, Bodenheimer T (2004) *JAMA* **291**: 1246–51
Hippisley-Cox J, Coupland C (2010) *BMC Fam Pract* **11**: 49
International Diabetes Federation (2012) *The Global Burden*. IDF, Brussels.
National Collaborating Centre for Chronic Conditions (2008) *Chronic Kidney Disease: National Clinical Guideline for Early Identification and Management in Adults in Primary and Secondary Care*. Royal College of Physicians, London
NICE (2011) *Diabetes in Adults Quality Standard*. NICE, London
NHS Diabetes and NHS Kidney Disease (2011) *Diabetes with Kidney Disease: Key Facts*. East Midlands Public Health Observatory, Mansfield
NHS Information Centre (2010) *National Diabetes Audit (NDA) Executive Summary 2008–2009*.
Royal College of General Practitioners and NHS Diabetes (2011) *Coding, Classification and Diagnosis of Diabetes: A review of the coding, classification and diagnosis of diabetes in primary care in England with recommendations for improvement*. Available at: http://bit.ly/II4u84 (accessed 21.05.12)
Sinclair A; Task and Finish Group of Diabetes UK (2011) *Diabet Med* **28**: 772–7
Stenner K et al (2011) *Int J Nurs Stud* **48**: 37–46
Sultan S et al (2008) *Psychology and Health* **23**: 73–89
United Kingdom Prospective Diabetes Study Group (1998) *Lancet* **352**: 837–53
Yorkshire & Humber Public Health Observatory (2011) *Association of Public Health Observatories Diabetes Prevalence Model*. Available at: http://bit.ly/hPTUS9 (accessed 21.05.12)
Yorkshire & Humber Public Health Observatory (2012) *Diabetes Community Health Profile – An Overview. NHS South Gloucestershire*. Available at: http://bit.ly/II4ox5 (accessed 21.05.12)

doing well but needing self-management strategies to achieve and maintain their initial goals (Sultan et al, 2008). Consequently the project was extended into a fourth year as there were new areas to develop, such as carbohydrate counting, to give them fresh impetus to keep going. As a result of the low attendance rates (*Figure 2*) the team looked for a new approach and asked their clinical psychologist if they might work together on a research project to see if people with type 1 diabetes could be encouraged to access the service, accept their diagnosis of diabetes and help to overcome their fear of hypoglycaemia and any other issues they may have. This research project is now being developed.

Having achieved a higher standard of diabetes care the diabetes nurses must continue to become experts in managing the condition as more people develop it. The medical staff must be trained to recognise the signs and symptoms of undiagnosed diabetes and be proficient in their knowledge of the polypharmacy taken routinely by people with diabetes. They must also be able to recognise when a person with diabetes is running into problems, as these individuals may present with any condition, ranging from minor illness to rapidly developing diabetic ketoacidosis.

Personal care plans and patient hand-held records are currently being developed as part of another ongoing project, which came about as a result of this pilot study by staff who are keen to continue to develop the services they provide.

Limitations

A limitation in the early part of this study was the restriction on training to that of an individual nurse, as the resources to train several nurses were not available. This led to the study being less effective when she left: a single person cannot be responsible for diabetes services within a practice, as knowledge is lost when that person leaves. There should be a practitioner with knowledge of diabetes available daily and teams must set aside protected time for continuing professional development and ensure that it is mandatory for all staff to attend.

Good standards of healthcare can be provided in primary care. However, time and finances, which budget holders tell us are both in short supply in the current economical climate, continue to be the stumbling block to higher standards of healthcare. Sadly, it was not possible for people with diabetes to have a "one-stop shop" where they saw the GP, nurse, podiatrist, dietitian and pharmacist in one visit, which would be the best outcome in terms of attendance, use of resources and patient satisfaction.

Another limitation was the 30 minutes allocated for the annual review. This also had to incorporate patient education and allow time for answering questions and queries without making the sessions appear crammed and rushed. Rescheduling the blood tests to a prior appointment meant that education could be focused and individualised. Education sessions also enabled patients to be kept abreast of the wider issues in diabetes, thereby empowering them more effectively (Funnell et al, 2009).

Conclusion

This pilot study has laid the foundations for the continuing development of strategies within a specialist diabetes service to meet the *Diabetes in Adults Quality Standard* (NICE, 2011). This details the clinical management strategies required to improve the total patient experience and journey through life with diabetes, and link to *The NHS Outcomes Framework 2011/12* (DH, 2010) and diabetes NSF (DH, 2001; 2003).

Primary care staff know their patients well having built up good professional relationships over time so are best placed to provide diabetes care from point of initial diagnosis of diabetes. As a result of this project, these patients can be assured of a positive experience with the potential outcome of reducing the longer-term complications of diabetes, provided that the surgery continues to provide a DSN service with protected time and resources to continue implementing the services in place. ■

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