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Background

These guidelines have been developed to support appropriate care and timely referral for people with diabetes in the Nottingham area. They are a consensus view and incorporate, where available, national and international recommendations on standards of care. In the event of significant new research findings or national recommendation, specific areas may be updated ad hoc. Full revision will be undertaken every two to three years.

By 2010, it is estimated that there will be ~30,000 people with diabetes in Nottingham.

Guideline Development

The following people have contributed:

- Alan Archer Consultant Physician
- Ken Brown General Practitioner
- Richard Burden Consultant Physician
- Lucia Calland Prescribing Advisor
- Kesten Challen General Practitioner
- Pat Clarke Diabetes Specialist Nurse
- Gavin Derbyshire General Practitioner
- Josie Drew Associate Specialist Paediatrics
- Tasso Gazis Consultant Physician
- Fran Game Consultant Physician
- Sarah Kay Specialist Dietitian
- Natasha MacIntyre Consultant Nurse
- Peter Mansell Consultant Physician
- Sarah Marston Podiatry Services Manager
- Renee Page Consultant Physician
- Simon Page Consultant Physician
- Gill Peck Diabetes Specialist Nurse
- Nikki Pownall Specialist Dietitian
- Helen Ramwell Community Dietitian
- Nigel Sturrock Consultant Physician
- Stephen Willott General Practitioner

Guidelines provide guidance

These recommendations should not be rigorously applied in all clinical circumstances. Good clinical practice always involves weighing the advantages and disadvantages of a clinical intervention depending on individual circumstances.

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

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Diabetes and Endocrinology Department
C Floor, South Block
University Hospital
Nottingham
NG7 2UH

Tel: 0115 924 9924 ext 41100
Fax: 0115 970 1080
E-mail: tasso.gazis@qmc.nhs.uk
Referral Guidance

The Nottingham Diabetes Service Advisory Group (NDSAG) does NOT recommend referral for uncomplicated, newly diagnosed Type 2 diabetes. Initial management (diagnosis, education, treatment and monitoring) is the responsibility of Primary Care Teams, supported by the PCTs and Nottingham Diabetes Management Guidelines.

**EYE**
- Sudden visual loss
- Sight threatening retinopathy
  
  | Eye Casualty at UHN |

**FOOT**
- Hot foot - ulcer + cellulitis / deep infection / ischaemia
- Chronic foot ulcer / deformity / persistent callus
  
  | Diabetes / Med Reg at UHN or NCH |
  | Letter / fax / electronic to UHN / CHN |

**METABOLIC**
- Protracted vomiting / ketonuria (type 1 DM)
- Newly diagnosed type 1 diabetes
  
  | On-call medics / paeds at UHN / CHN |
  | Child: Paed Reg at UHN / NCH |
  | Adult: Diabetes / Med Reg at UHN or NCH |

**PREGNANCY**
- Pregnant or contemplating pregnancy
  
  | Next joint diabetes / obstetric clinic |
  | UHN (PAC) – 44873; CHN (ANC) – 45244 |

**MANAGEMENT**
- Frequent hypoglycaemic episodes
- Difficulty achieving or problems with:
  - glycaemic targets
  - blood pressure targets
  - lipid targets
  - microalbuminuria, proteinuria or renal disease
  - Angina, claudication, cerebrovascular disease
  - Painful neuropathy, mononeuropathy, amyotrophy
  - Erectile dysfunction
  
