DONCASTER DIABETES GUIDELINES

April 2014
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Screening

Diabetes Definition

Sustained hyperglycaemia due to an absolute or relative lack of insulin, associating Diabetes Type 2 with insulin resistance, associated with an increased risk of microvascular and macrovascular complications.

The NICE 2013 guidance for Diabetes recommends:

- Follow up and regular testing of individuals known to be at increased risk of developing diabetes (people who have previously been found to have impaired glucose regulation and women with a history of gestational diabetes)
- Opportunistic Screening of people with multiple risk factors.

A high index of awareness is needed, as many cases remain undiagnosed.

Symptoms

- Polyuria
- Polydipsia
- Weight loss
- Tiredness / Lethargy
- Blurred vision
- Urinary or genital infection
- Skin infection including pruritus.

High Risk Patient Groups

- Age over 40 years
- Family history of diabetes
- Obesity especially with central distribution
- People of Southern Asia and Afro-Caribbean origin
- History of gestational diabetes
- Patients with Impaired Glucose Tolerance / Impaired fasting glycaemia
- Patients with ischaemic heart disease, claudication or hypertension
- Patients with cataract
- People with multiple risk factors need advice and support to reduce their risk and information about the symptoms and signs of diabetes.

Early Diagnosis of Diabetes – at risk patients

Pregnant Women symptoms of:

- thirst, polyuria, weight loss;
- other urinary symptoms;
- recurrent infections e.g. skin;
- neuropathic symptoms such as pain, numbness and paraesthesia;
- changes in visual acuity;
- vague or unexplained symptoms, lassitude.

Other illnesses:

- Hypertension;
- ischaemic heart disease;
- peripheral vascular disease;
- cerebrovascular disease;
- gout;
- glaucoma.

Also consider in:

- those with obesity;
- people of Asian, African and African Caribbean descent; over 65s;
- family history of:
  - diabetes;
  - cardiovascular disease;
  - hypertension;
- women with a history of:
  - gestational diabetes
  - who have given birth to babies weighing > 4kg;
  - polyhydramnios;
  - intrauterine death;
  - BMI >30;
  - PCOS with established diagnosis.

Confirmation of the diagnosis

Requires a LABORATORY plasma glucose measurement. (Capillary samples are not sufficient)

Criteria for diagnosing diabetes mellitus

<table>
<thead>
<tr>
<th>Patient with symptoms of diabetes</th>
<th>Fasting plasma glucose</th>
<th>2-hour plasma glucose</th>
<th>Random venous plasma glucose</th>
<th>OR</th>
<th>OR</th>
</tr>
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<tr>
<td>Random venous plasma glucose</td>
<td>≥ 11.1 mmol/l</td>
<td></td>
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<tr>
<td>Fasting plasma glucose</td>
<td>≥ 7.0 mmol/l</td>
<td></td>
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<tr>
<td>2 hour plasma glucose</td>
<td>≥ 11.1 mmol/l after 75g oral glucose (OGTT)</td>
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</table>

Asymptomatic patient

Two samples, either random, fasting, or after OGTT are needed to confirm the diagnosis. Samples should be taken on different days. Most cases can be confirmed with a random glucose measurement and an OGTT is often not necessary (World Health Organisation 2006).

Other diagnostic categories

Impaired glucose tolerance (IGT)

Fasting glucose less than 7 mmol/l
2-hour glucose between 7.8 and 11.1 mmol/l

- IGT and IFG are not clinical entities but should be considered as risk categories for cardiovascular disease and/or future diabetes
- Patients with IGT/IFG should be recorded and receive:
  - Follow-up and regular testing (reviewed at least annually);
  - Education and advice on risk of diabetes / diet / lifestyle modification etc,
  - (e.g. weight loss of 5kg and 30 minutes of moderate exercise 5 times weekly reduces progression to Type 2 Diabetes by almost 60%).

N.B. HbA1c can be used as a diagnostic test for diabetes providing that stringent quality assurance tests are in place and assays are standardised to criteria aligned to the international reference values, and there are no conditions present which preclude its accurate measurement.

An HbA1c of 48mmol/mol is recommended as the cut point for diagnosing diabetes. A value of less than 48mmol/mol does not exclude diabetes diagnosed using glucose tests (WHO 2011 Use of glycated haemoglobin (HbA1c) in the diagnosis of diabetes)
Newly Diagnosed Type 2 Diabetes

Initial and Ongoing Management

Initial Appointments (Practice Nurse or GP)

- Clinical Examination
  - Bloods
  - Urine
  - Lipids
  - Footcare
  - Height/Weight/BMI

- Management Plan
  - Diabetes register
  - Retinopathy screening
  - Structured Patient Education
  - Self-management plan
  - Patient Held Record
  - Referral to Dietetics

- Patient Education
  - What is diabetes?
  - Diet
  - Physical Activity
  - Smoking
  - Footcare

- Healthy Weight Solutions

- Ongoing Monitoring
  - 6 monthly
    - HbA1c – every 3-6mnth (depending on control & treatment changes) hypo
    - Blood Pressure – at least every 6mths if hypertensive or with renal disease BP
  - 12 monthly / annual review
    - HbA1c
    - Urine for Microalbuminuria
    - Retinal Screening
    - U & E’s
    - Blood Pressure
    - Lipid Profile (if not hypertensive & no renal disease)
    - Foot screening
    - Symptom enquiry
    - Assess CVD Risk
    - Sexual health enquiry
    - Weight, Height, BMI
    - Waist circumference

- Lifestyle
  - Diet Review (offer Dietetic referral)
  - Physical Activity
  - Smoking
  - Psychological well-being
  - Foot care
  - Pre-conception
  - Weight Management

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Patient Education

Provision of education for people with diabetes should be at the heart of diabetes care. Healthcare professionals should work with the person with diabetes to enhance and support their capacity to self-care. Diabetes education should be a planned life-long process, starting at the point of diagnosis and remaining an essential component of diabetes care thereafter. Family members, partners and carers should be included in the education process as appropriate (Diabetes UK).

Education should be tailored to individual needs and may be achieved through group or one-to-one education. Information must be accurate, clear, concise and not conflicting. All professionals providing education must be appropriately trained.

