



British Geriatrics Society Best Practice Guide

Diabetes

(Best Practice Guide 6.4 published May 2009)

1. Executive Summary

- Diabetes is the commonest metabolic long term condition in older people and is characterised by a high rate of vascular complications and subsequent disability, frequent hospital admissions, and increased institutionalisation.
- Effective diabetes care for older people requires clinicians to aim for the highest category of health status and quality of life commensurate with achieving a level of metabolic control that minimises both diabetes-related complications and the adverse effects of treatment.
- The Aims of Care can be classified according to both medical/healthcare team perspectives and patient/carer perspectives: these focus on maintaining a normal healthy lifestyle, a high level of functioning, minimising complications, and a ready access to education
- The increased risk of cognitive and mood disorders, undernutrition, physical frailty, and care home residency require those involved in the direct care of older people with diabetes to have skills in geriatric assessment and access to additional specialist treatment
- There are no age-related modifications required in either oral agent use or use of insulin in the management of diabetes in the elderly; as in younger people with diabetes, the emphasis is on a multifaceted approach that targets not only glucose but also cardiovascular risk modification

2. Introduction

Half of all people with diabetes in the United Kingdom are aged over 65 years and a quarter are over 75. Thus, 10% of people aged over 75 years and 14% of those aged over 85 years have diabetes (1). Yet the majority of large randomised clinical trials involving treatment and outcomes of patients with diabetes exclude these older, (often frailer) adults. Key facts about diabetes include:

- Life expectancy is reduced by 10 years
- 5% of the NHS budget is spent on diabetes and its complications
- The prevalence of overweight and obesity in all ages is anticipated to increase (2). This will result in an increase in diabetes prevalence in middle age, resulting in complications in older age and probably a continued rise in diabetes
- Coronary heart disease mortality is five times higher and stroke mortality three times higher than the non-diabetic population (3).
- Diabetes is the leading cause of both renal failure and blindness in people of working age and is the second commonest cause of lower limb amputation
- Admission to hospital is twice as likely with average length of stay twice as long
- Diabetes is an independent risk factor for admission to a British care home

Diabetes care for older people is particularly challenging for a number of reasons: patient frailty, especially in the very old influences their tolerance of standard therapies. Often they have impaired ability to self-care and self-medicate and the requirement of education and support for carers is often omitted from routine service provision. As with other branches of geriatric medicine, management of multiple co-morbidities including cognitive and mood dysfunction are particularly challenging in patients with diabetes, which is associated with particularly high rates of such impairments.

The aim of this document is to focus on the Principal Aims in Diabetes Care for older people. These have been summarised by the European Diabetes Working Party for Older People in their document, available on the web, in terms of the medical team and the patient: (4)

Medical/Diabetes Care Team-orientated

- Promote overall well-being and a normal life expectancy
- Prevent/delay the onset of cardiovascular disease
- Manage diabetes-related complications early and aggressively as appropriate
- Minimise hypoglycaemia and adverse drug event rate
- Provide specialist care at optimal time points

Patient/Carer-orientated

- To acquire the education and skills to self-manage diabetes effectively as a long term condition
- Maintain an optimal level of physical and cognitive function
- To be confident of access to services and support where necessary to manage their diabetes

The National Service Framework (NSF) for Diabetes

The National Service Framework (NSF) for Diabetes (5) and the Scottish Diabetes Framework (6) set core standards for care, from diabetes prevention to limiting its complications. The NSF for Diabetes suggests that care should be person centred, developed in partnership with health professionals, equitable, integrated within a multidisciplinary team and outcomes-orientated (5). The Department of Health Diabetes Commissioning Toolkit document discusses key outcomes of care relating to diabetes in the elderly including a section on complex needs (7) The main goals outlined within the National Service Framework are

- Prevention- modifying risk factors
- Identification- including opportunistic screening
- Empowerment- to enhance patients' personal control over their diabetes care
- Clinical Care improvement to maximise quality of life
- Detection of long term complications, including:
 - Screening for retinopathy; treatment for microalbuminuria; adequate blood pressure control, foot care; other secondary prevention measures including surveillance and management of other conditions.

