ROtherham Diabetes Management Guidelines 2011

Issue 3
OBJECTIVES
There are about 11,000 people diagnosed as having diabetes in Rotherham (4.4% of the population). The Rotherham Diabetes Network has produced these guidelines to help all health professionals provide optimal care for their patients with diabetes in primary, intermediate and secondary care.

DEVELOPMENT OF THE GUIDELINES
The following people have contributed in the development of the Guidelines:

Dr Solomon Muzulu  Consultant Physician (Diabetes and Endocrinology)  Rotherham Foundation Trust
Dr Bernard Everett  General Practitioner  Woodstock Bower Surgery
Dr Susan Rutter  Consultant Obstetrician  Rotherham Foundation Trust
Sri Kakarlapudi  Diabetes Dietician  Rotherham Foundation Trust
Trevor Pilling  Podiatrist  Woodstock Bower Surgery
Stuart Lakin  Head of Medicines Management  NHS Rotherham Nine Trees
Dr Jason Page  GP Lead Diabetes  Thorpe Hesley Surgery
Fiona Smith  Clinical Nurse Specialist/Diabetes/team leader  Rotherham CHS
Sharon Gamble  Paediatric Diabetes Nurse Specialists  Rotherham Foundation Trust
Jenny Hobson  Paediatric Diabetes Nurse Specialists  Rotherham Foundation Trust
Dr Bernd Franke  Consultant Physician (Diabetes and Endocrinology)  Rotherham Foundation Trust
Dr Sherif El-Rehee  Consultant Paediatrician  Barnsley NHS Foundation Trust
Cheryl Wogan  Medical & Retinal Screening Support Manager  Rotherham Foundation Trust
Dr Ahmed Abdelhafiz  Consultant Physician (Elderly)  Rotherham Foundation Trust

The Guideline editorial team are:
Dr Nagpal Hoysal  Consultant in Public Health Medicine  NHS Rotherham
Sue Smith  Public Health Specialist  NHS Rotherham

In the event of significant new research findings, or national recommendations, specific areas in these guidelines may be updated on an ad hoc basis. Full revision of the guidelines will be undertaken every two to three years.

GUIDELINES PROVIDE GUIDANCE
These guidelines provide advice on best practice management for the majority of people with diabetes; however, it is not a mandate to be slavishly followed at all turns. Good clinical practice always involves weighing the advantages and disadvantages of a potential course of action based on individual circumstances.

If you have comments on the content of the guidelines, please contact:

Dr Bernard Everett  Dr Solomon Muzulu
Woodstock Bower Surgery  Consultant Endocrinologist
Kimberworth Road  Rotherham Foundation Trust
Rotherham S61 1AH  Moorgate Road, Rotherham S60 2UD

NB: This guidance has been colour coded as follows

<table>
<thead>
<tr>
<th>Colour Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidance</td>
<td>must be followed</td>
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<tr>
<td>Additional Information</td>
<td></td>
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<tr>
<td>Best Practice</td>
<td></td>
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<tr>
<td>Document Links</td>
<td></td>
</tr>
</tbody>
</table>
# 1. Diagnosis of Diabetes

## Symptoms

- Polyuria
- Polydipsia
- Skin infection or pruritus
- Weight loss
- Lassitude
- Blurred vision
- Urinary or genital infection

People with type 2 diabetes may have few if any symptoms.

A high index of suspicion is needed as up to 30% of cases remain undiagnosed.

## Risk Factors for Type 2

White people aged over 40 years and people from black, Asian and minority ethnic groups aged over 25 years with one or more of the following:

- A first degree family history of diabetes
- Overweight/obese/morbidly obese with a BMI of 25kg/m² and above, with a sedentary lifestyle
- Waist measurement >94cm (>37”) for white and black men or >90cm (>35”) for Asian men, and >80cm (>31.5”) for women
- People who have ischaemic heart disease, cerebrovascular disease, peripheral vascular disease or treated hypertension
- Women who have had gestational diabetes
- Women with polycystic ovary syndrome who have a BMI > 30
- People who are known to have impaired glucose tolerance or impaired fasting glycaemia
- People who have severe mental health problems
- People who have hypertriglyceridaemia not due to alcohol excess or renal disease

A high index of suspicion is needed as up to 30% of cases remain undiagnosed.

## Criteria for Diagnosis

In people with symptoms, diabetes is usually diagnosed on the basis of a single:

- Random venous plasma glucose concentration ≥ 11.1 mmol/l
- Fasting plasma glucose concentration ≥ 7.0 mmol/l (whole blood ≥ 6.1 mmol/l)

In people without symptoms, diagnosis requires further confirmatory plasma venous determination. At least one additional glucose test result on another day with a value in the diabetic range is essential, either fasting or from a random sample as above. If there is still uncertainty, diagnosis is on the basis of:

- Plasma glucose concentration ≥ 11.1 mmol/l 2 hours after 75g anhydrous glucose in an oral glucose tolerance test (OGTT)

Children usually present with severe symptoms and diagnosis should be based on a single raised blood glucose result, as above. Do not delay referral to the Paediatric Diabetes Team.

Diagnosis must NEVER be made on the basis of glycosuria or a capillary blood glucose alone; such tests may be useful for risk assessment.

HbA1c measurement is not currently recommended for the diagnosis of diabetes.

Reference:
1. CMO’s Update, 26, May 2000.
1. DIAGNOSIS OF DIABETES

PROTOCOL FOR 75G ORAL GLUCOSE TOLERANCE TEST (OGTT)

- Baseline plasma glucose after a 12 hour fast (water only for comfort)
- Give equivalent of 75g oral glucose load:
  - 394ml of Original Lucozade® Sparkling Glucose Drink (73kcal/100ml formulation)

- Repeat plasma glucose 2 hours later
- Send sample to laboratory
- Patients should refrain from smoking/exercise during the test

WHEN TO REQUEST AN OGTT

- Patients with impaired fasting glycaemia
- Consider in other cases of diagnostic doubt (e.g. random glucose >9.0 but normal fasting glucose)
- Diagnosis of Gestational Diabetes

DIFFERENTIAL DIAGNOSIS

Discriminating between type 1 and type 2 diabetes:

- Consider type 1 diabetes if
  - Ketonuria is detected
  - Weight loss is marked
  - The person does not have features of the metabolic syndrome or other contributing illness
- In younger people, consider the possibility that apparent type 1 diabetes is MODY or type 2
- With obesity or with a family history of type 2 diabetes especially if of non-white ethnicity.

Do not routinely use measurement of specific auto-antibodies or C-peptide to confirm the diagnosis of type 1 diabetes – consider their use at the time of diagnosis to discriminate type 1 from type 2 diabetes.

Consider referral to secondary care where a confident diagnosis of either T1DM or T2DM cannot be made.

Impaired glucose tolerance (IGT):
- Fasting glucose < 7 mmol/l
- 2 hour glucose ≥ 7.8 but <11.1 mmol/l

Impaired fasting glycaemia (IFG):
- Fasting glucose ≥ 6.1 but < 7.0 mmol/l

- IGT and IFG are not clinical entities but should be considered as risk categories for cardiovascular disease (CVD) and/or future diabetes
- IGT and IFG are not interchangeable. Only 20% of subjects with an abnormality of glucose regulation will have both IFG and IGT
- IGT is 2-3 times more common that IFG in most populations
- IGT is a better predictor of CVD risk
- Patients with IGT/IFG should receive lifestyle advice – weight loss of 5kg and 30 minutes of moderate exercise 5 times weekly reduces progression to type 2 diabetes by almost 60%. Metformin may be considered in younger, more overweight patients
2. MANAGEMENT OF NEWLY DIAGNOSED DIABETES

2.1 DOES YOUR PATIENT NEED INITIATION OF INSULIN AT DIAGNOSIS OF DIABETES?

- Typical symptoms and a diagnostic blood glucose (Random ≥ 11.1 mmol/l)
  - YES
  - Is the patient ill (vomiting or semiconscious)?
    - YES
    - Admit to hospital
    - NO
    - Is there moderate (++)/heavy (+++) Ketonuria?
      - YES
      - Strong indication for insulin
      - NO
  - Are one or more of the following present?
    - Severe symptoms (Nocturia x 3-4)
    - Short history (weeks)
    - Marked weight loss (irrespective of absolute weight)
    - A first degree relative with type 1 diabetes
    - A personal history of autoimmune disease
      - YES
      - Two or more are a strong indication for insulin
      - NO
  - Is the patient under 30 years of age?
    - YES
    - First degree relative with diabetes on diet or tablets consider type 2 diabetes
    - NO immediate need for insulin
    - Consider non-urgent referral
    - NO
    - No immediate need for insulin. Dietary advice based on healthy eating principles refer to dietary information. For advice on oral glucose control treatment refer to Glucose control type 2 DM
2. MANAGEMENT OF NEWLY DIAGNOSED DIABETES

2.2 INITIAL MANAGEMENT PLAN FOR TYPE 2 DM

**OBJECTIVES**

- **Stopping Smoking**
  - Consider referral to smoking cessation
- **BMI > 25 kg m²**
  - Give diet + exercise advice regardless of BMI
- **Control BP to <140/80 (<130/80 if kidney, eye or cerebrovascular damage)**
  - Refer to obesity pathway
  - See NHS Rotherham hypertension guidelines
- **Initiate Simvastatin 40mg ON**
  - Aim to reduce total cholesterol to <4mmol/l & LDL-cholesterol < 2mmol/l
  - Switch to Atorvastatin 40mg daily if after 3-6 months of treatment cholesterol is not at target
  - Consider referral to smoking cessation
  - Refer to obesity pathway
  - See NHS Rotherham hypertension guidelines
- **Dietary Advice**
  - Consider early referral to DESMOND programme
  - Check HbA1C + fasting glucose in 3-6 months
  - If HbA1C > 6.5% (48 mmol/mol) after lifestyle interventions
- **Metformin**
  - Initiate 500mg daily titrated slowly to maximally tolerated dose.
  - Current maximum BNF recommended dose = 2g daily. In divided doses
- **Ramipril 10mg OD**
  - (Irbesartan 150mg increased to 300mg OD if ramipril not tolerated)
- **Aspirin 75mg OD**
  - Only if patient has had an MI or has symptoms of cardiovascular disease (Secondary prevention)
- **Control Blood Glucose**
  - Unless contra-indicated
    - (If dyspepsia or increased risk or GI bleeding add Lansoprazole 15mg daily)
    - (If aspirin allergic consider Clopidogrel 75mg daily see clopidogrel guidelines)
  - Unless blood glucose controlled with diet and weight loss
    - If microalbuminuria / proteinuria present
  - HbA1C to be below 6.5% (48 mmol/mol)
  - Fasting glucose < 6mmol/l (Venous sample)
3. REFERRAL CRITERIA

Initial diagnosis, management and education of most people with diabetes should take place in primary care, with or without use of the Diabetes Education and Resource Centre.

These criteria are guidelines only and the appropriate referral point and speed of referral depends on the clinical circumstances.

- **Routine** - appointment currently next 3 - 5 weeks
- **Urgent** - appointment next 1 - 2 weeks
- **Immediately** - ring hospital - appointment next 1 - 2 days, or admit

<table>
<thead>
<tr>
<th>Condition</th>
<th>Referral Point</th>
<th>Referral Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketonuria ++/+++</td>
<td>Immediate</td>
<td>Consultant Diabetologist (RFT) Diabetes Specialist Nurse (Diabetes education and resource - DERC)</td>
</tr>
<tr>
<td>Vomiting + ketonuria/severe hyperglycaemia (&gt;20 mmol/l)</td>
<td>Immediate</td>
<td>Consultant Diabetologist (RFT)</td>
</tr>
<tr>
<td>New diagnosis of diabetes in a child</td>
<td>Immediate</td>
<td>Paediatric Team</td>
</tr>
<tr>
<td>New suspected type 1 diabetes - WELL</td>
<td>Immediate/urgent</td>
<td>Diabetes Specialist Nurse (DERC)</td>
</tr>
<tr>
<td>New suspected type 1 diabetes - UNWELL</td>
<td>Urgent</td>
<td>Consultant Diabetologist (RFT)</td>
</tr>
<tr>
<td>Diabetes in pregnancy</td>
<td>Urgent</td>
<td>Diabetes Antenatal Clinic</td>
</tr>
<tr>
<td>Woman with diabetes planning pregnancy</td>
<td>Routine/urgent</td>
<td>Diabetes Antenatal Clinic / Diabetes Specialist Nurse (DERC)</td>
</tr>
<tr>
<td>Type 2, poorly controlled (glucose, BP or lipids) despite diet and maximal drug therapy (but not to initiate insulin)</td>
<td>Routine/urgent</td>
<td>Diabetes Specialist Nurse (DERC) Consultant Diabetologist (dependent on case)</td>
</tr>
<tr>
<td>Type 2, poorly controlled glucose *including initiating insulin</td>
<td>Routine/urgent</td>
<td>Diabetes Specialist Nurse (DERC)</td>
</tr>
<tr>
<td>Poor hypoglycaemia awareness</td>
<td>Routine</td>
<td>Diabetes Specialist Nurse (DERC)</td>
</tr>
<tr>
<td>Structured Education</td>
<td>Routine</td>
<td>Diabetes Specialist Nurse (DERC)</td>
</tr>
<tr>
<td>Poorly controlled diabetes requiring long term steroid therapy</td>
<td>Routine</td>
<td>Consultant Diabetologist (RFT)</td>
</tr>
</tbody>
</table>
### 3. REFERRAL CRITERIA

<table>
<thead>
<tr>
<th><strong>Peripheral vascular disease</strong></th>
<th><strong>Severe intermittent claudication</strong></th>
<th>Routine</th>
<th>Vascular surgeon (RFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rest pain</strong></td>
<td>Urgent</td>
<td></td>
<td>Vascular surgeon (RFT)</td>
</tr>
<tr>
<td><strong>Arterial ulceration</strong></td>
<td>Immediate</td>
<td></td>
<td>Vascular surgeon (RFT)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Peripheral neuropathy</strong></th>
<th><strong>Pain/sensory loss</strong></th>
<th>Routine</th>
<th>Consultant Diabetologist (RFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motor weakness</strong></td>
<td>Urgent</td>
<td></td>
<td>Consultant Diabetologist (RFT)</td>
</tr>
<tr>
<td><strong>Neuropathic ulceration</strong></td>
<td>Immediate</td>
<td></td>
<td>Consultant Diabetologist (RFT)</td>
</tr>
<tr>
<td><strong>Difficult to manage erectile dysfunction</strong></td>
<td>Routine</td>
<td>Urologist (RFT)</td>
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</tbody>
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<table>
<thead>
<tr>
<th><strong>Nephropathy</strong></th>
<th><strong>Persistent proteinuria</strong></th>
<th>Routine</th>
<th>Consultant Diabetologist (RFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Renal impairment:</strong></td>
<td><strong>Creatinine &gt; 150 _mol/l</strong> Or eGFR &lt; 45</td>
<td>Routine</td>
<td>Rotherham combined diabetes/renal clinic (RFT)</td>
</tr>
<tr>
<td><strong>Creatinine &gt; 300 _mol/l</strong> Or eGFR &lt; 30</td>
<td>Urgent</td>
<td>Rotherham combined diabetes/renal clinic (RFT)</td>
<td></td>
</tr>
<tr>
<td><strong>Symptoms or creatinine &gt; 500 _mol/l</strong> Or eGFR &lt; 15</td>
<td>Immediate</td>
<td>Renal unit, NGH, Sheffield</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ischaemic heart disease</strong></th>
<th><strong>Limiting angina</strong></th>
<th>Routine</th>
<th>Consultant Cardiologist (RFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unstable angina/rest pain</strong></td>
<td>Immediate</td>
<td></td>
<td>Consultant Cardiologist (RFT)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Eyes</strong></th>
<th><strong>Refer all patients aged 12+ with diabetes</strong> (newly diagnosed and registrations with existing diagnosis) for retinal screening</th>
<th>Routine</th>
<th>Diabetic Retinal Screening Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cataract</strong></td>
<td>Routine</td>
<td></td>
<td>Ophthalmologist (RFT)</td>
</tr>
<tr>
<td><strong>Health Promotion Smoking Cessation, Obesity, Alcohol</strong></td>
<td>Routine</td>
<td>Section 6 - Health Promotion and Preventative Care (Diabetes Guidelines)</td>
<td></td>
</tr>
</tbody>
</table>
# 3. REFERRAL CRITERIA

## OUT-PATIENT CLINIC DETAILS

<table>
<thead>
<tr>
<th>CLINIC</th>
<th>ROTHERHAM HOSPITAL</th>
<th>HOW TO REFER</th>
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</thead>
<tbody>
<tr>
<td>General Diabetes Adult</td>
<td>Dr S Muzulu</td>
<td>Referral letter</td>
</tr>
<tr>
<td></td>
<td>Dr B Franke</td>
<td></td>
</tr>
<tr>
<td>Paediatric</td>
<td>Dr B Franke</td>
<td></td>
</tr>
<tr>
<td>Elderly</td>
<td>Dr S El-Refee</td>
<td></td>
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<tr>
<td></td>
<td>Dr Abdelhafiz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wednesday p.m. (new &amp; follow-up)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tuesday 1.30 p.m. (new patient)</td>
<td></td>
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<tr>
<td></td>
<td>Thursday 9.00 a.m. (follow-up)</td>
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<td></td>
<td>2nd, 3rd, 4th (or 5th) Tuesday p.m.</td>
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<tr>
<td></td>
<td>Friday 1.30 p.m. (new &amp; follow-up)</td>
<td></td>
</tr>
<tr>
<td>Diabetes Renal Clinic</td>
<td>Dr S Muzulu</td>
<td>Referral letter</td>
</tr>
<tr>
<td></td>
<td>Dr B Franke</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4th Wednesday p.m. alternate months</td>
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<tr>
<td></td>
<td>4th Wednesday p.m. alternate months</td>
<td></td>
</tr>
<tr>
<td>Diabetes Foot Clinic</td>
<td>Dr B Franke and vascular surgeon</td>
<td>Referral letter</td>
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<td></td>
<td>1.30 - 2.30 p.m. 4th Tuesday monthly</td>
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</tr>
<tr>
<td>Erectile Dysfunction</td>
<td>Urology Clinic</td>
<td>Referral Letter</td>
</tr>
<tr>
<td>Diabetes Antenatal Clinic</td>
<td>Dr S Muzulu</td>
<td>Direct Letter to Clinic</td>
</tr>
<tr>
<td></td>
<td>Miss S Rutter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wednesday a.m. (new and follow-up)</td>
<td></td>
</tr>
<tr>
<td>Teenagers and Young Adult Diabetes Clinics</td>
<td>Dr B Franke</td>
<td>1.45 p.m. 3rd Friday every 2 months (ages 18-25)</td>
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<td></td>
<td>Dr S El-Refee</td>
<td>2nd Tuesday p.m. on odd months (ages 13-17)</td>
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<tr>
<td>Joint Paediatric Handover Clinic</td>
<td>Dr B Franke</td>
<td>1.30 p.m. 2nd Tuesday on even months</td>
</tr>
<tr>
<td></td>
<td>Dr S El-Refee</td>
<td></td>
</tr>
<tr>
<td>Diabetic Retinopathy Ophthalmology Clinic</td>
<td>Mr Jabir</td>
<td>Wednesday p.m.</td>
</tr>
</tbody>
</table>

Refer to contacts for telephone number
3. REFERRAL CRITERIA

PAEDIATRIC DIABETES SERVICES

REFERRAL PROCEDURE – DR EL-REFEE

The normal referral procedure for youngsters with newly diagnosed diabetes is that after a GP refers to or contacts the department, arrangements are made for the child/teenager to attend Children’s Ward 3 Assessment Unit as soon as possible. This will usually be straight away if parents are able to bring them to hospital.

