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REVIEW ARTICLE

Individualized Approaches to Diabetes Care in Nursing Homes

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ABSTRACT

Although diabetes care has been widely established as a single entity, data in older, frail individuals with numerous comorbidities and have limited polymedication. This group accounts for a sizable number of nursing home residents (NHs). We came together as a group of experts with multidisciplinary (endocrinologists, geriatricians, Nurses staff, general practitioners and diabetologists) with real-world practice in this field, which is becoming more and more important globally, to compile practical, straightforward guidance on the managing of senior, fragile patients of diabetes. An Individual Care Plan (ICP), which is presented in layman's terms, is the cornerstone of a patient's diabetes treatment. This is due to the demands placed on personnel of NH (medical coordinator, manager, nurses, and caregiver working at the front lines, and the other caregiver worker which is undertraining). The actual purpose of this document, which is released when the patient is admitted, is to made prescriptions ensure that given at and followed after admission. It details the need for proper treatment, regular monitoring, and dates and times for essential examinations and testing. This entails keeping tabs on the patient's HbA1c, as well as their blood and urine glucose levels and any complications that may arise from the condition (hypoglycemia, cardiovascular disease, foot disorders, ocular problems, malnutrition, kidney failure and peripheral neuropathy). Consequentially, staff education on the unique challenges of care for an elderly person with diabetes, emergency procedures, and maintaining an up-to-date ICP for use by medical professionals is essential.

Keywords: Diabetes, nursing home, polymedication

INTRODUCTION

Incidences of diabetes among the elderly continue to rise, posing a serious threat to public health. This is mostly attributable to the escalation in age-related insulin resistance as the population ages[38]. Type 2 diabetes is made worse by the current lifestyle factors of overeating and lack of exercise. Individualised treatment plans for diabetes in the elderly may be necessary because of a number of unique characteristics[45,23,67]. Although treatment guidelines for diabetes in the elderly have been produced, their recommendations are not backed by as much data as they are for younger patients, and none are tailored to the needs of the older population as a whole. There is some evidence that fragile older patients, i.e., the vast majority of nursing home residents, may benefit from treatment regimens similar to those established for younger patients based on rigorous glycemic control (NHs)[18,3,99,51]. Diagnosis, treatment, and monitoring of diabetes are made more difficult by the unique characteristics of the illness in elderly people, as well as by the demands of daily living and medical care in the NH context[9,63,82]. Despite recent statements that have shed some light on the subject, such as the ADA-EASD Position Statement on the Management of Hyperglycemia in Type 2 Diabetes and the treatment recommendations made by the European Diabetes Working Party for Older People (EDWPOP) for frail patients who have type 2 diabetes, there is a lack of conclusive evidence on diabetes management for the elderly in NHs[73]. Examples of such statements include the ADA-EASD Position Statement on the Management of Hyperglycemia in Despite the fact that both type 2 diabetes and the treatment recommendations for frail patients with type 2 diabetes that were developed by the European Diabetes Working Party for Older People (EDWPOP) shed some light on the subject, there is an overall absence of definitive evidence on diabetes management for the elderly in NHs[36,52,70].

This evidence-based clinical practise guideline was produced by a multidisciplinary panel of specialists including geriatricians, endocrinologists, diabetologists, and family physicians to assist in the treatment of old, fragile, diabetic patient. Nursing homes, nursing care housing for the elderly, the elderly, and diabetes mellitus type 2 were among the terms used to compile the literature analysed for this research. We used our clinical knowledge and expertise to figure out how good the search results were.