  | Letter / fax / electronic to UHN / CHN |

**CONTACT NUMBERS FOR REFERRAL**

<table>
<thead>
<tr>
<th></th>
<th>UHN (0115)</th>
<th>NCH (0115)</th>
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<tr>
<td>Dr Simon Page</td>
<td>924 9924</td>
<td>969 1169</td>
</tr>
<tr>
<td>Secretary</td>
<td>970 1080</td>
<td>962 7959</td>
</tr>
<tr>
<td>Dr Peter Mansell</td>
<td>Secretary</td>
<td>64464</td>
</tr>
<tr>
<td>Dr Tasso Gazis</td>
<td>Secretary</td>
<td>63834</td>
</tr>
<tr>
<td>Dr Garry Tan</td>
<td>Secretary</td>
<td>61100</td>
</tr>
<tr>
<td>Diabetes Unit</td>
<td>Secretary</td>
<td>63862</td>
</tr>
<tr>
<td>Diabetes Unit</td>
<td>Secretary</td>
<td>61215</td>
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<tr>
<td>Diabetes Registrar</td>
<td>Direct line</td>
<td>9709215</td>
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<td>via switchboard</td>
<td></td>
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<tr>
<td>Dr Alan Archer</td>
<td>Secretary</td>
<td>39357</td>
</tr>
<tr>
<td>Dr Renee Page</td>
<td>Secretary</td>
<td>37929</td>
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<tr>
<td>Dr Nigel Sturrock</td>
<td>Secretary</td>
<td>46200</td>
</tr>
<tr>
<td>Dr William Jeffcoate</td>
<td>Secretary</td>
<td>46201</td>
</tr>
<tr>
<td>Dr Fran Game</td>
<td>Secretary</td>
<td>34161</td>
</tr>
<tr>
<td>Dundee House</td>
<td>Manager</td>
<td>46812</td>
</tr>
<tr>
<td>Diabetes Registrar</td>
<td>via switchboard</td>
<td></td>
</tr>
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Or discuss with Diabetes Registrar in hours / On-call Medical Registrar out of hours.
**Diagnosing Diabetes / Glucose Intolerance**

Also see other diagnostic categories below

**TWO DIAGNOSTIC ELEMENTS NEEDED**

- Yes [Symptoms of diabetes?]
- No

**Symptoms of diabetes**

- Fasting plasma glucose ≥7.0 mmol/l
- OR
- Random venous plasma glucose ≥ 11.1 mmol/l
- OR
- 2 hour venous plasma glucose ≥11.1 mmol/l on OGTT

**PLUS, on a separate day**

- Fasting plasma glucose ≥7.0 mmol/l
- OR
- Random venous plasma glucose ≥ 11.1 mmol/l
- OR
- 2 hour venous plasma glucose ≥11.1 mmol/l on OGTT

**DIABETES**

Most cases are diagnosed in this way
75g OGTT is not usually necessary

**Oral Glucose Tolerance Test (OGTT)**

- 12 hour fast prior to test (water only for comfort)
- Refrain from smoking / eating / drinking / exercise during the test

1. Take baseline venous sample for glucose
2. Give 75g oral anhydrous glucose - equivalent to Lucozade Original (Energy) – 394ml
3. Take further venous glucose sample 2 hours later
4. The patient should remain rested, fasted and in the surgery.
5. Send samples to laboratory
6. Fingerprick glucose values should not be used to diagnose diabetes
Detection of People at High Risk of Diabetes

Routine / population screening of non-pregnant, asymptomatic adults is not recommended

The following groups are at higher risk of diabetes

- In these groups, opportunistic testing for diabetes may be appropriate over age 45 years
- Only laboratory samples can be used to diagnose diabetes, not fingerprick samples
- If glucose tolerance is abnormal, but not in the range for diabetes, follow up testing may be appropriate

Known impaired fasting glycaemia / impaired glucose tolerance

History of vascular disease
Race / ethnicity – South Asian, African / Caribbean
Parent or sibling with diabetes
Polycystic ovarian syndrome
Prior gestational diabetes
Obesity (BMI >30kg/m2)

Symptoms of Diabetes
- Polyuria (passing a lot of urine)
- Polydipsia (drinking excessively)
- Weight loss
- Lassitude
- Blurred vision
- Urinary or genital infection
- Skin infection including pruritus
- There may be few if any symptoms

Other Diagnostic Categories

Impaired glucose tolerance (IGT) Impaired fasting glycaemia (IFG)

<table>
<thead>
<tr>
<th>Fasting glucose</th>
<th>≥ 6.1 but &lt;7.0 mmol/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hour glucose</td>
<td>≥ 7.8 but &lt;11.1 mmol/l</td>
</tr>
</tbody>
</table>

IFG and IGT are risk factors for future diabetes
Exercise and weight loss reduces the risk of developing diabetes. There is no consensus on the cost effectiveness of the use of metformin to prevent diabetes in these patients.