Initial and Ongoing Management

<table>
<thead>
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<th>New Patient Education (first appointments)</th>
<th>New Patient Management (Clinical Examination)</th>
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<tbody>
<tr>
<td>• What is Diabetes?</td>
<td>• Check HbA1c, Blood Glucose, Lipid Profile, U &amp; E, Liver Function Tests, Thyroid Function Tests, Full Blood Count</td>
</tr>
<tr>
<td>• Establish patients understanding of their Diabetes and educational needs</td>
<td>• Dip urine and check urinary albumin: creatinine ratio if appropriate</td>
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<tr>
<td>• Provide initial dietary advice (Refer to Healthy_Weight_Solutions and offer individual dietitian review if appropriate)</td>
<td>• Examine feet (see Podiatry)</td>
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<tr>
<td>• Physical activity</td>
<td>• Weight, height, Body Mass Index, waist circumference</td>
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<tr>
<td>• Smoking</td>
<td>• Record on Diabetes register</td>
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<tr>
<td>• Foot care</td>
<td>• Retinopathy screening information</td>
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<tr>
<td>• Eye screening</td>
<td>• Refer to structured education (see Dottie – Doncaster Type 2 Diabetes Informative Education Programme)</td>
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<tr>
<td>• Driving</td>
<td>• Implement self-management plan and provide Patient Held Record (with guidance on it’s use).</td>
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<tr>
<td>• Self-monitoring and targets (offer Patient Held Record)</td>
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<tr>
<td>• Prescription exemption</td>
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<tr>
<td>• Pre-conception advice (if appropriate)</td>
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<td>• Flu/pneumonia</td>
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<td>• Local support group</td>
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<td>• What care to expect.</td>
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• When providing education to people with diabetes it is important to allow sufficient time and avoid information overload.
• People learn in different ways so the facilitator should proceed at an appropriate pace and level to the group/individual.
• Those attending the education sessions should be encouraged to do so with a friend or relative should they so desire as this can help them to feel more comfortable and can also help with understanding.
Type 2 Diabetes Structured Education

The aims of the structured education programme are to improve outcomes through addressing the individual’s health beliefs, optimising metabolic control, addressing cardiovascular risk factors (helping to reduce complications), facilitating behaviour change (such as increased physical activity), improving quality of life and reducing depression. An effective programme will also enhance the relationship between the person with diabetes and their healthcare professionals, thereby providing the basis of true partnership in diabetes management.

What is Dottie?

Dottie (Doncaster Type Two (Diabetes) Informative Education) is a structured education programme that has been developed by the multi-disciplinary Diabetes Education Development Group and piloted and run by the Diabetes Nurses and Diabetes Dietitians. The programme has been designed to meet standards outlined in evidenced based national policy such as the National Institute for Health and Clinical Excellence (NICE). The programme gives those attending the opportunity to learn how to self-manage their condition, explaining the importance of good control of diabetes to prevent complications and knowing when to get help. It also provides participants with support material specific to the programme.

Sessions take place in groups of up to 12 people plus a relative/carer/friend. The programme is held in various locations around Doncaster and normally lasts for approximately 6 hours over two half day sessions covering the topics noted on page 7.

Dottie is fun as well as informative and is a combination of discussion, practical work (food models and labels) and teaching.

How can Dottie help?

By supporting people to be confident self-managers of their diabetes, the programme helps them to identify their own health risks, to problem solve, set personal goals and plan for the future which allows them to think positively about their control of their own situation.

With a view to increasing the numbers of those referred into structured education programmes a new QOF indicator (DM14) was introduced with effect from April 2013 stating: “The percentage of patients newly diagnosed with diabetes, on the register, in the preceding 1 April to 31 March who have a record of being referred to a structured education programme within 9 months after entry on to the diabetes register.” By referring patients to Dottie, practices can ensure they meet QOF targets.

How can people be referred to Dottie?

All healthcare professionals can refer anyone newly diagnosed with type 2 diabetes (or those diagnosed within the past 2 years) to the programme by using the Dottie referral forms. Referal forms should be sent or faxed to the Diabetes Specilist Nurses (address below).

If you would like to know more about the Dottie programme, please contact the Diabetes Specialist Nurses, Cantley Health Centre, Middleham Road, Goodison Boulevard, Cantley, DN4 6ED Tel: 01302 379569, Fax: 01302 379500 or the Diabetes Dietitians, Department of Nutrition and Dietetics, DRI Tel: 01302 366666 ext 4110.

Training is available for those delivering diabetes education to patients on a 1 to 1 basis. Please contact the Diabetes Dietitians for further information on the above number.
Lifestyle Modification

- Work with each **individual** to find an approach to lifestyle changes that has the best chance of success (e.g. weight reduction and / or increased exercise).
- Offer patient education on an **ongoing** basis.
- Link to structured educational programmes where possible.
- **Patient information** is available from Diabetes UK: [www.diabetes.org.uk](http://www.diabetes.org.uk).

Smoking cessation
Stopping smoking is one of the most effective ways of reducing the risk of developing long-term complications of diabetes.
- Smoking increases the risk of coronary heart disease and stroke in people with diabetes and also increases their overall mortality.
- Smokers with diabetes are more than twice as likely to develop neuropathy and to have micro and macroalbuminuria.
- Smoking cessation advice & support (including NRT) should be a routine component of diabetes care.

With effect from 1st April 2014 contact the services are as follows for further advice & information:-

1. **Stop smoking advice and support for pregnant women and women who have recently had a baby** will be provided by RDaSH.
   - Tel: 01302 876290 You may also contact the relevant midwife or health visitor for advice via the usual route.

2. **Stop smoking advice and support for adults in the community** will be provided by South West Yorkshire Partnership NHS Foundation Trust.
   - Tel: 0800 6120011 Secure Fax 01709 423208 or e-mail [stopsmokingservice@rothgen.nhs.uk](mailto:stopsmokingservice@rothgen.nhs.uk)
   - Postal communication to: Doncaster and Rotherham Smokefree Services, Rotherham Community Health Centre, Greasbrough Road, Rotherham, S60 1RY

   The central clinic location (formerly East Lathe Gate House) will be at The Point, 16 South Parade, Doncaster, DN1 2DR.

Physical Activity
Regular physical activity is a vital part of diabetes management and will help to lower blood glucose levels, blood pressure, cholesterol, weight and the risk of developing CVD. Patients should be advised to take specialist advice before undertaking intensive / prolonged exercise and then should be encouraged to engage in regular activity Regular activity is considered 2.5 hours per week (ideally 30 minutes 5 days per week).

People with diabetes treated with tablets / insulin should be advised that:
- Blood glucose monitoring is recommended before and after intensive / prolonged exercise;
- They may need to increase carbohydrate intake / reduce treatment (as advised by GP /Consultant/nurse/dietitian);
- They should always carry dextrose tablets / sugary drinks;
- Patient information includes: Keeping active from Diabetes UK (free).

Psychological well-being
People with diabetes commonly suffer from depression, as they often attribute loss of enjoyment / energy to their diabetes rather than to depression. Patient information includes Balance for Beginners from Diabetes UK (£2.50).

Further support for patients can be offered through the Doncaster Community Psychological Therapies Service. Tel: 01302 565556, Fax: 01302 344085. Alternatively, support is available from The Talking Shop. The Talking Shop is a drop-in advice and psychological therapy shop which gives people the opportunity to browse information on mental health issues and gain information about therapies on offer. Contact them at 63 Hall Gate, Town Centre, Doncaster, DN1 3PB or Tel. 01302 565650.
**Healthy Eating**

**Dietary Modification**
This is the primary treatment for all patients diagnosed with diabetes. It is an equally important part of treatment for those requiring oral hypoglycaemic agents and/or insulin as for those using only lifestyle modification to control their diabetes.

Taking steps to balance a patient’s diet can help to:
- Control blood glucose levels;
- Improve blood lipids and blood pressure;
- Minimise the long term macro and microvascular complications of diabetes;
- Control weight, BMI and waist measurements (see **Weight Management**).

The current evidence suggests that patients should be advised to follow a balanced diet, which is high in fibre, low in fat, low in sugar and with calorie restrictions for the overweight patient.

