

The standard of diabetes care in nursing homes in South and East Belfast

Eileen Breslin

Older people residing in care homes are often referred to as a neglected and vulnerable group. Many concerns relating to the care of older people with diabetes within care homes have arisen over the past several decades, and no research to date illustrates that the standard of care has improved. This is despite guidelines and recommendations from Diabetes UK (previously, British Diabetic Association, 1999a), the Department of Health (2001) and the European Diabetes Working Party for Older People (2004). This article reports on a project that aims to establish whether the residents in nursing homes within South and East Belfast are receiving an appropriate standard of diabetes care, similar to their ambulant counterparts living in the community (Diabetes UK, 1999b).

In 1984, Tattersall highlighted the low standards of care of people with diabetes living in care homes, and according to other research carried out, this problem still exists (Turrell et al, 1998). Many of the staff working in care homes are unqualified and inexperienced, plus the turnover of staff is high, which makes it difficult to ensure that this highly vulnerable group of people receive an acceptable standard of care (Sinclair et al, 1997a; 1997b).

The European Diabetes Working Party for Older People (2004) produced guidelines for the care of older people with type 2 diabetes. The focus of good diabetes care is ensuring that the risk of complications relating to hyperglycaemia and hypoglycaemia are minimised, thus promoting both physical and cognitive wellbeing. A British Diabetic Association (BDA; 1999a)

report also suggested that, on admission to a care home, many people are not followed up appropriately, and are often referred to as “a forgotten population” (Benbow et al, 1997).

Methods

A retrospective survey in the target sample of care homes in the South and East Belfast area was carried out by questionnaire (provided in *Appendix 1*), that assessed whether the residents of nursing homes receive the same standard of diabetes care as older people who live in their own homes in the community (BDA, 1999b). The survey was carried out between 2006 and 2007, and gained information from the population relating to prevalence and management of diabetes within the specific sample (Polit and Hungler, 1998; Oppenheim,

Article points

1. This retrospective survey assessed whether residents in nursing homes receive the same standard of care as their ambulant counterparts living in their own homes.
2. There were 662 residents in the 17 care homes, of which 78 had a diagnosis of diabetes (a prevalence of 11.8%).
3. Recruitment of a diabetes care technician will assist in closing the gap between the standard of care of residents with diabetes in care homes and their counterparts in the community.

Key words

- Care homes
- Survey
- Diabetes care

Eileen Breslin is a Diabetes Specialist Nurse, Belfast Health & Social Care Trust, Northern Ireland.

Page points

1. A total of 26 care homes were identified and the stratified sample of the population was subdivided into homogenous subsets that distinguished homes for the mentally infirm (seven) from homes for those with other illnesses (19).
2. A DSN visited each of the homes to complete the survey and the information was accessed via the nursing notes with assistance from the senior carer.
3. There were 662 residents in the 17 care homes, of whom 78 had a diagnosis of diabetes (a prevalence of 11.8%).

2000). The survey aimed to identify whether there are gaps in the service provision of people living in care homes and if the care follows with national guidelines and the new General Medical Services contract (Department of Health [DH], 2004a). The survey examined the prevalence of diabetes, treatment type, when residents' diabetes had been reviewed, existing complications related to diabetes, which healthcare professionals are responsible for each resident, and the training needs of the staff within the homes.

Sampling

Probability sampling ensured that each member of the population had the same statistical chance of inclusion in the study (Oppenheim, 2000). A total of 26 care homes were identified and the stratified sample of the population was subdivided into homogenous subsets that distinguished homes for the mentally infirm (seven) from homes for those with other illnesses (19). This strategy pinpointed 19 nursing homes that determined the target population. The sample was identified by the nurse managers within the care homes, which ensured 100% inclusion rate regardless of treatment regimen, and therefore reduced the risk of bias (Treacy and Hyde, 1999). A DSN visited each of the homes to complete the survey, and the information was accessed via the nursing notes with assistance from the senior carer.

Results

Nineteen homes were invited to participate. Of these, seventeen (89.5%) took part in the survey. Residents were included in the survey if they had

a prior diagnosis of diabetes, and were excluded if they had been diagnosed with impaired fasting glucose or impaired glucose tolerance prior to the study.

Prevalence

There were 662 residents in the 17 care homes, of whom 78 had a diagnosis of diabetes (a prevalence of 11.8%). The residents' diabetes was treated in a number of ways: diet only (21 residents, 27%), oral hypoglycaemic agents (41 residents, 53%), and insulin therapy (16 residents, 20%).

