The older person with diabetes: considerations for care

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ABSTRACT

With the increasingly ageing population worldwide, more older people are living with diabetes. The conditions that often accompany older age, such as dementia, renal impairment, visual impairment and manual dexterity difficulties, can make diabetes management complex and self-care challenging. However, the status of older people varies considerably, and so choice of glucose-lowering agents and clinical targets should be individualised to maximise safety and ensure that the risks of treatments do not outweigh the benefits. For many patients, there will be an increasing dependence on others to manage their diabetes care, so an appropriate skill mix among healthcare professionals and carers, adequate training and regular competency assessment are crucial to support patients to remain safe and symptom free from diabetes.

KEY WORDS

◆ Diabetes ◆ Ageing ◆ Treatment targets ◆ Competence in care ◆ Self-management

The population worldwide is ageing dramatically: it is expected that between 2015 and 2050, the proportion of the world's population aged 60 years or older will nearly double, from 12% to 22%. The number of people aged 60 years or older will outnumber children younger than 5 years old by next year. Further, there are 125 million people in the world aged 80 years or more today, but by 2050, this number is expected to be 120 million people in China alone (World Health Organization (WHO), 2018).

Diabetes prevalence is also rapidly increasing with population ageing, with 592 million people predicted to have diabetes by 2035 (as opposed to the 382 million people in 2013). Older age is associated with increased risk of developing type 2 diabetes, and an increasingly older population has significant public health cost implications for the future (International Diabetes Federation (IDF), 2013). Older age and diabetes are both important risk factors for the development of functional decline, disability and impaired quality of life (Wong et al, 2013).

Older age and diabetes

Older age is associated with considerable changes, for example, in social role, functional ability, and work and income status. It can be an opportunity to take on new hobbies and interests, to travel and to be involved in the care of grandchildren. However, it can also be a time to cope with the death of friends and partners, or perhaps having to leave a home lived in for many years with many memories. The WHO (2018) and IDF (2013) define older people as those aged 60 years or more. When discussing the needs of older people, therefore, it can be appreciated that there is no such thing as a 'typical older person', given that the definition of older person can cover a 30-year span.

Diabetes substantially affects the ageing process, as it confers a two- to three-fold higher risk of physical disability, increases the risk of falls (Park et al, 2006), and doubles the risk of dementia (Strachan et al, 2011). On the other hand, ageing also affects diabetes, by promoting the progression of type 2 diabetes and increasing the risk of developing complications, memory problems, visual impairment and manual dexterity, all of which affect a person's ability to self-care. Ageing also exacerbates renal impairment, which limits the choice and dose of glucose-lowering therapies (IDF, 2013), increases the risk of hypoglycaemia and reduces awareness of hypoglycaemia (Munshi et al, 2011).

The condition or status of older people living with diabetes varies considerably, so individualised care is essential (*Box 1*):

Joan and Bill represent examples of how older people vary considerably in their physical ability, wellbeing, mental capacity and ability to self-care. All these factors need to be considered when agreeing on the appropriate clinical targets, treatment goals and choice of therapy. The IDF (2013) suggested that older people can be grouped into one of the categories mentioned in *Table 1*, depending on their status.

Box 1. Customising diabetes care

Joan is 76 years old and lives alone. She has had type 2 diabetes for 25 years and injects a mixed insulin twice a day. She has developed memory problems and sometimes forgets to take her insulin or forgets she has taken it and repeats the dose. Her appetite is poor and she has lost some weight recently. Her eyesight has deteriorated, and she finds it difficult to see her insulin device and blood glucose monitor screen. She has had several admissions for falls in the last year.

Bill is 75 years old and has had type 1 diabetes for nearly 50 years. He and his wife have a hectic social life and enjoy walking, dancing and holidaying abroad. He uses a flexible basal bolus insulin regimen, tests his blood glucose at least four times each day and adjusts his mealtime insulin to accommodate meals that vary in quantity and time of day.