Upon discharge from the Unit, arrangements are made for them to be seen by Dr El-Refee within 2-3 weeks in one of his Diabetes Clinics. In the meantime, they will have the continuing support of the Paediatric Diabetes Specialist Nurse, Sharon Gamble, and the Diabetes School Nurse, Karen Wilcock. Also available is Staff Nurse Jenny Hobson, Diabetic Nurse (part-time), based on the Children’s Ward.

NOTE: Guidelines for the care of Children and Young People with Type 1 Diabetes issued by Rotherham General Hospital Paediatrics Department are available on the Hospital Intranet.

DIABETES EDUCATION & RESOURCE CENTRE

GENERAL INFORMATION

- The Diabetes Education & Resource Centre opened in early May 2005
- The Centre is on the Rotherham General Hospital site and is jointly managed by the NHS Rotherham and the Hospital Foundation Trust
- It provides an education and resource facility for patients, their families and healthcare professionals and houses Rotherham’s Retinal Screening Service
- The facility is staffed by a multidisciplinary team including Diabetes Specialist Nurses, Podiatrists and Dieticians who run specialist clinics from the centre. The centre is currently open from 9 am to 5 pm Monday to Friday, and appointments are available through Choose and Book

SERVICES PROVIDED

- Diabetes triage
- Optimisation of glucose control
- Initiation of insulin therapy (for types 1 and 2)
- Hypoglycaemia management
- Planning a diabetic pregnancy
- Structured education programmes (DESMOND, DAFNE, carbohydrate counting/awareness sessions)

For contacts see Section 12
**RISK FACTORS**

**Previous history:**
- Previous GDM
- Previous macrosomic baby (90th centile for gestational age - approx 4kg at term (if unsure check against centile charts in antenatal clinic for each sex)
- Family history (1st degree relative with diabetes ie father, mother, sibling)
- Obesity (BMI >30)
- Polycystic Ovarian Syndrome
- Ethnicity other than white Caucasian
- On long term steroids

**Current pregnancy:**
- Large for dates (90th centile or above) / Polyhydramnios on antenatal ultrasound scan
- Persistent glycosuria on 2 or more occasions of 3+more (test urine for ketones if present refer urgently to delivery suite RFT, if not book OGTT)
- Any patient with symptoms suggestive of diabetes

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**REFERRAL FOR DIAGNOSIS OF GDM AND SPECIALIST MANAGEMENT**

Risk assessment for GDM and referral for further care is usually performed by the midwife at booking.

In order to make an informed decision about screening and testing for GDM, women should be advised that:

- most women with GDM will respond to diet and exercise
- some women (between 10-20%) will need oral hypoglycaemics/ Insulin therapy if diet and exercise alone are ineffective
- if GDM is not detected and controlled there is a small risk of birth complications such as shoulder dystocia
- a diagnosis of GDM will lead to increased monitoring and intervention both antenatally and in labour.

**If the woman wishes to proceed:**
Refer to Greenoaks clinic for OGTT - Refer to contacts

GDM can occur at any stage so an upper gestation limit cannot be set; however, repeated OGTT during a pregnancy is not recommended
4. DIAGNOSIS OF GESTATIONAL DIABETES (GDM)

WOMEN WITH A PREVIOUS HISTORY OF GDM

The risk of recurrence of GDM is:

- 75% if previously treated with insulin
- 30-80% if not treated with insulin

Women who have had GDM are at higher risk of developing diabetes in later life.

Women who have had GDM should undergo an annual check of fasting plasma glucose

Women with borderline/impaired postnatal OGTT in previous pregnancy should be referred early to the Medical Antenatal Clinic/Diabetes Specialist Midwife in future pregnancies.
## 5. ANNUAL REVIEW

### ANNUAL REVIEW FOR ADULTS WITH TYPE I DIABETES

The following are to be carried out by the GP/Practice Nurse at least once per year:

**Risk assessment:**
- Neuropathy, hypertension, CVD, psychological, foot care
- Non-hyperglycaemic risk factors

**Measure:**
- HbA1c
- Lipid profile
- BP
- Waist circumference
- Serum creatinine (estimated GFR using MDRD)
- Albumin:creatinine ratio in first pass urine

In addition to presentation with symptoms or complications, the following situations may prompt an earlier review:
- Report of background or referable retinopathy by the DRS service
- Pregnancy

### ANNUAL REVIEW FOR ADULTS WITH TYPE II DIABETES

The following are to be carried out by the GP/Practice Nurse at least once per year:

**Risk assessment:**
- Neuropathy, hypertension, CVD, psychological, foot care
- Non-hyperglycaemic risk factors

**Measure:**
- HbA1C
- Lipid profile
- UKPDS risk estimate - download here
- BP
- Serum creatinine (estimated GFR using MDRD)
- Albumin:creatinine ratio in first pass urine

In addition to presentation with symptoms or complications, the following situations may prompt an earlier review:
- Report of background or referable retinopathy by the DRS service
- Pregnancy

### ANNUAL REVIEW OF CHILDREN AND YOUNG PEOPLE WITH DIABETES

The following are normally carried out by the Paediatric team:
- Risk assessment (foot care and injection sites from diagnosis and hypertension and renal from age 12 years)
- Referral for retinal screening from age 12
- BP (from age 12)
- Microalbuminuria (from age 12)
- Coeliac disease (every three years)
- Thyroid disease (every three years)
6.1 REFERRAL FOR DIABETIC RETINOPATHY SCREENING

All people with diabetes aged 12 years and above are eligible for annual screening to detect diabetic retinopathy. Newly diagnosed patients and new registrations with an existing diagnosis of diabetes should be referred as soon as possible to the Barnsley and Rotherham DRS service.

The contact details for this service are: Retinal Screening

For referral form please see 13.5

6.2 PRE-CONCEPTION AND ANTENATAL CARE

As part of routine care, all women of child bearing age with diabetes should be advised about the effects of diabetes in pregnancy and encouraged to:

- Take 5mg Folic Acid daily if planning to conceive or as soon as they become aware that they are pregnant
- Make contact with health services as soon as they become aware that they are pregnant so that they can be referred for specialist antenatal diabetes care

Women planning to conceive need their diabetes to be well managed. Ideally, a HbA1c of 6.1% needs to be achieved and risk factors need to be managed. To facilitate this, a pre-conception clinic is available at Rotherham Foundation Trust.

Women who are booking in should be referred for antenatal diabetes care as soon as possible, referrals should be notified to:

Dr Susan Rutter, Consultant in Obstetrics & Gynaecology
People with diabetes are more at risk of complications arising as a result of infections such as influenza and pneumonia. Elevated blood glucose levels, as a response to infection, can lead to uncontrolled diabetes and the potential danger of Diabetic Ketoacidosis (DKA) or Hyperglycaemic Hyperosmolar State (HHS), both of which can be fatal if left untreated.

Vaccination should start after the age of six months and be repeated each year. None of the flu vaccines is licensed for use in children before the age of six months.

The best way to protect children younger than six months who are in a clinical risk group such as people with diabetes, is to request members of their household and their caregivers be vaccinated. They may not qualify for a free flu vaccination on the NHS but the vaccination is available over the counter at most local pharmacies.

Up to the age of three the dose is half that of an older child or adult, and for children under the age of 13, if they have not previously been vaccinated, the dose should be repeated after 4 – 6 weeks for the first year.

Vaccination should be postponed in patients with a feverish illness or infection and avoided in people with a known allergy to eggs, because the vaccine is grown using the protein from hens’ eggs.
6.4 MANAGEMENT OF NON-HYPERGLYCAEMIC RISK FACTORS

All people with diabetes should be assessed for non-hyperglycaemic risk factors on diagnosis and at annual review and offered advice and referral as appropriate.

Smoking Cessation:

1. **ASK and record smoking status**
   Smoker – ex-smoker – non-smoker

2. **ADVISE patient of health benefits**
   Stopping smoking is the best thing you can do for your health

3. **ACT on patient’s response**
   Build confidence, give information, refer, prescribe.
   Succeed with local NHS Stop Smoking Services

**Brief interventions and referral for smoking cessation**
Typical interventions take between 5 – 10 mins
May include the following
- Simple opportunistic advice to stop to all smokers
- An assessment of the patient’s commitment to quit
- An offer of pharmacotherapy and/or behavioural support
- Provision of self-help material and referral to more intensive support such as the NHS Stop Smoking Services
- Information should be recorded – smoking status, advice to stop, response to advice and referral if appropriate
- Everyone who smokes should be advised to quit
- If not ready they should be asked to consider the possibility and encouraged to seek help in the future
- If they present with a smoking related disease the advice should be linked to the medical condition
- Advice to stop should be sensitive to the individual’s preferences, needs and circumstances

**Very brief advice (AAA approach)**

**ASK and record the patient’s smoking status**
“Are you smoking at all these days?”

**ADVISE the patient of health benefits of quitting**
“Stopping smoking is the best thing you can do for your health”.

**ACT on patient’s response, including offering a referral to their local NHS Stop Smoking Service**
“Lots of my patients are succeeding with support from the local NHS Stop Smoking Service and stop smoking medication. Would you like me to refer you to them for more advice?”
6. HEALTH PROMOTION AND PREVENTATIVE CARE

Alcohol:

Identification for alcohol related risk and treatment in Primary Care - 16 years +

Score 0-8
‘Well done’ - Reinforce lower risk drinking message

Confirm how many units are in the patients ‘drinks’

Score 20+
Advise possible dependence
- Alcohol LES - Book into arranged clinic slot with practice and inform designated Keyworker if SADQ less than 30/meets eligibility criteria. (Not in LES refer to Clearways)
- SADQ > 30 complex/severely dependent refer directly to Consultant in substance misuse at Clearways
- Aged 16yrs to 18 yrs refer to Know the Score Young Persons Drug and Alcohol Project

Identify levels of drinking to assess alcohol related risk using AUDIT C – if score 5+
go on to complete full AUDIT.

Simple Brief Advice - Score 8-19
Advised increasing risk and higher risk drinkers to reduce within lower risk drinking limits:
- Personalise the feedback by relating drinking to individual health, risk and personal responsibility to change

Confidence – increasing risk/higher risk drinkers (8 - 19)
I know you can reduce your drinking and we can review this in a month’s time, but if you would like some extra support, explore how you feel about your drinking and your confidence in changing it please refer yourself to the Primary Care Alcohol Service, who will then arrange for you to see an Alcohol Worker in the Practice.
- NOT in LES advise self referral Lifeline
- 16 years to 18 years refer Know the Score

Local Brief advice tool.
DH – Know your Limits Literature

When should I use AUDIT C - AUDIT?
- New Patient Registration (DES only)
- General health interview, ante/post natal, sexual health check-up, NHS Health check etc
- Attendance at possible alcohol related health condition e.g. multiple A&E attendance
- Depression/anxiety
- Stomach disorders/diarrhoea
- Pancreatitis
- Abnormal LFT’s
- Hepatitis
- Cirrhosis
- Cardiac arrhythmias
- Vitamin deficiencies
- Hypertension
- Gout
- Stroke
- Unexplained infertility
- Emergency contraception
- Cardio myopathy
- Peripheral neuropathy
- Impotence/libido problems
- Seizures starting in middle age
- Falls/collapses in elderly
- Acne, eczema, multiple bruising
- Cancers of the mouth, pharynx, larynx, oesophagus, breast and colon
- Non compliance medication
WEIGHT MANAGEMENT – REFERRAL PATHWAY (ADULTS)

Patients should be referred into the Rotherham weight management services as appropriate.

Adults with a BMI (kg/m²) between 25 and 40 can be referred to Reshape Rotherham (community weight management service). Adults with a BMI greater than 40 or greater than 30 with increased risk (e.g., type 1 diabetes, tablet controlled type 2 diabetes etc) should be referred to RIO (multidisciplinary team for obesity).

INCREASED RISK IN ADULTS
- Type 1 diabetes
- Tablet controlled T2DM
- Dyslipidaemia
- South Asian men
- Established CVD
- Sleep apnoea

SECONDARY CARE
- Cardiology
- Diabetology
- Gastroenterology
- Respiratory
- Surgery
- Obstetric/Gynaecology/Maternity (Fertility/PCOS)
- Orthopaedics
- Rheumatology
- etc.

MUSCULOSKELETAL (physio/podiatry)
COMMERCIAL SECTOR
- e.g., Weight Watchers
- Slimming World

PHARMACY
Refer to tier 3 or recommend tier 2 as appropriate

Any TIER 3 patient requiring pharmacotherapy will be treated in TIER 3, and this will be reflected in the GP prescribing data for whom the patient is registered.

NB If patients are considered unsuccessful at any given tier, they automatically progress to the next tier of intervention.

After intervention, patients progress down through the tiers and back to primary activity (TIER 1) of monitoring and education (every 6-12 months).

For additional information see section 13.1
Children in the BMI 85th - 99.6th centile range can be referred to Carnegie Clubs (run by DC Leisure). Children with BMI greater than the 99.6th centile or greater than the 95th centile with increased risk (e.g., type 1 diabetes, tablet controlled type 2 diabetes etc) should be referred to RIO (multi disciplinary team for obesity).

Any TIER 3 patient requiring pharmacotherapy will be treated in TIER 3, and this will be reflected in the GP prescribing data for whom the patient is registered.

NB If patients are considered unsuccessful at any given tier, they automatically progress to the next tier of intervention.

After intervention, patients progress down through the tiers and back to primary activity (TIER 1) of monitoring and education (every 6-12 months).

For additional information see section 13.1
PATIENT EDUCATION

Education is essential to patient-centred care and is needed to ensure that individuals are empowered to make informed decisions about managing their diabetes.

Diabetes education needs to be specific to individual needs, and is best addressed on a one to one basis and in groups. It is important that the information given is accurate, clear, concise and not conflicting or ambiguous.

The following are a few points to consider when providing education to the patient with diabetes:

- Allow sufficient time
- Avoid information overload. It is important to proceed at an appropriate pace for each patient. Be aware of the patient’s saturation point
- Ensure that everyone is saying the same things
- Use information booklets but be aware of the contents. Written material should enhance teaching, not replace it
- Messages often need to be re-iterated several times. Much of what is said is forgotten, not heard or not understood
- Include a relative or friend where appropriate
- Be aware of language and cultural implications
- Record that the patient education has been given
- Education may have legal implications e.g. driving and hypoglycaemia, DVLA and insurance and employment

WHY STRUCTURED EDUCATION?

Structured education is a planned and graded programme that is comprehensive in scope, flexible in content and adaptable to educational and cultural background (NICE 2003). www.nice.org.uk

It aims to improve knowledge, blood glucose control, weight, dietary management, physical activity and psychological well being. Structured education improves biomedical outcomes, quality of life and treatment satisfaction. It is recommended for maximising self-care, personal autonomy, skills and knowledge (NSF for Diabetes 2001). www.dh.gov.uk/en/Publicationsandstatistics/Publications/
A high quality structured education programme should:

- Have a structured, written curriculum
- Have trained educators
- Be quality assured
- Be audited


For more details of criteria visit the National Diabetes Support Team at: www.cgsupport.nhs.uk/diabetes

**STRUCTURED EDUCATION IN ROTHERHAM:**

There are two national programmes for adults that currently meet the above suggested criteria. They are, Diabetes Education and Self Management for Ongoing and Newly Diagnosed (DESMOND) for people with Type 2 diabetes and Dose Adjustment For Normal Eating (DAFNE) for people with Type 1 diabetes. Both programmes are being delivered in Rotherham by the Diabetes Specialist Team.