Annual OGTT is recommended for those with IGT; 3 yearly for IFG.
Does the Newly Presenting Patient Need Insulin?

Guidance below not appropriate for paediatric patients

**Typical symptoms**

AND

**Diagnostic blood glucose**

- Yes

**Patient ill: vomiting or semiconscious**

- Yes
  - Admit to hospital

- No

**Moderate / heavy ketones in urine**

- Yes
  - Strong indication for insulin
  - Same Day referral

- No

**TWO or more of the following**

Severe symptoms (nocturia x 3-4)
Short history (days / weeks)
Marked weight loss (disregard absolute weight)
A first degree relative with type 1 diabetes
A personal history of autoimmune disease

- Yes
  - Strong indication for insulin
  - Same Day referral

- No

**Patient under 30 years of age**

- Yes
  - No immediate need for insulin
  - If first degree relative on diet or tablets consider Maturity Onset Diabetes of the Young (MODY)
  - Consider non-urgent referral

- No

**No immediate need for insulin**

Dietary advice
Monitoring and Complications

The Annual Review

Structured care with annual review is essential
Prevention and identification of complications is otherwise frequently inadequate
Underlined text is hyperlinked to explanatory flowsheet / text – point and click

General
- Weight / body mass index
- Lifestyle advice
- Dietary Advice or Referral to Dietitian
- Smoking cessation advice
- Sick day rules
- Medication problems – polypharmacy / dosette box (refer to pharmacist)
- Clinical waste / sharps

Macrovascular Disease
- Coronary Heart Disease Risk
- Blood Pressure
- Aspirin and Lipid Lowering Treatments
- The Diabetic Foot

Glucose Control
- Review Glucose Monitoring records
- HbA1c
- Oral Hypoglycaemic Agents (Tablets)
- Symptoms of hyperglycaemia / episodes of hypoglycaemia
- Injection sites for lipohypertrophy

Microvascular Disease
- Microalbuminuria and Proteinuria
- Retinopathy
- The Diabetic Foot
- Erectile dysfunction
Blood Glucose Monitoring
See notes below
Blood glucose testing is useful if it makes a difference to treatment.
Education in use of information from blood glucose testing is key to appropriate use.
Every patient’s needs should be individually assessed by an appropriately experienced
healthcare provider. Changes in testing regimen should be agreed with the patient.
The guidance below is neither rigid nor exhaustive.

Type 1 diabetes
Insulin (or insulin and tablet) treated type 2 diabetes

No

Yes

Planning pregnancy
Pregnant
Preparation for insulin therapy in type 2 diabetes

No

Yes

Blood glucose testing generally routine
4 or more times daily in some circumstances
Strips usually on repeat prescription

Sulphonylurea mono / combination therapy
Illness / unstable control / change in treatment
Suspected hypoglycaemia
Driving
Renal failure
Unpredictable lifestyle
Significant exercise

No

Yes

Blood glucose testing may be needed
Lower frequency testing: see notes below
Education in appropriate use
Strips usually provided via specific request

Diet treated Type 2 diabetes
Metformin monotherapy
Glitazone monotherapy

No

Yes

Blood glucose testing not needed routinely
Testing may be needed in some circumstances
Urine testing useful if:
Acceptable to patient
Renal threshold for glucose normal
Appropriate action taken following test

Check HbA1c 2 - 6 monthly
Notes for Blood Glucose Monitoring

Blood glucose tests are usually done before meals and bed.

Lower frequency testing may be:
- the occasional test before meals or bed
- testing before each meal and bed 2-3 times per week

this will be patient dependent
**Glycosylated Haemoglobin - Hb\textsubscript{A1c}**

HbA1c is generally measured every 2 – 6 months. Measures average blood glucose over previous 4 - 6 weeks. Measures how much glucose is ‘stuck’ to red blood cells (life span about 6 weeks). The HbA1c target should be individualised – if 1% above target, consider adjusting treatment. Conditions which affect red cells affect HbA1c - including haemolysis, bleeding, haemoglobinopathies and others.