Prevalence, frailty, comorbid conditions, and polymedication are specifics of an elderly diabetic resident at a nursing home

Prevalence: Patients admitted to an NH may or may not have had a previous diagnosis of chronic diabetes. Undiagnosed cases of diabetes

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are not included in the epidemiological data. A significant frequency of undetected diabetes exists in NHs, making undiagnosed patients more susceptible to diabetic consequences[37]. Although it may be difficult to pinpoint the exact frequency of undiagnosed diabetes, research based on broad testing of blood glucose discovered that 7.9% of nursing home populations had the disease lacking ever receiving a diagnosis,It accounts for more than a third of all people diagnosed with diabetes[48]. This is because people who are elderly or frail are less likely to recognise diabetes' warning signs, which include increased urination, weight loss, confusion, kidney function loss, vision loss, fatigue, erectile dysfunction recurrent infection, sarcopenia, poor wound healing and cardiovascular issues. Because its early signs, such as stupor, confusion and even coma, that may be disregarded, acute hyperglycemia is a medical emergency[94]. Contrarily, polydipsia and polyphagia are often absent or underreported in elderly individuals, particularly those who have cognitive impairment. Those with poor thirst mechanisms and anorexia are more prone to experiencing worsening dehydration and malnutrition. Finally, older people often ignore their blood sugar levels[29,62].

Comorbidity: The available research on co-morbidities in this patient population is summarised in Table 1. In comparison to community-dwelling seniors (those 65 and over), the incidence of multimorbidity is much greater among NHs (82%). Almost everyone living in Nursing homes suffers from at least one comorbidity, and those with diabetes are more likely to have several conditions at once[20,83]. Myocardial infarction risk is increased by diabetes to the same extent as a prior history of myocardial infarction increases risk. High systolic blood pressure, which is caused by persistently high blood sugar, raises the risk of heart and brain diseases[71].

Despite the fact that pinpointing specific figures is challenging to ascertain, which is about 50% of these Nursing homes individuals exhibit considerable decline in cognitive, and depression is very common. Both of these conditions reduce the patient's ability to cooperate with and contribute to their own therapy[34]. Numerous studies have shown that diabetic microvascular problems that affect the cerebral arteries may contribute to the onset and progression of vascular dementia and Alzheimer's disease[86,8]. Numerous epidemiological studies have identified this latter relationship, although not all of them. Diabetes progression as well as diabetes development are both influenced by physical inactivity. Because falling is linked to such high rates of mortality, morbidity, and functional decline, it is a constant worry for patients who are still ambulatory[84]. Older patients of diabetes which are at higher risk than patients with non-diabetes for a

variety of reasons, including orthostatic hypotension, hypoglycemia, peripheral neuropathy and visual issues[49,91].

Polymedication: People living in nursing homes, especially those with diabetes, are likely to use a wide variety of drugs due to the prevalence of comorbid conditions. Approximately three-quarters of residents used five or more prescription medicines regularly, and almost one-quarter used more than nine, according to a recent survey of NHs in eight European countries[5]. Many of these regimens include superfluous or redundant medicines, which are equally as likely as recommended pharmaceuticals to cause undesirable side effects and interact with one another[14]. This was recently discovered through extensive study in the United States' NHs. When compared to younger patients, 16.6% of senior patients were admitted to hospitals due to negative medication reactions[25]. Because many commonly used drugs, including many medications prescribed to people with diabetes, can worsen hyperglycemia in NHs (corticosteroids, beta blockers, thiazide diuretics, olanzapine, pentamidine), or cause hypoglycemia (quinine, fluoroquinolones), the treatment regimen should be carefully considered[68]. In fact, at least half of the pharmacologic treatments now on the market come with a significant adverse effect called hypoglycemia. Insulin was the second most often implicated drug (12.8% of all such admissions) in a recent study of emergency hospital admissions for adverse drug reactions in older Americans, and poly-medication, in general, has been identified as a critical risk factor for hypoglycemia in senior diabetes patients[10,96,15,39]. The prevalence of hypoglycemia in elderly individuals who are receiving treatment for diabetes has been linked to a number of factors, including the individual's overall health, the presence of a number of comorbid conditions (such as chronic renal or hepatic impairment), acute illness, polymedication, and poor nutrition[64].