Blood tests

The survey established how many of the residents had the following blood tests taken routinely over an 18-month period to measure: HbA_{1c}, cholesterol, serum creatinine and estimated glomerular filtration rate (eGFR). The survey revealed that approximately one third of all blood test results were missing, either due to no record of blood test results, or the results being outside the time frame. Due to missing data, the author decided to exclude microalbuminuria and evaluated eGFR instead.

Table 1 illustrates the minimum, maximum, mean and standard deviations of the venous blood test results. Approximately 65% of residents had an HbA_{1c} level of ≤7.5%, 44% had a cholesterol level <4.0 mmol/L, 72% had a serum creatinine level of <130 µmol/L and 41% had an eGFR >60 mL/min/1.73m².

Blood pressure

Figure 1 illustrates the blood pressure measurements taken on a monthly basis in the majority of the homes. Systolic pressure was recorded as acceptable in residents' notes if it was ≤145 mmHg (78.2% of residents) and diastolic pressure was recorded as acceptable if it was ≤80 mmHg (82.1% of residents).

Annual review

Annual review criteria, including assessment of eyes, feet and diet, are illustrated in Table 2 as the percentage of residents reviewed over the 18-month study period. The eye screening programme involved the examination of the fundus with an ophthalmoscope.

Table 1. Blood test data and statistical outcomes.				
	Minimum	Maximum	Mean	SD
HbA _{1c} (%) n=59	4.8	12.8	7.3	1.98
Cholesterol (mmol/L) n=57	2.1	6.8	4.1	1.16
Creatinine (µmol/L) n=66	46	237	103.0	41.7
eGFR (mL/min/1.73m ²) n=57	17	60	50.8	12.9

eGFR = estimated glomerular filtration rate; SD = Standard deviation.

The assessment of feet was difficult to determine, as the staff often stated that nail cutting was the only task completed; the author is unsure if sensation and circulation assessment took place. Nursing notes revealed which residents had seen a podiatrist, but no information was provided as to what the assessment involved. The survey indicated that 59% (46) of residents had a complete diabetic foot screening. However, the hospital podiatry department's records revealed that 54% (42) of residents had received a complete diabetic foot assessment. The possible reasons for this discrepancy may be that a private podiatrist visited the care home.

Dietary review revealed that only 23% (18) of residents had seen a registered dietitian during the 18-month study period. In contrast, nursing notes revealed this figure to be 17% (13) of residents, however, the dietetic department confirmed that an additional 6% (five) of residents had seen a registered dietitian.

Complications

History of the following diabetes complications were identified from the nursing notes by the DSN with the assistance of the senior carer:

- Myocardial infarction or angina: 38.5% (30 residents).
- Cerebral vascular accident: 36% (28 residents).
- Circulatory problems of the feet or legs: 24% (19 residents).
- Laser therapy: 6% (five residents).
- Cataract or visual problems: 35% (27 residents), of whom 21 had cataracts and six were registered blind.
- Amputation of toes, foot or limb: 5% (four residents).

Healthcare professional involvement

Healthcare professionals involved in the management of the residents' diabetes were identified as follows:

- GP: 94% (73 residents).
- Hospital consultant: 6% (five residents).

In 9% (seven) of residents, a DSN also had a role in their care in conjunction with the GP or consultant.

Blood glucose monitoring

All care homes who participated in the study monitored residents' blood glucose levels. The frequency in which the monitoring occurred varied from four times daily to once per month depending on the type of treatment. Increased frequency of monitoring was noted in residents treated with insulin therapy.

Discussion

Prevalence

The prevalence of diabetes was identified by the survey as 11.8%, similar to that of Sinclair et al (2001) – a prevalence of 12.0% – and Shah et al (2006) – a prevalence of 11.2%.