3. Complications

Cardiovascular Risk

Vascular risk factors should be treated where appropriate, as the majority of older diabetic patients will die from cardiovascular disease. This should include the use of , statins; antihypertensives and antiplatelet agents. However, comprehensive cardio-protective medication may not be routinely offered (8). In older patients in particular, the benefits of the above interventions should be weighed up against the adverse side effects, including postural hypotension, bradycardia and myalgia, bleeding and the risks of falls and fractures in frail older people.

Peripheral arterial disease (PAD)

PAD increases in prevalence in older age and is 3-6 times more common in adults with diabetes, although may only be symptomatic in half our older patients (9). Due to calcification of lower limb vessels in diabetes, the ankle-brachial pressure index may be falsely elevated in to the normal range. PAD can cause leg pain on exertion, ulceration and gangrene (with subsequent reduction in mobility), or rest pain due to critical ischaemia, with the potential threat of lower extremity amputation. Treatment of PAD should be medical therapy initially, with judicious use of anti-platelets, anti-hypertensives, statins and control of diabetes. Exercise programmes to increase walking distance should be used, and attention to foot care including properly fitting shoes, foot hygiene and prompt treatment of infection, to minimise the risk of amputation. If symptoms interfere with activities of daily living then it may be appropriate to refer for angioplasty.

Co-morbidities and functional impairment

Specific problems for older people include poor vision, cognitive impairment and arthritic complaints, which can hamper their ability to monitor blood glucose or to inject insulin. They may be more likely to suffer from nutritional deficiencies and miss meals making them at particular risk of hypoglycaemic attacks. Recurrent infections are commoner in the old leading to hyperglycaemic episodes as is poly-pharmacy, which together with higher rates of renal and hepatic impairment put them at risk of adverse drug reactions. Communication difficulties and poor mobility may also reduce access to appropriate healthcare workers. Models of care will vary between localities. However, review may need to be more frequent than outlined in The National Service Framework (NSF) for Diabetes referred to on page 2 and more specifically targeted with the support of dedicated services, perhaps including geriatric medicine.

Visual loss

Small pen devices for delivering insulin present difficulties. An important role for the diabetes specialist nurses is in supporting patients as newer appliances for insulin injection become available. The risk of development and progression of retinopathy is decreased by optimal glycaemic control and treatment with ACE-I is advocated. In order to monitor this, annual retinal screening by trained practitioners is necessary.

Foot Care

Foot problems may cause pain, morbidity and functional disability. Poor vision, lack of dexterity and cognitive impairment may delay recognition of foot problems and impair adequate treatment, leading limb-threatening complications. Podiatry services are needed, in both hospital and community settings, to ensure annual review (at least) which may need to be offered more frequently for the frailest patients and their carers. In addition to routine

diabetic foot risk assessment, education should be offered regarding daily examination of the feet, good foot hygiene and appropriate footwear.

Gait and balance

Peripheral neuropathy, peripheral vascular disease, reduced visual acuity and polypharmacy in older patients with diabetes all contribute to an increase falls risk with subsequent physical and psychological consequences. Again a multidisciplinary team assessment is helpful, and any medical reversible causes should be treated.

Frailty

The NSF and Quality and Outcomes Framework (QOF) for general practice in England (10) have used similar targets to improve overall diabetes care. However, they do not take into consideration patients' age. Targets for diabetes care in frail older people in particular may differ, as the benefits of aggressive glycaemic control are not proven in frail older adults, particularly where life expectancy is anticipated to be shortened due to other co-morbidities. Thus, although treatment is intended to decrease risks of diabetes complications, this must be balanced against the impact of co-morbidities and patients' susceptibility to adverse effects of treatment.

Care home residents present an important example where frailty due to physical and cognitive impairment are common. These patients are at increased risk of infections and have little diabetes specialist input, such as specialist nurses, podiatrists and dieticians (11). As a result, care of adults in care homes often falls short of standards for younger adults (12). Deficits in care homes include the lack of individualised care plans, lack of training for staff, insufficient nutritional guidance and a deficit of specialist health professional input. Both the American Geriatric Society (13) and Diabetes UK (14) have produced guidelines for such patients.