Frailty: The review's focus on one specific kind of NH, for those who are very vulnerable, is appropriate. When various physiological systems begin to weaken over time, it creates a condition known as frailty, which may be diagnosed in a clinical setting and seen in the laboratory[81]. Many people in nursing homes are physically weak and unable to do much of anything. Diseases and conditions associated with ageing contribute to this phenomenon [76,27,19]. These include cardiovascular illness (stroke and heart failure), arthritis, sarcopenia, osteoporosis, chronic pain, disorientation, fear of falling, incontinence, iatrogenic consequences, cognitive decline, and depression[95]. Few of these locals can expect to live much more than three years. Complications unique to diabetes, such as amyotrophy, cardiovascular disease, neuropathic pain, weight loss and cachexia, poor bone density, and increased risk of fracture, may further reduce a person's capacity for physical activity[78]. This means that diabetes residents of nursing homes are a particularly fragile and vulnerable group.

Initial Management: Diabetic patients who are newly admitted to a nursing home (NH) should have their diagnosis and current treatment plan evaluated. According to the study, diabetes was present upon admission for 26% of newly hospitalised patients[92]. However, the patient may be on medicines that are no longer necessary to prevent hypoglycemia and sarcopenia because of the natural reluctance to change a treatment that has likely been "effective" for a considerable amount of time[24]. In addition, acute hyperglycemia may develop in people with and without a diabetes diagnosis, often as a consequence of a medication response or dehydration. When deciding how to help an older person in nursing homes who has high blood glucose, it is important to think about the possible effects of acute hyperglycemia, such as diabetic ketoacidosis and hyperosmolar hyperglycemia, which could be an emergency[80].

Treatment Dilemma: Treatment aims to improve a patient's quality of life rather than necessarily lengthen their lifespan. To achieve this goal, a comprehensive picture of each patient's mental health issues is required[77]. The severity of these conditions and their effect on one's ability to function and quality of life should be used to prioritise diagnoses. A treatment approach focused on establishing balanced blood glucose is warranted since insufficient diabetes management will damage the status of patient's and quality of life[98,100]. An individual's quality of life may be jeopardised if they undergo therapy that is excessively strenuous and leads to functional imbalance. This is the precarious balance that defines diabetes care for this population[16]. The strategy must be tailored to the resident's level of functioning. The NH population ranges from fully mobile to utterly bedbound. Thus, it is necessary to modify therapeutic aims in light of this.

Hypoglycemia is more likely to occur in malnourished people. Although antidiabetic drug-induced hypoglycemia is common in NHs, there is strong epidemiological evidence that many patients who are currently being denied antidiabetic treatment would benefit from it[14]. Hospital admissions for ketoacidosis and hyperosmolar hyperglycemia, both of which are immediately life-threatening and might hasten cognitive decline, are twice as likely to occur in diabetic residents. Even if you have chosen to forgo treatment, you should still get your blood sugar levels checked if anything changes in how you feel[93]. The American Diabetes Association, the Société Francophone du Diabete and the European Association for the Study of Diabetes all recommend adapting therapy objectives to the patient's motivation, risk of hypoglycemia and other side effects, diabetes history, life expectancy, co-morbidities, cardiovascular consequences, and financial resources if treatment is selected[90]. Given the intricacy of the factors involved, an official individual, and the various consideration for diabetic assessment and care in nursing homes summarize in the table. 2.

Personal Care Plan: When treating elderly, dependent patients who have a number of different health problems, clinical decisions are made with the overarching goals of improving the patient's quality of life, maintaining function, preventing further loss, and preventing complications that could lead to hospitalization[35,88,72]. These are all preventative measures. In situations like this, one must shift their attention to a wider global perspective. The primary care physician for the NH team consults the ICP in order to make decisions on the treatment of diabetes, including determining a glucose goal, selecting a treatment plan, formulating daily care guidelines, and developing a long-term monitoring programme[85]. Documentation of the procedure will be assisted with by the office personnel.