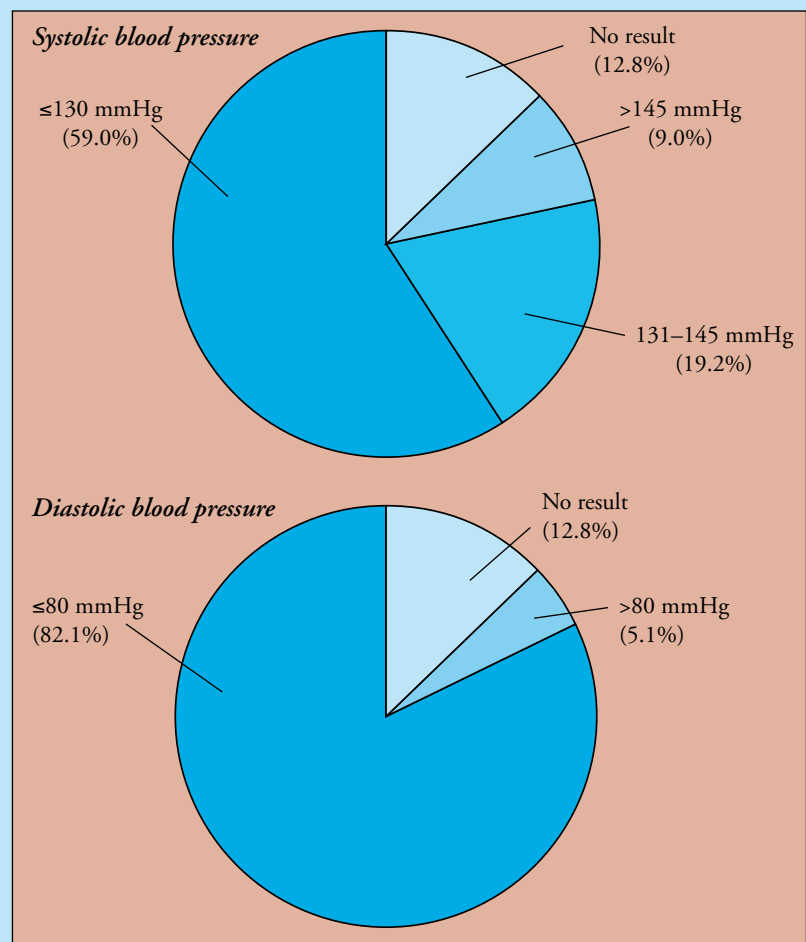


Figure 1. Mean blood pressure measurements taken from residents of care homes over the 18-month study period.

Page points

1. The findings of this survey fall short of the recommendations for an integrated team and suggest fragmented care with minimal input from specialist personnel within the community diabetes specialist team.
2. The current survey revealed that of the 78 residents, 34 (43.5%) had an HbA_{1c} level of ≤7%, and of these, 35% (12) of residents had an HbA_{1c} level of ≤6.5%, which is in line with the Joint British Societies' guidelines.

Patient review

The European Diabetes Working Party for Older People (2004) guidelines suggest that care should be provided by an integrated care team, yet this survey indicates that the GP appears to take overall responsibility (with support from a DSN for some residents) for 94% of the residents, with only 6% of the residents under the care of a consultant. However, staff in a number of the care homes indicated that the residents may only visit their GP if another medical problem presents. GPs do not communicate blood tests to the staff or manager within the home, and, therefore, it can be difficult to ensure adequate care for the residents with diabetes.

Other members of the community diabetes specialist team involved include: DSNs who have reviewed only 9% of the residents with regard to glycaemic control, dietitians (23% of residents), podiatry staff (59% of residents) and optometrists (73% of residents). These findings fall short of the recommendations for an integrated team (European Diabetes Working Party for Older People, 2004), and suggest fragmented care with minimal input from specialist personnel within the community diabetes specialist team. The findings from Duffy et al (2002) illustrated a lower percentage of residents (81%)

whose diabetes management was entirely the responsibility of their GP, with 3% receiving sole care from hospital consultants and the remainder receiving integrated care.

Fahey et al (2003) suggested that people living in care homes had their blood pressure checked less frequently than their counterparts living at home. However, the results of this survey were not supported by Fahey et al (2003), as 87% of residents had their blood pressure checked monthly over the 18-month study period.

The Joint British Societies (JBS 2) *Guidelines on Prevention of Cardiovascular Disease in Clinical Practice* (British Cardiac Society et al, 2005) advocate targets of ≤145 mmHg systolic and ≤80 mmHg diastolic blood pressure. The UKPDS (UK Prospective Diabetes Study; Stratton et al, 1998a) data suggest that a reduction of 5–6 mmHg in diastolic pressure could lead to a reduction in the risk of myocardial infarction by 16%, and reduce the risk of stroke by 38%. Nathan et al (2009) suggest that the older person's blood pressure is under-managed, leading to increased morbidity, mortality and disability in this specific group. However, the blood pressure control recommended by the ADA (American Diabetes Association) and EASD (European Association for the Study of Diabetes) joint consensus (Nathan et al, 2009) could result in an increased risk of falls due to dizziness, which identifies an area for future research to determine if residents are over-treated rather than under-treated.