The main principles of dietary modification, which are applicable to all patients diagnosed with diabetes, are clearly documented in Diabetes UK information. This information should be provided to all newly diagnosed patients and re-enforced as required at each annual review.

**With effect from April 2013, a new QOF indicator (DM13) states:- “The percentage of patients with diabetes, on the register, who have a record of a dietary review by a suitably competent professional in the preceding 12 months”.

**Implementation of Dietary Change**
Dietary advice should be individually tailored and regularly updated to take into account the patient’s lifestyle and circumstances e.g. age, BMI, work, and ethnicity.

- Changes in diet should be discussed and agreed with consideration to HbA1c, current treatment and exercise. Radical changes should be avoided in favour of more gradual modification of their eating habits, which can be established and maintained long term.
- **Be cautious of diabetic foods and drinks** – They may still affect blood glucose levels and are usually very high in fat and calories. They can also have a laxative effect and are expensive.

**Referral to Dietetics**

Diabetes UK and NICE guidance states that everyone with diabetes should be offered an appointment with a Registered Dietitian at diagnosis and for review as required throughout their lives.

Individual advice by a Dietitian is available in many GP practices throughout Doncaster and at DRI/Mexborough Montagu hospitals. There are also specialist diabetes clinics held at various locations around Doncaster. Access to these clinics is available through EBS bookings or by direct written referral to:

**Dietitians at:** Department of Nutrition and Dietetics, Doncaster Royal Infirmary. Tel: (01302) 366666 ext 4110.

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Weight Management

It is recommend that patients should be given realistic targets for weight loss and should aim for an initial body weight loss target of 5-10%, although lesser amounts are still beneficial and losing more weight in the longer term has metabolic benefits (Nice CG 66/87, Nice CG 43). Weight loss targets set for patients should be achievable and tailored support should be offered that considers individual preferences and circumstances, willingness to change and effects on the patient’s quality of life (Nice CG 87 (update)). Achieving ideal body weight may take years but a steady and sustained weight loss should be a long term goal. In addition to weight loss goals, other behaviour related outcome goals, such as healthy eating and increased physical activity levels should be an integral part of weight management.

Normal Body Mass Index (BMI) for adults is 18.5 - 24.9kg/m² (Asian patients <23kg/m²). Weight management has an important role in reducing the risk of complications in patients with diabetes. When helping a person with diabetes to lose weight agree a realistic weight loss goal. Aim for 10kg reduction or 10% of body weight.

- A 10kg or 10% weight loss can result in:
- 30% reduction in diabetes related deaths;
- 50% reduction in fasting glucose in people with newly diagnosed diabetes;
- Improved lipid profile and lower blood pressure.

It is recommended that waist measurement is used in addition to BMI to measure central obesity and disease risk for those with a BMI < 35kg/m². Highest health risk associated with waist circumference:

- **Caucasian**: ≥ 102cm (40in) men and ≥ 88cm (35in) women
- **South Asian**: ≥ 90cm (36in) men and ≥ 80cm (32in) women.

Multi-componant interventions are the treatment of choice for obesity, as recommended by NICE Clinical Guideline CG43 (2006). Patients should be signposted to the [Healthy Weight Solutions](#) Service, a weight management service for those over 18 years of age led by the Department of Nutrition and Dietetics, Doncaster and Bassetlaw Hospitals NHS Foundation Trust. Healthy Weight Solutions offers a choice of multi-component treatments on both a one-to-one or in group settings. Treatments are based on patient choice and clinical need.

Referrals to this service will be accepted from Health Professionals and by self-referral using the [Healthy Weight Solutions](#) referral form. Further advice and information is available by calling 0800 917 6264 / 01302 366 666 ext. 4110
Obesity

Background
Obesity is a major modifiable risk factor in the development of type 2 diabetes. Weight reduction in those who are obese can improve diabetes control significantly without the need for escalation in therapy.

Guidance
Those people with diabetes whose adipose tissue mass is likely to contribute to the progression of their diabetes control should be offered the opportunity to discuss their weight. The benefits of weight loss should be made clear to the patient. If the individual does not wish to consider making any changes then this should be reviewed at future consultations. Any choice of weight loss intervention should be negotiated between patient and health care professional. Consideration of what has been tried before is important.

Interventions
Interventions include lifestyle advice (see Physical Activity and Healthy Eating), Weight Management Groups, Specialist Weight Management 1:1 sessions, specific drug therapy and obesity surgery.

Drug Therapy (this option may also be discussed within the 1:1 sessions of the Healthy Weight Solutions Service)
- Consider drug therapy with orlistat as part of a weight loss programme, where managed care involving supervised diet, exercise and behaviour modification fails to achieve a realistic reduction in weight. (BMI >28kg/m² with orlistat).
- Diabetes medication may require adjustment / monitoring before and during therapy.
- Use of orlistat with acarbose is not recommended.
- Discontinue anti-obesity therapy if patient does not start to lose weight (Ideally 5% weight loss by week 12).

Obesity Surgery
Eligibility for surgery:-
- A BMI of 40kg/m2 or more or between 35 kg/m2 and 40kg/m2 in the presence of other significant disease.
- Patients referred to surgery have to have participated in local specialist weight management services (non-surgical Tier 3 / 4) for a duration of 12-24 months.
- Morbid/severe obesity has been present for at least five years.
- There are no specific clinical or psychological contraindications to this type of surgery.
- The individual is aged 18 years or above.
- The anaesthetic and other peri-operative risks have been appropriately minimised.
- The patient has engaged in appropriate support or education groups/schemes to understand the benefits and risks of the intended surgical procedure.

Any patients meeting the above criteria must be referred to the Healthy Weight Solutions service and can no longer be referred directly for bariatric surgery. Healthy Weight Solutions will then recommend a treatment plan based on the needs of the individual, and where appropriate, will make the necessary referrals for consideration of surgery.

**** Referral for bariatric surgery in Doncaster is made through the Healthy Weight Solutions specialist weight management service ****

Contact the Dietitians at: Department of Nutrition and Dietetics, Doncaster Royal Infirmary, Tel: (01302) 366666 ext 4110.
Alternatively, patients can self-refer to Healthy Weight Solutions on tel: 0800 917 6264
Introducing Doncaster’s new total weight management service lead by the Department of Nutrition and Dietetics, Doncaster & Bassetlaw Hospitals NHS Foundation Trust.

Healthy Weight Solutions offers a choice of evidence based multi-component treatments both one to one and in group settings. Access to treatments is based on patient choice and clinical need for both adults and children.

**Healthy Weight Solutions (individual support)**

A new personalised weight management programme for adults with a **BMI over 35kg/m²** and for children & adolescents aged 4 – 17 with a **BMI Centile >98th**, offering intensive expert support to lose weight. The programme targets motivated individuals and their families and will be supported by regular multidisciplinary team meetings.

Patients will receive personalised tailored advice from highly trained specialist obesity dietitians with access and dedicated support to a multidisciplinary team including weight management advisors, physiotherapists, exercise professionals and psychological therapists.