As a result of these discussions, the ICP is formulated in conjunction with the patient and his or her loved ones, as well as the patient's primary care physician and other nurses and senior caregivers[17,46]. This report is attached to the patient's medical records and contains all of the findings and conclusions from the first evaluation, as well as directions for nurses and caregivers written in clear language and providing suitable monitoring schedules (dates for future consultations and tests). Strict record-keeping with the addition of any new information that is relevant, particularly any changes in treatment and test results, will serve to flag any unusual occurrences and provide an easily accessible resource for everyone involved in the patient's care, particularly those who are not familiar with the patient[61,6]. This is especially important for those who are not familiar with the patient. The attending physician's subsequent duties include those typically assigned to a physician: addressing patient concerns, overseeing monitoring, and following up on concerns made by nurses and other caregivers. In order to better track the results of antidiabetic medication, three patient types that may be used in NHs to categorise frailty are distinguished[1]. All diabetes people need constant vigilance over their blood glucose levels. A danger of hypoglycemia (e.g., HbA1c 7%) should prompt a warning, hence it's recommended to check HbA1c levels every three months. Blood glucose concentrations should be measured at least once a month at different times of the day (such as fasting, postprandial, and at 4 PM) in those on insulin or a sulfonylurea or at risk of hypoglycemia[57]. All staff should be aware of the signs of hyperglycemia and hypoglycemia, which may be hard to spot in older patients or not be noticed at all[21].

Goals and Therapeutic Strategies Specifications: Recent research by Bouillet et al on 100 senior diabetic patients in Pakistani NHs found that 59% were using an oral antidiabetic medicine (OAD) alone, 42% were taking insulin alone, and 17% were taking both[59]. Similar results have been seen in other polls. Most of these patients experienced frequent monitoring of their blood sugar, creatinine, and hypertension (88%, 97%, and 75%, respectively), while only a minority were subjected to regular monitoring of their eyes (16%) or brain function (32%)[101].

The maxim "start low, progress gently" applies to most treatment plans for the elderly. An HbA1c goal should be established prior to starting or maintaining medical anti-diabetic medication[54]. The EDWPOP recommendations were modified to account for the fragility of this group and now recommend metformin as the first-line medication for all patients with preserved renal and liver function in addition to being free of heart failure and peripheral vascular disease[2]. Metformin's benefit in this group is that it does not lead to hypoglycemia due to its failure to increase insulin release.

Although their role in this context has yet to be determined, a novel family of gliptins that promote insulin release without causing hypoglycemia might be of interest. According to a randomised clinical study involving 335 people with an average age of 71, Vild agliptinmonotherapy was equally effective as metformin in regulating blood glucose and caused fewer gastrointestinal side effects than metformin[102,55,87]. In addition, recent research has shown that vildagliptin may be safely used to achieve personalised glycemic goal levels in people aged 70 and above with type 2 diabetes. However, there is a lack of information on the very vulnerable NH population[7]. A summary of prescription data on available pharmaceutical alternatives for individuals with poor renal function and the elderly. Even though pioglitazone might be a treatment alternative in places where it is now accessible, the danger of fluid retention and abrupt heart failure prevents its widespread usage[75,44]. In individuals who are not well managed or for whom oral medications are inappropriate, insulin treatment may be required. It helps people eat better and decreases the need for pills. The recommendation for elder diabetic patient given in Fig.1. The patient, however, is put at serious risk of hypoglycemia. Mealtime delivery of rapid-acting insulin is only one example of a complex treatment regimen that is difficult to adapt to NHs, as medication is administered by a different staff member than those who prepare and serve meals. In many cases, the best choice is either one injection of basal insulin a day or two injections of intermediate insulins that have already been mixed[47].

Keeping an eye on diabetic patients in NHs: The treatment of non-specific disorders, including dehydration, malnutrition, sarcopenia, orthostatic hypotension, falls, depression, cognitive impairment, and incontinence, takes precedence over the prevention of diabetic complications in institutionalised patients[104,22]. Priority should be given to simple procedures that may be carried out right away without requiring the patient to leave the state of Nursing homes, such as clinical criteria assessed by the patient's primary care physician[89]. When possible, the NH should invite a visiting specialist (such as an ophthalmologist, cardiologist, endocrinologist, geriatrician, or podiatrist) when their knowledge is needed. While only patients from the first and second groups, who are expected to live longer, will be monitored for medium-term repercussions (cardiovascular system, renal system, eyes), all patients will have their short-term concerns assessed (hyper- and hypoglycemia, sarcopenia and malnutrition, falls, and foot damage). The patients in the first group will get treatment from medical professionals, while those in the second group will spend the most of their time being examined at their own homes[33].