Furthermore, studies in care homes in the UK indicate that there is a high rate of undiagnosed diabetes, especially in those with dementia, where it may be up to 13% (15). This is important as epidemiological studies have suggested there is 2-3 times increase in risk of vascular dementia and Alzheimer's disease (16, 17), and many of the anti-psychotics used for behavioural symptoms may in turn be linked with the development of diabetes (18). Those with cognitive impairment may be especially difficult to manage due to their inability to communicate symptoms of hypoglycaemia, swallowing disturbances, irregular eating patterns and propensity to metabolic decompensation with intercurrent infection.

4. Interventions and treatment

Lifestyle intervention in the form of diet and weight loss is recommended in the treatment of diabetes, although there is minimal evidence to support this in older persons. Working towards a target HbA1c of 6.5% may be impractical and even dangerous in this group, and a treatment plan should be individualised to each patient. The European Diabetes Working Party Guidelines (4) have recently revised guidelines to suggest a target HbA1c of <7.0% for the elderly with minimal co-morbidities and <8.0% for the frail elderly, although goals of treatment need to be tailored to the individual, involve both the patient and carer, and must take account other factors such as levels of disability, life expectancy, and likely adherence to treatment.

Blood glucose monitoring

Self-Blood glucose monitoring (SBGM) is a contentious area in diabetes care. It is generally recommended for patients treated with insulin. However, for adults taking oral hypoglycaemic agents, its clinical and cost effectiveness has been challenged, since the publication of a comprehensive Health Technology review in 2000 (19). SBGM may contribute to patient education and their understanding of diabetes. For older adults, particularly those who are physically frail or cognitively impaired, ensuring accurate measurements are made and

interpreted appropriately may require the participation of health care staff or carers. As well as helping to optimise drug dosing, particularly insulin, SBGM may help in to identify hypoglycaemic episodes. Therefore, all patients should have access to blood glucose monitoring, particularly at diagnosis and this needs to be reviewed annually by the MDT in diabetes care .(4)

Oral hypoglycaemic agents

In their updated guidelines, the National Institute for Health and Clinical Excellence (NICE) recommend Metformin as first line therapy for all except those with contraindications such as renal impairment, marked hepatic failure or hypoxia (20). Metformin has cardiovascular benefits and a low risk of hypoglycaemia. However, impaired renal function often precludes its use.

Sulphonylureas or other rapid-acting insulin secretagogues such as meglitinides including repaglinide and nateglinide, can be used as first line agents where Metformin is contraindicated or in combination with Metformin when glycaemic targets have not been met (21). Hypoglycaemia is the most serious side-effect in the elderly, and patient/carer education is important. Long-acting agents such as Glibenclamide should be avoided due to the unacceptable risk of hypoglycaemia. Weight gain associated with sulphonylureas may be desirable in some underweight older subjects.

Thiazolidinediones can be given as additional therapy with above or used as monotherapy. They are contra-indicated in liver disease and in NYHA stage 3 or 4 heart failure, and should be used with caution in those at risk of bone loss or fracture.

The only available alpha-glucosidase inhibitor is acarbose. Like biguanides acarbose does not cause weight gain or hypoglycaemia when used as monotherapy. They can be used if other agents are not tolerated, but are limited in many cases by gastro-intestinal side-effects.

Newer agents such as Exenatide (a glucagon-like peptide-1 analogue) and Sitagliptin (a dipeptidyl peptidase-4 inhibitor), have recently come on to the market. Exenatide is specifically mentioned in the NICE guidelines for use in morbidly obese patients. These agents (used alone) should not cause hypoglycaemia. However, they have not been extensively studied in older people and longer-term safety data are awaited.