The UKPDS follow-up (Holman et al, 2008) and DCCT/EDIC (Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications; DCCT/EDIC Study Group, 2005) studies suggest that improved glycaemic control reduces the risk of both microvascular and macrovascular complications. The current survey revealed that of the 78 residents, 34 (43.5%) had an HbA_{1c} level of ≤7%, and of these, 35% (12) of residents had an HbA_{1c} level of ≤6.5%, which is in line with the JBS 2 guidelines (British Cardiac Society et al, 2005). One reason for this could be a reduced appetite in the residents and increased medication without proper assessment. Glycaemic control in this group of people will need to be assessed further.

Table 2. Percentage of residents reviewed over the 18-month study period.

<i>Eye review</i>		
Was the resident seen?	Number of residents	Percent (%)
No	21	26.9
Yes	57	73.1
Total	78	100.0
<i>Foot review</i>		
Was the resident seen?	Number of residents	Percent (%)
No	30	38.5
Yes	46	59.0
Not applicable (due to foot amputation)	2	2.6
Total	78	100.0
<i>Dietary review</i>		
Was the resident seen?	Number of residents	Percent (%)
No	60	76.9
Yes	18	23.1
Total	78	100.0

The Quality and Outcomes Framework of the new General Medical Services contract (DH, 2004a) for primary care recommends a cholesterol level of <5 mmol/L, but the JBS 2 guidelines now stipulate the target for cholesterol levels as <4 mmol/L, and the results of this survey illustrate that over 50% of residents of care homes in the South and East Belfast area achieve this target.

It is well documented that people with diabetes have a two- to five-times higher risk of myocardial infarction and stroke (DH, 2004b), and the present survey identified that one-third of residents had a stroke or myocardial infarction, with 17% of that number having previously experienced both.

Boulton et al (2006) documented that distal symmetrical neuropathy affects 90% of people with diabetes. However, due to poor documentation of the podiatrists' visits to the care homes, it was difficult to assess the extent of neuropathy. This survey found that people with diabetes in care homes in the South and East Belfast area experienced a 10- to 20-fold higher incidence than their counterparts without diabetes. However, the study population had a 5% rate of amputations with a further 24% having a current or previous problem with ulceration.

This survey highlighted that 8% of residents were registered blind with a further 27% diagnosed with visual problems (cataract or retinopathy treated with laser therapy). This correlates with Scottish Intercollegiate Guidelines Network (2001) findings that approximately 30% of people with diabetes are at risk of developing visual problems. The NICE guidelines for retinal screening stipulate that digital retinal screening is the "gold standard" (National Collaborating Centre for Chronic Conditions, 2008). Unfortunately, due to the physical and mental condition of the residents, many are unable to attend hospital or the mobile retinal screening clinic. This results in many residents receiving suboptimal screening compared with their counterparts living in the community. No retinal screening of residents assessed in this survey met the national standard. However, 73% of the

residents did receive retinal screening using an ophthalmoscope but not the gold standard, digital retinal screening.

Education and training

This survey demonstrated a gap in educational training within care homes, as every home stated that additional training would be beneficial to both staff and the diabetes management of the residents. Sinclair et al (1997a) and Turrell et al (1998) both recognise the need for additional training in care homes due to the number of unqualified staff, inexperience and high staff turnover.

It is difficult to know how to meet this gap in South and East Belfast, as during the previous year, the DSN delivered monthly training sessions for both trained and untrained staff within the community. These sessions were poorly attended. This may have been due to a shortage of staff, or the information regarding forthcoming training events may not have reached the care home staff from the manager of the care home.

Blood monitoring

This area in the survey was added due to a medical device alert (Medicines and Healthcare products Regulatory Agency, 2006) regarding the transmission of hepatitis B as a result of the misuse of lancing devices used in both nursing and residential homes. Despite the alert being circulated to all the care homes, 41% (seven) continued to use incorrect lancing devices, which could lead to further transmission of hepatitis B. This survey also identified that only 12% of all staff who performed the procedure of blood monitoring had received their hepatitis B vaccine.

Conclusion

This survey has illustrated shortfalls in the annual review of residents with diabetes living in care homes in the South and East Belfast area and the continual educational needs of the staff. Educational requirements need to be addressed, and local guidelines relating to the standard of care that residents should receive need to be developed. This will ensure that the care of this population is improved.