<table>
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<tr>
<th>HbA1c (%)</th>
<th>Interpretation</th>
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<tr>
<td>Less than 6</td>
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<td>Less than 7</td>
<td>Excellent</td>
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<td>7 - 8</td>
<td>Acceptable</td>
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<td>8 - 9</td>
<td>Poor</td>
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<tr>
<td>Over 9</td>
<td>Very poor</td>
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<table>
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<th>HbA1c (%)</th>
<th>Equivalent mean plasma glucose (mmol/l)</th>
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<td>7</td>
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## Retinopathy Screening

**Diabetes remains the leading cause of preventable blindness in the working age population.**

The retinopathy screening service now complies with Quality Assurance Standards developed by the National Screening Committee and the National Service Framework for Diabetes.

This service replaces optometry-based retinopathy screening – but not refraction / glaucoma assessment.

The Nottingham Diabetic Retinopathy Service (DRS) uses digital photography. It provides centralised annual call-recall and notifies patients and Practices of screening results. Patients with sight threatening retinopathy are referred directly for treatment, reducing the risk of visual loss.

Contact details are:

- **Web:** [www.nottinghamretinopathy.co.uk](http://www.nottinghamretinopathy.co.uk)
- **Phone:** 0115 919 4411
- **Post:**
  - The Nottingham Diabetic Retinopathy Service (DRS)
  - Department of Diabetes and Ophthalmology
  - Nottingham University Hospitals
  - QMC Campus
  - C Floor, South Block
  - Derby Road
  - Nottingham NG7 2UH

Currently, there are 4 screening sites. The number will increase over 2007. Hospital transport is available by the usual route:

- Carlton (Park House) Health & Social Care Centre
- Stapleford Care Centre
- Queen’s Medical Centre Campus – Clinic 2
- City Hospital Campus – Dundee House
Microalbuminuria, Proteinuria and Renal Disease

Measure serum creatinine / GFR and see notes and renal referral guidance below
See Aspirin and Lipid section (calculate CHD / CVD risk)
See Blood Pressure section

**Obtain morning urine sample** - but any sample is better than none
Dip with standard dipstick

- **Negative**
  - Send for albumin : creatinine ratio
  - Normal
  - Abnormal
    - Repeat x 2 in 3 months
    - 2 / 3 Positive
      - Yes: Start ACE inhibitor – see U+E monitoring guidance
      - No: Repeat in 12 months

- **Positive**
  - IF + or greater
    - Send for protein : creatinine ratio
    - See Renal Unit referral guidance
  - See Aspirin and Lipid section
  - See Blood Pressure section

Check for alternative causes:
Infection - Send to microbiology for microscopy, culture and sensitivity
Thrush
Menstruation

Consider referral for review / advice
Notes for GFR, Microalbuminuria and Proteinuria

Glomerular filtration rate (GFR)
- Preferred measure of renal function as it accounts for age, sex, ethnicity and weight.
- Already or shortly to become routinely reported in local hospitals
- If abnormal, annual repeat testing unlikely to be sufficient. See renal referral guidance

Microalbuminuria
- Excess albumin in the urine but not detectable using protein dipstick
- Earliest indicator of chronic kidney disease (nephropathy).
- Predictive of cardiovascular morbidity and mortality

Proteinuria
- Excess albumin in the urine but detectable using protein dipstick
- An important finding in patients with type 1 and type 2 diabetes
- Represents progression of urine albumin excretion from microalbuminuria.
- Associated with progressive chronic kidney disease due to diabetic nephropathy
- Predictive of cardiovascular morbidity and mortality

Urine sample for laboratory screening
- 10 ml early morning ‘first pass’ urine sample in a ‘Universal’ specimen container
- Early morning sample excludes postural proteinuria
- Clinical chemistry form for ‘albumin/creatinine ratio’ (ACR) or ‘protein/creatinine ratio’ (PCR)