There will be an initial consultation with the specialist dietitian to discuss needs and expectations, with regular follow up, as part of a rolling 12 week programme, and further support for up to one year. Dietitians will provide appropriate dietary treatments tailored to the individual’s needs and used behaviour change skills to improve eating habits and activity levels. Dietitians will administer anti-obesity medication where clinically indicated. Patients will be referred to other members of the team as appropriate.

Clinics will run at selected LIFT buildings and community sports venues to meet the needs of local people.

**Healthy Weight Solutions (group support)**

Formally known as Health Wise Doncaster, the structured 12 week weight management courses in group settings will continue to run. This course targets people with a BMI over 25kg/m², helping participants to lose weight and have a healthier lifestyle. The course will be run by trained NHS staff, supported by dietitians, and includes interactive sessions including healthy eating, getting active and healthy cooking. This service is available at various local venues.

This is a free service available to patients with a Doncaster G.P. Provision of this service is through funding from NHS Doncaster Clinical Commissioning Group and is run in partnership with Doncaster Metropolitan Borough Council (DMBC).

Referrals will be accepted from Health Professionals or by self-referral using the Healthy Weight Solution referral form.

Further advice and information about this service can be obtained via a free phone number **0800 917 6264**.

February 2014
Pharmacotherapy of glucose lowering in people with Type 2 diabetes (see also explanatory notes below)

1 – Where tolerated and not contraindicated (see explanatory notes below)
2 – See explanatory notes for agent preference
3 – Continue OHA and/or GLP-1 (as appropriate)

- Metformin\(^1\)
- Metformin\(^1\) + Single OHA\(^2\)
- Metformin\(^1\) + Dual OHA\(^2\) (consider GLP-1)
- Add Insulin\(^3\)
**Pharmacotherapy of glucose lowering in people with Type 2 diabetes (contd)**

**Explanatory Notes**

**Metformin:**

- Step up metformin over several weeks to minimise risk of gastrointestinal (GI) side effects.
- Consider trial of extended-absorption metformin if GI tolerability prevents the person continuing with metformin.
- Review metformin dose if serum creatinine >130 micromol/litre or estimated glomerular filtration rate (eGFR) <45 ml/minute/1.73 m².
- Stop metformin if serum creatinine >150 micromol/litre or the eGFR <30 ml/minute/1.73 m².
- Prescribe metformin with caution for those at risk of a sudden deterioration in kidney function, and those at risk of eGFR falling to <45 ml/minute/1.73 m².
- If the person has mild to moderate liver dysfunction or cardiac impairment, discuss benefits of metformin so due consideration can be given to its cardiovascular-protective effects before any decision is made to reduce the dose.

**Other Oral Hypoglycaemic Agents (see also medicines formulary*):**

1. **Sulfonylureas: Gliclazide or Glimepiride**
   - Prescribe a sulfonylurea with a low acquisition cost (not glibenclamide) when an insulin secretagogue is indicated.
   - Educate the person about the risk of hypoglycaemia, particularly if he or she has renal impairment.
   - Consider an alternative OHA in overweight patients.

2. **Gliptins (DPP-4 inhibitors): Sitagliptin, Saxagliptin or Linagliptin**
   - Continue a gliptin only if there is a reduction of 5 mmol/ml in HbA₁c in 6 months.
   - Discuss the benefits and risks of a gliptin with the person, bearing in mind that a gliptin might be preferable to pioglitazone if:
     - further weight gain would cause significant problems, or
     - pioglitazone is contraindicated, or
     - the person had a poor response to, or did not tolerate, pioglitazone (or rosiglitazone) in the past.
3. Pioglitazone

- Continue pioglitazone only if there is a reduction of 5mmol/mol in HbA1c in 6 months.
- Discuss the benefits and risks of pioglitazone with the person, bearing in mind that pioglitazone might be preferable to a DPP-4 inhibitor if:
  - the person has marked insulin insensitivity, or
  - a DPP-4 inhibitor is contraindicated, or
  - the person had a poor response to or did not tolerate a DPP-4 inhibitor in the past.
- Do not start or continue pioglitazone if the person has heart failure or is at higher risk of fracture.

4. GLP-1 Mimetics: Exenatide, Liraglutide, or Lixisenatide

- Continue exenatide/liraglutide/lixisenatide only if the person has a reduction in HbA1c of 10mmol/mol and ≥ 3% of initial body weight in 6 months.
- Discuss the benefits of exenatide/liraglutide/lixisenatide to allow the person to make an informed decision.

5. Dapagliflozin

- Continue dapagliflozin only if the person has a reduction in HbA1c of 5mmol/mol in 6 months.
- Renal function is an important consideration when prescribing dapagliflozin, as it should be avoided if eGFR <60ml/minute/1.73m² because it is ineffective in these situations.

*http://www.dbh.nhs.uk/Library/Pharmacy_Medicines_Management/Formulary/Formulary_S2/Section%202.12.pdf (for oral hypoglycaemic agents)
Starting Insulin Therapy in Type 2 Diabetes

Starting insulin therapy

- If other measures do not keep HbA1c ≤ 59 mmol/mol (or other agreed target) discuss benefits and risks of insulin treatment.
- Initiate with a structured programme.
- Begin with either a human NPH insulin taken at bed time or twice a day according to need or alternatively a once a day long acting insulin analogue (insulin detemir, insulin glargine) if:
  - the person’s lifestyle is restricted by recurrent symptomatic hypoglycaemic episodes, or
  - the patient needs 3rd party help e.g. District Nurse to inject insulin and could reduce the number of injections with a long acting analogue.
- Review use of sulfonylurea if hypoglycaemia occurs with insulin and sulfonylurea.
- Consider twice daily biphasic human insulin (pre-mixed) (particularly if HbA1c > 75 mmol/mol (9.0%)).
- Consider pre-mixed preparations of insulin analogues (including short acting insulin analogues) rather than pre-mixed NPH preparations if:
  - immediate injection before a meal is preferred, or
  - blood glucose levels rise markedly after a meal.
- Also consider intensifying the insulin regime to basal bolus (background insulin once a day and short acting insulin pre meals) if:
  - target HbA1c not achieved, or
  - there is a need for short acting insulin before meals.
  - Active lifestyle and reduce hypoglycaemia.

Intensifying the insulin regimen

- Monitor those using basal insulin regimens (NPH or a long-acting analogue [insulin detemir, insulin glargine]) for need for short-acting insulin before meals or pre-mixed insulin.
- Monitor those using pre-mixed insulin once or twice daily for need for further injection of short-acting insulin before meals or change to meal time plus basal regimen.

Pen devices

- Insulin cartridges are to be used in conjunction with their own company’s pen devices.
- These devices should be:
  - person orientated (patient choice);
  - easy for the person to use and administer their insulin;
  - be either reusable pens with cartridges or disposable;

If pen devices are to be used by a professional administering the insulin, sharp safe insulin pen needles are available.
Diabetes Type 1

This guidance applies to adults with Type 1 diabetes.

Most children with diabetes have Type 1 diabetes.

For their emergency and follow up care please contact the on-call Paediatrician or the Paediatric Diabetes Specialist Nurses.

