

Diabetes and older people: ensuring individualized practice

Stephen Phillips and Anne Phillips outline the important factors to consider when treating older patients with diabetes. They consider the case studies of Rosemary and Ray to illustrate individualized care in practice.

Diabetes mellitus is now a more common condition in older people. This is partly owing to better, outcomes and risk management strategies in diabetes (Hawthorne, 2009), and the fact that people are living longer and healthier lives (Office for National Statistics (ONS), 2011).

This article will investigate the impact of diabetes in older people, and the ethical considerations for health professionals in decision-making with older people (Reed et al, 2004). It is important, but sometimes difficult, to balance the needs of the a patient and the need to achieve national targets for diabetes, e.g. in the Quality and Outcomes Framework (QOF), 2011 (British Medical Association, 2011).

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To do no harm and achieve good outcomes for individual patients, care needs to be patient-centred not target-driven. Practice nurses are at the forefront of providing individualized diabetes care for older people, and this article will explore the determinants of this care.

Prevalence

Diabetes is being diagnosed at increasing rates across the whole population, but specifically in the older population (Sinclair, 2009).

It is estimated that there are over 3 million people in England aged 16 years and over with diabetes, a prevalence of 7.4%, of whom almost one third may remain undiagnosed (Yorkshire and Humber Public Health Observatory (YHPHO), 2010).

In Scotland, the prevalence is 6.7%, and in Wales, it is 9% (YHPHO, 2010). The prevalence of diabetes in the UK is expected to continue to increase owing to rising rates of obesity and an ageing population (YHPHO, 2010).

Demographics

It is estimated that there will be about 87 900 people in the UK aged over 100 years by 2034 (ONS, 2011). The Nursing and Midwifery Council (NMC, 2009) has reported that this figure is expected to reach 250 000

by 2050.

In addition, the ONS (2011) revealed that people aged 50 years and over already make up a least one quarter of the population of the UK. By 2031, more than 1 in 5 members of the UK population will be 65 years and over, i.e. about 15.8 million older people.

Statistics show that there is an association between age, increased incidence of type 2 diabetes, and comorbidities of diabetes (Williams, 2009). Indeed, 14.3% of people with diabetes are aged between 55–74 years, and 16.5% of these are currently over 75 years (YHPHO, 2010).

Diabetes UK (2010) estimates that someone with diabetes is admitted to hospital from residential care every 25 minutes. These demographic and disease prevalence changes have substantial implications for the health of the older population and the work of diabetes primary care teams.

Impact of diabetes on older people

Although the prevalence of hypertension, hypercholesterolemia and the incidence of mortality from cardiovascular and cerebrovascular disease are markedly declining, the prevalence of diabetes remains high and is expected to rise further, especially in the older

population (King et al, 1998; Allender et al, 2008).

Diabetes and its vascular, neurological and psychological complications can cause significant morbidity and mortality across all age groups. As diabetes increasingly becomes more common in older people, some of the underappreciated complications need to be addressed (Sinclair et al, 2009; Sinclair, 2011). These include cognitive disorders, e.g. dementia and physical disabilities caused by or causing falls, fractures and other conditions common in older people such as arthritis (Schwartz et al, 2001; Gregg et al, 2002; Jolley, 2009).

These less well-recognized complications impair quality of life, lead to a loss of independence, increase demands on ageing caregivers, and may be a greater concern to older people with diabetes than the more commonly recognized vascular and neurological complications (Gregg et al, 2002).

Defining risk

The risk of diabetic complications increases with the duration of diabetes. Therefore, self-care strategies are important in older adults, where risks are likely to be high (Hewitt et al, 2011). In order to achieve realistic care planning and to achieve this

CASE STUDY I

Rosemary is an 81-year-old widow with type 2 diabetes and a history of angina and neuropathy. She was found wandering around her local town in a disorientated state. Following emergency ambulance intervention for the acute assessment and management of hypoglycaemia, a referral was made for reassessment at the local general practice with her practice nurse. Rosemary was unable to remember what had occurred prior to the episode. She was also scared and fearful of this recurring.

Rosemary does not test her own blood glucose levels and no longer drives. Her recent haemoglobin A_{1c} (HbA_{1c}) was 48 mmol/mol (6.5%). She is prescribed metformin 500 mg twice daily and gliclazide 80 mg twice daily.

A mental health assessment was also undertaken indicating that Rosemary is demonstrating early signs of cognitive dysfunction. The practice nurse is concerned that Rosemary might be experiencing difficulty in remembering her medications, and possibly her meals too. She suggests a dossett box to Rosemary and asks Rosemary brings a friend or neighbour with her for another appointment.

