Treatment | Continuous Blood Glucose Monitoring (CGM)
---|---
For the treatment of | Type 1 Diabetes Mellitus (or absolute insulin deficiency secondary to other pancreatic disease)
Background | Continuous Glucose Monitoring (CGM) is a device including a sensor self-inserted subcutaneously, which records blood glucose levels through the day and night. Thus can help individuals with variable and unpredictable glucose levels achieve safer and more stable overall control.
Commissioning position | The policy has been developed in the absence of a national tariff for the use of Continuous Blood Glucose Monitors. The Provider is required to submit a prior approval request. The Commissioner will consider the request against the criteria / category outlined below.

A) **Disabling hypoglycaemia despite optimal self-management supported by a secondary care specialist team**

A trial of CGM only to be considered following structured education, optimised insulin analogue basal-bolus insulin therapy, frequent conventional finger-prick self-monitoring of blood glucose and a trial (or at least consideration) of insulin pump therapy (CSII).

‘Disabling hypoglycaemia’ may comprise:

- **Severe events requiring assistance from another person in treatment**
  (2 such events within 12 months lead to revocation of driving licence)

- **Impaired awareness of hypoglycaemia**
  (Loss of early warning symptoms is associated with 6-fold increased risk of severe hypoglycaemia, but some individuals are able to avoid severe events by reliance on the presence of a ‘carer’; obsessional conventional glucose monitoring; or avoidance of normal activities which may induce hypoglycaemia / mask symptoms / or lead to personal danger if hypoglycaemia ensues eg exercise)

  CGM can substitute ‘technological awareness’ for ‘physiological awareness’

- **Fear of hypoglycaemia**
  Disability, glucose levels chronically above target and reduced quality of life due to phobic worry and behaviours leading to hypoglycaemia avoidance.

B) **Dangerously erratic glucose levels leading to decompensated high glucose levels and diabetic ketoacidosis**

A trial of CGM only to be considered following structured education, optimised insulin analogue basal-bolus insulin therapy, frequent conventional finger-prick self-monitoring of blood glucose and a trial (or at least consideration) of insulin pump therapy (CSII).

A trial of CGM can be considered if deemed safe and appropriate by a specialist diabetologist for individuals in whom other illnesses or complications preclude safe and stable control without this technology.

This might include those with gastroparesis, Addison’s disease or renal failure.

C) For pregnant women with labile blood glucose or dangerous
A trial of CGM only to be considered following structured education, optimised insulin analogue basal-bolus insulin therapy, frequent conventional finger-prick self-monitoring of blood glucose and a trial (or at least consideration) of insulin pump therapy (CSII).

**D) Transition from paediatric care:** Already using CGM and having demonstrated significant clinical benefit justifying ongoing provision.

**Requests should be made by a consultant Diabetologist**

This guideline is focused on devices providing ‘real time’ data directly to the user. All specialist diabetes services would be expected in addition to have some provision for limited use of CGM without ‘real time’ data for single short-term (3-4 day) diagnostic studies of underlying 24 hour glucose patterns including mean, variability and hypoglycaemic / hyperglycaemic excursions. These would be sited by the clinical team within the service and would not be used long-term in any individual.

Initial requests should be made for funding of short term (6 months) trial of continuous monitoring, and a subsequent request for long term funding should be made based on the results of the trial.

**Indicative numbers**

It is expected that CGM will largely be used as an ‘add on’ therapy for those already using insulin pumps and may often be provided through a sub-specialty insulin pump service.

It is not envisaged that the therapy will be offered to more than 1-3% of adults with type 1 diabetes attending a specialist service (under current guidelines and with current technologies).

Supra-regional assessment for islet or pancreas transplantation should be considered in those who continue to experience recurrent life-threatening hypoglycaemia despite CGM.