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Table 1. Statuses of older people

Functionally independent
Living independently, with no important impairments of activities of daily living (ADLs), and who need no or minimal caregiver support
Functionally dependent
Significant impairment of ADLs, such as bathing, dressing and personal care. This category includes those who are frail and those with dementia Frailty: Characterised by extreme fatigue, recent weight loss, severe restriction in mobility and strength. Frail individuals are at a high risk of falls and admission to a care home Dementia: Cognitive impairment leading to significant memory problems and disorientation. Although people with dementia may be physically well, they are unable to self-care
End of life
Defined as having less than 12 months to live

Source: IFD, 2013

Both the WHO (2018) and the IDF (2013) have a focus on encouraging healthy ageing. The latter recommends encouraging physical activity (both endurance and resistance) in the functionally independent person, as this has beneficial effects on blood glucose and blood pressure, strengthens the bone, reduces the risk of falls, reduces the risk of cardiovascular disease and stroke and improves mood and sleep patterns. Healthy eating benefits weight management, glycaemic control and blood pressure; maintains muscle and bone health; and reduces the risk of cardiovascular disease and stroke. As people age, their energy requirements fall, but their micro-nutrient needs do not, so they still require a nutrient-rich diet. Further, the risk of periodontitis is increased three-fold in people with diabetes, so dental health is important when promoting a healthy eating plan (Pershaw et al, 2011).

Sarcopenia (muscle loss) and frailty have recently been recognised as complications of diabetes (Sinclair et al, 2017). Insulin plays an important role in muscle health through its effect on protein synthesis: some of the dramatic weight loss observed in people with newly diagnosed type 1 diabetes is due to the loss of muscle mass through severe insulin deficiency. As people age, there is a loss of muscle mass and an increase in visceral fat, which results in insulin resistance (where the body becomes less sensitive to the effects of insulin). This can result in hyperglycaemia through reduction in muscle uptake of glucose and, consequently, the development of type 2 diabetes. It also affects muscle protein synthesis and increases muscle breakdown, resulting in sarcopenia and frailty. Diabetes accelerates the reduction in muscle mass and strength that occurs with ageing (Sinclair et al, 2017).

Diabetes in the older person is often complicated by the existence of other comorbidities, such as chronic kidney disease, cardiovascular disease and dementia. This has implications on choice of treatments (e.g. the dose and licence for medications may depend on the estimated glomerular filtration rate), ability to self-care and appropriate treatment targets. The relative wellness of an older person can also change rapidly, for example, following the death of a spouse or the development of an infection or a stroke. Therefore, as the individual ages and their circumstances change, the annual diabetes review remains an important part of the diabetes care plan.

Although the glycaemic targets set by national and international diabetes authorities, such as the National Institute for Health and Care Excellence (NICE, 2015a; 2015b), the European Association for the Study of Diabetes (Davies et al, 2018) and American Association of Diabetes (2019), may be appropriate for many older people, particularly if they are not using a glucose-lowering agent that carries a risk of hypoglycaemia, the targets may be too stringent for some people who are functionally dependent. The benefits of achieving stringent glycaemic control in preventing diabetes complications are usually seen after a long period of time, so they may not be appropriate for someone with a limited life expectancy. More importantly, the risk of hypoglycaemia for those using agents associated with this side effect (insulin, sulphonylureas and prandial regulators) can increase the risk of morbidity and mortality and outweigh any benefits. Hypoglycaemia in older people increases the risk of cardiovascular and cerebrovascular events, progression of dementia, falls, A&E admissions and unplanned hospitalisation (Munshi et al, 2011). Futher, it may be difficult to diagnose and so is easily missed, and its signs may be attributed to other causes, such as transient ischaemic attacks. A study to demonstrate the reduced awareness and frequency of hypoglycaemia in older people involved 40 people aged over 69 years who were monitored using a continuous glucose monitoring system for 3 days and who also tested their blood glucose four times a day using the conventional finger-prick system (Munshi et al, 2011). Of the 40 participants, 26 had at least one episode of hypoglycaemia. A total of 102 episodes were recorded in the group, of which 95 were unrecognised and not identified by the finger-prick blood glucose test. Additionally, 18 of the 26 participants who experienced at least one episode of hypoglycaemia experienced an episode of nocturnal hypoglycaemia lasting almost 1 hour. These individuals all had suboptimal glycaemic control, with HbA1c levels of 64 mmol/mol (8%) or greater, at which hypoglycaemia may not be suspected (Munshi et al, 2011) (*Table 2*).