**Diabetes Education and Self Management for Ongoing and Newly Diagnosed (DESMOND):**

**WHAT THE PROGRAMME INVOLVES?**

- **6 hrs education, as either:**
  - 1 full day or 2 half days
- **Groups of 6-10 + partners or friends**
- **Delivered by 2 DESMOND educators (Rotherham currently has 4 DESMOND educators, and there will soon be two more).**

**REFERRAL CRITERIA:**

- Newly diagnosed or on-going Type 2 Diabetes.
- Able to speak & understand English
- Not housebound
- Patients can self refer or clinicians and professionals can refer using adult referral form to the Diabetes Specialist Nurse Service.

**WHERE ARE THE COURSES RUN?**

In the Diabetes Education and Resource Centre and also in several satellite centres in the community.

More information about DESMOND can be found at www.desmond-project.org.uk

**Dose Adjustment For Normal Eating (DAFNE):**

DAFNE has been established in Rotherham for 3 years. There are six DAFNE educators and two DAFNE trained doctors.

**WHAT DOES IT INVOLVE?**

- A 5-day training course delivered by 2 educators covering all aspects of diabetes and how to dose adjust insulin for the food eaten along with healthy lifestyle changes in accordance with taught DAFNE principles.
- Initial follow-up session (2.5 hours) within 8 weeks of completing the course
- Recurrent (12-18 months) top-up sessions (3– 3.5 hours)
7. PATIENT EDUCATION

REFERRAL CRITERIA:
• People with Type 1 Diabetes who have been diagnosed at least 6 months prior to referral and are aged over 17 years
• Can speak and understand English
• No problems with vision or hearing
• No eating disorders
• No current severe mental health problems
• People who are willing to make changes to their diabetes management

WHERE ARE THEY HELD?
This programme is being currently held at the Diabetes Education and Resource Centre, but there are plans for it to be delivered at other satellite centres in the community.

More information about DAFNE can be found at www.dafne.uk.com

LOCALLY DEVELOPED EDUCATION PROGRAMMES:
• Carbohydrate awareness / counting group (for patients on insulin)
• Optimisation of control (for patients with insulin treated Type 2 diabetes)
• Diabetes and Weight Management Groups

WHAT IS CARBOHYDRATE AWARENESS / COUNTING GROUP?
This is a programme that has been developed for

• People with type 2 diabetes on basal bolus regime who would like to improve their diabetes control by matching their insulin to the amount of carbohydrate in their meal and
• As a stop-gap programme for people with type 1 diabetes on basal bolus regime, waiting to go on to the DAFNE programme.

This programme is to give patients an understanding of what carbohydrates are and why they are important in the management of their diabetes. The programme consists of practical workshops to teach:

• Which foods contain carbohydrates
• How to estimate the amount of carbohydrate in a given food
• How insulin works
• How to match the insulin to the food you eat

WHERE ARE THE COURSES HELD?
In the Diabetes Centre at the Rotherham General Hospital and can also be organised in satellite centres in the community depending on the amount of interest.

HOW LONG IS THE COURSE?
The course is delivered over two mornings, three and half hours each (currently on a Tuesday).

WHO CAN GO ON IT?
People who are on a multiple insulin injection regime, i.e. when they inject a quick acting insulin for their meals and one or two injections of a background insulin, also called the ‘Basal Bolus regime’.
7. PATIENT EDUCATION

HOW TO REFER PATIENTS TO THIS PROGRAMME?
Use the referral form for dietetics and mark for Diabetes Specialist Dietitians or the referral form for Diabetes Specialist Nurses.

- The referral should include:
  - Patient details
  - Height
  - Weight
  - Most recent HbA1c and Lipid profile
  - Current Medication
  - Any relevant past medical history

- Address to:
  Kathy Winearls
  Diabetes Education and Resource Centre
  Rotherham General Hospital
  Moorgate road
  Rotherham
  S60 2UD

OPTIMISATION OF BLOOD GLUCOSE CONTROL PROGRAMME

AIM
Improve knowledge and understanding of diabetes and insulin therapy in order to enable self-management.

REFERRAL CRITERIA:
- People with Type 2 diabetes who are treated with insulin therapy either a once daily or twice daily regime.
- HbA1c > 7%.
- Anyone who wishes to learn more about their diabetes and improve their blood glucose control and are able to understand English and participate in group education.

LEARNING OUTCOMES:

TO:
- Have an understanding of the treatments used in Type 2 Diabetes
- Understand the benefits of improving glycaemic control in reducing the risk of developing potential long term complications associated with diabetes
- Understand how diet and activity affects blood glucose levels
- Understand blood glucose monitoring and HbA1c
- Understand and apply the ‘3 Day Rule’ insulin adjustment concept
- Manage and prevent hypoglycaemia effectively
- Understand the importance of annual reviews
- Understand when and how to seek professional support

TIMES:

1st session - 2 hours
2nd session - 2 hours
6 month follow up session - 2 hours

Optimise control groups are open to any patient with Type 2 Diabetes who meets the referral criteria. They consist of 5 to 10 participants and partners are welcomed. These sessions will be held at the Diabetes and Education Resource Centre or can be arranged in satellite centres in the community, according to demand.
DIABETES AND WEIGHT MANAGEMENT PROGRAMME:

- This programme has been specifically designed to support people with diabetes to make choices about their food and lifestyle, to enable them to lose weight and manage their diabetes. It is aimed at people who do not fit the criteria for Reshape Rotherham.

- It is a six session programme delivered over twelve weeks. Each session lasts for 2 hours.

- This programme aims to give people more guidance on diets to help with
  - Weight management (specifically looking at calorie restriction) whilst taking into consideration
    - Reducing the risk of hypoglycaemia when altering dietary intake,
    - Altering diabetes medications to aid weight loss and prevent hypoglycaemia,
    - Increasing exercise and understanding alteration necessary to diabetes medication to enable this
    - Behaviour change, eating out, recipe ideas and goal setting.

WHERE IS IT DELIVERED?

Two venues currently:
- Diabetes Education and Resource Centre, Rotherham General Hospital, Moorgate Road, Rotherham
- Highthorne Road Surgery, Kilnhurst, Rotherham.

REFERRAL CRITERIA:

- People with Type 1 or Type 2 Diabetes on Insulin or maximum Oral hypoglycaemic medication
- BMI over 27 and for a waist circumference >102cm for men and >80cm for women
- Motivated to lose weight and willing to follow a calorie restricted diet plan
- Willing to attend all six sessions
- Ability to speak and understand English

HOW TO REFER?

By letter or dietetic referral card and please specify that the referral is for Diabetes Weight Management groups

The referral should include:
- Patient details
- Height
- Most recent HbA1c and Lipid profile
- Weight
- Any relevant past medical history
- Current Medication

Address to:
Kathy Winearls
Diabetes Education and Resource Centre
Rotherham General Hospital
Moorgate road
Rotherham
S60 2UD
8. GLUCOSE CONTROL IN TYPE 2 DM

8.1 DIETARY INFORMATION

The aims of dietary treatment of diabetes are to:
• Minimise symptoms of hyperglycaemia.
• Minimise the risk of hypoglycaemia.
• Minimise the long term macro- and microvascular complication of diabetes.

To achieve this, dietary advice should aim to:
• Minimise fluctuations of blood glucose to as near normal as possible.
• Promote weight loss in people who are overweight.
• Reduce the risk of cardiovascular disease.

The dietary guidelines recommended for people with diabetes are similar to the UK healthy eating guidelines. Advice on diet should be offered following assessment of:
• Lifestyle.
• Social circumstances.
• Current dietary intake.
• Readiness to make changes to diet and lifestyle.
• Current medication

Dietary changes should be negotiated with each patient using the following general principles:
• Existing eating habits should be modified rather than attempting to make major changes to the patient's pattern of eating.
• Total calorie intake should be restricted to that needed to achieve and then maintain an agreed target weight.
• At least half of the energy intake should be from carbohydrates, with most of it in the form of medium to low Glycaemic Index (GI) food. E.g. oat based cereals, granary or multigrain bread, pulses and beans, new potatoes, pasta. For more information on GI visit www.glycaemicindex.com.
• Fruit and vegetables should be increased to at least 5 portions/day to achieve recommended antioxidant intake.
• The intake of sugary food and drinks should be reduced to 10% of total calorie requirements.
• Total fat should be reduced to 30% of total calorie requirements by restricting the following
  • Saturated fat to less than 10%
  • Polyunsaturated fat to less than 10% and
  • Monounsaturated fat for the rest of the allowance.
• Dietary salt should be reduced to <6g/day.
• Alcohol if taken, should be taken in moderation as per DH recommendations which is 2-3 units/day for women and 3-4 units/day for men with 2-3 alcohol free days.
• Special diabetic products are high in calories, and are likely to cause gastrointestinal upset and are not recommended. Options such as low calorie, low sugar, diet, healthy choices etc would be better.

Please refer to a Dietitian for individualised advice (see below for referral pathway for dietitians). Patients can be given stop gap information from the Nutritional Information Pack.

The pack is available online at: http://websrv.rotherhampct.nhs.uk/intranetapps/pctIntranet/departments/PageStyle2.asp?WebPageID=1743

and also by contacting The Department of Nutrition & Dietetic Services, Oakwood Hall, Rotherham NHS Foundation Trust, Moorgate Road, Rotherham. S60 2UN. Telephone: 01709 304297
8. GLUCOSE CONTROL IN TYPE 2 DM

REFERRAL GUIDANCE:

Referral to the Diabetes Specialist Nurses for:

People newly diagnosed with diabetes

- Type 2 – To refer within four weeks of diagnosis
- Type 1 for initial advice – to refer within 48 hours of Diagnosis. After initial consultation, patient will be referred to the specialist team for further management.

- Everyone who controls their diabetes with diet or tablet treatment should be offered dietetic review by a dietitian at their diabetic annual review.

- People starting on Exenatide or similar medications to help maximise the benefit of the drug in achieving weight loss.

- When being started on Sulphonylureas.

- People with Type 2 diabetes treated with diet or tablets and wanting to lose weight.

Referral to the Diabetes Dietetics Specialist Team for:

- People whose diabetes is poorly controlled even on maximum doses of medication.

- People who are wishing to lose weight but finding it difficult to manage due to diabetes medication.

- People who are having problems with hypoglycaemia or just erratic blood glucose control and you suspect this may be due to dietary issues.

- People who are commencing on insulin.

- People who would like to gain better understanding of relationship of carbohydrate, insulin and blood glucose levels.

- People with diabetes treated with insulin attending annual review for update on diet related issues.

- People with diabetes who are taking up exercise or who do competitive sport.

- People who want to manage their diabetes using carbohydrate counting.

For more information on diet and diabetes please use the following link:

http://websrv.rotherhampct.nhs.uk/?WebPageID=1721
8. GLUCOSE CONTROL IN TYPE 2 DM

8.2 ORAL HYPOGLYCAEMICS AND GLP-1

OVERVIEW - CONTROLLING BLOOD GLUCOSE IN A PATIENT WITH TYPE 2 DIABETES

OBJECTIVES

- HbA1c to be below 6.5% (48mmol/mol)
- Fasting glucose < 6mmol/l (venous sample)
- Patients must not experience frequent episodes of hypoglycaemia
- In the very elderly or frail, symptom control alone may be the priority

TREATMENT

Review HbA1c every 3-6 months if not at target, every 12 months once at target

ORAL TREATMENT TO LOWER BLOOD GLUCOSE

Step 1

METFORMIN (see note 1)

Step 2

GLICLAZIDE

SITAGLIPTIN (see note 2)

Step 3

SITAGLIPTIN (see note 2)

GLICLAZIDE

EXENATIDE / LIRAGLUTIDE (see note 3 & 4)

PIOGLITAZONE (see note 5)

DIET AND WEIGHT LOSS. Consider referral to the DESMOND programme

If HbA1c above 6.5% (48mmol/mol) fasting glucose above 6mmol/l and/or BMI > 25 initiate metformin

NOTES

1. Go to Step 2 if Metformin is not tolerated or contra indicated.

2. Sitagliptin is a new drug and is subject to intensive monitoring for adverse effects by the CHM and MHRA. Sitagliptin may be considered as a second line choice if weight gain or hypoglycaemia is undesirable.

3. Exenatide /liraglutide should be considered if oral therapy has failed to control HbA1c or weight gain is undesirable. Exenatide /liraglutide is a new drug and is subject to intensive monitoring for adverse effects by the CHM and MHRA.

4. The cocomittant use of Exenatide and Sitagliptin is outside the licence of both drugs.

5. Pioglitazone due to its adverse side effect profile should only be considered for patients that are unable or unwilling to be treated with Exenatide or insulin.

TARGETS FOR GLYCAEMIC CONTROL

<table>
<thead>
<tr>
<th>HbA1c Control</th>
<th>&lt; 7.0% =53 mmol/mol</th>
<th>7.0-8.0% =53-64 mmol/mol</th>
<th>8.0-9.0% =64-75 mmol/mol</th>
<th>&gt;9.0% = 75 mmol/mol</th>
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<tbody>
<tr>
<td>DM23 achieved</td>
<td>DM 24 achieved</td>
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<td>ACCEPTABLE</td>
<td>POOR</td>
<td>VERY POOR</td>
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HbA1c is 1% above a patient's individual target consider whether an adjustment in diet or medication is needed to restore optimal glucose control.
## 8. GLUCOSE CONTROL IN TYPE 2 DM

### ORAL DIABETES TREATMENT PATHWAYS

<table>
<thead>
<tr>
<th>METFORMIN</th>
<th>GLICLAZIDE</th>
<th>SITAGLIPTIN</th>
<th>Exenatide / Liraglutide</th>
<th>Pioglitazone</th>
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<td>(First line recommendation)</td>
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8. GLUCOSE CONTROL IN TYPE 2 DM

Step 1 - TREATMENT OF TYPE 2 DIABETES: METFORMIN

**AIMS OF TREATMENT**
- HbA1c to be below 6.5% (48 mmol/mol) on Metformin monotherapy
- Fasting glucose < 6mmol/l (venous sample)
- In the very elderly or frail, symptom control alone may be the priority

**INITIATE METFORMIN**
- Start with 500mg daily for 1-2 weeks, then 500mg twice a day for 1-2 weeks then increase to 500mg TDS (unless glycaemic target is reached)
- Then titrate every 1-3 months to achieve glycaemic target or maximum dose is prescribed (2g daily in divided doses)
- Tablets should be taken with or immediately after a meal
- Diarrhoea occurs in up to 20%, this usually resolves after 3-5 days or may be dose dependent and may resolve on dose reduction
- Consider FBC if any signs of B12 deficiency

**REVIEW 3-6 MONTHS AFTER INITIATION AND FOLLOWING A DOSE INCREASE**
If glycaemic targets MET - Review in 6-12 months
If glycaemic targets NOT MET - Patient is taking the maximum, or maximum tolerated metformin dose
Check compliance - Consider adding Gliclazide or Sitagliptin

**TARGETS FOR GLYCAEMIC CONTROL**

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If HbA1C is 1% above a patient’s individual target consider whether an adjustment in diet or medication is needed to restore optimal glucose control.

**BLOOD GLUCOSE MONITORING**
Patient blood glucose monitoring may not be necessary at this stage. Patients are very unlikely to experience hypoglycaemia on Metformin, consider blood glucose monitoring if the patient reports hypoglycaemia like symptoms. Effectiveness can be monitored using HbA1C measurements.
8. GLUCOSE CONTROL IN TYPE 2 DM

Step 2 - TREATMENT OF TYPE 2 DIABETES; GLICLAZIDE (Sulphonylurea)

**PATIENT HAS**
- A contraindication to metformin
- Failure to tolerate metformin despite a reasonable trial and a slow initiation
- Failure of metformin to control diabetes

**DIABETES CONTROL**
- HbA1c below 7.5% (48 mmol/mol)
- Fasting glucose < 6mmol/L (venous sample)
- Patients must not experience frequent episodes of hypoglycaemia

**In the very elderly or frail, symptom control alone may be the priority**

**INITIATE GLICLAZIDE**
- 40mg-80mg daily with breakfast and subsequently with evening meal
- Titrate by 40-80mg steps, every 1-3 months to achieve glycaemic target or until
  - Maximum daily dose is reached = 320mg daily, given as 160mg BD
  - Or maximum tolerated dose is reached

**SIDE EFFECTS** are generally mild and infrequent and include hypoglycaemia, gastro-intestinal disturbances, such as nausea, vomiting, diarrhoea and constipation. Hypersensitivity occurs rarely and usually in the first 6-8 weeks of therapy, and usually manifest as allergic skin reactions.

**AVOID GLICLAZIDE**
- Severe hepatic disease, Severe renal impairment eGFR ≤ 30 ml/s/min/1.73 m²
- Porphyria
- Pregnancy and Breast feeding
- Presence of ketoacidosis

**WEIGHT GAIN**
A 2-4kg weight gain is recognised as a consequence of sulphonylurea therapy; in some patients this may exceed 10kg. Patients should be re-assessed and dietary compliance reaffirmed before initiation.

**REVIEW 3-6 MONTHS AFTER INITIATION AND FOLLOWING A DOSE INCREASE**
- If glycaemic targets MET - Review in 6-12 months
- If glycaemic targets NOT MET - Patient is taking the maximum, OR maximum tolerated metformin and/or gliclazide dose

Check compliance - Consider adding Exenatide, Sitagliptin if not added at step 2 or pioglitazone if alternatives inappropriate.