Page points

1. The present survey identified that one-third of residents had a stroke or myocardial infarction, with 17% of that number having previously experienced both.
2. This survey highlighted that 8% of residents were registered blind with a further 27% diagnosed with visual problems (cataract or retinopathy treated with laser therapy).
3. Blood glucose monitoring was added to the survey due to a medical device alert regarding the transmission of hepatitis B as a result of the misuse of lancing devices used in both nursing and residential homes.

Page points

1. The recent recruitment of a diabetes care technician (DCT) will assist in closing the gap between the standard of care of residents with diabetes in care homes and their counterparts in the community.
2. A new report will document medication, venous blood sample results, urine sample results, a foot examination and general dietary assessment. The report will also set out recommendations relating to future management of the resident with diabetes, such as referral to a diabetes specialist nurse, dietitian or podiatrist.

The prevalence of diabetes within the study population is higher than in the general population (11.8% versus 3.86%; Diabetes UK, 2008). Increased strain is placed on an already over-stretched healthcare service for this neglected and vulnerable group of people. The *National Service Framework for Older People* (DH, 2001) stated that the inequalities in relation to the care of older people and the tackling of age discrimination need to be approached, not only relating to the management of diabetes, but all chronic conditions.

Improving the diabetes care of residents of care homes

The recent recruitment of a diabetes care technician (DCT) will assist in closing the gap between the standard of care of residents with diabetes in care homes and their counterparts in the community.

The DCT will visit each care home to complete the annual review (with the exception of retinal screening) using an assessment tool. This tool is filled out by the DCT and documents medication, venous blood sample results, urine sample results, a foot examination and general dietary assessment. After it has been completed, the tool is discussed with the DSN regarding future management of the residents' diabetes and the GP is informed of any suggestions for a change in medication. The report will set out recommendations relating to future management of the resident with diabetes, such as referral to a DSN, dietitian or podiatrist. ■

Benbow SJ, Walsh A, Gill GV (1997) Diabetes in institutionalised elderly people: a forgotten population? *BMJ* **314**: 1868–9

Boulton AJM, Cavanagh PR, Rayman G (eds.) (2006) *The Foot in Diabetes*. 4th edn. Wiley, Chichester

British Cardiac Society, British Hypertension Society, Diabetes UK et al (2005) JBS 2: Joint British Societies Guidelines on Prevention of Cardiovascular Disease in Clinical Practice. *Heart* **91**(suppl 5): v1–51

British Diabetic Association (1999a) *Guidelines of Practice for Residents with Diabetes in Care Homes*. BDA, London. Available at: <http://tiny.cc/V20uQ> (accessed 09.03.09)

British Diabetic Association (1999b) *Recommendations for the Structure of Specialist Diabetes Care Services. A British Diabetic Association Report*. BDA, London. Available at: <http://tiny.cc/dguLb> (accessed 09.03.09)

Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study Group (2005) Intensive Diabetes Treatment and Cardiovascular Disease in Patients with Type 1 Diabetes. *N Engl J Med* **353**: 2643–53

Diabetes UK (2008) Reports and statistics. Diabetes prevalence 2008. Available at: <http://tiny.cc/nsAkZ> (accessed 18.03.09)

Department of Health (2001) *National Service Framework for Older People*. DH, London. Available at: <http://tiny.cc/wlkBp> (accessed 09.03.09)

Department of Health (2004a) *General Medical Services Contract*. DH, London. Available at: <http://tiny.cc/yUVEI> (accessed 09.03.09)

Department of Health (2004b) *Chronic Disease Management: A Compendium of Information*. DH, London. Available at: <http://tiny.cc/irkaN> (accessed 09.03.09)

Duffy U, Craig M (2002) An evaluation of diabetic care in registered nursing homes. *Practical Diabetes International* **19**: 146–8

European Diabetes Working Party for Older People (2004) *Clinical Guidelines for Type 2 Diabetes Mellitus*. European Diabetes Working Party for Older People. Available at: <http://tiny.cc/nLW9p> (accessed 09.03.09)

Fahey T, Montgomery A, Barnes J, Protheroe J (2003) Quality of care for elderly residents in nursing homes and elderly people living at home: controlled observational study. *BMJ* **326**: 580

Holman RR, Paul SK, Bethel MA et al (2008) 10-year follow-up of intensive glucose control in type 2 diabetes (UKPDS 80). *N Engl J Med* **359**: 1577–89

Medicines and Healthcare products Regulatory Agency (2006) *Lancing devices used in nursing homes and care homes*. MHRA, London. Available at: <http://tiny.cc/O7JHL> (accessed 09.03.09)