Table 2. Glycaemic targets and thresholds for treatment de-escalation

	De-escalation thresholds for those taking agents with a risk of hypoglycaemia	Targets
Fit older person	53 mmol/mol (7%)	58 mmol/mol (7.5%)
Moderate to severe frailty	58 mmol/mol (7.5%)	64 mmol/mol (8%)
Very severe frailty	64 mmol/mol (8%)	70 mmol/mol (8.5%)

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There has been increasing recognition recently that for the safety and wellbeing of older people, de-escalation of treatment and a relaxation of targets is appropriate (Strain et al, 2018). In addition to reducing the risk of hypoglycaemia, this strategy reduces tablet load; may enable once-daily administration, which is easier for carers to supervise; and reduces the risk of other side effects, such as heart failure and gastrointestinal complications.

Dementia and diabetes

For many people, successful diabetes management relies on the individual being able to follow a healthy eating plan, monitor blood glucose, take medications correctly, recognise and treat hypoglycaemia, adjust insulin dose in response to blood glucose readings and attend clinic appointments. The ability to do these things is seriously compromised if the person has dementia. Simplification of treatment, training of carers to recognise and treat hypoglycaemia, using a blood glucose meter and administering insulin and agreement on relaxed clinical targets are some of the requirements to keep such individuals safe. However, it should be kept in mind that giving up the daily process of managing a condition they may have had for decades can be a source of profound sorrow and frustration for the individual or their partner, especially if their usual routine is changed.

End of life and diabetes

Of the 500 000 people who die in the UK each year, approximately 75 000 have diabetes (Diabetes UK, 2018). As 'end of life' is defined as what is expected to be the last 12 months of the individual's life, a wide spectrum of factors need to be considered for diabetes management in this period (e.g. the individual's wishes, clinical targets, monitoring frequency, insulin regimen complexity, appetite, weight changes and effects of other medication). As mentioned above, the usual aim of diabetes management is primarily to reduce the risk of long-term complications, but this is inappropriate for someone with limited life expectancy. Diabetes UK (2018) supported the development of a useful document to advise on the management of diabetes during the last year of life (*Box 2*).

The document recommends that if an individual is treated with an agent that has a risk of hypoglycaemia (primarily, insulin and sulphonylureas), treatment should aim to achieve blood glucose levels no less than 6 mmol/l and no more than 15 mmol/l. This provides a safety margin to avoid hypoglycaemia without permitting hyperglycaemia at a level that would cause dehydration and discomfort.

Towards the end of life, particularly in the last few days or weeks, the individual's condition can change rapidly, so treatment needs to be reviewed regularly, even daily, as infection, steroid therapy, anorexia, vomiting and weight loss all impact blood glucose levels. Rapid de-escalation of treatment, dose increase or initiation of insulin may be warranted. For individuals with type 2 diabetes, cessation of blood glucose-lowering treatment including insulin may be possible. Insulin regimens can be simplified but never stopped in people with type 1 diabetes: patients with type 1 diabetes being admitted to hospital with diabetic ketoacidosis due to omission of insulin in the last days of life is heart-breaking, especially if they wish to die at home.