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<td>EXCELLENT</td>
<td>ACCEPTABLE</td>
<td>POOR</td>
<td>VERY POOR</td>
<td></td>
</tr>
</tbody>
</table>

If HbA1C is 1% above a patient’s individual target consider whether an adjustment in diet or medication is needed to restore optimal glucose control.

Refer to section 8.5
8. GLUCOSE CONTROL IN TYPE 2 DM

Step 2 OR 3 - TREATMENT OF TYPE 2 DIABETES: SITAGLIPTIN

Sitagliptin as a third line agent to metformin and gliclazide if the patient has;
• Failure of metformin and/or gliclazide to control diabetes

Sitagliptin should be considered as a second line agent in addition to metformin if the patient:
• Is at significant risk of hypoglycaemia or its consequences, consider work and social circumstances (e.g., older person, people working with machinery or at heights or living alone).
• Has a contraindication or cannot tolerate gliclazide
• Further weight gain would be undesirable

Sitagliptin can be used in combination with gliclazide as a second line agent if the patient:
• Has a contraindication or cannot tolerate metformin despite a reasonable trial

<table>
<thead>
<tr>
<th>DIABETES CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>• HbA1c below 7.5% (58 mmol/mol)</td>
</tr>
<tr>
<td>• Fasting glucose &lt; 6mmol/l (venous sample)</td>
</tr>
<tr>
<td>• Patients must not experience frequent episodes of hypoglycaemia</td>
</tr>
</tbody>
</table>

• In the very elderly or frail, symptom control alone may be the priority

INITIATE SITAGLIPTIN
• 100mg once daily
• The dose of metformin to be maintained
• The dose of gliclazide may need lowering if hypoglycaemia is a concern
• No dose adjustment is required for patients with mild renal insufficiency, mild to moderate hepatic insufficiency or in the elderly.

SIDE EFFECTS Hypersensitivity reactions include anaphylaxis, angioedema, and exfoliative skin conditions and stevens-johnson have been reported usually in the first 3 months of treatment. Nausea, flatulence and constipation have been reported when used in conjunction with other hypoglycaemic agents.

AVOID SITAGLIPTIN
• Moderate or worse renal failure
• Pregnancy
• If eGFR <50mls/min/1.73 m²

Sitagliptin is a new drug and is subject to intensive monitoring by the CHM and MHRA its adverse effect profile may not fully known.

REVIEW 3-6 MONTHS AFTER INITIATION AND FOLLOWING A DOSE INCREASE
If glycaemic targets MET - Review in 6-12 months
If glycaemic targets NOT MET - Patient is taking the maximum, OR maximum tolerated meformin and/or gliclazide dose
Check compliance - Consider adding exenatide or initiating insulin or pioglitazone

TARGETS FOR GLYCAEMIC CONTROL

<table>
<thead>
<tr>
<th>HbA1c Control</th>
<th>&lt; 7.0%</th>
<th>7.0-8.0%</th>
<th>8.0-9.0%</th>
<th>&gt;9.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>=53 mmol/mol</td>
<td>=53-64 mmol/mol</td>
<td>=64-75 mmol/mol</td>
<td>= 75 mmol/mol</td>
</tr>
<tr>
<td>DM23 achieved</td>
<td>DM 24 achieved</td>
<td>DM 25 achieved</td>
<td>Outside QOF targets</td>
<td></td>
</tr>
<tr>
<td>EXCELLENT</td>
<td>ACCEPTABLE</td>
<td>POOR</td>
<td>VERY POOR</td>
<td></td>
</tr>
</tbody>
</table>

If HbA1C is 1% above a patient’s individual target consider whether an adjustment in diet or medication is needed to restore optimal glucose control
Refer to section 8.5
Exenatide/liraglutide should be considered as a third line agent in addition to metformin and gliclazide if there is a:

- Failure of metformin and/or gliclazide/sitagliptin to control diabetes
- Weight loss is desirable (BMI ≥ 35 kg/m²)
- BMI ≤ 35 kg/m², and therapy with insulin would have significant occupational implications or weight loss would benefit other significant obesity-related comorbidities

- In the very elderly or frail, symptom control alone may be the priority

**DIABETES CONTROL**
- HbA1C below 7.5% (58 mmol/mol)
- Fasting glucose < 6mmol/L (venous sample)
- Patients must not experience frequent episodes of hypoglycaemia

### 8. GLUCOSE CONTROL IN TYPE 2 DM

#### Step 3 - TREATMENT OF TYPE 2 DIABETES;(GLP-1)

**EXENATIDE/LIRAGLUTIDE**

<table>
<thead>
<tr>
<th>EXENATIDE</th>
<th>LIRAGLUTIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOSE</strong></td>
<td><strong>ROUTE</strong></td>
</tr>
<tr>
<td>5 micrograms twice daily increasing to 10 micrograms twice daily if necessary.</td>
<td><strong>SC Injection</strong></td>
</tr>
<tr>
<td><strong>ROUTE</strong></td>
<td><strong>WHEN</strong></td>
</tr>
<tr>
<td><strong>SC Injection</strong></td>
<td>Within 1 hour before 2 main meals and at least 6 hours apart.</td>
</tr>
<tr>
<td><strong>WHEN</strong></td>
<td><strong>HBA1C CONTROL</strong></td>
</tr>
<tr>
<td><strong>Within 1 hour before 2 main meals and at least 6 hours apart.</strong></td>
<td>Mean reduction 0.4-0.6% for 5 microgram twice daily and 0.8-0.9% for 10 microgram twice daily</td>
</tr>
<tr>
<td><strong>HBA1C CONTROL</strong></td>
<td><strong>WEIGHT</strong></td>
</tr>
<tr>
<td>Mean reduction 0.4-0.6% for 5 microgram twice daily and 0.8-0.9% for 10 microgram twice daily</td>
<td>Mean reductions of between 0.8 to 1.5% across dose range 1.2 and 1.8mg daily.</td>
</tr>
<tr>
<td><strong>WEIGHT</strong></td>
<td><strong>INJECTION DEVICE</strong></td>
</tr>
<tr>
<td>Mean weight loss 1.4kg for 5 microgram twice daily -1.3kg for 10 microgram twice daily</td>
<td><strong>Pre-filled pen</strong></td>
</tr>
<tr>
<td><strong>INJECTION DEVICE</strong></td>
<td><strong>CO-PRESCRIBED WITH</strong></td>
</tr>
<tr>
<td><strong>Pre-filled pen</strong></td>
<td><strong>METFORMIN</strong></td>
</tr>
<tr>
<td></td>
<td>✓ (Can also be used in combination with a sulphonylurea)</td>
</tr>
<tr>
<td><strong>METFORMIN</strong></td>
<td><strong>SULPHONLUREA</strong></td>
</tr>
<tr>
<td>✓ (Can also be used in combination with a sulphonylurea)</td>
<td>✓ (Can also be used in combination with a metformin)</td>
</tr>
<tr>
<td><strong>SITAGLIPTIN</strong></td>
<td>×</td>
</tr>
<tr>
<td>×</td>
<td><strong>PIOGLITAZONE</strong></td>
</tr>
<tr>
<td>✓ in combination with metformin</td>
<td>✓ in combination with metformin</td>
</tr>
<tr>
<td>✓ in combination with metformin</td>
<td>×</td>
</tr>
</tbody>
</table>
8. GLUCOSE CONTROL IN TYPE 2 DM

Step 3 - TREATMENT OF TYPE 2 DIABETES;(GLP-1) EXENATIDE/LIRAGLUTIDE

REVIEW 3-6 MONTHS AFTER INITIATION AND FOLLOWING A DOSE INCREASE

If glycaemic target MET: Review in 6-12 months.
If glycaemic target NOT MET - Patient is taking the maximum OR maximum tolerated metformin and/or gliclazide dose and exenatide or insulin is inappropriate

Check compliance - Consider adding initiating Insulin or pioglitazone

TARGETS FOR GLYCAEMIC CONTROL

<table>
<thead>
<tr>
<th>HbA1c Control</th>
<th>&lt; 7.0%</th>
<th>7.0-8.0%</th>
<th>8.0-9.0%</th>
<th>&gt;9.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>=53 mmol/mol</td>
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<td>DM23 achieved</td>
<td>DM 24 achieved</td>
<td>DM 25 achieved</td>
<td>Outside QOF targets</td>
<td></td>
</tr>
<tr>
<td>EXCELLENT</td>
<td>ACCEPTABLE</td>
<td>POOR</td>
<td>VERY POOR</td>
<td></td>
</tr>
</tbody>
</table>

If HbA1C is 1% above a patient’s individual target consider whether an adjustment in diet or medication is needed to restore optimal glucose control.

Refer to section 8.5
8. GLUCOSE CONTROL IN TYPE 2 DM

Step 3 - TREATMENT OF TYPE 2 DIABETES; PIOGLITAZONE

Pioglitazone should only be considered if
- There is a failure to tolerate metformin and/or gliclazide despite a reasonable trial
- The patient considers human insulin and/or exenatide to be an unacceptable option

DIABETES CONTROL
- HbA1c below 7.5% (58 mmol/mol)
- Fasting glucose < 6mmol/l (venous sample)
- Patients must not experience frequent episodes of hypoglycaemia

In the very elderly or frail, symptom control alone may be the priority

INITIATE PIOGLITAZONE
- 15-30mg once daily
- Increased to 45mg once daily according to response (it takes several weeks (up to 6 months) before the full therapeutic effect becomes obvious.

SIDE EFFECTS: Gastro-intestinal disturbances, weight gain, oedema, fractures at atypical sites, anaemia, headache, visual disturbances, dizziness, arthralgia, hypoesthesia, haematuria, impotence, macular oedema.

LESS COMMONLY:
- hypoglycaemia, fatigue, insomnia, vertigo, sweating, altered blood lipids, proteinuria
- Hepatic impairment
- Heart failure
- Pregnancy
- Breast feeding
- In patients considered to be at high risk of fractures.

Liver Toxicity
Due to rare reports of liver dysfunction. Liver function should be checked before and after initiation and at all reviews.

REVIEW 3-6 MONTHS AFTER INITIATION AND FOLLOWING A DOSE INCREASE
If glycaemic targets MET - Review in 6-12 months
If glycaemic targets NOT MET - Patient is taking the maximum, OR maximum tolerated metformin and/or gliclazide and/or pioglitazone dose
Check compliance - Consider initiating insulin

TARGETS FOR GLYCAEMIC CONTROL

<table>
<thead>
<tr>
<th>HbA1c Control</th>
<th>1.0-7.0%</th>
<th>7.0-8.0%</th>
<th>8.0-9.0%</th>
<th>&gt;9.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM23 achieved</td>
<td>=53 mmol/mol</td>
<td>=53-64 mmol/mol</td>
<td>=64-75 mmol/mol</td>
<td>= 75 mmol/mol</td>
</tr>
<tr>
<td>EXCELLENT</td>
<td>ACCEPTABLE</td>
<td>POOR</td>
<td>POOR</td>
<td>POOR</td>
</tr>
</tbody>
</table>

If HbA1C is 1% above a patient's individual target consider whether an adjustment in diet or medication is needed to restore optimal glucose control.

Refer to section 8.5
8. GLUCOSE CONTROL IN TYPE 2 DM

8.3 OVERVIEW INJECTABLE THERAPIES FOR TYPE 2 DIABETES

<table>
<thead>
<tr>
<th>Prior to Injection Therapy</th>
<th>GLP-1</th>
<th>BASAL INSULIN</th>
<th>BD BIPHASIC INSULIN</th>
<th>TDS 50/50 INSULIN</th>
<th>MULTIPLE INJECTION THERAPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure maximum tolerated oral hypoglycaemic agents. Review lifestyle and diet. Refer for structured education programme for type 2 diabetes</td>
<td>1 or 2 injections (not insulin)</td>
<td>1 insulin 1-2 injections</td>
<td>1 insulin 2 injections</td>
<td>1 insulin 3 injections</td>
<td>2 insulins 4/5 injections</td>
</tr>
</tbody>
</table>

**PROS**
- Simplicity - no dose adjustment
- No BGM (unless on SU)
- Weight loss an advantage
- Simplicity
- Once daily monitoring
- Keep existing oral medication
- Simplicity
- Inject & eat
- Covers breakfast & evening meal
- Inject & eat
- Simple fixed mixture
- Covers breakfast, lunch & evening meal
- Inject & eat
- Flexibility to have irregular meals
- Good for shift workers

**CONS**
- Potential nausea/vomiting
- Risk of pancreatitis
- Insulin controls background glucose level doesn't address post-prandial levels
- Lack of flexibility
- Regular meal pattern required
- Lack of flexibility
- Regular meal pattern required
- Requires patient self titration of insulin + Carbohydrate counting skills

**Starting Criteria**
- HbA1c>7.5%
- BMI>35
- Continue if a reduction in HbA1c<1.0% at 6 months (or other NICE 2009a recommendation)
- Starting Criteria HbA1c>7.5 <8.5%
- BMI<35
- Optimisation Review at 80units/24 hours
- If no improvement consider BD biphasic (or refer to DSN service for advice)
- Starting Criteria HbA1c>8.5%
- BMI< 35
- Optimisation Review at 60 units BD
- If no improvement - Refer to DSN service

Skills and Capabilities to Consider

LOW
- Knowledge and skill development

HIGH
- Knowledge and skill development

Refer to DSN service for optimisation

Refer to DSN service for optimisation
8.4 INSULIN

ONCE DAILY INSULIN (TYPE 2 DIABETES ONLY)

BEFORE INITIATING INSULIN:
- REFER to dietitian
- TEACH self blood glucose monitoring (if appropriate) - or review technique if patient is already monitoring
- ASSESS patient readiness to start insulin
- REVIEW and INTENSIFY current diabetes medication
- COMMENCE/MAXIMISE metformin dose if not contraindicated

ALWAYS USE clinical judgement and consider patient's individual circumstances in all cases
Suggested criteria for initiating ONCE daily insulin
One or more of the following:
- No osmotic symptoms
- HbA1c > 7.5 but < 9% (NICE clinical guideline 66)
- Intolerance/maximum tolerated dose of oral hypoglycaemic agents (OHAs)
- Conditions where optimal glycaemic control is not appropriate, e.g. terminal illness, inability to self care, physical or mental health issues, or patient choice

STOP glitazones
- CONTINUE sulphonylurea (consider a reduction in dose if high risk of hypoglycaemia)
- CONTINUE metformin (check creatinine level <150 & eGFR >45)

START ONCE DAILY BASAL INSULIN
(Long acting analogue (see NICE TA 53) OR NPH [isophane insulin]
SUGGESTED INITIAL DOSE
(bedtime) 10 UNITS in addition to OHAs (N.B. basal insulin is best given at the same time each day)
8. GLUCOSE CONTROL IN TYPE 2 DM

ONCE DAILY INSULIN WHAT TO REVIEW

Review at one, three and six months (following initiation of once daily insulin regimen)

At EACH review check and record:
- Injection technique/device used
- Injection sites – for signs of overuse/bruising
- Incidence of hypoglycaemia (ask about symptoms) & individual management plan for treatment of hypoglycaemia
- Unplanned changes in weight
- Lifestyle changes
- Application of ‘3 day rule’ (self-titration)

At 3 month review - As above plus:
(Check HbA1c prior to appointment)
If fasting blood glucose (FBG) level to target, HbA1c improving by 1%:
CONTINUE with titration as required

If fasting blood glucose to target but HbA1c not improving:
Check pre-meal or 2 hour post meal blood glucose levels once or twice daily for 2 weeks

REVIEW
- Is there concordance with self-titration? (3 day rule)
- Re-emphasise importance of self-management
  If FBG still not improving, consider alternative therapy/refer to DSN service

6 Months review
Check as above
8. GLUCOSE CONTROL IN TYPE 2 DM

TARGETS (ONCE DAILY INSULIN)

**TEACH** patient self titration of insulin using the ’3 day rule’ aiming for a fasting blood glucose level of **4.5-6mmol/l** (consider agreed individual targets/safety)

Patient to have **telephone contact** with appropriately trained health care professional **within** 7 days
Patient to be **seen** by appropriately trained healthcare professional within 14 days (or sooner if any related problems)

**Review in 3 months** (see ‘what to review’)
Re-check HbA1c (as per local/national Guidelines)
Review application of ‘3 day rule’

**Review at 6 months** (see ‘what to review’)

### ONCE DAILY INSULIN

<table>
<thead>
<tr>
<th>REGIME</th>
<th>INSULIN</th>
<th>DEVICES</th>
<th>PEN NEEDLES</th>
<th>SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once daily (duration 20-24 hours)</td>
<td>LANTUS (Glargine)</td>
<td>SOLOSTAR (pre-filled) Pen</td>
<td>Penfine or BD Microfine</td>
<td>8mm/5mm</td>
</tr>
<tr>
<td></td>
<td>Available in:</td>
<td>AUTOPEN 24</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 10ml vial</td>
<td>(1-21units or 2-42 units)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 3ml cartridge</td>
<td>OPTIClick Pen</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• pticlick cartridge</td>
<td>pre-filled pen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once or twice daily (duration 18-20 hours)</td>
<td>LEVEMIR (Detemir)</td>
<td>FLEXPEN (pre-filled) INNOLET (pre-filled) NOVOPEN 4</td>
<td>Novofine or BD microfine</td>
<td>8mm/6mm 8mm/5mm</td>
</tr>
<tr>
<td></td>
<td>Available in:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 3ml cartridge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• pre-filled pen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once or twice daily (duration 12-20 hours)</td>
<td>HUMULIN I</td>
<td>HUMULIN I (pre-filled) Pen</td>
<td>BD Microfine</td>
<td>8mm/5mm</td>
</tr>
<tr>
<td></td>
<td>Available in:</td>
<td>HUMAPEN LUXURA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 10ml vial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 3ml cartridge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• pre-filled pen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSULATARD</td>
<td>Available in:</td>
<td>INNOLET(pre-filled) NOVOPEN 4</td>
<td>Novofine or BD microfine</td>
<td>8mm/6mm 8mm/5mm</td>
</tr>
<tr>
<td></td>
<td>• -10ml vial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• -3ml cartridge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• -pre-filled device</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. GLUCOSE CONTROL IN TYPE 2 DM