New diagnosis of Type 1 diabetes

- Type 1 diabetes is likely in new diabetic patients with any of the following features:
  - younger age of onset;
  - short and dramatic history of diabetic symptoms;
  - little or no family history;
  - significant weight loss;
  - lack of obesity;
  - presence of urinary ketones;
  - marked hyperglycaemia;
  - being generally unwell;
  - vomiting or other symptoms suggestive of ketoacidosis.

- The history and biochemistry may help to distinguish new Type 1 from new Type 2 diabetes but a distinction may not always be possible. Islet cell and GAD antibodies are present at diagnosis in 90% of new Type 1 diabetics, but these tests take several weeks to come back and are not helpful in acute management.

- If you have difficulty in distinguishing new Type 1 from new Type 2 diabetes in an individual please seek specialist advice.

Complications

- The surveillance for complications and outpatient follow-up for Type 1 Diabetes normally takes place in specialist medical care.

- Consideration needs also to be given to lipid and hypertension management.

Driving

- New Type 1 diabetic patients are obliged to inform DVLA and their car insurers of their diabetes and will normally be granted a licence subject to 3-yearly review.

Acute management

- If you suspect new Type 1 diabetes a management plan needs to be made immediately. If the patient is clinically well with hyperglycaemia but no urinary ketones and no lowering of the venous bicarbonate, then insulin treatment can be started urgently within 6-12 hours at home by the GP urgently contacting and involving the Community Diabetes Specialist Nurses.

- Referral to an Acute Physician is necessary in any potential new Type 1 diabetic patient where any of the following apply:
  - the patient is generally unwell or vomiting;
  - a large amount of weight loss has occurred;
  - the urine is positive for ketones;
  - the venous bicarbonate has fallen, or there is any reason to suspect current or impending ketoacidosis.

- These patients will require consideration for treatment with intravenous fluids and intravenous insulin as an inpatient.

- New Type 1 patients may not need to be admitted when relatively stable. Contact the Diabetes In-Patient Specialist Nurse via DRI Switchboard for further advice.

Subsequent treatment

- Whether the patient has been started on insulin in the community or hospital, the patient's immediate follow-up and point of contact for insulin adjustment will be the Diabetes Specialist Nurse.

- If a Diabetologist has not yet been involved in management at this stage then a referral to outpatient specialist medical care should be made.

- Urgent dietetic input is also required.

Insulin regimen

- All new Type 1 diabetic patients are started on a type of basal-bolus insulin regimen. Although fixed doses are normally used initially it is very desirable to get the patient on a more flexible system of matching insulin to food values using a carbohydrate-counting regimen by referral to one of the carbohydrate counting groups. Specialist care will normally arrange this.

- For information on Carbohydrate Counting education and how to refer please contact Specialist Diabetes Dietitians at Doncaster Royal Infirmary Tel: 01302 366666 ext 4110

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Self-monitoring of diabetes

Self-monitoring may prove useful to people in their overall approach to self-care.

**Type 1 and Type 2 diabetes on insulin**
- Most patients in this group should be taught self-blood glucose monitoring.
- Patients vary in how often they test.
- See guidance table re frequency of testing.
- More frequent testing in certain circumstances may be indicated: - illness, pregnancy, changes in treatment, driving, hypo awareness.
- Testing is only part of the process of improving glucose control. Unless results are interpreted and diet or insulin adjusted glycaemic control will not improve.

<table>
<thead>
<tr>
<th>Diabetes Type</th>
<th>Testing frequency</th>
<th>Specific Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type 1 Diabetes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin</td>
<td>Up to 4 times a day* (2-3 boxes** per month)</td>
<td>Greater risk of hypoglycaemia and hyperglycaemia</td>
</tr>
<tr>
<td>Diet</td>
<td></td>
<td>More frequent testing indicated in certain circumstances (e.g. for drivers and those doing frequent physical activity/sports).</td>
</tr>
<tr>
<td><strong>Gestational Diabetes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin</td>
<td>Up to 7 times a day* (2-3 boxes** per month)</td>
<td>Including fasting state and 1 or 2 hour postprandial blood glucose</td>
</tr>
<tr>
<td>Diet</td>
<td></td>
<td>Up to 7 times a day under specialist advice</td>
</tr>
<tr>
<td><strong>Type 2 Diabetes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-injection insulin therapy (more than 2 times per day)</td>
<td>Up to 4 times a day* (2-3 boxes** per month)</td>
<td>Greater risk of hypoglycaemia and hyperglycaemia</td>
</tr>
<tr>
<td><strong>Type 2 Diabetes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin Therapy including oral agents</td>
<td>At least once a day (2 boxes** per month)</td>
<td>Vary testing times to identify hypoglycaemia</td>
</tr>
<tr>
<td>Unstable Glycaemic Control</td>
<td>More frequent testing</td>
<td>Vary according to individual need</td>
</tr>
<tr>
<td><strong>Type 2 Diabetes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet and exercise</td>
<td>Not routinely required</td>
<td>HbA1C real outcome measure</td>
</tr>
<tr>
<td>Metformin</td>
<td></td>
<td>Testing is appropriate in certain circumstances where need and purpose is clear and agreed with patient. This should be supported by educational support. See NICE guidelines.</td>
</tr>
<tr>
<td><strong>Type 2 Diabetes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfonylurea alone (or in combination with other oral antidiabetic agents e.g. a Glitazone)</td>
<td>At least 3 times a week* (1 box** every 3 months)</td>
<td>Hypoglycaemia common</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vary testing times during the day to identify hypoglycaemia</td>
</tr>
</tbody>
</table>

*Please see DVLA guidance for drivers on Insulin and for Class C1 vehicles available at [www.dvla.gov.uk](http://www.dvla.gov.uk)

**1 box contains 50 strips – testing frequency may increase in certain circumstances.**

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Self-monitoring of diabetes (contd)

Type 2 diabetes not on insulin

Urine or blood glucose testing may be considered in this patient group. NICE (2002) recommends that: 'Self-monitoring should not be considered as a stand alone intervention' and ‘self-monitoring should be taught if the need / purpose is clear and agreed with the patient’.

When considering whether testing is appropriate, the following points should be considered:
- a clear indication should be given on why, when and how to test;
- a clear indication should be given on when testing is not required;
- a clear reason for monitoring i.e.
  - intention to provide the patient with information about their day to day glycaemic control to inform decision making, particularly in relation to illness, strenuous activity or when driving
  - intention to provide the clinician with information about day to day control, enabling them to give appropriate advice
  - aim to detect/confirm hypoglycaemia
  - aim to confirm symptoms of hyperglycaemia and poor control.

Treatment of hypoglycaemia (below 4mmols)

- If the person is taking insulin and/ or tablets ) to control diabetes they may suffer a hypoglycaemic episode. It occurs when there are insufficient levels of glucose in the blood. This can be caused by taking too much treatment , eating too little or at the wrong time, too much exercise or from drinking alcohol on an empty stomach. This condition needs to be treated promptly by eating or drink something with sugar/glucose, for example:-

  - 120 mls of lucozade, or
  - 3 dextrose tablets, or
  - 150-200mls pure fruit juice or
  - 2 teaspoons of sugar, honey, or jam, or
  - 5 jelly babies

  Then a 20gram starchy carbohydrate snack
  - Re-check blood glucose levels to ensure now above 4mmols
  - If not repeat the process after 5-10 minutes.