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<tr>
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<td>&lt;2.5</td>
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<td>&gt;2.5</td>
<td>&gt;3.5</td>
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<tr>
<td></td>
<td>but less than 30 mg/mmol</td>
<td>Microalbuminuria</td>
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<td>(Dipstick for protein usually negative)</td>
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<tr>
<td>ACR or</td>
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<tr>
<td>PCR</td>
<td>&gt;30 mg/mmol</td>
<td>Clinical proteinuria</td>
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<tr>
<td></td>
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<td>(Dipstick for protein positive)</td>
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</table>

PCR is the best test to confirm clinical proteinuria - at higher levels (above 30 mg/mmol) ACR may be inaccurate. There is no need for 24 hour urine collections.
Renal Unit Referral Guidance

Also see Microalbuminuria and Proteinuria section above
General renal referral advice / guidance is available from CHN Renal Unit (969 1169)

If non-diabetic renal disease suspected
If patient under care of Diabetes Service, referral may already be in hand.

• Malignant hypertension (visual disturbance, retinal haemorrhages & exudates)
  Immediate referral by phone or fax on 0115 962 7678
• Proteinuria with oedema and low serum albumin (nephrotic syndrome)
• Dipstick proteinuria with urine protein : creatinine ratio >100 mg/mmol (and patient not known to UHN / CHN diabetes service)
• Dipstick proteinuria and microscopic haematuria present
• Macroscopic haematuria but urological tests negative

For management of advancing chronic kidney disease
If patient under care of Diabetes Service, referral may already be in hand.

• GFR <15 ml/min
  Roughly equivalent to serum creatinine > 400 umol/L in men
  > 300 umol/L in women
  Immediate referral to renal service by phone (969 1169) or fax (962 7678)
  Ensure general renal referral guidance followed

• GFR 15-29 ml/min
  Roughly equivalent to serum creatinine 200-400 μmol/L in men
  150-300 μmol/L in women)
  Repeat within 5 days
  If repeat GFR <15 ml/min: urgent renal referral as above
  Otherwise routine renal referral - ensure general renal referral guidance followed

• GFR 30-59 ml/min
  progressive fall in GFR / increase in serum creatinine OR
  microscopic haematuria present OR
  dipstick proteinuria present OR
  unexplained anaemia, abnormal potassium, calcium or phosphate OR
  symptoms suggest systemic illness eg SLE OR
  uncontrolled BP (>150/90 on 4 agents)
  Routine referral - ensure general renal referral guidance followed

• GFR 60-89 ml/min
  not chronic kidney disease unless other problems (persistent proteinuria or haematuria)

• GFR >90 ml/min
  normal
Blood Pressure

See Notes on next page
See Aspirin and Lipid section (calculate CHD / CVD risk)
See Microalbuminuria and Proteinuria section
The aim is to lower systolic and diastolic pressure below target.
Check blood pressure and adjust treatment every 4 weeks until target attained.

Microvascular complications OR
Pre-existing cardiovascular disease OR
Microalbuminuria OR
Proteinuria OR
Abnormal renal function

Yes

If above target 130/75mmHg start
ACE inhibitor – click for U+E monitoring guidance

If above target 130/75mmHg add
Bendroflumethiazide

If above target 140/80mmHg start
Bendroflumethiazide

If above target 140/80mmHg add
ACE inhibitor – see U+E monitoring guidance

If above target 140/80mmHg add
Long acting calcium channel blocker e.g. Diltiazem

If above target 130/75mmHg add

If above target 140/80mmHg add
Alpha blocker

If above target 130/75mmHg

If above target 140/80mmHg

Consider 5th agent / referral
Notes for Blood Pressure

Initial assessment

Measuring blood pressure - British Hypertension Society recommendations:
- Patient seated and relaxed for 5 minutes with arm supported
- No tight clothing to constrict the arm
- Bladder should encircle between three-quarters and whole upper arm.
- Cuff level with heart
- Alternative adult cuff (12.5 - 13.0 x 35) recommended for use in all adults.
- For arm circumference over 42 cm large bladders may be required

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<td>23 - 33</td>
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<tr>
<td>Alternative adult</td>
<td>12.5 - 13.0</td>
<td>35 - 42</td>
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</table>