Insulin

The decision to start insulin therapy should be made with patients and carers. For older people relying on others to give insulin, once daily dosing of longer acting agents may be more convenient, although this may not give as good control as a basal bolus or twice-daily regime. Newer longer acting analogue insulin agents such as Glargine and Detemir can improve glycaemic control with less frequent hypoglycaemia, allowing safer targeting of treatment towards an HbA1c of <7%. The timing of insulin dosing may not be critical when patients are receiving basal insulin alone. Thus dosing may be arranged between community nurses and patients, at a mutually convenient time. However, if glycaemic control or post-prandial glucose targets are not obtained with basal insulin, short-acting insulins may be added. When giving bolus doses of short acting insulin, mealtimes will be a much more important factor, and this can be problematic for frail patients, unable to administer their own insulin. Newer short acting analogue insulins have a more immediate effect than older short-acting agents. This can be of benefit for those with cognitive impairment who may eat unpredictably, so that they can receive their insulin safely, even if given immediately after they have eaten.

A comment on guidelines

Reference has already been made to the tensions generated between treatment guidelines for type 2 diabetes (5, 20) and targeted care of frail older people, (4) particularly those living in care homes (15). Recommendations specific to care home residents are summarised below. The principles outlined equally apply to many frail older people living in the community, needing holistic diabetes care:

- Full assessment on admission to care home- screen for presence of diabetes and complications. Document weight, co-morbidities, medication list. Assess physical, cognitive and affective mental function and cardiovascular risk status.
- Individualised care plan- dietary and nutrition plan, agreed objectives and metabolic targets for each patient. Management strategies for hypo/hyperglycaemic attacks. List of criteria for referral to secondary care.
- Annual review- screen for presence of diabetes and complications and assess outcome measures.
- Designated member of care staff- Coordinate metabolic monitoring and liaise with multidisciplinary team.
- Appropriate resources- Accessible, appropriate education for residents with diabetes. Education and training for staff. Onsite treatment and assessment area or transport arranged as needed. Access to podiatrist, optometrist, dietician, diabetes specialist nurse, secondary care.

5. Audit

It is important that older people are included in audits of diabetes services, which can be driven by the NSF, NICE or QOF in primary or secondary care. For QOF, there may be a tendency to exempt older people from consideration for targeted intervention; although a recently published review of cases exempted from QOF found that exemptions were based on sound clinical reasoning and not apparently ageist (22). In addition, the use of guidelines such as those produced by Diabetes UK (14) and the European Diabetes Working Party (4) help to focus on the specific needs of older people.

6. The Future

The public health objective is that there should be fewer people with diabetes, who should be identified sooner, have greater control over their own care, with fewer complications and that complications should be identified and treated earlier and receive effective inpatient care. Successful implementation of such a strategy is likely to result in a larger population living into older age with diabetes and its complications.

Although much diabetes care can and should be co-ordinated in the community by general practitioners, we can anticipate increasing numbers of older people with complex needs requiring specialist multidisciplinary teams in diabetes and geriatric medicine.

The government's white paper requires that all patients with diabetes should have a personal diabetes care plan by 2010 (23). This must be individualised and created in partnership with healthcare professionals. Structured education is a key component, provided around the time of diagnosis, with annual reinforcement and supported by evidence based written information. In accordance with these objectives, specialist-training packages sensitive to the needs of older patients and their carers will need to be developed and delivered on a large scale in the community and institutions.

Specific studies of treatment of older people with diabetes are required, including appropriate targeting of blood glucose levels and cardiovascular risk modification.

7. Recommendations

- I. All older people with diabetes require an annual review process which involves a regular review of nutrition and drug therapy, a screen for vascular complications, and an appraisal of metabolic targets in the light of agreed aims of care
- II. An assessment of mood and mental performance is recommended at the time of diagnosis of diabetes in older people and at regular intervals thereafter according to need
- III. Optimal glycaemic control in the majority of older people with diabetes should be aimed for at the earliest opportunity with targets comparable to those in younger subjects: HbA1c <7.0%
- IV. Geriatricians need to work more closely with other healthcare staff, social services, and those in primary care in managing the elderly with diabetes to avoid unnecessary hospital admission, care home residency, and repeated bouts of acute ill-health.

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