Self management – Patient Held Record

- A Patient Held Record ('Your Diabetes') is available for people newly or recently diagnosed with diabetes to encourage more effective diabetes self-management. All practices and diabetes health care professionals should hold a supply of Your Diabetes. They are available to order from the Stores Department at St. Caths Hospital. Contact elizabeth.walters@rdash.nhs.uk for further copies.
- This Your Diabetes resource should be used at each clinical appointment with the person so that they are more informed and involved in their care plan. It aims to empower people to understand their diabetes more fully so that they are able to manage it more effectively.
Blood Pressure Management

**Targets**
- If kidney, eye or cerebrovascular damage, set a target < 130/80 mmHg.
- Others, set a target < 140/80 mmHg.

**If on antihypertensive therapy at diagnosis of diabetes**
- Review BP control and medication use.
- Make changes only if BP is poorly controlled or current medications are inappropriate because of microvascular complications or metabolic problems.

**If the person’s BP reaches and consistently remains at the target**
- Monitor every 4–6 months and check for possible adverse effects of antihypertensive therapy (including those from unnecessarily low blood pressure).

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**Maintain lifestyle measures**

**Offer ACE inhibitor (titrate dose)**
For people of African-Caribbean descent, offer ACE inhibitor plus thiazide diuretic or CCB

**Monitor BP 1–2 monthly**

**Add CCB or thiazide diuretic**

**until consistently below target**

**Add other drug (thiazide diuretic or CCB – see**

**Add alpha-blocker or beta-blocker**

**Antihypertensive medications can increase the likelihood of side effects such as orthostatic hypotension in a person with autonomic neuropathy.**

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If there is a possibility of the person becoming pregnant, start with a CCB. If continuing intolerance to ACE inhibitor (other than renal deterioration or hyperkalaemia), change to an A2RB.

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Management of blood lipids

Aged 18–39 years with type 1 or 2 diabetes and who have at least one of the following:

- retinopathy (pre-proliferative, proliferative, maculopathy);
- nephropathy, including persistent microalbuminuria;
- poor glycaemic control (HbA1c > 75 mmol/mol);
- elevated blood pressure requiring antihypertensive therapy;
- raised total blood cholesterol (> 6.0 mmol/l);
- features of metabolic syndrome (central obesity and fasting triglyceride > 1.7 mmol/l (non-fasting > 2.0 mmol/l) and/or HDL cholesterol < 1.0 mmol/l in men or < 1.2 mmol/l in women);
- family history.

Age > 40 years with either Type 1 or 2 diabetes

Offer simvastatin 40mg or a statin of similar efficacy and cost.
If becoming pregnant is a possibility, discuss issues surrounding statin use and agree next step
For further information, see Medicines Formulary*

Treat to achieve total cholesterol < 4.0 mmol/litre or LDL-C < 2.0 mmol/litre.
If target is not reached, titrate the statin.

Assess lipid profile and modifiable risk factors 1–3 months after starting therapy.
Continue to monitor annually.

*http://www.dbh.nhs.uk/Library/Pharmacy_Medicines_Management/Formulary/Formulary_S2/Section%202.12.pdf (for cholesterol lowering drugs)
Monitoring

- Annually, regardless of presence of nephropathy: arrange ACR estimation.
- on first-pass urine sample (or spot sample if necessary).
- measure serum creatinine.
- estimate GFR.

Further investigation
If abnormal ACR (in absence of proteinuria/UTI):
- repeat test at next two clinic visits and within 3–4 months;
- microalbuminuria is confirmed if at least one out of two or more results is also abnormal.

Interpretation
Suspect renal disease other than diabetic nephropathy and consider further investigation/referral if ACR is raised and:
- no significant or progressive retinopathy, or
- BP is particularly high, or
- resistant to treatment, or
- heavy proteinuria (ACR > 100 mg/mmol) but ACR previously documented as normal, or
- significant haematuria, or
- GFR has worsened rapidly, or
- the person is systemically ill.

Action
If diabetic nephropathy confirmed, offer ACE inhibitor with dose titration to maximum dose (unless not tolerated).
Substitute an A2RB if ACE inhibitors are poorly tolerated.
Maintain BP < 130/80 mmHg if abnormal ACR

Include in discussion
Significance of abnormal AER and trend.
If becoming pregnant is a possibility: relative risks and benefits of ACE inhibitor so an informed decision can be made.

ACR, albumin:creatinine ratio; AER, albumin excretion rate; A2RB, angiotensin II receptor blocker; BP, blood pressure; GFR, glomerular filtration rate; UTI, urinary tract infection.
Abnormal ACR = ACR > 2.5 mg/mmol for men and > 3.5 mg/mmol for women.

Every person with diabetes needs to have annual eye screening performed for early detection and treatment of retinopathy in diabetes to prevent blindness from diabetic eye disease. Patients should be made aware of the importance of this at the time they are educated at diagnosis. Digital Eye Photography with levels of quality assured image grading is the approved national method for diabetes eye screening. Manual fundoscopy or screening by an optometrist does not constitute adequate screening.

The Doncaster Diabetes Eye Screening Programme (DDESP) provides this service locally to patients under the care of Doncaster CCG GPs.

Two field digital retinal photography is performed on each eye through dilated pupils. The images are then interpreted via a grading pathway conforming to the recommendations of the NHS Diabetic Eye Screening Programme allowing for up to three levels of quality assured grading of images. It is important to note that the image interpretation is by far the most demanding and skilled part of the service.

Results of the grading of images are sent directly to GPs and patients. Referrals to ophthalmology for further assessment and treatment are made directly from the screening service without any action needed by the GP. After referral to eye clinic patients may then be discharged directly back to further screening by HES when no further ophthalmological input is needed.

Patients with diabetes are recalled automatically for eye screening providing they have been notified to the Doncaster Diabetes Register, which is the local central recall database for diabetic eye screening. It is therefore important for all practices to ensure that they notify the Doncaster Diabetes Register of all those who are newly-diagnosed as those patients should be screened within 3 months of diagnosis (direct number 01302 366666 ext 6401 or ext 3906). Following this, annual recall for eye screening takes place automatically.

Retinal screening is currently provided by the DDESP on 3 sites: DRI, Vermuyden Centre and Mexborough Montagu Hospital.

As this is a screening service it is not covered by Choose and Book provisions.

Please direct any enquiries about DDESP to: 01302 366666 ext 6401
DDESP is a screening service and not an eye emergency service. Any patients presenting to GPs or community optometry with sudden change in vision should be referred urgently to the ophthalmology service in the usual way.

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Neuropathic Pain Management

Every year, formally ask about neuropathic symptoms

If present:
- discuss cause and prognosis;
- agree appropriate therapeutic options and review;
- be alert to psychological consequences and offer support appropriate to need.

Offer a choice of amitriptyline, duloxetine, gabapentin or pregabalin as initial treatment of neuropathic pain.

Provide information about the titration process in order to maximize compliance and benefit from the treatment provided.

If pain reduction is satisfactory continue treatment.

If initial treatment is not effective or is not tolerated, offer one of the remaining three drugs.