- **Electronic monitors**
  - in general wrist monitors are inaccurate, upper arm machines are suitable
- **More information available at** [http://www.bhsoc.org](http://www.bhsoc.org)
- **Ambulatory / Home Blood Pressure readings**
  - Subtract 10/5 mmHg to correlate with clinic pressure
  - 130/75 ambulatory / home = 140/80 in clinic

Non-pharmacological measures prior to pharmacological treatment
- Stop smoking
- Weight Loss
- Increase physical activity
- No added salt diet
- Reduce alcohol to <2 units /day

ACE Inhibitors / All Receptor Blockers
- Make sure patient not taking potassium-retaining diuretic or ‘Lo-Salt’
- Check potassium and creatinine before and within 2 weeks of
  - starting ACE inhibitor (or All-receptor blocker) OR
  - increasing dose
- Stop ACEI / ARB and refer for investigation for renal artery stenosis if:
  - K+ >6.0mmol/L OR
  - Creatinine rise >20% OR
  - GFR fall of >15%
- If ACE inhibitor not tolerated or cough, switch to Angiotensin II receptor blocker

Ethnicity
- People of African-Caribbean ethnicity may respond poorly to ACEI, All receptor blockers and β-blockers
- Addition of a diuretic partially overcomes this
- Consider calcium channel blocker as alternative
Aspirin and Lipid Lowering Treatments

See Notes on next page
See Microalbuminuria and Proteinuria section
See Blood Pressure section

Pre-existing cardiovascular disease OR
Hypertension OR
Microalbuminuria OR
Proteinuria OR
Abnormal renal function

Yes

No

Estimate 10 year CHD risk

Aspirin and Statin

Yes ≥ 15%

No

Random triglycerides ≥ 2.3 mmol/l

Yes

Reduce alcohol consumption, obesity and improve diabetes control if possible

No

Lifestyle measures Repeat assessment annually

Fasting triglycerides ≥ 2.3 but < 10 mmol/l

Fibrate Monitor annually

Fasting triglycerides ≥ 10 mmol/L

Fibrate Consider referral to lipid or diabetes clinic
Notes for Aspirin and Lipids

Initial assessment

- **Pre-existing cardiovascular disease** means prior myocardial infarction, angina, CAGB, angioplasty or heart transplant, peripheral vascular disease, transient ischaemic attack (TIA) or ischaemic stroke.
- **10-year coronary heart disease (CHD) risk** should be assessed annually if there is no pre-existing cardiovascular disease (primary prevention):
  - Framingham equation - underestimates risk where there is a family history of premature CHD, microvascular end-organ damage and in some ethnic groups e.g. south Asians
- **10-year CHD risk of 15% is equivalent to a cardiovascular disease (CVD) risk of 20%**
- Identify people with adverse lipid profile secondary to conditions other than diabetes mellitus – excess alcohol consumption, hypothyroidism

Aspirin

- Usual dose is 75 mg daily
- In primary prevention, reduce systolic blood pressure ≤145mmHg
- Consider proton pump inhibitor if GI side effects
- Use clopidogrel 75mg daily only in those truly allergic (not just intolerant) of aspirin

Statin

- Ideally,
  - LDL target <2.0 mmol/l
  - Total cholesterol target <4.0 mmol/l
- Otherwise, reduce total cholesterol by 25% or LDL cholesterol by 30%

Fibrate

- Use of a statin and fibrate together increases the likelihood of adverse effects (see British National Formulary)

Fasting lipid profiles

- Both insulin and sulphonylureas may cause fasting hypoglycaemia
- If you wish to check a fasting lipid profile, ensure that you have given clear instructions to the patient about avoiding hypoglycaemia
- Treatment decisions can often be taken using results from random samples
The Diabetic Foot

**Community Podiatry**

**Referral to Community Podiatry Service**
POD 1 referral form (available from health centres) to nearest health centre irrespective of GP practice

A podiatrist will carry out an assessment using the evidence based ‘Trent Diabetic Assessment Tool’. This includes vascular and neurological examination together with podiatric and biomechanical examinations and will result in a risk classification.

Podiatrists employed by Gedling Primary Care Trust (PCT) spend between three and six months working in UHN or CHN foot clinics to support the practitioner and standardise practice.