After discussion with Rosemary, the practice nurse discontinues her sulphonylurea medication to reduce the risk of hypoglycaemia, as Rosemary's hypo left her unsafe, frightened and at risk. Rosemary is happy with these suggestions, and agrees to return in a week so that her practice nurse can assess how she is coping.

safely, older people need a good understanding of their condition and should be sufficiently cognitively aware and motivated to make informed decisions about their health (Holdich, 2009).

This can often be difficult to achieve, and this is where rigid adherence to QOF targets or tight haemoglobin A_{1c} (HbA_{1c}) control can be detrimental (Hall and Haslam, 2010). It has been found that in older people taking insulin, around one quarter of those aged over 75 years had evidence of cognitive impairment which significantly reduced their ability to understand the actions required in the event of low blood glucose or an acute infection (Hewitt et al, 2011).

Disability

Diabetes is associated with greater risk of disabilities relating to mobility and being able to perform daily tasks

(Gregg et al, 2000; Gregg et al, 2002). Findings from the National Health and Nutrition Examination Surveys indicated that older people with diabetes can have about 2–3 times the prevalence of an inability to walk 400 metres, to do housework, to prepare meals independently and to manage money (Gregg et al, 2000). One in four women with diabetes aged 60 years and over reported being unable to walk 400 metres, compared to less than one sixth of women without diabetes of the same age.

Women with diabetes also appear to become disabled at about twice the rate of women without diabetes, and they also have an increased risk of hip fractures and falls (Gregg et al, 2002; Schwartz et al, 2001). The association of diabetes with a physical disability is explained in part by the typical complications of diabetes, e.g. coronary

heart disease, peripheral arterial disease and visual impairment, but a 60% greater prevalence of disability remains after controlling for these factors (Gregg et al, 2000; Gregg et al, 2002).

Cognitive dysfunction

Diabetes is associated with cognitive dysfunction, where type 2 diabetes has been related to accelerated cognitive decline in older people with dementia (Jolly, 2009; Velayudhan et al, 2010).

Type 2 diabetes is also associated with increased development of cognitive impairment and increased risk of earlier development of both Alzheimer's disease and vascular dementia (Biessels et al, 2006; Luchsinger et al, 2007). Diabetes may accelerate cognitive decline and the development of dementia by a number of possible mechanisms,

including insulin resistance, disturbances in insulin homeostasis in the brain, hyperinsulinaemia and generation of advanced products of glycosylation (Zimmet et al, 2001).

The evidence for diabetes being a risk factor for dementia is of considerable importance (Sinclair et al, 2000), as with the increasing prevalence of diabetes (YHPHO, 2010) coupled with the longevity of the population (ONS, 2011), this aspect is rapidly becoming a major public health concern. Individuals at risk of or who are experiencing dementia often reside in care homes (Sinclair et al, 2000) and may experience the difficulties of diabetes control within care establishments (Diabetes UK, 2010). Identification of those at particular risk of progression may help target early treatment strategies (Department of Health, 2010). This can be seen in the case of Rosemary where the intervention of her practice nurse was pivotal (*Case Study 1*). A further article dedicated to diabetes and declining cognitive function will be published in this journal in the near future.

Hypoglycaemia

Hypoglycaemia is one of the most common side effects of taking diabetes medications such as insulin and sulphonylureas (MacArthur, 2010; NHS Diabetes, 2010).

Although all older people taking insulin or sulphonylureas are at risk of developing hypoglycaemia, older patients taking sulphonylureas were shown to be more significantly at risk of developing severe

CASE STUDY 2

Ray is a 72-year-old retired teacher. Ray has had type 1 diabetes for 36 years and has always managed his diabetes very well. Ray uses the basal bolus regime, but since his wife's death 6 months ago, Ray has found it increasingly difficult to be motivated and his appetite has reduced as he has lost interest in eating. Ray has been recently admitted to hospital following an acute hypoglycaemic episode, which he was unable to treat and reported that he did not recognise his hypo symptoms.

Ray comes to see his practice nurse following discharge and together they plan



a system of care in order to gain control. Ray agrees to test his blood glucose levels pre meal and to reduce his insulin doses by 10% due to this hypo and the suggestion of other hypo episodes which he might not have recognised. Ray also expresses difficulty in preparing meals so together his practice nurse discusses social care arrangements which could help Ray continue to manage independently at home.

Ray is happy with this suggestion, and the practice nurse arranges a referral on his behalf to social services, as well as his local Age UK voluntary befriending scheme.

hypoglycaemia (MacArthur, 2010).

Hypos occur in 7.7% of all inpatient admissions leading to increased mortality rates and length of stay (NHS Diabetes, 2010).

Hypoglycaemia is a serious condition in all ages; however hypos can be underestimated in the older person as symptoms may be attributed to other conditions such as confusion due to dementia and/or communication difficulties after a stroke. The consequences may be catastrophic, including death (Sinclair, 2009).