Table 1: Studies of comorbidities of elderly diabetic patients in nursing homes

No. of Patients	No. With Diabetes / Prevalence	Country	Comorbidities	References
2237residents	731(31.6%) any of the diabetic warning signs at age 82 (MDS diagnosis or prescription claim, chart diagnosis, laboratory analysis).	US	Diabetic depression occurs in 40.8% of those who suffer from diabetes, whereas the general population has a 43% incidence of depression. 21 people with diabetes (3.3% of all cases) and 21 people without diabetes (1.7% of all cases) each had peripheral neuropathy. 36% against 19% at 5 months for hospitalisation Dialysis patients with end-stage renal disease decreased from 40 to 37 (4.8%), while those with chronic kidney disease increased from 68 to 78 (11.2%).	30
124,665withDM	24.6%-mean70.4y	US	Hospitalization rates were 60.1% for HT, 29.0% for depression, 19.0% for dementia, and 11.9% for renal failure among those with acute illnesses.	97
98NH, 534patientswithtype3DM, and1092controlsofover, 72yorecruited	Over 5.3% glycosylated haemoglobin (HbA1c) levels or a documented diagnosis of diabetes mellitus were present in the medical records of 523 participants.	Australia	Statistically significant difference between DM and NDT BMI<19e> 35 (7.0%) DM vs 144 NDT (12.5%) There were 124 cases of stroke and transient ischemic attack (18.7%). DM vs 153 (14.5%) NDT Alternative Disorders of the Cerebral Circulation 128 (21.5%) A DM victory against 183 (14.5%) NDT Disorder of Parkinson's 146 (13.7%) The difference between the DM and NDT cases of psychosis was 136 (14.8%) 62 (11.5%) DM vs 72 (6.5%) NDT 243 cases of coronary heart disease/myocardial infarction (35.7%). against 231 (24.0%) non-discrete types (NDT) Chronic cardiac failure due to congestion 257 (43.0%) DM vs. 329 (39.4%) NDT; DM vs. 359 (38.1%) NDT; DM vs. Hypertension, 228 (39.7%) DM	28
454participantswith2347, HbA1cmeasurements.	Meanagewas70,and185participi pants, (50%)weretakinginsulin	US	A lower risk of mortality or functional impairment was seen in those with higher HbA1c (P trend .006). As for cognitive impairment, 79% of registrants had a score of 6 or below on the Short Portable Mental Status Questionnaire, suggesting that they were experiencing some degree of cognitive decline.	103
9 geriatricinstitutions,cateri ngforatotalof657patients	13.46% Prevalence Nine senior centres averaged 4.8% (range, 12.45%-24.8%)	France	24% of patients with systolic blood pressure (in millimetres of mercury) more than 140; 65 patients with a creatinine clearance rate of less than 60 mL/Min	12
349,000DMinNH, whodoubledin20y	A comparable percentage (19.3%) and time frame also (median of 273)	US	Alzheimer's disease 39% vs. 44%, cardiovascular disease 80% vs. 72%, hypertension 56% vs. 35%	65