If pain reduction is still unsatisfactory at maximum doses:
- refer the patient to a specialist pain and/or condition specific service

Consider referring the person to a specialist pain service at any stage, including at initial presentation and at the regular clinical reviews if:
- They have severe pain or
- Their pain significantly limits their lifestyle, daily activities (including sleep disturbance) and participation or
- Their underlying health condition has deteriorated.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Starting dose</th>
<th>Maximum dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitriptyline</td>
<td>10mg/day</td>
<td>75mg/day</td>
</tr>
<tr>
<td>Duloxetine</td>
<td>60mg/day</td>
<td>120mg/day</td>
</tr>
<tr>
<td>Pregabalin</td>
<td>150mg/day in 2 doses</td>
<td>600mg/day in 2 doses</td>
</tr>
<tr>
<td>Gabapentin</td>
<td>usually 300mg ON for one day then 300mg BD</td>
<td>usually 1200mg TDS</td>
</tr>
</tbody>
</table>

- higher doses of amitriptyline can be used if recommended by a specialist pain service. Tricyclic antidepressants are not licensed for the treatment of neuropathic pain
- lower starting doses of pregabalin and gabapentin may be required in some individuals.

Other Neuropathic Complications

Gastroparesis:
Consider gastroparesis in adult with: erratic blood glucose control, or unexplained gastric bloating or vomiting. Consider referral to specialist services.

Erectile Dysfunction:
Review with men annually.

Action: provide assessment and education for a man with erectile dysfunction to address contributory factors and treatment options.
If no contraindications, offer a phosphodiesterase-5 inhibitor.
If phosphodiesterase-5 inhibitor is ineffective, discuss next steps. Offer psychosexual counseling and counselling for other interventions as appropriate (possible medical treatments or surgery).
If libido is reduced consider measuring serum testosterone.

Other signs of possible autonomic neuropathy:

Loss of warning signs for hypoglycaemia
Consider contributory sympathetic nervous system damage.
Action: Investigate further and offer specific interventions.

Unexplained diarrhoea, particularly at night
Consider: autonomic neuropathy affecting gut.

Unexplained bladder-emptying problems
Consider: autonomic neuropathy affecting bladder.
All patients who are referred to the Doncaster Community Podiatry Service via health professional, or those who attend through a self-referral, receive a thorough individual foot check which comprises of:-

**Full medical History**

**Vascular Assessment:** This includes palpation of pedal pulses, Doppler studies, capillary refill and visual assessment looking at skin integrity and conditions, colour changes, venous return, and temperature gradient. An ABPI (ankle brachial pressure index) will be carried out if necessary.

**Neurological Assessment:** This includes monofilament testing, neurotip testing and reviewing proprioception, temperature testing and muscle strength.

**Foot Evaluation:** This includes evaluation of any skin conditions or foot deformity with individual written and verbal advice.

**Footwear Review:** This includes visual assessment to check suitability of the shoes. Individual written and verbal advice regarding correctly fitting shoes and the best type of shoes to wear. We promote shoes with soft-soled cushioning, those with a fastening rather than slip-on shoes, and shoes with a deep and rounded toe. Podiatry provide off-loading using padding, casting and insoles.

Podiatry leaflets have been designed to follow NICE guidelines. The leaflet offered are:- Low, Medium and High Risk Diabetes Foot Care; Diabetic Footwear Advice; and Diabetic Ulcerations. These leaflets were developed to ensure that a patient's care was complimented by reiterating the verbal information received and to support the agreed care plan. This helps the patients to understand and follow-up on advice to enable appropriate foot health.

**Group education**
People with diabetes are also invited to attend an hour group education session which advises on the risks and complications of their condition and the effects on the lower limb and feet. The session includes detailed information regarding appropriate self-care such as checking feet and shoes daily, filing toe nails and use of emollients. Patients are advised to utilize family/carer support where required. The education session ensures that each patient receives high grade information and advice.

**Ulcers**
All ulcer patients should be referred to podiatry for assessment, a treatment plan and appropriate triage unless critical limb ischaemia or a spreading infection have occurred, which should be admitted urgently via surgical assessment unit.
**Diabetic Foot Risk Stratification and Triage**

**ACTIVE**
- **Definition**: Presence of active ulceration, spreading infection, critical ischaemia, gangrene or unexplained hot, red, swollen foot with or without the presence of pain.
- **Action**: Rapid referral to and management by a member of a Multidisciplinary Foot Team. Agreed and tailored management/treatment plan according to patient needs. Provide written and verbal education with emergency contact numbers. Referral for specialist intervention when required.

**HIGH**
- **Definition**: Previous ulceration or amputation or more than one risk factor present e.g. loss of sensation or signs of peripheral vascular disease with callus or deformity.
- **Action**: Annual assessment by a specialist podiatrist. Agreed and tailored management/treatment plan by specialist podiatrist according to patient needs. Provide written and verbal education with emergency contact numbers. Referral for specialist intervention if/when required.

**MODERATE**
- **Definition**: One risk factor present e.g. loss of sensation or signs of peripheral vascular disease without callus or deformity.
- **Action**: Annual assessment by a podiatrist. Agreed and tailored management/treatment plan by podiatrist according to patient needs. Provide written and verbal education with emergency contact numbers.

**LOW**
- **Definition**: No risk factors present e.g. no loss of sensation, no signs of peripheral vascular disease and no other risk factors.
- **Action**: Annual screening by a suitably trained Health Care Professional. Agreed self management plan. Provide written and verbal education with emergency contact numbers. Appropriate access to podiatrist if/when required.

*These risk categories relate to the use of the SCI-DC foot risk stratification tool*
Diabetes in Pregnancy

Pre-conception Steps and Aims

Women with diabetes who are planning to become pregnant should be informed that establishing good glycaemic control before conception and continuing throughout pregnancy will reduce the risk of miscarriage, congenital malformation, stillbirth and neonatal death. It is important to explain that risks can be reduced but not eliminated.

Women planning a pregnancy should be referred to the Hospital Specialist Type 1 and Type 2 clinics for optimisation of control and advised to continue contraceptive precautions until agreed acceptable HbA1c targets are reached. Women who become pregnant should be referred urgently to the Hospital Joint Diabetes-Obstetric clinics.

Pre-conceptual advice commences in the Young Adult Clinic and should be reinforced to all young women with diabetes. Furthermore, mature women should also be advised should they be in the position to be starting second or third families with new partners.

- Type 1 and 2 should commence 5mg folic acid prior to conception
- Type 1 aim for HbA1c < 53mmol/mol. Transfer to Basal Bolus Regime
- Type 2 aim for HbA1c < 44mmol/mol (if safe). Stop oral therapy with the exception of metformin and transfer to Basal Bolus Regime
- Advise women with HbA1c above 86mmol/mol to avoid pregnancy.

Good Control is Essential

If it is safely achievable, all women with gestational diabetes (pre-existing Type 1 or Type 2 or IGT in Pregnancy) should aim to keep fasting blood glucose between 4.0 and 5.3 mmol/litre and 1-hour postprandial blood glucose below 7.8 mmol/litre.