Hypos can occur for a variety of reasons, including advanced age and other comorbidities including acute illness in older people. A strategy to reduce the risk of hypos in an older person with diabetes must consider a range of factors. Being prescribed five or more medications can increase the risk of falls and

hypoglycaemia (Hawthorne, 2009).

The number of older people with diabetes being prescribed polypharmacy is very high (NHS Diabetes, 2010). If an older person has chronic kidney disease where the excretion of drugs is impaired, coupled with poor nutrition, hypoglycaemic risk is raised considerably.

Factors to be aware of

Practice nurses need to be particularly aware of the risks of hypos in older people, especially those living on their own. Therefore, implications of hypos should be discussed with all older diabetes patients.

A partnership approach can facilitate safe decision-making for the individual to avoid increasing the risk of hypoglycaemia (Holdich, 2009). However, rigid adherence to the QOF guidance (2011) for HbA_{1c} targets can be risky for older

people, as medicating to reduce HbA_{1c} too aggressively raises the risk of hypoglycaemia considerably.

Additionally, practice nurses need to be aware of underlying macrovascular diseases that may lead to strokes or myocardial infarctions as a direct result of hypoglycaemia (Sinclair, 2009). Repeated episodes of hypoglycaemia can lead to a high risk of falls and hospital admission due to fractured neck of femurs and consequently a lack of independence and self-confidence in the older person with diabetes (Schwartz et al, 2001; Sinclair, 2009).

Another aspect of potential hypoglycaemia in older adults is that their nutritional status may be compromised and their cognitive ability to self-medicate might be deficient (Velayudhan et al, 2010). Consequently, when medications are prescribed, they may not work as

expected and the risk of hypoglycaemia may be greater, something that prescribers need to be mindful of.

Other risk factors

Other risk factors for hypoglycaemia include:

- ▶ Recovery and increased activity after illness
- ▶ Major amputation
- ▶ Abrupt discontinuation of steroid therapy.

The timing of meals, if relying on support care workers or meals on wheels, can increase the risk of hypoglycaemia considerably. Older people may be experiencing comorbid conditions secondary to their diabetes, leading to eyesight problems, falls, depression, and a poor oral intake, all of which could mean closer monitoring is required (Sinclair, 2009).

Symptoms

It is the symptoms of hypoglycaemia which warn an individual that the blood glucose is becoming low (NHS Diabetes, 2010). In the older person, these symptoms can be suppressed, leading to a lower blood glucose before the response mechanism kicks in. Often the intensity of all symptoms is low and the person's cognitive function is impaired, so the older person with diabetes may not be aware of the symptoms, as in the case of Ray (*Case Study 2*) or not be physically able to self-treat (Sinclair, 2009).

Hypoglycaemia unawareness is due to the loss of the autonomic warning signs which often go undetected, e.g. sweating, shaking, hunger and anxiety

(Gibson, 2009). As a result, a hypoglycaemic episode can be mismanaged by the older person and/or their carers (Gibson, 2009; MacArthur, 2010). This means that close monitoring and awareness by all health professionals responsible for the care of patients at risk is of the utmost importance.

Therefore, issues common in older patients such as poor eyesight, polypharmacy, poor nutrition, weight loss, poorly-fitting dentures, difficulties in mobility, low mood and activities of daily living should be assessed and addressed by the practice nurse and primary care diabetes teams (Phillips and Wright, 2010). The management approach should be based on safety and tailoring care for individuals, not QOF targets (Hall and Haslam, 2010).

Care homes

NHS Diabetes (2010) highlighted the key features of good diabetes care for older people, including the mechanisms for appropriate screening, developing individualized care plans, appropriate blood glucose control and coordination of the specialist services available. However, although the principles of excellence in care for older people with diabetes is admirable, the provision of that care will be at the mercy of local commissioners of services and is therefore at risk if not on their current priority agenda (De Costa 2010).

A Diabetes UK (2010) report *Diabetes in Care Homes – Awareness, Screening, Training*, found that 6 out of 10 care homes

in England with residents with diabetes fail to provide any training for their staff about the condition (Diabetes UK, 2010). Without training, staff cannot give residents the care they need to manage the complex effects of cognitive impairment, diabetes and other physical conditions.

Conclusions

With the increasing prevalence of diabetes in the older adult population, a reliance on patient-centred care planning and partnership approaches in care are vital. This is particularly important with growing evidence that diabetes is a risk factor for dementia (Sinclair et al, 2009).

It is essential that care is individualized to promote safety and reduce the risk of hypoglycaemia, which can be especially dangerous in older people (Sinclair, 2009). The cases of Rosemary and Ray show how fundamental the role of the practice nurse is in diabetes care.

