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Type 1 diabetes in adults: diagnosis and management of type 1 diabetes in adults NICE guideline Draft for consultation, January 2015

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How the guideline was developed

Scope – update of CG 15 from 2004. Not a guideline for pump use. Some recommendations from 2004 repeated in 2015 eg psychological issues, blood pressure etc

Guideline development group Chair – Prof Stephanie Amiel, I GP , 3 consultants, nurses, and Several people with type 1 diabetes both lay and professional.

Met every 4-6 weeks for nearly 2 years. Health economic and systematic review/evidence experts from Centre for Chronic disease management at RCP

Very strict conflict of interest policy

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Recommendations - Diagnosis

1.1.1 Diagnose type 1 diabetes on clinical grounds in adults presenting 15 with hyperglycaemia, bearing in mind that people with type 1 diabetes typically (but not always) have one or more of:

- ketosis
- rapid weight loss
- age of onset below 50 years
- BMI below 25 kg/m2
- personal and/or family history of autoimmune disease. **[new 2015]**

Recommendations - Diagnosis

1.1.2 Do not discount a diagnosis of type 1 diabetes if a person presents with a BMI of 25 kg/m2 or above or is aged 50 years or above. **[new 2015]**

1.1.3 Do not measure C-peptide and/or diabetes-specific autoantibody titres routinely to confirm type 1 diabetes in adults. **[new 2015**

Any comments?

Recommendations – autoantibody testing

1.1.4 Consider further specialist investigation involving measurement of C-peptide and/or diabetes-specific autoantibody titres if:

type 1 diabetes is suspected but the clinical presentation includes some atypical features (for example, age 50 years or above, BMI of 25 kg/m2 or above, slow evolution of hyperglycaemia or long prodrome) **or**

- type 1 diabetes has been diagnosed and treatment started but there is a clinical suspicion that the person may have a monogenic form of diabetes, and C-peptide and/or autoantibody testing may guide the use of genetic testing **or**
- classification is uncertain, and confirming type 1 diabetes would have implications for availability of therapy (for example, continuous subcutaneous insulin infusion [CSII or 'insulin pump'] therapy). **[new 2015]**

Recommendations – Autoantibody testing

1.1.5 When measuring C-peptide and/or diabetes-specific autoantibody titres, take into account that:

autoantibody tests have their lowest false negative rate at the time of diagnosis, and that the false negative rate rises thereafter

C-peptide has better discriminative value the longer the test is done after diagnosis

with autoantibody testing, carrying out tests for 2 different diabetes-specific autoantibodies reduces the false negative rate. **[new 2015]**

Recommendations – Education & Information

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Offer all adults with type 1 diabetes a structured education programme of proven benefit, for example the DAFNE (dose adjustment for normal 6 eating) programme. Offer this programme 6–12 months after diagnosis, at a time that is clinically appropriate and suitable for the person. **[new 2015] [1.3.1**

What is the local provision?

Recommendations - Diet

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1.4.1 Offer carbohydrate-counting training to adults with type 1 diabetes as part of structured education programmes for self-management (see section 1.3). **[new 2015]**

1.4.3 Do not advise adults with type 1 diabetes to follow a low glycaemic index diet for blood glucose control. **[new 2015]**

1.4.4 Offer dietary advice to adults with type 1 diabetes about issues other than blood glucose control, such as weight control and cardiovascular risk management, as indicated clinically. **[new 2015]**

Can these be implemented locally?

Recommendations – Blood glucose control

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Support adults with type 1 diabetes to achieve and maintain a target HbA1c 11 level of 48 mmol/mol (6.5%) or lower, to minimise the risk of long-term vascular complications. **[new 2015] [1.6.6]**

Agree an individualised HbA1c target with each adult with type 1 diabetes, taking into account factors such as the person's daily activities, aspirations, likelihood of complications, comorbidities, occupation and history of hypoglycaemia. **[new 2015] [1.6.7]**

Ensure that achieving, or attempting to achieve, an HbA1c target is not accompanied by problematic hypoglycaemia. **[new 2015]**

Recommendations – HBA1c

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1.6.1 Measure HbA1c levels every 3–6 months in adults with type 1 diabetes. **[new 2015]**

1.6.3 Calibrate HbA1c results according to International Federation of Clinical Chemistry (IFCC) standardisation. **[new 2015]**

1.6.4 Inform adults with type 1 diabetes of their HbA1c results after each measurement and ensure that their most recent result is available at the time of consultation. Follow the principles in the NICE guideline on patient experience in adult NHS services about communication. **[new 2015] - Can this be done locally?**

Recommendations - smbg

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Support adults with type 1 diabetes to test at least 4 times a day, and up to 10 times a day if any of the following apply

the target for blood glucose control, measured by HbA1c level (see recommendation 1.6.6), is not achieved

the frequency of hypoglycaemic episodes increases

there is a legal requirement to do so (such as before driving)

during periods of illness

before and after sport

when planning pregnancy, during pregnancy and while breastfeeding

if there is a need to know blood glucose levels more than 4 times a day for other reasons (for example, impaired awareness of hypoglycaemia, high-risk activities). **[new 2015] [1.6.13]**

Recommendations – smbg targets

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Advise adults with type 1 diabetes to aim for:

- a fasting plasma glucose level of 5–7 mmol/litre on waking **and**
- a plasma glucose level of 4–7 mmol/litre before meals at other times of 6 the day. **[new 2015] [1.6.15**]

Do you feel these are possible?