Table 2: Considerations for diabetic assessment and care in nursing homes

Time of Admission or diagnosis	Criteria for Assessment	Recommendations for monitoring
Diabetic screenings should be routinely administered to all incoming residents. Creation of a personalised diabetes treatment plan in accordance with the facility's Diabetes Care Protocol. The interdisciplinary team conducts a functional evaluation of the patient's global/physical, cognitive, and emotional condition. Examining and perhaps initiating diabetes therapy.	Factors influencing longevity, quality of life, autonomy, and control over one's own life	Patients or caregivers who have maintained cognitive function may benefit from a regimen of structured education and lifestyle interventions (such as physical exercise). Benefits, risks, metabolic objectives, and the assessment of diabetic complications are all part of the annual review of diabetes therapy and the diabetes care plan. New health problems call for a glycemic checkup.
The Mini-Mental State Exam (MMSE) The Guide to the Development of the Thymus (GDS) The Lawton Instrument for Assessing Daily Living Capabilities	Elaborate evaluation of the elderly	Testing on a regular basis: once a year and if a new health problem arises Measures of Adaptive Behavior in Daily Living (MMSE), Global Developmental Status (GDS), and the Instrument
Probability of Low Blood Sugar high risk: history of hypoglycemia, numerous comorbidities, moderate risk: renal impairment, recent hospital admission Evaluation of the risk of falling, including the effects of drugs, personal history, and surrounding environment.	Hypoglycemia and accident risk	Falls, disorientation, asthenia, sleepiness, sweating, pallor, speech impairment, mydriasis, tremor, odd movements, rapid mood swings, slurred speech, and mydriasis are all symptoms of low blood sugar. Anyone who notices signs should give the patient sugar water. Glucose intravenously if the nurse detects hypoglycemia. If you think your doctor should alter your therapy, have them know.
To determine who is at danger of malnutrition, a Mini-Nutritional Assessment may be used to determine whether dietary restrictions can be relaxed.	Nutritionalstatus	Consistent monthly monitoring of weight and body mass index (with meticulous record-keeping), with a focus on maintaining or regaining lean body mass. Mini-Nutrition Assessment, and Biology if Time Permits. Intervention for malnutrition.
That's a lot of comorbidities. Diabetic interactions. Rank comorbidities according to their effect on function and quality of life, taking into account mortality and the possibility of iatrogenic cause. Assessment of cardiovascular risk all across the world using the Framingham score. If you have high blood pressure and your kidneys are healthy, your goal should be to reduce your readings down to less than 150/90 mm Hg. Take a stricter stance and start monitoring for orthostatic hypotension in patients with renal disease. Keep up with secondary CVD prevention for those who already suffer from abnormal blood lipids. Infection detection using urine strip test (for leukocytes and glucose). Electrolyte balance, potassium, sodium, creatinine (estimated GFR), etc. Keep an eye on anti-diabetic drugs and those that might have an effect on kidney function or renal impairment.	History, risk factors, and comorbidities in cardiovascular disease (heart failure, ischemic heart disease, history of stroke or myocardial infarction, CV risk factors) Chronic kidney disease and diminished renin output	If any new health problems occur, it may be time to reevaluate your management of diabetes. Keep an eye on blood pressure and see what's up with any unexpected drops. Keep up with secondary prevention of dyslipidemia and cardiovascular disease. In general, an ECG should be performed once a year, but more often if symptoms are present. Possible initial-stage treatments include angiotensin-converting enzyme inhibitors, angiotensin receptor antagonists, long-acting calcium channel blockers, beta-blockers, and thiazide diuretics. Strip tests of the urine (to detect leukocytes and glucose) are used for monitoring and infection prevention on an annual basis and more often in patients taking medications that may affect kidney function. Electrolyte balance, potassium, sodium, creatinine (GFR calculation), etc.
Retinal clarity and visual acuity (fundus oculi, retinal photography and slit lamp examination). ICP should take into account the frequency of ophthalmologic monitoring..	Eyes	In the case of patients with retinopathy, yearly onsite examinations, including VA and retinography, are recommended for those with normal cognitive function; for those with impaired cognitive function, examinations are recommended once every 2 years. If an ophthalmologist is not available onsite, a referral may be made (rare).
Patient interviews, pinprick tests using a monofilament, and vibration analysis will all be part of the investigation.	feetandperipheral neuropathy	Patients at risk should have more frequent testing done on their blood vessels and nervous system than once per year. If a specialist is required, they will be referred. Caregiver education on preventive, toenail clipping, washing and drying, and footwear for high-risk patients Bathing: spotting the first indication and notifying the doctor

Table 3: Precautions when prescribing blood glucose lowering agents to elderly patients[2]