TWICE DAILY INSULIN THERAPY

BEFORE INITIATING INSULIN THERAPY:
- REFER to dietitian
- TEACH self blood glucose monitoring (or review technique if patient is already monitoring)
- ASSESS patient readiness to start insulin using pre-insulin guidelines – (appendix 1)
- REVIEW & INTENSIFY current diabetes medication
- COMMENCE/MAXIMISE Metformin dose if not contraindicated

Use clinical judgement and consider the patient’s individual circumstances in all cases
Suggested criteria for initiating twice daily insulin therapy
One or more of the following:
- Osmotic symptoms (polydipsia/polyuria)
- Unplanned weight loss
- HbA1c greater than 9% (NICE clinical guideline 66)
- Intolerance / maximum tolerated dose of oral hypoglycaemic agents (OHAs)
- Women of childbearing age (if unwilling to have multiple injection therapy)
- Conditions where optimal glycaemic control is required and where multiple injection therapy (MIT) is not acceptable
- Other high risk groups e.g. previous myocardial infarction / cardiovascular disease / peripheral vascular disease

START BI-PHASIC INSULIN MIXTURE (30/70 OR 25/75 RATIO)
INITIAL START DOSE (suggested)
- 10 units to be injected with breakfast
- 10 units to be injected with evening meal
(consider a start dose of 6-8 units twice daily if patient is lean/normal body weight)

TARGETS (TWICE DAILY INSULIN)

Teach patient self titration of insulin using the ‘3 day rule’
Patient should have at least 1 x telephone contact with appropriately trained health care professional within 7 days.
Patient should be seen by appropriately trained healthcare professional within 14 days

Aim for pre meal blood glucose levels of 4-7mmol/l
(or agreed patient personal targets)

Review in 1 month (or sooner)
See ‘what to review’ - especially if hypoglycaemia suspected

Review in 3 months
See ‘what to review’ Re-check HbA1c as per local/national Guidelines

Review at 6 months
TWICE DAILY INSULIN WHAT TO REVIEW:

Minimum face to face reviews: one, three and six months following initiation of twice daily insulin regime

At each review check and record:
- Injection technique/device used
- Injection sites – look for areas of overuse/bruising
- Incidence of hypoglycaemia (ask about symptoms) & individual management plan for treatment of hypoglycaemia
- Changes in weight
- Lifestyle changes
- Application of ‘3 day rule’ (self-titration)

At 3 month review - as above plus:
- If HbA1c improving:
  - CONTINUE with regime and self-titration (if appropriate)

If pre-meal glucose not to target and HbA1c not improving - REASSESS:

Is there concordance with/understanding of self-titration?
Re-emphasise importance of self-management

At 6 Month review - As above plus:
- If HbA1c not improving – REASSESS
- Check pre-meal and 2 hour post-meal blood glucose levels once or twice daily for two weeks
- Consider a change of insulin mixture (refer to DSN service)
- Consider multiple injection therapy (MIT) (refer to DSN service)
### 8. GLUCOSE CONTROL IN TYPE 2 DM

#### TWICE DAILY INSULIN

<table>
<thead>
<tr>
<th>REGIME</th>
<th>INSULIN</th>
<th>DEVICES</th>
<th>PEN NEEDLES</th>
<th>SIZE</th>
</tr>
</thead>
</table>
| **TWICE DAILY Biphasic ANALOGUE Mixtures** | HUMALOG MIX 25  
Available in:  
- 3ml cartridge  
- pre-filled pen  
- 10ml vial | Humalog Mix 25  
Kwikpen (pre-filled)  
Humapen Luxura | BD Microfine | 8mm/5mm |
| NOVOMIX 30  
Available in:  
- 3ml cartridges  
- pre-filled pen | Novomix 30 Flexpen (pre-filled)  
Novopen 4 | Novofine or BD Microfine | 8mm/5mm | 8mm/5mm |
| HUMALOG MIX 50  
(consider referral to DSN)  
Available in:  
- 3ml cartridge  
- pre-filled pen | Humalog Mix 50  
Kwikpen (pre-filled)  
Humapen Luxura | BD Microfine | 8mm/5mm |
| **TWICE DAILY Biphasic HUMAN Mixture** | HUMULIN M3  
Available in:  
- 3ml cartridges  
- pre-filled pen  
- 10ml vial | Humulin M3 (pre-filled) pen  
Humapen Luxura | BD Microfine | 8mm/5mm |
| MIXTARD 30  
Available in:  
- 3ml cartridges  
- prefilled device  
- 10ml vial | Mixtard 30 Innolet (pre-filled)  
Novopen 4 | Novofine or BD Microfine | 8mm/5mm | 8mm/5mm |
## 8. GLUCOSE CONTROL IN TYPE 2 DM

### MEALTIME / BOLUS - INSULINS (ALSO USED FOR ‘SICK’ DAYS)

<table>
<thead>
<tr>
<th>REGIME</th>
<th>INSULIN</th>
<th>DEVICES</th>
<th>NEEDLES</th>
<th>SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOLUS</td>
<td>HUMALOG (Lispro)</td>
<td>Humalog Kwikpen (pre filled)</td>
<td>BD Microfine</td>
<td>8mm/5mm</td>
</tr>
<tr>
<td>Rapid acting Analogue insulins</td>
<td>Available in: 3ml cartridge Pre-filled pen 10ml vial</td>
<td>Humapen Luxura</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOVORAPID (Aspart)</td>
<td>Flexpen (pre filled)</td>
<td>Novofine</td>
<td>8mm/6mm</td>
</tr>
<tr>
<td></td>
<td>Available in: 3ml cartridge Pre-filled pen 10ml vial</td>
<td>Novopen 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>APIODRA (Glulisine)</td>
<td>Solostar (pre-filled pen)</td>
<td>BD Microfine / Penfine</td>
<td>8mm/5mm</td>
</tr>
<tr>
<td></td>
<td>Available in: 3ml cartridge Pre-filled pen 10ml vial</td>
<td>Humapen Luxura</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quick acting</td>
<td>HUMALOG (Lispro)</td>
<td>BD Microfine</td>
<td>8mm/5mm</td>
</tr>
<tr>
<td></td>
<td>Human insulin</td>
<td>Available in: 3ml cartridge Pre-filled pen 10ml vial</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Humulin S</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ADDITIONAL TOOLS

- ‘3 day rule’ guidelines for teaching self-titration
- Pre-insulin counselling guidelines
- Hypoglycaemia treatment and management plan
- ‘Sick Day’ guidelines
- Referral Form to DSN service

Further information available from:

- www.nice.org.uk
- www.rcn.org.uk
- www.dh.gov.uk
8. GLUCOSE CONTROL IN TYPE 2 DM

8.5 SELF-MONITORING OF BLOOD GLUCOSE

In keeping with recommendations contained within NICE Clinical Guideline CG 87 self monitoring of blood glucose should only be provided routinely to people with type 2 diabetes not treated with insulin or sulphonylureas where there is an agreed purpose or goal to testing.

THESE GUIDELINES DO NOT APPLY IN:

- Patients using insulin either alone or in combination with oral medication
- Pregnancy
- Children

1. People with diabetes should have their HbA1c measured at 2-6 month intervals (6 monthly if blood glucose levels are stable).

2. Blood glucose monitoring is not necessary unless the patient is going to act upon the result, by adjusting their dose or food intake. The patient with stable non-insulin controlled diabetes will, therefore, require limited monitoring in normal circumstances.

3. If treated with tablets patients do not need to do daily readings but should be advised to do regular readings when:

   - They are feeling unwell and not able to eat. E.g. common colds, chest infections, GI infections
   - They have hypoglycaemic symptoms: dizziness, nausea, sweating, feeling faint, confusion and disorientation
   - Circumstances such as travel, or working hours have resulted in a change to the daily routine and meal times

Patients should act if blood glucose levels are less than 4mmol/l by consuming a high calorific snack and re-measuring blood glucose levels. See ‘Management of Hypoglycaemia’ section.

4. Patients are advised to do occasional blood glucose readings to ensure familiarity with the equipment and that all equipment is in good working order and that blood glucose sticks are in date.

5. Patients should be encouraged to do regular readings 2-4 times a week at different times of the day when hypoglycaemic drug therapy has been modified, until it is recognised that blood glucose levels have stabilised on the new drug regime.

6. Patients should be encouraged to do regular readings 2-4 times a week at different times of the day if they undertake any major modifications to their regular diet until it is recognised that blood glucose levels have stabilised.

7. Patients who are reluctant to dispense with regular monitoring should be encouraged to check their blood glucose no more that 2-4 times a week at irregular intervals.
8.6 URINE GLUCOSE TESTING

- Occasionally some patients may express a preference for urine testing
- Urine tests are inexpensive relative to SMBG
- Urine tests are non-invasive
- Urine tests are an unreliable guide to the current blood glucose level and may therefore be misleading
- Urine tests are influenced by a high (often seen in the elderly and patients with renal impairment) or a low renal threshold (as seen in pregnancy)
- Urine tests identify hyperglycaemia but not hypoglycaemia

Advantages and disadvantages of each of the currently available urine test strips are shown below:

<table>
<thead>
<tr>
<th>Test strip</th>
<th>RANGE</th>
<th>TIMES (s)</th>
<th>COMMENT</th>
<th>RELATIVE COST</th>
</tr>
</thead>
</table>
| BHR Medi-test      | Up to 55.5 mmol/l | 30-60     | • Accurate and sensitive.  
• Also allows testing for protein, ketones and leucocytes                   | Cheapest       |
| Diabur Test 5000   | Up to 5%      | 120       | • Accurate and sensitive.  
• Scale rather elaborate.  
• Can be read after 120 sec with no loss of accuracy                      | Mid-range      |
| Diastix            | Up to 2%      | 30        | • Difficult to distinguish between 0.5, 1 and 2% in poor light.   
• Must be read at 30 seconds for accurate result.  
• Colour change inhibited by heavy ketonuria                               | Mid-range      |
| Clinistix          | Low/medium/high | 10        | • Not quantitative, useful only as a screening test                   | Most expensive |
8. GLUCOSE CONTROL IN TYPE 2 DM

8.7 SICK DAY RULES

KEY POINTS

- Intercurrent illness may cause a deterioration of glucose control and an increased risk of diabetic ketoacidosis
- All insulin-treated patients should be familiar with the SICK DAY RULES (see below) and in type 1 diabetes be provided with a supply of quick acting insulin (e.g. disposable pen)
- Patients with type 1 diabetes should have foil wrapped quick ketone testing strips for urine analysis available and some may be advised to check their level of blood ketones
- Checking BOTH the blood glucose AND urine or blood ketones is an ESSENTIAL part of the assessment of ANY patient with diabetes who is unwell irrespective of whether they have type 1 or type 2 diabetes

SICK DAY RULES FOR PEOPLE WITH INSULIN-TREATED DIABETES

Any illness such as ‘flu’ or a chest infection may cause the blood sugar to rise because, during illness, other hormones stop insulin from working normally.

- NEVER STOP INSULIN INJECTIONS
- Measure blood glucose AT LEAST FOUR TIMES EACH DAY (before breakfast, lunch, tea and bedtime)
- If the blood sugar is below 11 mmol/l continue the usual insulin doses
- If the blood sugar is between 11 and 17 mmol/l, give 4 UNITS extra of fast-acting (soluble) insulin before each meal and at bedtime
- If the blood sugar is more than 17 mmol/l give 6 UNITS extra of fast-acting (soluble) insulin before each meal and at bedtime
- If appetite is poor replace normal meals with fluids such as milk, Lucozade® (not if BMs are high, e.g > 15, BF) or fruit juice and continue insulin injections and blood glucose monitoring. Drink plenty of sugar free liquids (suggest 5 pints each day, sipping 100 ml hourly)
- SEEK MEDICAL ADVICE if the blood glucose levels are continuously over 17 mmol/l, if vomiting develops, or if you do not know what to do
KETONES AND TYPE 1 DIABETES
Ketones – advice for people with Diabetes

WHAT ARE KETONES?
- Ketones are acids produced from the breakdown of body fat
- Insulin controls the production of ketones
- Ketones can be detected in the urine using test strips (Ketostix). Moderate (++) or large (+++) amounts of ketones in the urine usually means more insulin is needed

WHEN TO CHECK FOR KETONES?
- The urine should be checked for ketones if you develop any of the following:
  - A temperature
  - Excessive thirst
  - Vomiting
  - Frequency passing urine
  - A blood sugar above 17 mmol/l
  - Abdominal pain

WHAT TO DO IF KETONES ARE PRESENT
- Monitor Blood tests 4 times each day
  Test for ketones every time urine is passed
- Give extra insulin according to SICK DAY RULES guidelines
- ALWAYS contact your doctor if the urine ketone tests remain positive or you start vomiting

ADDITIONAL INFORMATION
Many people with Type 1 Diabetes will have been given additional self management instructions to follow during illness, especially those who have completed a structured education programme. They may have been advised to give extra doses of quick acting insulin every 2 hours when ketones are present. It is not uncommon for these additional doses to be much higher than usual.
8.8 MANAGEMENT OF HYPOGLYCAEMIA

Hypoglycaemia, defined as blood glucose levels (BGL) <4mmol/l is a possible consequence of some diabetes treatments. It affects people’s work, relationships, ability to drive and their quality of life. Hypoglycaemia should be prevented where possible and when it does occur, should be treated fast and effectively. It is also important to guide patients to identify the cause of their hypoglycaemia and take appropriate steps to avoid recurrence.

For treatment flowchart

WHAT CAN CAUSE A HYPO?

COMMON CAUSES IN THE COMMUNITY
- Eating less carbohydrate (starchy food) than normal, or missing or being late with a snack or a meal
- Doing more activity than normal without taking extra carbohydrate (starchy or sugary food) or adjusting their insulin prior to the activity
- Taking too much insulin or too large a dose of sulphonylureas e.g. gliclazide, glimepiride and prandial glucose regulators e.g. nateglinide, repaglinide
- Drinking too much alcohol, especially on an empty stomach when on insulin on sulphonylureas.

COMMON CAUSES IN THE HOSPITAL
- Mis-calculation of sliding scale insulin dose:
  - Over correcting high BGLs
  - Over estimating patients dietary intake
  - Time delay in receiving a meal after insulin being given

Missed meals due to:
- Lack of appetite
- Away from bed when meal arrives
- Disliking hospital meals
- Investigation procedures – nil by mouth
- Wrong meal delivered
- No bedtime snack available

CAN HYPO SYMPTOMS OCCUR AT BLOOD GLUCOSE LEVELS ABOVE 4 MMOL/L?
- Yes. This may happen when there has been a period of poor control (i.e. when blood glucose levels have been in double figures) and when this is corrected and blood glucose levels begin to drop to normal levels (BMs between 4-7mmol/l)
- This is not a true hypo

WHAT CAN BE DONE WHEN THERE ARE HYPO SYMPTOMS BUT BLOOD GLUCOSE IS ABOVE 4MMOL/L?
- Advise patient to sit down and have a non-sugary drink if wishes to, and let the symptoms settle. If the person feels desperate to have something to eat, advice to keep to a small snack such as 1 small biscuit, 1/2 a piece of toast, or a small portion of fruit etc.
- It is not advisable to treat them as hypo, as it will not give the body a chance to adapt to normal glucose levels
- Explain to patient why it has happened and why not to treat it as hypo.

WHAT IF SYMPTOMS DON’T SETTLE?
- Investigate other causes
8. GLUCOSE CONTROL
HYPOGLYCAEMIA

PREVENTION AND MANAGEMENT

- Educate patients and carers on
  - Causes of hypos (please see above) and how to avoid them
  - Blood glucose monitoring and how to interpret the results
  - Eat extra carbohydrate or reduce hypoglycaemic medication if doing increased activity
  - Carrying identification
  - Educating friends and family on what is a hypo and how to treat it fast / effectively
  - Give ‘Hypoglycaemia’ A4/A5 sheet (both available in diabetes information pack) to be kept at an easily accessible place

- Review oral hypoglycaemic medication/insulin doses regularly, especially if patient is on a weight-reducing programme or has increased their activity level
- Remember patients will need more input if they have irregular meal patterns, exceptionally active lifestyle, poor appetite, gastroparesis, or also has Coeliac disease
- Make referrals to the relevant members of the diabetes specialist team if further input is required.

For treatment flowchart

Hospital

Community
8. GLUCOSE CONTROL
HYPOGLYCAEMIA

8.8 MANAGEMENT OF HYPOGLYCAEMIA (HYPO) – HOSPITAL

EXPERIENCING SYMPTOMS OR SIGNS OF HYPOGLYCAEMIA?