Recommendations – insulin therapy

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Offer multiple daily injection basal–bolus insulin regimens, rather than twice-daily mixed insulin regimens, as the insulin injection regimen of choice for all adults with type 1 diabetes. **[new 2015] [1.7.2]**

1.7.4 Offer twice-daily insulin detemir as basal insulin therapy for adults with type 1 diabetes. **[new 2015]**

1.7.5 Consider, as an alternative basal insulin therapy for adults with type 1 diabetes

an existing insulin regimen being used by the person that is achieving their agreed targets

once-daily insulin glargine if insulin detemir is not tolerated or if twice-daily basal insulin injection is not acceptable to the person. 4 **[new 2015**

What is your reaction to these?

Recommendations – rapid acting insulins

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1.7.7 Offer rapid-acting insulin analogues injected before meals, rather than rapid-acting soluble human or animal insulins, for mealtime insulin replacement for adults with type 1 diabetes. **[new 2015]**

1.7.8 Do not advise routine use of rapid-acting insulin analogues after meals. **[new 2015]**

1.7.9 If an adult with type 1 diabetes has a strong preference for an alternative mealtime insulin, respect their wishes and offer the preferred insulin. **[new 2015]**

Recommendations – Mixed insulins

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1.7.10 Consider a twice-daily human mixed insulin regimen for adults with type 1 diabetes if a multiple daily injection basal–bolus insulin regimen is not possible and a twice-daily mixed insulin regimen is chosen. **[new 2015]**

1.7.11 Consider a trial of a twice-daily analogue mixed insulin regimen if a person using a twice-daily human mixed insulin regimen has hypoglycaemia that affects their quality of life. **[new 2015]**

Recommendations - Metformin

1.7.14 Consider adding metformin to insulin therapy if an adult with type 1 diabetes and a BMI of 25 kg/m2 or above wants to improve their blood glucose control while minimising their effective insulin dose. **[new 2015]**

Do we do this?

Managing Hypoglycaemia

1.3.7 Consider the Blood Glucose Awareness Training (BGAT) programme for adults with type 1 diabetes who are having recurrent episodes of hypoglycaemia (see also section 1.10). **[new 2015]**

Can this be provided locally or do people with hypo unawareness need referral to a specialist unit?

Recommendations – Hypo awareness

Assess awareness of hypoglycaemia in adults with type 1 diabetes at each 13 annual review. **[new 2015] [1.10.1]**

1.10.2 Use the Gold score or Clarke score to quantify awareness of hypoglycaemia in adults with type 1 diabetes, checking that the 2 questionnaire items have been answered correctly. **[new 2015]**

1.10.3 Explain to adults with type 1 diabetes that impaired awareness of the symptoms of plasma glucose levels below 3 mmol/litre is associated with a significantly increased risk of severe hypoglycaemia. **[new 2015]**

Managing Hypo Unawareness

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1.10.4 Ensure that adults with type 1 diabetes with impaired awareness of hypoglycaemia have had structured education in flexible insulin 10 therapy using basal–bolus regimens and are following its principles correctly. **[new 2015]**

1.10.5 Offer additional education focusing on avoiding and treating hypoglycaemia to adults with type 1 diabetes who continue to have impaired awareness of hypoglycaemia after structured education in flexible insulin therapy. **[new 2015]**

1.10.6 Avoid relaxing individualised blood glucose targets as a treatment for adults with type 1 diabetes with impaired awareness of hypoglycaemia. **[new 2015]**

Managing Hypo Unawareness

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1.10.7 Review insulin regimens and doses and prioritise strategies to avoid hypoglycaemia in adults with type 1 diabetes with impaired awareness of hypoglycaemia, including:

- reinforcing the principles of structured education
- offering continuous subcutaneous insulin infusion (CSII or insulin 24 pump) therapy
- offering real-time continuous glucose monitoring. **[new 2015]**

1.10.8 If impaired awareness of hypoglycaemia is associated with recurrent severe hypoglycaemia despite these interventions, consider referring the person to a specialist centre. **[new 2015]**

Recommendations - Equipment

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1.8.3 Offer needles of different lengths to adults with type 1 diabetes who are having problems such as pain, local skin reactions and injection site leakages. **[new 2015]**

1.8.4 If possible, choose needles with the lowest acquisition cost to use with pre-filled and reusable insulin pen injectors. **[new 2015]**

1.8.5 Advise adults with type 1 diabetes to rotate insulin injection sites and avoid repeated injections at the same point within sites. **[new 2015]**

"Motherhood and apple pie?"