	Sulfonylureas	Thiazolidinediones	Glinides	Metformin	Insulin	DPP-IVinhibitors	GLP1-Ragonists
Weight	**Neutral/loss** Low danger below 60 mL/min As stated in the package insert, the recommended flow rate is 30 mL/min. So far as can be determined from[94]	**Gain** Potential Danger Is Moderate As stated in the prescribing information, creatinine clearance below 30 mL/min is contraindicated.	**Gain** Potential Danger Is Moderate None of the above Attention: Dosage Changes May Increase Hypoglycemia Risk[11] This is because the iatrogenic risk of hypoglycemia is much lower than it is with Sulfonamides.	**Gain** Extreme danger None of the above[26]	**Gain** Lessdanger NoDoseadjustment[11]	**Neutral** With an eGFR below 60 mL/min/1.73 m2, the risk of complications is minimal. For vildagliptin with a creatinine clearance of 60 mL/min/1.73 m2 or less, 50 mg/d is recommended at all times. 2.5 mg/day saxagliptin, 30-60 mL/min/1,73 m2: Sitagliptin 50 mg daily between 15 and 30 mL/min/1.73 m2:	**Loss** Safe bet Below 30 mL/min/1.73 m2 exenatide is not recommended. Limiting creatinine clearance to less than 60 mL/min/1.73 m2 when using liraglutide. The Prescribing Information says
Hypoglycemia Safety Measures for Patients with Chronic Kidney Disease							
Restriction for the Elderly	Assess renal health regularly. Malnutrition and dehydration might be made worse by gastrointestinal responses. The Prescribing Information says	Keep an eye out for hypoglycemia. The smallest first dosage of a short-acting SU[94]	After the age of 75, it's not a good idea. The Prescribing Information says	Danger of Low Blood Sugar In accordance with[94]	Due to the increased likelihood of age-related complications (such as bladder cancer, broken bones, and heart failure), the older patient must carefully weigh the potential advantages of therapy against the potential dangers. Prescription data suggests	Warnings for those over 75, with the exception of vildagliptin The Prescribing Information says	Warnings for Patients Over 75 Years Old from the Product's Prescribing Information
Sideeffects	Gastrointestinal/ lacticacidosis	Hypoglycemia	Hypoglycemia	Hypoglycemia	Fluidretention,Cardiac	Rare	GastrointestinalWeightloss

Cardiovascular System: Many people in Nursing homes live in fear of dying prematurely due to cardiovascular disease. Despite the recommendation for an annual resting ECG, further testing is only necessary when ominous symptoms are present[31]. It is important to monitor blood pressure on a regular basis and display the findings to draw attention to any fluctuations[58]. Because it may be harder for older people to handle sudden drops in blood pressure, they may benefit from antihypertensive therapy that is given slowly.

Fig.1 Recommendation for frail patients with type 2 diabetes for older people treatment

Kidney Function: Patients over the age of 65 who also have diabetes and chronic renal disease have a very poor prognosis. The significant frequency of renal impairment among diabetic NH residents highlights the need to monitor kidney function since this condition raises iatrogenic hazards in this polymedicated group[56]. Due to the difficulty in collecting urine samples over the course of 24 hours, proteinuria may be approximated from a single sample of urine by adjusting for creatinine. The most critical measurement is the GFR, which is calculated from creatinine levels in the blood. Neither elderly participants nor those that are very thin, fat, or malnourished have been used to validate any of the currently used procedures[66].

As a result of the fact that the Chronic Kidney Disease Epidemiology Collaboration formula has been validated in people whose renal function was either normal or impaired, the French National Health Authority recommends doing an enzymatic test in addition to using the formula. Due to the fact that the majority of the persons in this group have renal impairment of some kind, the Cockcroft-Gault approach cannot be relied upon for accurate results[50] . The Modification of Diet in Renal Disease technique should be employed instead since it can predict pathological GFR with a high level of accuracy (although it tends to underestimate normal rates). All diabetic patients should have their glomerular filtration rate (GFR) assessed annually, and those with prior kidney disease or on nephrotoxic medicines should have their GFR evaluated more often. Annual checks on electrolytes (sodium, potassium, and calcium) are also recommended[53]. Polyuria and genitourinary infections, both of which are more common in older women with diabetes, may induce urine incontinence, which can have negative effects on quality of life as well as increase the risk of dehydration[79].