MILD:
E.g. sweating, clammy, pallor,
glazed eyes, tingling of lips,
blurred vision, light headedness

MODERATE:
E.g. lack of concentration, slurred
speech, change in behaviour, confused
or disorientated

SEVERE:
Unresponsive or unconscious

Check blood glucose. If <4mmol/l

INVESTIGATE OTHER CAUSES

NO
YES

YESTERDAY REASSURE

YES

Investigate other causes

NO

 Able to follow instructions

YES

Able to swallow

NO

If IV access achievable

YES

NO

Give 25ml of 50% dextrose solution
IV and flush with normal saline

Give glucagon injection if available
(See below for dosage details*)

Alert and responsive in 10 – 15 mins (Glucagon may cause vomiting)

Call Medical Team

YES

NO

Squeeze GlucoGel, a little at a time into
inside of the cheek and rub the cheek from the
outside until one entire tube is used

Wait for 15 minutes, re-check blood glucose level.
Is blood glucose above 4mmol/l?

YES

Is a meal due in next half hour?

YES

NO

Have the meal as usual and consider
reducing insulin dose by 1-2 units or
having extra carbs such as - 1 potato,
or 1 slice bread or 1 tablespoon rice
or pasta etc for that meal.

Go to BOX1

NO

Give a carbohydrate snack e.g. one piece
of toast, or one biscuit or one fruit or
cereal bar and eat next meal as usual
when it is due

Check blood glucose is above 4mmol/l

YES

Risk of repeat Hypo is high therefore monitor blood
glucose regularly at least 4 hourly for 24 hours.
Investigate cause for hypo and provide advice and support
to avoid reoccurrence.

*GLUCAGON DOSE:
ADULTS AND CHILD OVER 8YRS (OR BODY WEIGHT OVER 25KG) – 1MG.
CHILD UNDER 8YRS (OR BODY WEIGHT UNDER 25KG) – 500 MICROGRAMS.
ROUTE OF DELIVERY: SUBCUTANEOUS, INTRAMUSCULAR, OR INTRAVENOUS INJECTION.
8.8 MANAGEMENT OF HYPOGLYCAEMIA (HYPO) – COMMUNITY

**EXPERIENCING SYMPTOMS OR SIGNS OF HYPOGLYCAEMIA?**

- **MILD:** E.g. sweating, clammy, pallor, glazed eyes, tingling of lips, blurred vision, light headedness
- **MODERATE:** E.g. lack of concentration, slurred speech, change in behaviour, confused or disorientated
- **SEVERE:** Unresponsive or unconscious

1. **Check blood glucose. If <4mmol/l**
   - **OR** If unable to check, but has symptoms of Hypo follow appropriate coloured arrows based on symptoms

   - **YES** Able to follow instructions
     - **YES** Able to swallow
       - **YES** Squeeze GlucoGel, a little at a time into inside of the cheek and rub the cheek from the outside until one entire tube is used
       - **NO** Give Glucagon injection if available (do not give this if patient on gliclazide or has had large quantities of alcohol call 999).
     - **NO** Alert and responsive in 10 – 15 mins (Glucagon may cause vomiting)
   - **NO** Wait for 15 minutes, re-check blood glucose level. Is blood glucose above 4mmol/l?
     - **YES** Have the meal as usual and consider reducing insulin dose by 1-2 units or having extra carbs such as - 1 potato, or 1 slice bread or 1 tablespoon rice or pasta etc for that meal.
     - **NO** Give a carbohydrate snack e.g. one piece of toast, or one biscuit or one fruit or cereal bar and eat next meal as usual when it is due.

2. **Investigate other causes**
   - **YES** Is blood glucose above 4mmol/l?
     - **YES** Risk of repeat Hypo is high therefore monitor blood glucose regularly at least 4 hourly for 24 hours. Investigate cause for hypo and provide advice and support to avoid reoccurrence.
     - **NO** Go to BOX1
   - **NO** Is a meal due in next half hour?
     - **YES** Check blood glucose is above 4mmol/l
       - **YES** Call 999 immediately
       - **NO** Have the meal as usual and consider reducing insulin dose by 1-2 units or having extra carbs such as - 1 potato, or 1 slice bread or 1 tablespoon rice or pasta etc for that meal.

**BOX1**

- Advise to take or give one of the following:
  - 3 glucose tablets with some water
  - 60ml (small glass) of Lucozade
  - 150mls (medium glass) of ordinary fizzy drink
  - 2 Jelly babies or boiled sweets or 2-4 teaspoons of sugar mixed in small glass of water

- Wait for 15 minutes, re-check blood glucose level. Is blood glucose above 4mmol/l?
9. RISK FACTOR MANAGEMENT

9.1 HYPERTENSION

HOW TO MEASURE BLOOD PRESSURE

BRITISH HYPERTENSION SOCIETY RECOMMENDATIONS
- The patient should be seated and relaxed for 5 minutes with the arm supported
- Ensure no tight clothing constricts the arm
- The rubber bladder should encircle between three-quarters and the whole upper arm
- The cuff must be level with the heart
- The alternative adult cuff (12.5 - 13.0 x 35) is recommended for use in all adults
- For arm circumference over 42 cm large bladders may be required

<table>
<thead>
<tr>
<th>CUFF SIZES</th>
<th>WIDTH (CM)</th>
<th>LENGTH (CM)</th>
<th>ARM ARC (CM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>12.0 - 13.0</td>
<td>23</td>
<td>up to 33</td>
</tr>
<tr>
<td>Alternative adult</td>
<td>12.5 - 13.0</td>
<td>35</td>
<td>up to 42</td>
</tr>
</tbody>
</table>

BLOOD PRESSURE MEASUREMENTS SHOULD BE TAKEN ON A MINIMUM OF THREE SEPARATE OCCASIONS AND AVERAGED.

ELECTRONIC MONITORS
- Should only be used if there is published evidence of accuracy
- In general wrist monitors are inaccurate, upper arm automated machines are suitable
- Information on validated machines can be downloaded here

INTERPRETATION

10 YEAR CORONARY EVENT RISK

RISK ASSESSMENT

People with diabetes should be considered at high CVD risk if any or all of the following are present:
- Overweight
- Hypertensive (BP > 140/80mmHg in the absence of anti-hypersensitive therapy)
- Microalbuminuria
- Family history of CVD
- Smoker
- History of CVD
- High risk Lipid profile

Otherwise estimate CV risk annually using the UKPDS risk engine or an equivalent (see www.dtu.ox.ac.uk)

TREATMENT THRESHOLD

<table>
<thead>
<tr>
<th>CLINIC BP (MMHG)</th>
<th>AMBULATORY/HOME BP (MMHG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 140 systolic AND/OR</td>
<td>≥130 systolic AND/OR</td>
</tr>
<tr>
<td>≥ 80 diastolic</td>
<td>≥ 75 diastolic</td>
</tr>
</tbody>
</table>

TARGETS

- No microvascular complications < 140 / < 80 < 130 / < 75
- Microvascular/ Cerebro vascular complications < 130 / < 80 < 120 / < 75
9. RISK FACTOR MANAGEMENT

9.1 HYPERTENSION IN DIABETES - MANAGEMENT ALGORITHM

Is the patient at high CVD risk (manifest CVD or > 20% CV event risk)?
(The answer will invariably be ‘yes’ for people over the age of 40 with diabetes)

YES
START STATIN

NO
Repeat BP measurement annually

BLOOD PRESSURE
> 140 mmHg systolic and/or
> 80 mmHg diastolic

NO

Microalbuminuria or proteinuria?

YES
ACE inhibitor or ARB blocker:
• Titrate to maximal tolerated dose

NO
Use ACE inhibitor first line but you may treat with any antihypertensive agent to suit patient profile
Target < 140 / < 80 mmHg

BP < 140 / < 80 mmHg

YES
Repeat every 6 months

NO

BP < 140 / < 80 mmHg

YES

• Add in additional agents and titrate to full dose (see A/CD mnemonic in Vascular Risk guidelines)
• Only stop agents if not tolerated
• Multiple agents are often required to attain BP control

NO
Consider Anti-thrombotic *

* R90 Offer low-dose aspirin, 75 mg daily, to a person who is 50 years old or over if blood pressure is below 145/90 mmHg.
R91 Offer low-dose aspirin, 75 mg daily, to a person who is under 50 years old and has significant other cardiovascular risk factors (features of the metabolic syndrome, strong early family history of cardiovascular disease, smoking, hypertension, extant cardiovascular disease, microalbuminuria).
R92 Clopidogrel should be used instead of aspirin only in those with clear aspirin intolerance (except in the context of acute cardiovascular events and procedures). Follow the recommendations in the NICE TA ‘Clopidogrel and modified-release dipyridamole in the prevention of occlusive vascular events’.

* NICE guidance has not been updated since recent evidence suggesting avoiding aspirin in people with Diabetes unless they have established CVD. We would currently advise avoiding aspirin in patients without CVD, however an individual patient approach is needed.
9. RISK FACTOR MANAGEMENT

9.1 HYPERTENSION IN DIABETES - TREATMENT OPTIONS

LIFESTYLE MODIFICATION
- Weight loss
- Increase physical activity
- Reduce alcohol intake to less than 2 units per day
- No added salt diet
- Stop smoking
- ‘5 a day’ (portions of fruit/vegetables)

ACE INHIBITOR
- Drug of first choice in patients with microalbuminuria or proteinuria
- Titrate to maximal tolerated dose
- Adequate contraception advised if used in women of child bearing age. ACE inhibitors must be stopped in the event of pregnancy
- Combination with diuretic (furosemide 20-40mg or bendroflumethazide 2.5mg) can be useful
- U&E and creatinine should be checked before and 7-10 days after starting an ACE inhibitor and after every dose adjustment

BETA-BLOCKERS
- Use cardioselective agents (eg atenolol 25-100mg od or metoprolol 50-200mg od)
- Greater cardiovascular protective effects in diabetic patients with IHD than in non-diabetics
- Useful in patients with anginal/post myocardial infarction
- Cheap/Effective: equal efficacy with Captopril in UKPDS trial
- Use with care in heart failure/severe peripheral vascular disease; avoid in asthma
- May cause erectile dysfunction

CALCIUM ANTAGONISTS
- Useful in patients with co-existent angina
- Long acting agents recommended
- Suggest diltiazem XL 90-360 mg od or amlodipine 5-10mg od
- Use as second line agent or as part of combination therapy
- Metabolically neutral
- Avoid short acting dihydropyridine calcium channel blockers such as nifedipine

ETHNIC CONSIDERATIONS
- People of African-Caribbean descent may respond poorly to ACEI, Alpha blockers and beta-blockers
- Consider Ca channel blockers or an ACEI with a diuretic as alternatives

ANGIOTENSIN II BLOCKERS
- Useful in patients who do not tolerate ACE inhibitors due to cough
- Equal first line agents in type 2 diabetes with microalbuminuria/proteinuria
- U&E and creatinine should be checked before and 7-10 days after starting an All blocker and after every dose adjustment
- Irbesartan is the recommended AT2 blocker in diabetes

DIURETICS
- Thiazides, e.g. bendroflumethazide 2.5mg od
  - Inexpensive and effective
  - Unlikely to have adverse metabolic effects when used at low dose
  - May cause erectile dysfunction
  - Use when serum creatinine is normal
- Loop diuretic, e.g. furosemide 40mg od
  - Potentiate ACEI effect
  - Consider when serum creatinine raised above normal

ALPHA BLOCKERS
- Doxazosin 1-16 mg daily (or m/r 4-8mg od)
- Use as second line agent or as part of combination therapy
- Metabolically neutral
- Safe in renal impairment
- Check lying and standing blood pressure before starting alpha-blocker

THE BRITISH NATIONAL FORMULARY GIVES DETAILS OF DOSAGES, SIDE EFFECTS, DRUG INTERACTIONS AND MONITORING OF ALL ANTI-HYPERTENSIVE DRUGS.
The UKPDS trial showed clear benefit of lowering blood pressure to 142/84 mmHg in middle-aged patients with type 2 diabetes and hypertension.

To achieve this approximately one third of patients required one anti-hypertensive agent, one third needed two and one third needed three or more agents.

A target of 140/80 or less may be difficult, impossible or unnecessary to achieve in certain patients (i.e. the elderly). Individual targets should be established for each patient.

Systolic hypertension is common in diabetes and the recommended targets may be difficult to attain. Aim to lower the systolic pressure by 20 mmHg in the first instance and then review.

Aim to minimise ALL vascular risk factors, especially in patients with established end-organ damage.

In the UKPDS each 10 mmHg decrease in mean systolic blood pressure was associated with risk reductions of:

12% for any diabetes-related complication

15% for diabetes related deaths

11% for myocardial infarction

13% for microvascular complications

NO THRESHOLD OF RISK WAS OBSERVED FOR ANY END POINT
9.2 CARDIOVASCULAR DISEASE

INITIAL ASSESSMENT

• Take a full clinical history, including any history of cardiovascular disease (myocardial infarction, angina, CABG, angioplasty or heart transplant, peripheral vascular disease, atherosclerotic cerebrovascular disease).

• Identify people with adverse lipid profile secondary to conditions other than diabetes mellitus:
  • ask about alcohol consumption and manage accordingly
  • check thyroid function tests to exclude hypothyroidism
  • check liver function tests to exclude liver disease
  • check serum creatinine and urine protein to exclude renal disease

• Review and discuss other modifiable risk factors, particularly smoking
  • offer smoking cessation advice where appropriate and/or refer to smoking cessation clinic
  • for individuals who are overweight or obese, encourage weight loss and increased physical activity

LIPOID LOWERING DRUGS

Two classes of lipoprotein regulating drugs are recommended. The British National Formulary gives details of dosages, side effects, drug interactions and monitoring.

• Statins: The statins (atorvastatin, fluvastatin, pravastatin, simvastatin and rosuvastatin) are more effective than other classes of drugs in lowering LDL-cholesterol but less effective than the fibrates in reducing triglycerides and raising HDL-cholesterol

• Fibrates: Bezafibrate, ciprofibrate, fenofibrate, and gemfibrozil can be regarded as broad-spectrum lipid-modulating agents. They decrease serum triglycerides, reduce LDL-cholesterol and raise HDL-cholesterol. Fibrates have been shown to reduce the risk of coronary heart disease events in those with low HDL-cholesterol or raised triglycerides

Other lipid-regulating drugs are available, but are less commonly used (e.g. ezetimibe, nicotinic acid derivatives and fish oils).

• All adult patients, unless assessed as lower risk (10 year CV risk <20%), should be offered treatment with a statin (unless contraindicated)
• Those with a fasting triglyceride level ≥10.0 mmol/l should normally be treated with a fibrate as drug of first choice. Consider referral of such patients to lipid or diabetes clinic, particularly if a statin-fibrate combination may be necessary

9.2 CARDIOVASCULAR DISEASE – TARGETS FOR TREATMENT

<table>
<thead>
<tr>
<th>PRIMARY AND SECONDARY PREVENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cholesterol</td>
</tr>
<tr>
<td>LDL cholesterol</td>
</tr>
<tr>
<td>HDL cholesterol</td>
</tr>
<tr>
<td>Triglycerides</td>
</tr>
</tbody>
</table>
9. RISK FACTOR MANAGEMENT

9.3 KIDNEY DISEASE

MICROALBUMINURIA:
- Excess albumin in the urine but not detectable using protein dipstick
- The earliest indicator of renal disease (nephropathy)
- Is predictive of total mortality, cardiovascular mortality and cardiovascular

MICROALBUMINURIA LABORATORY SCREENING
10 ml early morning ‘first pass’ urine sample in a 'Universal' specimen container. Clinical chemistry form for albumin/creatinine ratio (‘ACR’) in mg/mmol.

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
<th>INTERPRETATION</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2.5</td>
<td>&lt;3.5</td>
<td>Normal</td>
<td>Repeat in 1 year</td>
</tr>
<tr>
<td>≥2.5</td>
<td>≥3.5</td>
<td>Possible microalbuminuria</td>
<td>Exclude infection, then repeat once or twice within 4 months to confirm.</td>
</tr>
</tbody>
</table>

PROTEINURIA:
- Is an important finding in people with diabetes
- Represents progression of urine albumin excretion from microalbuminuria
- Is associated with a high probability of progressive renal impairment due to diabetic nephropathy and an increased risk of macrovascular disease

RENNAL MONITORING FOR PATIENTS WITH DIABETES
- Annual urine dipstick test for protein (Boehringer 5L or Albustix test strips)
- If urine dipstick negative for protein measure urinary albumin creatinine ratio (ACR)
- Annual serum creatinine/eGFR

RENNAL MANAGEMENT FOR PATIENTS WITH DIABETES
Normal albumin excretion
- Maintain good blood glucose control (HbA1c < 7.0% if possible)
- Maintain good blood pressure control (target < 140/80 mmHg)
- Stop smoking

Persistently raised ACR or proteinuria
- Maintain good blood glucose control (HbA1c < 7.0% if possible)
- Maintain good blood pressure control (target < 130/80 mmHg)
- Start ACE inhibitor of choice for CV/renal protection – see BP guidelines
- Use combination antihypertensive therapy to reach target. Manage CV risk factors aggressively – see lipid/aspirin guidelines

DISCUSS WITH A DIABETOLOGIST OR NEPHROLOGIST IN THE FOLLOWING CIRCUMSTANCES:
If non-diabetic renal disease is suspected because of:
- Heavy proteinuria/nephrotic syndrome +/- raised creatinine with
- Short duration diabetes
- Haematuria/microscopic haematuria
- Possible systemic illness – e.g. vasculitis/myeloma

For management of:
- Persistent fluid retention
- Hypertension

For management of advancing renal failure
(eGFR 30-60 ml/min)
9.4 ANTITHROMBOTICS (Aspirin/Clopidogrel)

ASPIRIN (75 MG OD)

SECONDARY PREVENTION
- For people with manifest cardiovascular disease, offer 75 mg aspirin daily

PRIMARY PREVENTION
- If over 50, and BP <140/90 offer aspirin 75 mg daily
- If under 50 and significant other CV risk factor, offer aspirin 75 mg daily
- Prescribe aspirin according to the recognised cautions and contraindications given in the British National Formulary

ASPIRIN INTOLERANCE
- Consider clopidogrel 75mg daily in those patients who are intolerant of aspirin

*NICE guidance has not been updated since recent evidence suggesting avoiding aspirin in people with Diabetes unless they have established CVD. We would currently advise avoiding aspirin in patients without CVD, however an individual patient approach is needed.
On diagnosis of diabetes, and at annual review thereafter, trained personnel should examine patients’ feet to detect risk factors for ulceration.