Recommendations - Transplantation

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1.9 Referral for islet or pancreas transplantation

1.9.1 Consider referring adults with type 1 diabetes who have recurrent severe hypoglycaemia that has not responded to other treatments (see section 1.10) to a centre that assesses people for islet and/or pancreas transplantation. **[new 2015]**

1.9.2 Consider islet or pancreas transplantation for adults with type 1 diabetes with suboptimal diabetes control who have had a renal transplant and are currently on immunosuppressive therapy. **[new 2015]**

Where would we refer to locally?

Ketone Measurement

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1.11.1 Consider ketone monitoring (blood or urine) as part of 'sick-day rules' for adults with type 1 diabetes, to facilitate self-management of an episode of hyperglycaemia. **[new 2015]**

Ketone monitoring in hospital

1.11.2 In adults with type 1 diabetes presenting to emergency services, consider capillary blood ketone testing if:

- DKA is suspected **or**
- the person has uncontrolled diabetes with a period of illness, and urine ketone testing is positive. **[new 2015]**

1.11.3 Consider capillary blood ketone testing for inpatient management of DKA in adults that is incorporated into a formal protocol. **[new 2015]**

Is this the local policy

Recommendations – inpatient care

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Enable adults with type 1 diabetes who are hospital inpatients to self- administer subcutaneous insulin if they are willing and able and it is safe to do so. **[new 2015] [1.14.6]**

1.14.1 Aim for a target plasma glucose level of 5–8 mmol/litre for adults with type 1 diabetes during surgery or acute illness. **[new 2015]**

1.14.2 Establish a local protocol for controlling blood glucose levels in adults with type 1 diabetes during surgery or acute illness to achieve the target level. **[new 2015]**

Inpatient Care

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1.14.3 Use intravenous in preference to subcutaneous insulin regimens for 4 adults with type 1 diabetes:

- if the person is unable to eat or is predicted to miss more than 1 meal **or**
- if an acute situation is expected to result in unpredictable blood glucose levels – for example, major surgery, high-dose steroid treatment, inotrope treatment or sepsis **or**
- if insulin absorption is expected to be unpredictable, for example because of circulatory compromise. **[new 2015]**

Is this local policy?

Inpatient Care

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1.14.4 Consider continuing the person's existing basal insulin regimen (including basal rate if they are using continuous subcutaneous insulin infusion [CSII or insulin pump] therapy) together with protocol-driven insulin delivery for controlling blood glucose levels in adults with type 1 diabetes during surgery or acute illness. **[new 2015]**

1.14.5 Use subcutaneous insulin regimens (including rapid-acting insulin before meals) if an adult with type 1 diabetes and acute illness is eating. **[new 2015]**

Gastroporesis

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1.15.1 Consider domperidone (in preference to metoclopramide) for treating gastroparesis in adults with type 1 diabetes. **[new 2015]**

Although this use is common in UK clinical practice, at the time of consultation (December 2014), domperidone did not have a UK marketing authorisation for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

1.15.2 Consider continuous subcutaneous insulin infusion (CSII or insulin pump) therapy for adults with type 1 diabetes who have gastroparesis. **[new 2015]**

1.15.3 Advise a small-particle-size diet (mashed or pureed food) for symptomatic relief for adults with type 1 diabetes who have vomiting caused by gastroparesis. **[new 2015]**

1.15.4 Refer adults with type 1 diabetes who have gastroparesis for specialist advice if the interventions in recommendations 1.15.1, 5 1.15.2 and 1.15.3 are not beneficial or not appropriate. **[new 2015]**

TFT Testing

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1.15.5 Measure blood thyroid-stimulating hormone (TSH) levels in adults 8 with type 1 diabetes at annual review. **[new 2015]**

Acute painful neuropathy of rapid improvement of blood glucose control

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1.15.25 Explain to the person that the specific treatments for acute painful neuropathy resulting from rapid improvement of blood glucose control:

- have the aim of making the symptoms tolerable until the condition resolves
- may not relieve pain immediately and may need to be taken regularly for several weeks to be effective. **[new 2015]**

1.15.27 Do not relax diabetes control to address acute painful neuropathy resulting from rapid improvement of blood glucose control in adults with type 1 diabetes. **[new 2015]**

1.15.28 If simple analgesia does not provide sufficient pain relief for adults with type 1 diabetes who have acute painful neuropathy resulting from rapid improvement of blood glucose control, offer treatment as described in the NICE guideline on neuropathic pain

Erectile Dysfunction

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1.15.30 Offer men with type 1 diabetes the opportunity to discuss erectile dysfunction as part of regular review. **[2015]**

1.15.31 Offer a phosphodiesterase-5 inhibitor to men with type 1 diabetes with isolated erectile dysfunction unless contraindicated. Choose the phosphodiesterase-5 inhibitor with the lowest acquisition cost. **[new 2015]**

1.15.32 Consider referring men to a service offering further assessment and other medical, surgical or psychological management of erectile dysfunction if phosphodiesterase-5 inhibitor treatment is unsuccessful or contraindicated. **[2015]**