Eyes: Only 35.9% of institutionalised diabetic patients benefit from regular eye examinations, according to the findings of a new comprehensive analysis. This is despite the fact that there is solid evidence that early identification and treatment of diabetic retinopathy decreases the risk of vision loss[42]. This is the case despite the fact that a significant number of senior diabetes patients with retained cognitive function suffer a reduction in quality of life as a consequence of ophthalmological problems. Diabetics who have sufficient glycemic control (with HbA1c of 8%) and normal blood pressure do not need annual ophthalmological tests (including evaluation of visual acuity, dilated eye slit-lamp examination, and retinography). In all other cases, a thorough eye exam should be performed at least once a year; this is especially important in cases where retinopathy, glaucoma, or cataract are suspected to be present or have already shown themselves[4]. If an ophthalmologist visits the NH to provide these examinations, it would be excellent. If a patient is at risk for neuropathy, they should have monofilament testing done more often than once per year[60]. A general practitioner (GP) should check your feet at least once a year, and a podiatrist may check them again if necessary. Caregivers should be taught the basics of foot care, such as debriding, dressing ulcers, using orthoses, wearing special shoes, making sure the feet are completely dry after washing, and keeping toenails short. They should also be told to keep a close eye out for any signs of trouble and report them to the doctor when necessary, such as after every bath[69].

Comprehensive Geriatric Assessment: Evaluations of cognitive (Mini-Mental State Examination), thymic (Geriatric Depression Scale), and daily living function should be part of the process of adjusting therapy and care on a regular basis or at least once a year during an acute incident (hospitalization)[40].

Dietfor Diabetic Patients in NHs? 54% of diabetic patients in a sample of French NHs were on a specific diabetes diet, yet their HbA1c levels were the same as those with no dietary restrictions, despite solid evidence that this is of little value in this group[43]. The most important thing is that patients in this high-risk group for weight loss, sarcopenia, and functional decline enjoy their meals. Residents of nursing homes are also at risk of dehydration on a daily basis. Diabetic individuals are

at an increased risk of significant consequences such as dehydration and hyperosmolar hyperglycemia[32].

Education and Training: Patients are urged to take an active role in their treatment whenever feasible. However doing so calls for an elevated level of self-awareness and medical literacy. Particularly important are being alert for the first indications of hypoglycemia and acute hyperglycemia, taking good care of one's feet, avoiding wounds, and being aware of circumstances that might lead to a decompensation of one's diabetes[74]. The elderly patient in an institution has a number of challenges that make it difficult for them to learn, including a lack of ability to see the future and, in particular, the long-term effects of complications. Healthcare is often provided by family and friends or by the National Health Service (NHS) itself. As a result, the elements in Table 2 need to be considered in the educational process. This outline has the potential to serve as an accessible supplementary resource for the ICP. Since there is a lot of turnover in NHs, it is up to the NH coordinator to make sure that all of the new caregivers get the right training[13].

CONCLUSIONS

Treatment of type 1 diabetes in younger patients should focus on minimising the patient's risk of developing complications (chronic but also acute to a lesser degree) (i.e., maintaining tight glycemic control as witnessed by an HbA1c level of below a certain threshold). On the other hand, when dealing with elderly people living in NH who have diabetes, it is crucial to focus on maximising quality of life while minimising the risk of hospitalisation and protecting patients' independence. This requires considering malnutrition, sarcopenia, the risk of falls, and cognitive impairment when deciding on a treatment plan, in addition to concentrating on acute problems such as hypoglycemia, hyperglycemia, infection, and dehydration. The wide variety of risk factors and problems associated with diabetes prevent the development of a universally applicable algorithm or even glycemic goals that should be used when making treatment decisions. Practical diabetes management in the NH environment relies on the creation and implementation of an individual care plan (ICP), as well as education and training (of the patient, family, physician, nurses, and notably caregivers) due to the complexity of the approach

Conflict of interest: Nil

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