Nathan DM, Buse JB, Davidson MB et al (2009) Management of hyperglycaemia in type 2 diabetes: a consensus algorithm for the initiation and adjustment of therapy: a consensus statement from the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetes Care* **29**: 1963–72

National Collaborating Centre for Chronic Conditions (2008) *Type 2 Diabetes: National Clinical Guideline for Management in Primary and Secondary Care (update)*. Royal College of Physicians, London. Available at: <http://tiny.cc/zWC9B> (accessed 18.03.09)

Oppenheim AN (2000) *Questionnaire Design, Interviewing and Attitude Measurement*. Continuum International Publishing, London

Polit DF, Hungler BP (1998) *Nursing Research: Principles and Methods*. 6th edn. Lippincott Williams & Wilkins, Philadelphia, US

Scottish Intercollegiate Guidelines Network (2001) *Management of Diabetes: A National Clinical Guideline*. 55. SIGN, Edinburgh

Sinclair AJ, Turnbull CJ, Croxson SC (1997a) Document of diabetes care for residential and nursing homes. *Postgrad Med J* **73**: 611–12

Sinclair AJ, Allard I, Bayer AJ (1997b) Observations of diabetes care in long-term institutional setting with measures of cognitive function and dependency. *Diabetes Care* **20**: 778–84

Sinclair AJ, Gadsby R, Penfold S et al (2001) Prevalence of diabetes in care homes residents. *Diabetes Care* **24**: 1066–8

Sinclair AJ, Finucane P (2000) *Diabetes in Old Age*. 2nd edn. Wiley & Sons, Chichester

Shah A, Bruce M, Wilson C et al (2006) The care of people with diabetes in care homes within a primary care trust. *Journal of Diabetes Nursing* **10**: 289–96

Stratton IM, Adler AI, Neil HA et al (1998) Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study. *BMJ* **321**: 405–12

Tattersall RB (1984) Diabetes in the elderly – A neglected area? *Diabetologia* **27**: 167–73

Treacy MP, Hyde A (1999) *Nursing Research: Design and Practice*. University College Dublin Press, Ireland

Turrell AR, Castleden CM, Freestone B (1998) Long stay care and the NHS: discontinuities between policy and practice. *BMJ* **317**: 942–4

Appendix 1. Questionnaire used to assess the standard of diabetes care residents of care homes receive in South and East Belfast. The original questionnaire had more space for additional clients; the example below is for two clients.

General information

How many residents live in the home?

How many are treated with diet and tablets?

How many residents have diabetes mellitus?

How many are treated with diet and insulin?

How many are treated with diet only?

How many are treated with diet, tablets and insulin?

Diabetes check

Client	HbA _{1c}	Cholesterol	Urea and electrolytes	Albumin/creatinine ratio	Blood pressure	Weight	Eyes (retinal camera)	Feet (pulses and sensation)	Dietitian (review)
No: 1									
Date									
Result									
No: 2									
Date									
Result									

Complications:

Client	Heart attack (MI)/angina	Stroke (Cerebrovascular accident)	Circulatory problems (feet and legs)	Retinopathy/cataract/ other visual problems	Amputation
No: 1					
No: 2					

Management:

Who is involved with the diabetes management of the clients within the home?

	Clients	
	1	2
District nurse	<input type="checkbox"/>	<input type="checkbox"/>
Diabetes specialist nurse	<input type="checkbox"/>	<input type="checkbox"/>
Practice nurse	<input type="checkbox"/>	<input type="checkbox"/>
GP	<input type="checkbox"/>	<input type="checkbox"/>
Hospital consultant	<input type="checkbox"/>	<input type="checkbox"/>
No one	<input type="checkbox"/>	<input type="checkbox"/>

How many of the clients have been admitted to hospital within the past 12 months due to problems relating to their diabetes?

Training:

Have staff attended any courses on diabetes within the past 12 months?

If so, how many staff have attended training?

What courses have they attended?

Do you feel that staff would benefit from additional training?

If yes, which of the following topics?

- What is diabetes?
- What care the client should expect
- Types of treatment
- Diet
- Blood glucose monitoring
- Hypoglycaemia and treatment
- How to manage the client if he or she is unwell
- Other please specify

Blood monitoring

Do the staff monitor the clients' blood glucose levels?

If so, how often?

Have the staff had formal training on blood glucose monitoring?

How many different types of meters are used within the home?

Do the staff perform quality control on the meters?

If so, how often is the quality control check performed?

What type of finger pricking device is used?

Have the care home staff received their hepatitis B vaccination?

Thank you for your time in completing this survey.