Conflict of interest: none

References

Allender S, Scarborough P, O’Flaherty M, Capewell S (2008) Patterns of coronary heart disease mortality over the 20th century in England and Wales: possible plateaus in the rate of decline. *BMC Public Health* 8: 148

Biessels G, Staekenborg S, Brunner E, Brayne C, Scheltens P (2006) Risk of dementia in diabetes mellitus, a systematic review. *Lancet Neurol* 5(1): 64–74

British Medical Association (2011) Summary of 2011/12 QOF indicator changes, points and thresholds. <http://tinyurl.com/672y3eb> (accessed 21 March 2011)

De Costa S (2010) Does the NHS White Paper signal a raw deal for older people. *Journal of Diabetes Nursing* 14(8): 310

Department of Health (2010) *Living well with dementia. A National Dementia Strategy*. <http://tiny.cc/vv68p> (accessed 1 March 2011)

Diabetes UK (2010) *Diabetes in Care Homes. Awareness, Screening, Training*. <http://tiny.cc/7bif0> (accessed 1 March 2011)

Gibson H (2009) Hypoglycaemia unawareness. *Practice Nursing* 20(5): 240–4

Gregg E, Natayan V (2000) Type 2 diabetes and cognitive function: are cognitive impairment and dementia complications of type 2 diabetes? *Clin Geriatr* 8: 57–72

Gregg E, Engelgau M, Narayan V (2002) Complications of diabetes in elderly people. *BMJ* 325(7370): 916–7

Hall G, Haslam D (2010) Tailoring care in type 2 diabetes. *Journal of Diabetes Nursing* 14(Suppl): 8

Hawthorne G (2009) A risk management partnership. *Practice Nursing* 20(2): 86–90

Hewitt J, Smeeth L, Chaturvedi N, Bulpitt C, Fletcher A (2011) Self management and patient understanding of diabetes in the older person. *Diabetic Medicine* 28(1): 117–22

Holdich P (2009) Patient-centred care planning. *Practice Nursing*. 20(1): 18–23

Jolley D (2009) The epidemiology of dementia. *Practice Nursing* 20(6 suppl): S4–S6

King H, Aubert R, Herman W (1998) Global burden of diabetes, 1995–2025: prevalence, numerical estimates and projections. *Diabetes Care* 21(9): 1414–31

Luchsinger J, Reitz C, Patel B, Tang M, Manly J, Mayeux R (2007) Relation of diabetes to mild cognitive impairment. *Arch Neurol* 64(4): 570–5

MacArthur C (2010) Hypoglycaemia in type 2 diabetes. *Practice Nursing* 21(2): 84–8

NHS Diabetes (2010) Safe and effective use of insulin in hospitalised patients. <http://tiny.cc/az28h> (accessed 1 March 2011)

Nursing and Midwifery Council (2009) *Guidance for the Care of Older People*. <http://tiny.cc/fbqmg> (accessed 1 March 2011)

Office for National Statistics (2011) Population estimates. UK population grows to 61.8 million. <http://tiny.cc/2f1iw> (accessed 1 March 2011)

Phillips A, Wright J (2010) Assessing the impact of mental wellbeing on self-management. *British Journal of Wellbeing* 1(6): 30–5

Reed J, Stanley D, Clarke C (2004)

KEY POINTS

- Care must be individualized, not target driven, to ensure safety
- Evidence suggests that older people with diabetes use primary care services two to three times more than their counterparts without diabetes
- In older people with diabetes, the high rate of cardiovascular disability, visual deficit, cognitive impairment and treatment-related issues, such as hypoglycaemia are significant

Health, Well-Being and Older People. The Policy Press, Bristol

Schwartz A, Sellmeyer D, Enstrud K, et al (2001) Older women with diabetes have an increased risk of fracture: a prospective study. *J Clin Endocrinol Metab* 86(1): 32–8

Sinclair A, Girling A, Bayer A (2000) Cognitive dysfunction in older subjects with diabetes mellitus: impact on diabetes self management & use of care services. All Wales Research into Elderly (AWARE) Study. *Diabetes Res Clin Practice* 50(3): 203–12

Sinclair A (2009) *Diabetes in Old Age* (3rd edn). Wiley-Blackwell, Oxford

Sinclair A (2011) Diabetes care for older people: A practical view on management. *Diabetes and Primary Care* 13(1): 29–38

Velayudhan L, Poppe M, Archer N, Proitisi P, Brown R, Lovestone S (2010) Risk of developing dementia in people with diabetes and mild cognitive impairment. *Br J Psych* 196(1): 36–40

Williams J (2009). Diabetes and the older adult: what care do they need and what do they receive? *Journal of Diabetes Nursing*. 13(8): 308–10

Yorkshire and Humber Public Health Observatory (2010) APHO Diabetes Prevalence Model: Key findings for England. <http://tinyurl.com/2wjckcp> (accessed 1 March 2011)

Zimmert P, Alberti K, Shaw J (2001) Global and societal implications of the diabetes epidemic. *Nature* 414(6865): 782–7