The safety of medications for diabetes before and during pregnancy

Women with diabetes may be advised to use metformin as an adjunct or alternative to insulin in the pre-conception period and during pregnancy, when the likely benefits from improved glycaemic control outweigh the potential for harm. All other oral hypoglycaemic agents should be discontinued before pregnancy and insulin substituted. Healthcare professionals should be aware that data from clinical trials and other sources do not suggest that the rapid-acting insulin analogues (aspart and lispro) adversely affect the pregnancy or the health of the fetus or newborn baby.

Women with insulin-treated diabetes who are planning to become pregnant should be informed that there is insufficient evidence about the use of long-acting insulin analogues during pregnancy. Therefore isophane insulin (also known as NPH insulin) remains the first choice for long-acting insulin during pregnancy. ACE1 inhibitors and angiotensin-II receptor antagonists should be discontinued before conception or as soon as pregnancy is confirmed. Alternative antihypertensive agents suitable for use during pregnancy should be substituted.

Statins should be discontinued before pregnancy or as soon as pregnancy is confirmed.

Removing barriers to the uptake of pre-conception care and when to offer information

Women with diabetes should be informed about the benefits of pre-conception glycaemic control at each contact with healthcare professionals, including their diabetes care team, from adolescence. The intentions of women with diabetes regarding pregnancy and contraceptive use should be documented at each contact with their diabetes care team from adolescence.

Pre-conception care for women with diabetes should be given in a supportive environment and the woman’s partner or other family member should be encouraged to attend.

First Trimester Steps and Aims

- Early booking
- Access to Diabetes Specialists Nurse and Midwife
- Blood tests FBC, U/E, Bone, LFT, HbA1c, TFT, Auto Diff, WBC
- Blood glucose monitoring to protocol range
- Scan 8 – 10 weeks
- Insulin adjustments
- Diet – meet with dietitian
- Hypoglycaemia – use of the GlucaGen Kit
- Blood Pressure Monitor
- Eye Checks – retinopathy
- Smoking Cessation
- Reduce/eliminate alcohol.
- Folic acid 5mg for first 12 weeks.

Second Trimester Steps and Aims

Care during the second trimester has two main components.

Diabetes Care

- Plasma glucose control and HbA1c, as near-normal as safely possible
- Eye checks – retinopathy
- Insulin increases
- Diet – meet with dietitian.

Obstetric Care

- As for non diabetic women.
- Alpha-fetaprotein
- Amniocentesis – offered if required.

Third Trimester Steps and Aims

- Plasma glucose control and HbA1c, as near-normal as safely possible
- Eye checks – retinopathy
- Insulin continues to increase
- Diet - meet with dietitian
- Growth scans from 26 weeks for risk of foetal macrosomia
- Ideally spontaneous labour. Most babies are induced at 38 weeks
- Caesarean – for obstetric indicators
- Mothers encouraged to give birth in Consultant Unit.
- In event of early delivery steroids are administered.

Post Delivery Steps and Aims

- Newborn is likely to have trouble stabilising plasma glucose if mother’s plasma glucose has been raised. As a result newborn may need to spend 24 – 48 hours in Special Care Baby Unit
- Mother’s insulin dramatically reduces to pre-pregnancy doses
- For breast feeding extra CHO is required plus a reduction in insulin.

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Gestational Diabetes

Diabetes can present during pregnancy because gestation in non-diabetic women adds extra demands on insulin producing cells. These demands are largely due to the human placental lactogena hormone which has an anti-insulin action.

As pregnancy progresses, double the insulin must be made to ensure normal glucose level.

Screening

Identification of cases for screening OGTT should be offered if one or more of the following risk factors are present

- BMI above 30kg/m^2
- Previous macrosomic baby weighing 4.5Kg or above
- Previous gestational diabetes
- First degree relative with diabetes
- Family origin with an high prevalence of diabetes (South Asian, Black Caribbean and Middle Eastern)

Screening and diagnosis

Offer screening for overt undetected diabetes or gestational diabetes using risk factors above at the booking appointment. This process should be followed:

1. At the booking appointment: random glucose and HbA1c to pick up undetected overt Type 2 diabetes (Glucose ≥ 11.1mM and/or HbA1c ≥ 47.5mmol/mol).

2. 2-hour 75g oral glucose tolerance test (OGTT) at 16-18 weeks to test for gestational diabetes if the woman has had gestational diabetes previously, followed by OGTT at 28 weeks if the first test is normal.

3. OGTT to test for gestational diabetes at 24-28 weeks if the woman has any risk factors (as above) and stage 1 and 2 above are negative/do no apply.

Abnormal if:
- Fasting glucose ≥ 5.3mM
- 2 hour glucose ≥ 8.5mM

At Delivery

- Advice Paediatrician
- Advice Diabetes Specialist Team
- Postnatal – stop insulin
- Return to normal diet.

OGTT at 6 – 8 weeks after delivery

Risks to Baby

- Congenital abnormality
- Large/small babies
- Premature delivery
- Respiratory distress.
- Hypoglycaemia
- Intra-uterine death.

Risk to Mother

- Unstable babies.
- Pre-eclampsia
- Hydramnios
- Hypoglycaemia
- Caesarean section, 10 – 15% in non diabetic women, 50% for diabetic women
- Retinopathy
- Nephropathy.

Return to Index
The following categories of patients are normally appropriate for referral to Specialist Care

- Type 1 diabetes in adults
- Type 1 diabetes in children
- MODY type diabetes
- Secondary causes of diabetes
- Type 2 diabetes with poor control despite usual optimization of treatment
- Complex Type 2 diabetes
- Diabetes with neuropathy
- Diabetes with resistant hypertension
- Diabetes with significant renal impairment
- Diabetic foot ulcers
- Any newly pregnant diabetic woman
- Diabetic women planning to get pregnant
- Diabetes with complex lipid disorders
- Male diabetes with testosterone deficiency syndrome
- Diabetes with at-risk feet
- Diabetes with proteinuria >0.5g/24hrs
- Diabetes with painful neuropathy
- Diabetes with morbid obesity
- Diabetes with erectile dysfunction
- Type 2 diabetes where red-list drugs are to be considered
- Diabetes with significant retinopathy.

Specialist Diabetes Clinics at Doncaster Royal Infirmary and Mexborough Montagu Hospital

All DRI & MMH clinics are specialist clinics intended for specific types of diabetes, specific diabetes issues and complications.

Specialist Clinics at Doncaster Royal Infirmary
(all multidisciplinary including doctor/dietitian/diabetes specialist nurse/podiatrist/midwife as appropriate).

1) Specialist Clinics for Type 1 diabetes, Type 2 diabetes with complications (as listed above) or unstable control, and rare forms of diabetes
2) Paediatric diabetes clinics
3) Joint adult-paediatric diabetes clinics
4) Young adults diabetes clinics
5) Joint diabetes-obstetric clinics
6) Diabetes Foot Ulcer Clinics
7) Diabetes with complex lipid problems
8) Bariatric clinics for diabetic patients considering surgery
9) Diabetes retinal screening clinics (automatic from diabetes register).

Specialist Clinics at Montagu Hospital
(all multidisciplinary including doctor / dietitian / diabetes specialist nurse as appropriate).

All services offered as at Doncaster Royal Infirmary other than gestational and foot care clinics.