Ideally, a discussion about a patient's wishes concerning diabetes management should be had when end of life is approaching. This may be formalised in an advance decision, which is a legally binding document written by an individual with mental capacity to refuse a specific type of treatment in the future, even if his or her life is at risk. Useful information about these decisions is available at http://tinyurl.com/y3nd86za.

Box 2. Aims of diabetes care at the end of life

- Effective symptom control
- Minimise diabetes-related adverse treatment effects
- Avoid acute diabetes complications (hypoglycaemia, diabetic ketoacidosis, hyperosmolar hyperglycaemic state) and dehydration
- Ensure appropriate level of intervention according to the stage of illness, wishes of the individual, life expectancy
- Support self-management for as long as possible

Competency in diabetes care

Living with diabetes can be challenging at any time of life, so the support of nurses is valuable. Most people who have this chronic condition do not see a diabetes specialist nurse. Diabetes care may be provided by a practice nurse, community nurse, general nurse in secondary care or an unregistered practitioner. Having diabetes doubles the risk of being admitted to a care home (Sinclair et al, 2011), and 25% of care home residents have diabetes (Diabetes UK, 2018). As people with diabetes have a high prevalence of associated comorbidities, dementia, frailty and disability (Sinclair et al, 1997), they usually have very complex care needs. Despite this, care for many is provided by nurses and unregistered practitioners who do not have specialist diabetes knowledge. Being clear about what skills are needed to support an older person with diabetes and having the competence to put these skills into practice promotes safe, effective and high-quality care for this vulnerable group of people, irrespective of the healthcare settings in which they are cared for.

TREND-UK (Training, Research, and Education for Nurses in Diabetes-UK) has just launched the 5th edition of the *Integrated Career and Competency Framework for Adult Diabetes Nursing*. This tool covers 27 areas of diabetes care, from screening and diagnosis of type 2 diabetes to end-of-life diabetes management, and it includes sections particularly relevant to older people such as hypoglycaemia, injectable therapies and residential care. It lists the standards of competence expected for each aspect of care by five levels of staff, from unregistered practitioners to nurse consultants. It also includes useful resources and provides some examples of how to assess competency (*Box 3*). It can be found in the resources section on the TREND-UK website (www.trend-uk.org). Registration to access the site and the resources is free of charge.

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Box 3. Useful resources provided by TREND-UK

For healthcare professionals:
- Diabetes and dementia: guidance on practical management
- Hypoglycaemia in adults in the community: recognition, management and prevention

For people with diabetes:
- 65+ years old: Keeping well with your type 2 diabetes
- Diabetes and enteral feeding
- Keeping safe with insulin therapy
- Looking after your feet when you have diabetes

Conclusion

The status of older people varies considerably among individuals, since this group is defined using a wide age range. There is no such thing as a 'typical older person'. Thus, for diabetes mangement in older individuals, the degree of wellbeing, physical ability and mental capacity should influence decisions around appropriate treatment targets, choice of glucose-lowering agent and support needed, rather than chronological age. The aim should be to keep vulnerable older people safe and symptom-free but also encourage self-management and a lifestyle to maintain health in functionally independent older persons. Health professionals and care workers should have the appropriate level of competence to support people with diabetes in their care. BJCN

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KEY POINTS

- As people with diabetes have a high prevalence of associated comorbidities, they usually have very complex care needs
- Older adults with certain health statuses (e.g. dementia and end of life) need special considerations when it comes to diabetes management
- All individuals involved in diabetes care (from practice nurses and community nurses to unregistered practitioners) must have the skills needed to support older adults with diabetes
- Nurses in all healthcare settings have a vital role to play in supporting diabetes management.

CPD REFLECTIVE QUESTIONS

- Why would a one-size-fits-all approach not be effective for diabetes management among older adults?
- Reflect on whether you and your team members are aware of the skills and competence to deliver diabetes care in the community
- What factors need to be considered while making decisions about the treatment targets, types and support needed for diabetes management in older adults?

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