**ASSESSMENT SHOULD INCLUDE:**
- Testing of sensation using 10g monofilament and/or vibration
- Palpation of dorsalis pedis and posterior tibial foot pulses
- Inspection for any foot deformity
- Inspection of footwear
- Inspection for callus
- Note of previous ulceration
- Note of previous amputation

**CLASSIFY FOOT RISK AS:**
- At low current risk (normal sensation, palpable pulses)
- At increased risk (neuropathy or absent pulses or other risk factors)
- At high risk (neuropathy or absent pulses plus deformity or skin changes or previous ulcer)
- Foot care emergency (ulceration, infection, acute charcot foot)

**FURTHER REFERENCES:**
- Diabetic Foot care – see NICE Guideline 10
- Diabetic foot pathway of care – see NICE Pathway of Care
- These can be found on the NICE Guidance Website at: www.nice.org.uk
9. RISK FACTOR MANAGEMENT

9.5 NEUROPATHY AND FOOTCARE – DIABETES FOOT ASSESSMENT TOOL

<table>
<thead>
<tr>
<th>TEST</th>
<th>EQUIPMENT</th>
<th>GUIDELINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SENSATION</td>
<td>monofilament 10g</td>
<td>• Place the monofilament on the foot for 1-2 seconds until it buckles</td>
</tr>
<tr>
<td></td>
<td>• Avoid areas of callus or damaged tissue</td>
<td>• Ask the patient to say “yes” every time they feel it</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recommended testing areas are 1, 3 and 5 metatarsal heads and 1st toe apex</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Failure to perceive this sensation may indicate large nerve fibre damage</td>
</tr>
<tr>
<td>VIBRATION</td>
<td>128Hz tuning fork</td>
<td>• Place the tuning fork on the patient's hand or elbow, so the patient knows what to expect</td>
</tr>
<tr>
<td></td>
<td>• Tuning fork should be held below the two prongs. Do not use a hard surface to start vibration</td>
<td>• Ask the patient to close their eyes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Vibrate the tuning fork and apply to the bony part of the medial side at the base of the big toe joint. It should be applied at a 90 degree angle with a constant pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ask the patient to tell you if the vibration feels the same, or absent when compared with the sensation they felt on their elbow, and can they say when it stops</td>
</tr>
<tr>
<td>PALPATION</td>
<td>None</td>
<td>• Posterior tibial and dorsalis pedis pulses</td>
</tr>
<tr>
<td></td>
<td>• Peripheral arterial disease is classified as the inability to palpate both arteries in one or both feet. Other signs of vascular disease may include thin shiny skin, loss of subcutaneous tissue, dusky red or cyanosed skin</td>
<td>Refer to Foot Assessment form 13.4</td>
</tr>
<tr>
<td></td>
<td>• Intermittent claudication = pain in calf muscles when walking any distance</td>
<td></td>
</tr>
</tbody>
</table>

9.5.1: Sensory Testing
- Monofilament Test:
  - Place the monofilament on the foot for 1-2 seconds until it buckles.
  - Ask the patient to say “yes” every time they feel it.
  - Recommended testing areas are 1, 3 and 5 metatarsal heads and 1st toe apex.
  - Failure to perceive this sensation may indicate large nerve fibre damage.

9.5.2: Vibration Testing
- Tuning Fork Test:
  - Place the tuning fork on the patient's hand or elbow, so the patient knows what to expect.
  - Ask the patient to close their eyes.
  - Vibrate the tuning fork and apply to the bony part of the medial side at the base of the big toe joint. It should be applied at a 90 degree angle with a constant pressure.
  - Ask the patient to tell you if the vibration feels the same, or absent when compared with the sensation they felt on their elbow, and can they say when it stops.

9.5.3: Palpation Testing
- Posterior Tibial and Dorsalis Pedis Pulses:
  - Peripheral arterial disease is classified as the inability to palpate both arteries in one or both feet. Other signs of vascular disease may include thin shiny skin, loss of subcutaneous tissue, dusky red or cyanosed skin.
  - Intermittent claudication = pain in calf muscles when walking any distance.

Refer to Foot Assessment form 13.4.
9.6 PSYCHOLOGICAL

TO FOLLOW
9. RISK FACTOR MANAGEMENT

9.7 ERECTILE DYSFUNCTION

Erectile dysfunction – the inability to obtain and sustain an erection suitable for intercourse

Are there clues to psychogenic or organic origin?

SUGGESTS PSYCHOGENIC
- Sudden onset
- Early collapse of erection
- Good quality spontaneous / self stimulation / waking erections
- Premature ejaculation or inability to ejaculate
- Relationship problems
- Major life events
- Psychological problems

CONSIDER PSYCHOSEXUAL THERAPY
Contact: Jan Farrell - Urology

SUGGESTS ORGANIC
- Gradual onset
- Lack of tumescence
- Normal ejaculation
- Normal libido
- Risk factors
- Operations / radiotherapy or trauma to pelvis / scrotum
- Current medication
- Smoking
- Alcohol

RECOMMENDED INVESTIGATIONS
- Glucose/HbA1c
- Creatinine
- 9am LH/FSH and testosterone
- Prolactin

REFERRAL FOR ENDOCRINE OPINION IF TESTOSTERONE OR PROLACTIN ABNORMAL

IS PHYSICAL TREATMENT APPROPRIATE / DESIRED?

DISCUSS TREATMENT OPTIONS
Arrange a trial of
- Sildenafil/tadalafil/vardenafil *
- Sublingual apomorphine*
- Vacuum device
- Urethral alprostadil
- Intracavernosal alprostadil

In surgery or after referral to diabetes erectile dysfunction clinics
* HSC 99/115 and 99/148 include men with diabetes in list of patients to whom GPs may prescribe

POOR RESPONSE/NOT TOLERATED – TRY ALTERNATIVE CHOICE
9. RISK FACTOR MANAGEMENT

9.8 CONTRACEPTION

As with all patients seeking contraception, discussion should be in the context of what attributes will best suit the need of the patient and condom use is encouraged to help prevent (sexually transmitted infections).

COMBINED ORAL CONTRACEPTIVES

- Generally safe in younger patients with type 1 diabetes
- Patients with two or more risk factors (i.e. diabetes plus any one of the following: age > 35yrs, hypertension, vascular disease, obesity (BMI > 30 kg/m²), smoking) should not use the combined contraceptive pill
- Low dose combined pills with gestodene or desogestrel (3rd generation) have a minimal effect on carbohydrate and lipid metabolism but a higher thromboembolic risk
- Low dose combined pills containing levonorgestrel (2nd generation) have a greater effect on carbohydrate and lipid metabolism but a lower thromboembolic risk
- Low dose combined pills are especially suited to the young patient

PROGESTOGEN ONLY PILL

- Metabolically neutral but less reliable than low dose combined contraceptive pill
- Safe in patients with diabetes

DEPO PROVERA

- Injectables may alter the dosage requirements for diabetic control, but these are suitable for use in patients with diabetes

IMPLANON

- Suitable for patients with diabetes

IUCD/IUS

- As safe in diabetic as non-diabetic women but avoid in women with multiple sexual partners

BARRIER METHODS

- Safe but less reliable than hormonal contraceptives - but encourage use in all patients in addition to main method for safer sex

HORMONE REPLACEMENT THERAPY

- Very little trial evidence with HRT and patients with diabetes
- Recommendation to use HRT in patients with diabetes based on extrapolation of benefits from non-diabetic population. There appears to be little or no role for HRT in cardiovascular disease prevention
- Preparations using non-androgenic progestogens (Premique and Tridestra) have better cardiovascular risk profile than those containing norethisterone (Climagast and Estrapak) or levonorgestrel (Prempak-C)
- Patient tolerability is likely to play a major part in selection of suitable HRT
- Measure triglycerides a month after starting HRT
SUMMARY

Consider switch from combined pill to progestogen only pill if other cardiovascular risk factors present.

UNDER 35 YEARS CHOOSE FROM
• Combined oral contraceptives
• IUCD/IUS
• Depo Provera
• Barrier
• POP
• Implanon

OVER 35 YEARS CONSIDER
• Switch from combined pill to progestogen only pill if other cardiovascular risk factors present
• IUCD/IUS or sterilisation if family complete
• Implanon
10. PAEDIATRIC DIABETES SERVICES

DIABETES DIAGNOSIS

Children are mainly presenting with Type I Diabetes, however children are beginning to present with Type 2 Diabetes.

Early or prompt diagnosis for children and young people is vital. The presenting symptoms would be:

SYMPTOMS FOR BOTH TYPE I AND 2
- Polyuria
- Lassitude/Lethargy
- Polydipsia

ADDITIONAL SYMPTOMS FOR TYPE I
- Usually not obese, recent weight loss
- Thrush type infection (repeated episodes) presenting with Ketoacidosis
- Blurred vision
- Presence of Ketones at diagnosis with about 35%

ADDITIONAL SYMPTOMS FOR TYPE 2
- Overweight at diagnosis, little or no weight loss
- Negative for Ketones (generally)
- Thrush type infection (repeated episodes)
- May have areas of dark skin pigmentation (acanthosis nigricans), which are most often found between the fingers and toes and on the back of the neck (“dirty neck”) and in axillary creases.

TYPICAL HIGH RISks FACTORS
- Family history
- South Asian/Black African /Caribbean

Please obtain urine sample and test for glycosuria. If positive and symptomatic refer as stated below. to Children’s Assessment area, contact on call registrar to arrange review as soon as possible.

NOTE: Guidelines for the care of Children and Young People with Type 1 Diabetes issued by Rotherham General Hospital Paediatrics Department are available on the Hospital Intranet.

REPEAT PRESCRIPTIONS FOR DIABETES MEDICATION AND EQUIPMENT

Please note families are issued with a complete list of repeat prescription items which is also faxed to their GP. They are advised to only access what they need however all items need to remain available for them to access as needed. (Current practice appears to be that items not accessed for 6 months are removed which creates problems for the families when these items are required as they have to contact the specialist nurse and a repeat fax has to be sent to the practice.)

INSULIN PUMP THERAPY

Please communicate with the paediatric diabetes team, if any requests for an Insulin Pump Therapy are made as there are set procedures in place.

REFERRAL PROCEDURE

Please see section 3
11. GLOSSARY

TO FOLLOW
12. CONTACTS

RFT Rotherham Foundation Trust
DERC Diabetes Education and Resource Centre

PAEDIATRIC TEAM
Dr S El-Refee Consultant Paediatrician (RFT)
Sharon Gamble Diabetes Specialist Nurse (DERC)

ADULTS
Dr B Franke Consultant Diabetologist (RFT)
Dr S Muzulu Consultant Diabetologist (RFT)

DIABETES SPECIALIST NURSES (DERC)
Reception Fax: 01709 307911

Fiona Smith Team Leader
Avril Bird
Karen Carnall
Lynda Astbury
Dawn Cunningham
Carol Roebuck

Diabetes Specialist Nurses (DERC) - Administration Team
Claire Keightley Manager
Denise Murray Secretary
Janet Bell DAFNE/DESMOND Co-ordinator
Kathy Winearls Administration Officer
Theresa Ridgeway Receptionist
Helen Smith Receptionist

ELDERLY
Dr A Abdelhafiz Consultant Physician (RFT)
Elizabeth Fairclough DSN Older People (RFT)

SPECIALIZED
Obstetrics/Antenatal Clinic
Miss S Rutter Consultant Obstetrician (RFT)
Sr J Ridge DSN Midwife - Greenoaks - (RFT)

Urology
Jan Farrell Manager/CNS Urology Psycho-sexual Therapy (RFT)

Ophthalmology
Mr Jabir Clinical Director of Specialist Surgery (RFT)
12. CONTACTS

Podiatry
Trevor Pilling Podiatrist – Diabetes (DERC)
Fiona Crawford Podiatrist – Diabetes (DERC)
Lisa Watson Podiatrist – Diabetes (DERC)
Janice Wooten Assistant Podiatrist – Diabetes (DERC)

Dietetics
Sri Kakarlapudi Lead Dietitian for Diabetes Services
Sarah Veitch Dieticians – Diabetes (DERC)
Janet Gomm Dieticians – Diabetes (DERC)
Sarah Groom Specialist dietitian for Obesity and Diabetes

Retinal Screening
In Barnsley Foundation Trust
Cheryl Wogan Medical & Retinal Screening Support Manager
Appointments/General Admin Enquires

Cardiology
Dr Muthusany Consultant Cardiologist (RFT)

Vascular Surgeon
Mr Nawaz Vascular Surgeon (RFT)

Rotherham Combined Diabetes Renal Clinic
Admin Office
Renal Unit, NGH, Sheffield
Admin Office

LOCAL SERVICES DIRECTORIES AND USERS GROUPS

DIABETES UK

Diabetes UK Rotherham Voluntary Group
Secretary: Miss Mary Cook
9a Eastwood Mount, Clifton
Rotherham, S65 2TF

DIABETES WEBSITES
www.diabetes.org.uk
**ADULT REFERRAL TO DIABETES SPECIALIST NURSE SERVICE**

**Adult Referral to Diabetes Specialist Service**

- **If URGENT please fax:** 01709 307911
- **Post to:** Diabetes Specialist Nurse Service  
  Diabetes Education & Resource Centre  
  Rotherham General Hospital, Moorgate  
  Rotherham S60 2UD
- **Otherwise call for advice:** 01709 307910

<table>
<thead>
<tr>
<th>Patient Details</th>
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</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Hospital Number:</td>
</tr>
<tr>
<td>Address:</td>
<td>NHS Number:</td>
</tr>
<tr>
<td>Date of Birth:</td>
<td>/ / Home Telephone:</td>
</tr>
<tr>
<td>Post Code:</td>
<td>Hospital Consultant:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GP Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GP Name:</td>
<td>Practice:</td>
</tr>
<tr>
<td>Referral from:</td>
<td>(Stamp)</td>
</tr>
</tbody>
</table>

**Reason for Referral: (please tick)**

<table>
<thead>
<tr>
<th>URGENT – within 5 working days</th>
<th>ROUTINE - within 6 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of insulin therapy in well type 1 – newly diagnosed</td>
<td>Glucose control persistently poor HbA1c &gt; 7.5% (Type 1 DM)</td>
</tr>
<tr>
<td>Diabetic Pregnancy (Type 1 or Type 2) Immediate referral to Greenoaks must be made</td>
<td>Glucose control persistently poor HbA1c &gt; 8.5% (Type 2 insulin treated DM)</td>
</tr>
<tr>
<td>Hypoglycaemia unawareness (requiring intervention of others)</td>
<td>Problematic Hypoglycaemia (frequent severe hypos affecting day to day activities)</td>
</tr>
<tr>
<td>Initiation of insulin in problematic Type 2 diabetes with severe osmotic symptoms (on maximum OHAs or intolerant of OHAs)</td>
<td>Commence insulin therapy (Type 2 patient on maximum OHAs or intolerant of OHAs)</td>
</tr>
</tbody>
</table>

**PLEASE ATTACH CURRENT MEDICATION LIST**

**PLEASE ATTACH ANY OTHER RELEVANT RESULTS**

**OTHER INFORMATION**

<table>
<thead>
<tr>
<th>Background Medical History</th>
<th>YES</th>
<th>NO</th>
<th>Result</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischaemic Heart Disease</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetic Retinopathy</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous Stroke/TIA</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Diabetic Nephropathy</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Peripheral Vascular Disease</td>
<td>☐</td>
<td>☐</td>
<td></td>
<td></td>
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<tr>
<td>Diabetic Neuropathy</td>
<td>☐</td>
<td>☐</td>
<td></td>
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</tr>
<tr>
<td>Autonomic Neuropathy</td>
<td>☐</td>
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<td></td>
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<tr>
<td>Other important conditions (list):</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Transport Required**

** Signed: Name: Date: **
13. APPENDICES

13.1 ROTHERHAM HEALTHY WEIGHT REFERRAL PATHWAY - ADULTS (ADDITIONAL INFORMATION)

SPECIALIST TERTIARY SERVICE - TIER 4
Bariatric surgery.

RIO (ROTHERHAM INSTITUTE FOR OBESITY) - TIER 3
The Rotherham Institute for Obesity (RIO) is a specialist centre for the management of obesity. It has a multidisciplinary team approach to tackling weight by providing specialists including; Obesity Specialist Nurses (OSNs), healthcare assistants (HCAs) with specialist weighing and measuring equipment, dietetics input for complex dietary needs, group work and cooking skills education in our on-site kitchen, talking therapists for psychological and counselling input, a physical activity specialist with on-site gym facilities, a General Practitioner with a specialist interest in obesity (GPwSI) for any prescribing issues, and access to local bariatric surgeons and other secondary care specialists if meeting appropriate criteria. It provides all the pre-op assessment for adults who may be suitable for surgery.

