

# Hypoglycaemia in residential care homes

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## ABSTRACT

Hypoglycaemia is the most common metabolic complication occurring in older people with type 2 diabetes. Limited data are available about prevalence of diabetes or its complications in care homes. However, the prevalence of residents with diabetes in care homes seems to be significant. There is high level of disability, dependency, and polypharmacy among residents in these settings. Hypoglycaemia is both an important adverse reaction of treatment and an outcome measure. This study reviews the relevant literature and reports a case of hypoglycaemia to demonstrate the causes of hypoglycaemia, characteristics of these patients, and the complexity of their problems.

### Keywords

elderly; homes for the aged; hypoglycemia.

## INTRODUCTION

Although up to 20% of residents in care homes have diabetes, insufficient data are available about their quality of care, complications, or outcome.<sup>1</sup> Hypoglycaemia is often a limiting factor in their management.<sup>2</sup> Risk factors for hypoglycaemia are highly prevalent in these individuals and can be a cost concern to health systems (Box 1).<sup>3</sup> Prevention of hypoglycaemia has the potential to improve psychosocial aspects of patients, their quality of life, confidence, and compliance.<sup>2</sup>

## CASE REPORT

An 86-year-old female was admitted to hospital from a nursing home with a history of being less responsive. She was known to have type 2 diabetes, hypertension, dementia, ulcerative colitis, and end-stage renal disease. Her medications consisted of 16 different drugs including insulin. Her blood glucose was 1.2 mmol/l, urea 28.1 mmol/l, creatinine 348 µmol/L, and glycosylated haemoglobin 10.2%. She responded to intravenous glucose and her insulin regimen was reduced. Although her oral intake was variable, she was discharged back to the nursing home with no medical follow-up.

Five months later the patient was admitted with general deterioration, urinary tract infection, and high blood glucose of 27.6 mmol/l. Her insulin regimen was titrated up and she was discharged without follow-up. She was admitted again 3 months later with blood glucose of 1.3 mmol/l, mainly due to reduced oral intake, and behaviour problems. Her insulin was reduced and she was again discharged home without follow-up. After 8 days she was readmitted with a chest infection, high blood glucose of 31.1 mmol/l, and dehydration. The patient's insulin was increased, and in spite of her oral intake remaining unpredictable and erratic, she was again discharged with no follow-up. Two weeks later she was readmitted with dehydration due to reduced oral intake. Her blood glucose was 3.6 mmol/l, urea 79.2 mmol/l, and creatinine 1657 µmol/L. She was rehydrated, and insulin was changed to insulin glargine once daily.

Although the patient improved, the nursing home refused to take her back due to her complex

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**Box 1. Risk factors for hypoglycaemia.<sup>3</sup>**

- ▶ Advanced age
- ▶ Multiple comorbidities
- ▶ Polypharmacy (≥5 medications)
- ▶ Chronic renal or hepatic impairment
- ▶ Recent hospital admission
- ▶ History of hypoglycaemia
- ▶ Poor nutrition
- ▶ Use of sulfonylurea or insulin
- ▶ Acute illness
- ▶ Hypoglycaemic unawareness
- ▶ Diminished counter regulatory responses

condition. At this stage she was essentially 'homeless'. Her renal function gradually improved and blood glucose stabilised. She was finally discharged to an elderly mental health nursing home. No follow-up arrangements were made.

**DISCUSSION**

With increasing age, symptoms of hypoglycaemia become less intense, and neurological symptoms (for example, light-headedness and unsteadiness) are more commonly reported and may be misinterpreted as features of cerebrovascular disease.<sup>4</sup>

Hypoglycaemia may cause serious morbidity, provoking major vascular events such as stroke, myocardial infarction, acute cardiac failure, and ventricular arrhythmias.<sup>5</sup> Although the perception of recurrent hypoglycaemia may reflect tight glycaemic control, this is not necessarily the case for patients with diabetes who are resident in care homes. Hypoglycaemia is usually multifactorial and reflects the complexity of the associated comorbid conditions. In a randomised placebo-controlled trial of three of the major risk factors for sulphonylurea-induced hypoglycaemia — advanced age, maximum dose of sulphonylurea, and missed meals — the combination of risk factors did not result in hypoglycaemia in healthy older patients with diabetes.<sup>6</sup> This supports the view that the existence of comorbidities is an important factor in the occurrence of hypoglycaemia. The case reported here represents most of the risk factors of hypoglycaemia, and the authors believe that this is not an isolated or a rare case, as many are likely to exist in care homes nationwide.

The new class of long-acting insulin analogues may have the potential to limit the risk of

hypoglycaemia and can be conveniently injected once daily. However, this is unlikely to eradicate the problem, considering the complexity of cases within care homes. Older patients resident in care homes will require special needs assistance to improve every aspect of diabetes management. In patients with dementia and diabetes, diabetes care is difficult and will require closer attention. Geriatricians may be one resource that could be involved in the local diabetes care service to develop integration between primary and secondary care as well as the development of shared care protocols. Targets should not always be a number, as quality-of-life measures may be regarded as one of several primary goals.

**Consent**

Patient consent was not obtained as the patient died and had no dependents

**Ethical approval**

Ethics approval was not required for this educational development activity

**Competing interests**

The authors have stated that there are none.

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**How this fits in**

Hypoglycaemia in older residents of care homes who have diabetes is common, and can be a cost concern to health systems. Hypoglycaemia in these individuals is not necessarily due to tight glycaemic control but is multifactorial reflecting their complex background. A lax approach to glycaemic control is unlikely alone to eradicate hypoglycaemia, and may be harmful. Older residents in care homes will require structured services reflecting their special needs to improve every aspect of diabetes management.