**Effective from**

December 2013

**Summary of evidence/rationale**

A number of national guidelines encourage healthcare professionals to support the implementation and use of Continuous Glucose Blood Monitoring systems for patients to self monitor their glucose levels to improve and manage their condition. NICE Type 1 diabetes: diagnosis and management of type 1 diabetes in children, young people and adults – June 2009 (reissued March 2010) – CG15

- 1.2.6.6 children and young people with type 1 should be encouraged to use blood glucose measurements for short-term monitoring of glycaemic control because this is associated with reduced levels of glycated haemoglobin.

- 1.2.6.8 children and young people with type 1 diabetes and their families should be encouraged to perform frequent blood glucose monitoring as part of a continuing package of care.

- 1.2.6.14 children and young people with type 1 diabetes who have persistent problems with hypoglycaemia unawareness or repeated hypoglycaemia should be offered continuous glucose monitoring systems.

- 1.3.1.1 children and young people with type 1 diabetes, their parents and carers should be informed that they should always have access to an immediate source of carbohydrate (glucose or sucrose) and blood glucose monitoring equipment for immediate conformation and safe management of hypoglycaemia.

- 1.9.1.6 continuous glucose monitoring systems have a role in the assessment of glucose profiles in adults with consistent glucose control.
4.2 the new technology may identify women in whom short-term postprandial peaks of glycaemia are not detected by intermittent blood glucose monitoring.

Diabetes UK Position Statements Continuous Glucose Monitoring (September 2008)

- Continuous Glucose Monitoring System is useful for intermittent use by clinicians and patients to look at interstitial glucose profiles and identify trends. It is particularly useful in adults and children to identify overnight glucose profiles, postprandial hyperglycaemia and therefore aid in adjustment therapy rather than looking at absolute values.
- Adults and children who have persistent problems with hypoglycaemia unawareness or repeated hypoglycaemia should be offered Continuous Glucose Monitoring to help determine where and why this is happening and therefore aid in management and education. In these circumstances these devices should be available through their local diabetes services.
- In the long-term it is hoped that the ultimate diabetes management system will be developed into a closed loop artificial pancreas that will monitor glucose levels and dispense insulin accordingly. However, in the meantime Continuous Glucose Monitoring provide information to the person with diabetes and their healthcare professional that can aid in improvement of HbA1c levels and diabetes control.

Although there is some conflicting evidence on the use of Continuous Blood Glucose, this piece of equipment is recommended for patients who have ongoing problems with controlling their diabetes.

Scottish Intercollegiate Guidelines Network Management of diabetes a national clinical guideline – March 2010 – 116

- 3.3 Self monitoring of glycaemia – Continuous monitoring of interstitial glucose (CMG) is an alternative for people with type 1 diabetes who have persistent problems with glycaemic control.
- 3.3.1 Continuous Glucose Monitoring – systems using continuous monitoring of glucose by means of subcutaneous sensors which measure interstitial glucose levels have been developed. These systems are generally only considered for use by patients who experience difficulties in maintaining normal glucose levels or who have transferred to continuous subcutaneous insulin therapy.


- In conclusion, real-time Continuous Glucose Monitoring systems can improve metabolic control, reduce hypoglycaemia episodes and improve quality of life. Whether this holds true for long term periods and in the majority of patients remains to be proven. In the long-term, Continuous Glucose Monitoring help to reduce chronic diabetes complications and
perhaps also mortality therapy reducing health care costs.

<table>
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<tr>
<th>Review Date</th>
<th>March 2016</th>
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<tbody>
<tr>
<td>Policy to be reviewed by</td>
<td>Northern England Strategic Clinical Networks Waterfront 4 Newburn Riverside Newcastle upon Tyne NE15 8NY</td>
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</table>

REFERENCES

NICE Type 1 diabetes: diagnosis and management of type 1 diabetes in children, young people and adults – June 2009 (reissued March 2010) – CG15

NICE Diabetes in pregnancy: management of diabetes and its complications from pre-conception to postnatal period – March 2008 (reissued July 2008) – CG63

Diabetes UK Position Statements Continuous Glucose Monitoring (September 2008)

Scottish Intercollegiate Guidelines Network Management of diabetes a national clinical guideline – March 2010 – 116