

# Inpatient management of diabetes mellitus

## Clinical priorities

Diabetes is a chronic condition marked by high levels of blood glucose, which can lead to acute and chronic complications. In acute hospitals, hyperglycaemia can increase risk of infection and other adverse outcomes. Chronic high blood glucose levels are associated with long-term complications and comorbidities.

### Aims of the initiative

- Improve the in-hospital management of diabetes mellitus
- Enhance the patient experience and health outcomes
- Reduce hospital readmission.

**235,955** episodes of inpatient care

NSW Health Statistics 2016–2017



**1.49m** bed days



**6.3 days** average length of stay



**\$1.6 billion** resourcing cost

A recent analysis of care in NSW hospitals highlighted four key areas for improvement.

1



### IDENTIFICATION AND TESTING

All people with diabetes who present to hospital should have: a laboratory blood glucose level (BGL) test taken in the emergency department; a current HbA1c recorded in the medical file early in the admission.

2



### INSULIN MANAGEMENT

A minimum of four BGL checks should occur in the first 24 hours of admission, and regular BGL monitoring (minimum four BGL checks/day) should be continued for patients requiring insulin. A basal-bolus-supplemental insulin regimen should be considered for all patients requiring subcutaneous insulin.

3



### ACCESS TO SPECIALIST CARE

Patients should have timely and appropriate access to specialist care (endocrine and/or diabetes education) if required, preferably early in the admission.



4

### OPTIMISING HEALTH THROUGH ONGOING CARE

A diabetes management plan, with standardised communication processes and tools, will support the transfer of patient care to the community for ongoing management.

Addressing these four key areas will ensure that people with diabetes who require hospitalisation are provided with best practice, evidence based care.

## Identification and testing

All people with diabetes who present to hospital should have a formal laboratory BGL test taken in the ED.

- Early recognition of hyperglycaemia requires early testing of a BGL.
- Patients without known diabetes who present to hospital with macrovascular complications will also benefit from a BGL test on admission.
- Best practice is supported by early identification and documentation of diabetes in ED, using the appropriate classification (i.e. type 1, type 2 or other).
- LHDs may consider a BGL test for patients presenting to ED who are at risk of type 2 diabetes.

All patients with known diabetes should have a current HbA1c that is recorded in the medical file early in the admission.

- HbA1c may be self-reported, obtained from the GP or re-requested if unknown or the last test was >3 months ago.
- HbA1c determination in those with known diabetes can be an effective tool for identifying patients at risk of inpatient hyperglycaemia, and who would benefit from detailed glycaemic review prior to transitioning to community-based care.
- HbA1c can be measured in patients without known diabetes who have elevated BGLs to help diagnose diabetes or pre-diabetes. In these cases, patients should be supported to access appropriate follow-up care.

## Insulin management

Not all patients with diabetes will require insulin; however those requiring insulin are at higher risk of glycaemic instability in hospital. Early recognition of people at risk of glycaemic instability enables earlier implementation of glycaemic management protocols, which may translate to fewer complications and a more positive experience.

- A minimum of four BGL checks should occur in the first 24 hours of admission, and regular BGL monitoring (minimum four BGL checks/day) should be continued for patients requiring insulin.
- Patients treated with corticosteroids are at higher risk of developing hyperglycaemia. Regular BGL monitoring (four times daily) should be considered for the first 48 hours after receiving corticosteroid therapy.
- Evidence-based insulin protocols, such as a basal-bolus-supplemental insulin regimen, should be considered for patients requiring subcutaneous insulin.
- Patient-centred care includes establishing pre-admission insulin therapies and patient involvement and education.

- eMeds with Glucose Management View enhancement or the paper-based NSW Subcutaneous Insulin and Blood Glucose Chart for Adults should be implemented to support standardised best practice insulin management. The use of sliding scale insulin alone should be discouraged.
- Staff should have access to capability building resources, such as those developed by the ACI, on best practice insulin management.



## Access to specialist care

Patients should have timely and appropriate access to specialist care if required. This may be a physician with a diabetes interest in rural areas. Refer patients to specialist diabetes services as early as possible if they experience:

- recurrent hypoglycaemia despite medication adjustment
- any severe hypoglycaemia (BGL less than 2.5 mmol/L or any episodes causing reduced level of consciousness)
- persistently elevated BGLs (two or more BGLs higher than 15mmol/L in a 24-48 hour period).

Patients should also have access to specialist care if they have type 1 diabetes, use an insulin pump, or are commenced on insulin therapy and are likely to be discharged requiring insulin.

Other indications for referral to endocrinology and diabetes services can be found in the [ACI Thinksuln app](#).



## Optimising health through ongoing care

A diabetes management plan, with standardised communication processes and tools, will support the transfer of patient care to the community for ongoing management by a general practitioner and integrated care team.

Seamless care transition beyond the hospital is also key priority area for improving outcomes. As a minimum standard, transfer of care documentation should include an assessment of diabetes management prior to and during the patient admission, changes made to medical therapy (and rationale for changes), and follow up arrangements after discharge.

Long-term benefits of improving inpatient glycaemic management can be achieved by ensuring the safe transition of patients on insulin therapy from an inpatient environment to the community. Patients with identified risk factors should receive access to appropriate outpatient specialist diabetes care.

## Evidence

Wong V, Lai J, Inpatient Insulin Management: an Evidence Check rapid review brokered by the Sax Institute ([www.saxinstitute.org.au](http://www.saxinstitute.org.au)) for the NSW Agency for Clinical Innovation, 2016.