Managing diabetes at the end of life

Life expectancy has increased in the past 20 years including for people with diabetes, but diabetes is among the top ten leading causes of death in Australia, primarily due to long term complications. The focus of palliative care, especially at the end of life, is on maintaining comfort and quality of life by controlling unpleasant symptoms, managing pain and providing spiritual and other support to the individual and his or her family including helping them make informed decisions about care.

PALLIATIVE AND OF LIFE CARE

Managing diabetes at the end of life is complex and there is limited evidence about what constitutes best practice diabetes care at the end of life. However, consensus guidelines and an Ethical Framework for Integrating Palliative Care Principles into the Management of Advanced Chronic or Terminal Conditions are available to guide clinical decisions.

Dying is a complex process that follows a common continuum from stable through unstable, deteriorating and terminal stages and usually lasts 6-12 months. However, the stages usually do not occur in a linear fashion, especially in diabetes where there may be a long progression to terminal care and many episodes of stable/unstable diabetes before the individual enters the deteriorating and terminal stages.

Thus, it can be difficult to determine an individual's disease trajectory and prognosis and consequently, to decide when to begin discussing palliative end of life care and advanced care planning with people with diabetes. However, proactive care planning is possible. Regular consultations and annual complication assessments, which are part of standard diabetes care, represent opportunities to identify the need to consider palliative care issues such as advanced care planning, power of attorney and other documentation.

DIABETES AND END OF LIFE CARE
A plethora of physiological and psychological factors affect glycaemic control during end of life care. The contribution of hyperglycaemia and hypoglycaemia to discomfort, pain and unpleasant symptoms is largely under-recognised, particularly if regular blood glucose (BG) monitoring is not part of the care plan. Many palliative health professionals regard BG monitoring as burdensome, distressing and in conflict with palliative care philosophy, rather than a useful diagnostic tool to detect hypo- and hyperglycaemia and aid decisions about symptom control and comfort.

In contrast, most people with diabetes and their families regard BG monitoring as comforting and essential to optimising their care, except in the last hours of life.

KEY MANAGEMENT CONSIDERATIONS
Diabetes management should be integrated into the overall palliative care plan. In addition, corticosteroid-induced hyperglycaemia is common in palliative care situations especially in people with pre-existing diabetes risk factors.

THE CARE PLAN NEEDS TO INCLUDE MAKING PROVISION FOR:
- Identifying individuals at risk of steroid-induced diabetes when people are admitted to palliative care and/or when steroid medications are prescribed.
- Managing diabetes that develops following steroid use or a diagnosis of cancer.
Identifying and managing pre-existing diabetes and diabetes complications that affect management decisions such as medications when renal and liver disease are present and can contribute to pain and discomfort.

Managing hypoglycaemia, which can be individually or collectively related to hypoglycaemic medications, low hepatic glucose reserves, particularly if the individual is malnourished or has hepatic metastases, renal impairment or gastrointestinal disturbance due to anorexia and cachexia syndrome.

Choosing a safe, effective medication regimen to maintain BG in an acceptable range. Renal and hepatic function is often altered and gastrointestinal disturbance and impaired glucose absorption is common, which, along with the prognosis and the individual’s care decisions, influences medication choices. Many oral hypoglycaemic agents might be contraindicated and insulin might be a safer more easily adjusted option.

Activating the Liverpool Care Pathway when the interdisciplin ary team agrees the individual is dying.

Significantly, care is likely to change as the individual's health status changes within the Palliative Care Outcomes Collaborative (PCOC) (2008) 5 stages, and the care plan may need to be revised frequently before the Liverpool Care Pathway applies.

GLYCAEMIC TARGETS
Preventing long term diabetes complications is not a priority of palliative care; however, managing existing complications to reduce pain and promote comfort is essential.

Opinions differ about the optimal BG target range and BG monitoring frequency. The conservative approach to BG monitoring and treating hyperglycaemia in palliative care situations is changing as health professionals recognise the impact of hyperglycaemia on comfort and quality of life and safer more effective treatments are available. In addition, hypo- and hyperglycaemia can be difficult to detect without BG monitoring because many of the symptoms can have multiple contributory causes and can be present without significant symptoms.

Hyperglycaemia causes distressing osmotic symptoms, exacerbates pain, contributes to delirium and confusion, reduces mood, problem-solving and coping ability and quality of life. Thus, preventing hyperglycaemia can enhance comfort and meet a key palliative care goal.