CONTACT: Lynn Senior, RIO Supervisor, Rotherham Institute for Obesity (RIO)
Clifton Medical Centre, The Health Village, Doncaster Gate, Rotherham, S65 1DA

RE SHAPE ROTHERHAM - TIER 2
A free service available to all local residents registered to a Rotherham GP, with a BMI of over 25. Reshape Rotherham consists of a series of 10 weekly, hour long sessions designed to help people make long term changes towards a healthier diet and lifestyle.

People can either self refer by telephoning or can be referred into the service by visiting their GP or Practice Nurse.

For more information on Reshape Rotherham, please contact Vanessa Quarmby

PRIMARY ACTIVITY – TIER 1
Primary activity includes health promoting brief interventions to encourage lifestyle changes. These can be provided by a range of staff including GPs, Leisure Services, Health Visitors etc.
13. APPENDICES

ROtherham Healthy Weight Referral Pathway - Children (Additional Information)

The Weight Management Services working with children and young people have signed up to Rotherham’s Children and Young People’s Overarching Information Sharing Protocol

Carnegie International Camp - Tier 4

The residential summer camp is designed for 8-17 year olds and is the most intensive weight management programme available with the exception of surgery; it is primarily focused on the most obese children (>85th percentile for age and gender related BMI), although it is effective for all levels of overweight/obesity.

The camp is multidisciplinary and includes guidance on dietary restriction and modification, physical activity promotion, lifestyle change and the development of social skills whilst providing a fun and supportive environment for weight loss. All components adhere fully to NICE guidance and activities are aligned to key stages in the National Curriculum and other national health campaigns such as Change4Life. Visit: www.carnegieweightmanagement.com or 0113 8125 233.

Rio (Rotherham Institute for Obesity) - Tier 3

The Rotherham Institute for Obesity (RIO) is a specialist centre for the management of obesity. It has a multidisciplinary team approach to tackling weight by providing specialists including: Obesity Specialist Nurses (OSNs), healthcare assistants (HCAs) with specialist weighing and measuring equipment, dietetics input for complex dietary needs, group work and cooking skills education in our on-site kitchen, talking therapists for psychological and counselling input, a physical activity specialist with on-site gym facilities, a General Practitioner with a specialist interest (GPwSI) in obesity for any prescribing issues, and access to local bariatric surgeons and other secondary care specialists if meeting appropriate criteria. It provides triage of children who may be suitable for Carnegie Camps.

Contact: Lynn Senior, RIO Supervisor, Rotherham Institute for Obesity (RIO) Clifton Medical Centre, The Health Village, Doncaster Gate, Rotherham, S65 1DA Tel: 08444 773622 or Fax: 08444 773831.

Carnegie Club - Tier 2

Carnegie Club is a 12 week weight management programme for overweight and obese children aged 8-17 and their families to help them become fitter, healthier and happier. DC Leisure is working in partnership with NHS Rotherham and Carnegie Weight Management (CWM) to deliver the Carnegie Clubs FREE of charge at Rotherham Leisure Complex and Aston-cum-Aughton Leisure Centre.

Visit: www.carnegieweightmanagement.com/rotherham or call the programme manager on 07525 702784.

Primary Activity – Tier 1

Primary activity includes health promoting brief interventions to encourage lifestyle changes. These can be provided by a range of staff including GPs, Leisure Services, Health Visitors, Teachers, School Nurses etc.
NHS ROTHERHAM WEIGHT MANAGEMENT REFERRAL FORM

All patients MUST be motivated to lose weight

FOR ADULTS:  (BMI = Body Mass Index, WC = waist circumference)
• Consider direct referral to Reshape Rotherham (weight management programme)
  If BMI 25 - 40  (NB adults can self-refer to Reshape Rotherham on 01709 307694)
• Consider direct referral to RIO (specialist MDT)
  If BMI > 30 (or WC > 102cm male or > 88cm female) with increased risk, or BMI > 40 without

FOR CHILDREN:  (using appropriate child growth charts for BMI centiles)
• Consider direct referral to Carnegie Clubs (via DC Leisure)
  If BMI > 85th centile (NB children (8-17years) can be self-referred on 01709 722555)
• Consider direct referral to RIO (specialist MDT)
  If BMI > 95th centile with increased risk, or > 99.6th without increased risk

PATIENT DETAILS

Name:......................................................................................................................Gender: M/F.................................
Address:.................................................................................................................................................Postcode:..........................................................
Home tel no:.................................................. Height:.......................... Mobile tel no:................................ Weight:......................... BMI:..........................
DOB:.................................................. Name of parent/guardian (for child referral):............................. Contact tel no:..........................
Address (if different from above):..............................................................................................................Postcode:..........................................................

PLEASE TICK BOX IF ANY APPLY:
☐ Type 1 Diabetes (insulin controlled)          ☐ Post bariatric surgery
☐ Type 2 Diabetes (diet or tablet controlled)  ☐ Coeliac disease/ Crohn’s disease
☐ Dyslipidaemia                                ☐ Food Allergy (not been seen by a Dietitian)
☐ Established cardiovascular disease           ☐ Pregnant or Breastfeeding
☐ Established sleep apnoea                    ☐ Diagnosed mental health condition
☐ South Asian Male                             ☐ please specify…………………………………………
☐ Other - please specify………………………………

GENERAL PRACTITIONERS DETAILS (PATIENT MUST BE REGISTERED WITH A ROTHERHAM GP)

Name of GP:..................................................................................................................Postcode:..........................................................
GP Address:.......................................................................................................................Postcode:..........................................................

REFERRER DETAILS (PLEASE TICK BOX THAT APPLIES TO YOU)

Internal referrals:                          External referrals:
☐ Reshape Rotherham                          ☐ GP / ☐ Practice Nurse / ☐ During CVD/HealthCheck
☐ Carnegie Clubs via DC Leisure               ☐ Consultant (specify department)..........................
☐ RIO                                        ☐ Dietitian
☐ Carnegie International Camp                 ☐ Health Visitor
☐ Bariatric Surgical Service                  ☐ Pharmacist
☐ Other

Print Name................................................. Signature:.................................................. Date:..........................
Send completed form to relevant address or fax number given below:
Reshape Rotherham, Dept of Nutrition and Diyetetic Services, Oakwood Hall, Moorgate Road Rotherham S60 2UD
Tel 01709 307725  Fax 01709 307947
Natalie Dunn, DC Leisure, Rotherham Leisure Complex, Effingham Street, Rotherham S66 1BL
Tel 01709 722555.  Fax 01709 722557.  Mobile 07525 702784
ARIO, Clifton Medical Centre, The Health Village, Doncaster Gate, Rotherham, S651DA
Tel 08444773622 or Fax 08444773831
ADULT WEIGHT MANAGEMENT SELF REFERRAL FORM

So, you’re thinking about losing weight, we can help you.

Reshape Rotherham is a new adult (over 17 years old) weight management programme. It's FREE, fun and friendly. It consists of 10 weekly, hour long group sessions and will help you to make long-term changes towards a healthier diet and lifestyle. The programme is delivered in community venues around the Rotherham area such as health centres, church halls etc. Please fill in and return the referral form below. We look forward to meeting you.

YOUR DETAILS

Name:.................................................................................................................. Gender: M/F..........................
Address:..................................................................................................................
.............................................................................................................................. Postcode:..........................
Home tel no:.......................................................... Mobile tel no:..........................
DOB:............................................................. Height:........................................ Weight:..................................

PLEASE TICK BOX IF ANY APPLY:
☐ Type 1 Diabetes (insulin controlled) ☐ Post bariatric surgery
☐ Type 2 Diabetes (diet or tablet controlled) ☐ Coeliac disease/ Crohn’s disease
☐ Dyslipidaemia ☐ Food Allergy (not been seen by a Dietitian)
☐ Established cardiovascular disease ☐ Pregnant or Breastfeeding
☐ Established sleep apnoea ☐ Diagnosed mental health condition
☐ South Asian Male ☐ please specify..........................................................
☐ Other - please specify..........................................................

How did you hear about Reshape Rotherham?
..........................................................................................................................

Were you referred to Reshape Rotherham during a NHS Health Check by your GP or Practice Nurse?
☐ YES ☐ NO

If coming to Reshape Rotherham, please choose your preference:
☐ Daytime ☐ Evening (after 5pm)

Preferred area in Rotherham (e.g. Maltby, Town Centre, Wath etc) .................................

GENERAL PRACTITIONERS DETAILS (YOU MUST BE REGISTERED WITH A ROTHERHAM GP)

Name of GP:........................................................................................................ Postcode:..........................

Send or fax this form to:
Reshape Rotherham, Nutrition & Dietetic Department
Rotherham NHS Foundation Trust
Oakwood Hall, Moorgate Road
Rotherham, S60 2UD
Fax Number: 01709 307947

Signature: ................................................. Date: ............................................

Aged 17 or under?
Carnegie Club is a 12 week weight management programme for overweight & obese children aged 8-17 & their families. Carnegie Clubs are FREE of charge, run at Rotherham Leisure Complex and Aston-cum-Aughton Leisure Centre. For more information please contact Natalie Dunn on 01709 722555/ 07525 702784/ visit www. carnegieweightmanagement.com/rotherham
13. APPENDICES

13.2 SMOKING CESSATION REFERRALS

ASK and record Smoking Status

NON SMOKER Record in notes. No further action required.

SMOKER ADVISE the patient of health benefits of quitting “Stopping smoking is the best thing you can do for your health”.
ACT on patient’s response, including offering a referral to their local NHS Stop Smoking Service

Smokes and WANTS HELP TO STOP.

Complete referral form and send to Rotherham Stop Smoking Service
RCHC, Greasbrough Road
Rotherham
S60 1RY

Stop smoking Service will attempt to phone client twice and if no contact send a letter.
Client will be informed of all types of support offered and nearest venue. An appointment can be made.

Smokes DOES NOT want help to stop

If not ready they should be asked to consider the possibility and encouraged to seek help in the future
The Stop Smoking Service can help with any concerns

WHAT WE OFFER
Friendly advice and support using
An evidence based programme - assessment, preparation, quit and 4 weeks of follow up

• Help with access to treatment products available on prescription
• Carbon Monoxide monitoring
• Group support
• 1-1 appointments
• Drop In
• Home Visits for those receiving home visits from GPs
### 13. APPENDICES

#### 13.3 ALCOHOL

**AUDIT C**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Scoring system</th>
<th>Your Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you have a drink containing alcohol?</td>
<td>Never, Monthly or less, 2 - 4 times per month, 2 - 3 times per week, 4+ times per week</td>
<td></td>
</tr>
<tr>
<td>How many units of alcohol do you drink on a typical day when you are drinking?</td>
<td>1 - 2, 3 - 4, 5 - 6, 7 - 8, 10+</td>
<td></td>
</tr>
<tr>
<td>How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?</td>
<td>Never, Less than monthly, Monthly, Weekly, Daily or almost daily</td>
<td></td>
</tr>
</tbody>
</table>

**Scoring:**

A total of 5+ indicates increasing or higher risk drinking.
An overall total score of 5 or above is AUDIT-C positive.
### Remaining AUDIT questions

<table>
<thead>
<tr>
<th>Questions</th>
<th>Scoring system</th>
<th>Your Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often during the last year have you found that you were not able to stop drinking once you had started?</td>
<td>Never</td>
<td>Less than monthly</td>
</tr>
<tr>
<td>How often during the last year have you failed to do what was normally expected from you because of your drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
</tr>
<tr>
<td>How often during the last year have you needed an alcoholic drink in the morning to get yourself going after a heavy drinking session?</td>
<td>Never</td>
<td>Less than monthly</td>
</tr>
<tr>
<td>How often during the last year have you had a feeling of guilt or remorse after drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
</tr>
<tr>
<td>How often during the last year have you been unable to remember what happened the night before because you had been drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
</tr>
<tr>
<td>Have you or somebody else been injured as a result of your drinking?</td>
<td>No</td>
<td>Yes, but not in the last year</td>
</tr>
<tr>
<td>Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested that you cut down?</td>
<td>No</td>
<td>Yes, but not in the last year</td>
</tr>
</tbody>
</table>

### Scoring:

0 – 7 Lower risk, 8 – 15 Increasing risk, 16 – 19 Higher risk, 20+ Possible dependence
### Referral Form

**To Primary Care Alcohol Service**

**Fax number** 01709 324363

<table>
<thead>
<tr>
<th>Name</th>
<th>Date of Birth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Male / Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Address</th>
<th>GP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Telephone No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OK to Contact</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If No - how would patient like to be contacted?

<table>
<thead>
<tr>
<th>Referral Source Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name and Contact No of Referrer</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safeguarding children / vulnerable adult concerns</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Has the patient consented to the Referral?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>13. APPENDICES</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td><strong>Any Risk Identified?</strong></td>
</tr>
<tr>
<td>Daily Units</td>
</tr>
<tr>
<td>SADQ Score</td>
</tr>
<tr>
<td>AUDIT Score</td>
</tr>
<tr>
<td><strong>Reason for referral</strong></td>
</tr>
<tr>
<td><strong>To be completed by Primary Care Service</strong></td>
</tr>
<tr>
<td>ACTIONS:</td>
</tr>
</tbody>
</table>
13. APPENDICES

13.4 FOOT ASSESSMENT FORM (SAMPLE)

**DIABETIC FOOT ASSESSMENT**

<table>
<thead>
<tr>
<th>10g monofilament</th>
<th>Foot Pulses</th>
<th>Vibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>L</td>
<td>R</td>
</tr>
<tr>
<td>Hallux (1st toe)</td>
<td>Dorsalis Pedis</td>
<td>1st Metatarsal Phalangeal Joint</td>
</tr>
<tr>
<td>1st Met head</td>
<td>Posterior Tibial</td>
<td></td>
</tr>
<tr>
<td>3rd Met head</td>
<td>Intermittent Claudication</td>
<td></td>
</tr>
<tr>
<td>5th Met head</td>
<td>Colour/Temperature</td>
<td></td>
</tr>
</tbody>
</table>

*Neuropathy = 2 or more sites absent  *Peripheral Arterial Disease = no pulse in one foot for monofilament

**Risk Factors**

<table>
<thead>
<tr>
<th>Presence of foot deformity</th>
<th>Amputation</th>
<th>Poor Footwear</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>L</td>
<td>R</td>
</tr>
<tr>
<td>Previous foot ulceration</td>
<td>Painful neuropathy</td>
<td>Smoker</td>
</tr>
<tr>
<td>R</td>
<td>L</td>
<td>R</td>
</tr>
<tr>
<td>Current foot ulceration</td>
<td>Night/Rest pain</td>
<td>Poor diabetes control</td>
</tr>
<tr>
<td>Callus/Corn</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Risk Classification**

**LOW RISK**
- Normal Sensation
- Palpable Pulses

Basic foot care advice
- Annual foot assessment
- Refer to Podiatry Department only if patient has a clinical need for podiatry treatment (not routine simple nail care)

**INCREASED RISK**
- Peripheral Neuropathy or Absent Pulses or Deformity/Callus or Presence of risk factor

Refer to Podiatry Department
- At risk foot care advice by health care professional
- Regular review (3-6 monthly)

**HIGH RISK**
- Neuropathy or absent pulses
  - Plus deformity or callus
  - Previous foot ulceration or Amputation

Refer to Podiatry Department
- Refer to Orthotics Department via GP
- At risk foot care advice
- Arrange review within 3 months

**FOOT CARE EMERGENCY**
- Current Foot Ulceration
  - Infection
  - Acute charcot foot

Refer to GP within 24 hours
- Refer to Podiatry Department
- Redress wound
- At risk foot care advice

For an urgent referral (eg infection) contact one of the team direct.

Useful Numbers
- Podiatry Dept
  - Doncaster Gate Reception:
    - Diabetes Centre
    - Podiatrist: Trevor Pilling
- Diabetes Specialist Nurses:
  - Tissue Viability Specialist Nurse

LA/dm/R-DFAT 12.05.05
# 13. APPENDICES

## 13.5 DIABETES EYE SCREENING REFERRAL FORM

Bold Fields mandatory – we may have to return the form if they are not completed

<table>
<thead>
<tr>
<th>Field</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Address</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Postcode</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Date of Birth</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Telephone Contact</td>
<td>Home, Work, Mobile</td>
</tr>
<tr>
<td>GP</td>
<td>..............................................................</td>
</tr>
<tr>
<td>GP Address</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Date of Diagnosis</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Symptomatic at diagnosis</td>
<td>YES □ NO □</td>
</tr>
<tr>
<td>Fasting blood sugar at diagnosis</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Or diagnosis by GTT</td>
<td>YES □ NO □</td>
</tr>
<tr>
<td>ALL PATIENTS</td>
<td>........................................................................</td>
</tr>
<tr>
<td>Most recent Hba1c</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Most recent BP</td>
<td>YES □ NO □</td>
</tr>
<tr>
<td>On Rx for Blood Pressure</td>
<td>YES □ NO □</td>
</tr>
<tr>
<td>Diabetes Type</td>
<td>Type 1 □ Type 2 □ MODY □ Other □</td>
</tr>
<tr>
<td>Diabetes treatment</td>
<td>........................................................................</td>
</tr>
<tr>
<td>Patient has given consent for screening and sharing of information to relevant health professionals</td>
<td>YES □ NO □</td>
</tr>
<tr>
<td>Signed</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Name</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Date</td>
<td>..............................................................</td>
</tr>
<tr>
<td>Designation</td>
<td>..............................................................</td>
</tr>
</tbody>
</table>
13. APPENDICES

13.6 REFERENCES


Nottingham Health Authority Guidelines on Vascular Risk (2001)