Hypoglycaemia risk is increased in people with diabetes on sulphonylureas and/or insulin. The risk of hypoglycaemia is increased in palliative situations due to anorexia, malnourishment, liver disease, low glycogen stores and cachexia syndrome in advanced cancer. As in all diabetes care planning, glycaemic targets need to be individualised to ensure safety, comfort and avoid hypo- and hyperglycaemia. Generally, a blood glucose range from 5-15 mmol/L will achieve these aims.

BLOOD GLUCOSE MONITORING
Many people with diabetes and their families want to continue their usual BG monitoring regimen because it helps them maintain stability at a frightening, uncertain time of life. In addition, some people with diabetes and/or their families regard reduced or no BG monitoring as staff 'giving up'.

TYPE 1 DIABETES
Diabetes management depends on the prognosis, oral intake and co-existing diseases as well as the type of diabetes. People with type 1 diabetes who are reasonably well should continue their usual insulin regimens but doses should be adjusted to avoid hypo and hyperglycaemia and in the terminal phase. Generally, long acting insulin analogues or small doses of rapid acting insulin might be appropriate if the person has nausea and vomiting or little appetite. In the future, there may be a role for insulin pumps.

Blood ketone tests should be performed if the BG is consistently over 15 mmol/L, especially if the individual has nausea, vomiting and signs of dehydration.

TYPE 2 DIABETES
Sulphonylureas (SU) doses may need to be reduced to avoid hypoglycaemia. SU may be contraindicated if renal and/or liver disease is present. Side effects such as gastrointestinal symptoms associated with Metformin also needs to be considered and metformin should be ceased if there is renal failure (eGFR <30ml/min). Short acting insulin or long acting insulin analogues may be a suitable alternative to oral hypoglycaemic agents depending on the individual's physiological status, symptoms and comfort.

Thiazolididiones may not be suitable if liver and cardiovascular disease is present. The GLP-1 and DPP-1V may be an alternative but have not been tested in palliative care settings. In addition, the GLP-1 often cause nausea and both types of agents have been associated with pancreatitis.

CORTICOSTEROID-INDUCED DIABETES
Corticosteroids reduce insulin sensitivity and increase insulin resistance proportional to the dose of steroid and...
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duration of use. Non-diabetic individuals have different thresholds for developing diabetes. The presence of diabetes risk factors increases the risk. Screening people for diabetes risk factors on admission to palliative care and monitoring blood glucose levels when people commence steroids will identify steroid-induced hyperglycaemia and enable treatment to be commenced to reduce the impact on comfort, cognitive function and pain.

Steroid medications usually increase blood glucose levels during the day especially post prandially and the blood glucose tends to normalise overnight and may be in the normal range before breakfast. The most effective management is to monitor blood glucose levels especially in the afternoon, use the lowest effective steroid dose for the shortest possible time and proactively treating hyperglycaemia, e.g. with a morning dose of long acting insulin or Premixed insulin with breakfast. However, the insulin regimen should be guided by the blood glucose pattern.

EDUCATION
Education and support, including bereavement support is essential for individuals with diabetes, their families and often health professional carers. Sensitive discussion about the need to adjust medicines and other changes to established self-management routines is essential. In addition, diabetes specialists are in an ideal position to identify regular opportunities to identify when to begin discussing palliative care and other end of life issues.

SUMMARY
Caring for people at the end of life is an important part of the continuum of care. Health professionals have a responsibility to advise and support people with diabetes to make timely decisions about their diabetes care at the end of life.

Blood glucose monitoring provides important information on which to base treatment decisions. The aim should be to avoid hypo and hyperglycaemia.

The individual’s wishes and accumulated diabetes knowledge and expertise should be respected and acknowledged.

KEY PRACTICE POINTS

- Palliative care focuses on avoiding burdensome monitoring, managing unpleasant symptoms, comfort and quality of life through interdisciplinary team care.
- It is essential that the individual and his or her family are involved in care decisions.
- Palliative care is a key aspect of the chronic disease trajectory. Proactive planning for palliative situations could be incorporated into annual diabetes complication screening processes.
- Hyper- and hypoglycaemia contribute to the distressing symptoms associated with end of life care but their presence and significance is often under-recognised and under-rated.
- Blood glucose monitoring can help identify hypo- and hyperglycaemia and enable appropriate treatment.
- The blood glucose range and medication regimen should be individualised and adjusted as needed.

References