**Musculoskeletal Podiatry / Biomechanics**
Examination of lower limb function bone structure, muscles and joint function. This enables diagnosis of functional problems. Problems treated with orthoses and strengthening / stretching exercises to improve foot function. Referral should be made via general referral to the Podiatry service.

**Minor Surgery**
Podiatrists carry out nail surgery at a number of community clinics. Performed using local anaesthetic and may involve phenolisation of the nail bed. Effective for chronic and acute nail problems where conservative measures have been ineffective.

**Podiatry Service Lead for Diabetes**

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<tbody>
<tr>
<td>UHN</td>
<td>Alison Shone</td>
<td>0115 9249924 Ext 44122</td>
</tr>
<tr>
<td>CHN</td>
<td>Alison Shone</td>
<td>0115 9691169 Ext 37946</td>
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</table>

Print and hand out Good Foot Care page of Guidelines
**Good Foot Care**

**TAKE CARE OF YOUR FEET AND PROBLEMS CAN BE PREVENTED**

Diabetes can cause nerve damage and poor circulation in your feet. Nerve damage means you are less likely to **feel an injury** to your feet. Poor circulation means the injury or ulcer may be **slow to heal**.

**Check your feet carefully every day**

- Between the toes
- The soles and tops of your feet
- Your heels

If you cannot do this ask someone else to help if possible

**Look for**

- red areas
- cracks on the heels or between the toes
- any hard skin
- any new sores or ulcers

If you spot any of these contact your local GP surgery, Health Centre or Podiatrist for advice

<table>
<thead>
<tr>
<th>DOs</th>
<th>DON'Ts</th>
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<tr>
<td><strong>ALWAYS</strong> look at your feet every day</td>
<td><strong>NEVER</strong> walk barefoot</td>
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<tr>
<td><strong>ALWAYS</strong> wash your feet every day</td>
<td><strong>NEVER</strong> wear new shoes for long periods - always wear them in gradually</td>
</tr>
<tr>
<td><strong>ALWAYS</strong> dry carefully between your toes</td>
<td><strong>NEVER</strong> use <strong>HOT</strong> water - test the temperature with your elbow first</td>
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<tr>
<td><strong>ALWAYS</strong> apply moisturising cream (E45) to the heels if you have dry skin</td>
<td><strong>NEVER</strong> use a hot water bottle</td>
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<tr>
<td><strong>ALWAYS</strong> wear clean socks</td>
<td><strong>NEVER</strong> use corn plasters, razors or knives</td>
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<tr>
<td><strong>ALWAYS</strong> check your shoes for pebbles etc. before putting them on</td>
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</tr>
<tr>
<td><strong>ALWAYS</strong> have your feet measured before buying new shoes</td>
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Type 2 Diabetes
Patient Education

People learn partly by what they are told or read, but mainly from their own experiences of living with diabetes. For example, hypoglycaemia can be explained but is often meaningless until the individual has experienced the symptoms.

Education needs to be specific to individual needs. This is best achieved by structured, one to one or group education. It is important that the information given is accurate, clear, concise and not conflicting or ambiguous. It is essential that educators are appropriately trained.

When providing education to the patient with diabetes:

- **Allow sufficient time** and avoid information overload:
  - proceed at an appropriate pace for each patient
  - be aware of the patient's saturation point.
- Ensure that everyone is saying the same things.
- **Written material should enhance teaching, not replace it**
  - make sure you know what is in the booklets / leaflets you use.
  - 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.
- **Education may have legal implications**, for example driving and hypoglycaemia, DVLA, insurance and employment – so use a checklist to record what has been said and done.

New Patient Education
At first appointment, a comprehensive history and examination must be performed

- Print the checklist and use the annual review guidance to ensure all aspects of care are covered
- **Lipid profile**
- **Blood pressure**
- **HbA1c**
- Retinopathy screening
- **Dip urine and perform urinary albumin : creatinine ratio if appropriate**
- **U&E, creatinine**
- **Foot examination**
- Body mass index
- Full blood count
- Thyroid function tests
- Liver function tests

Book Second appointment
if SYMPTOMATIC in 2 weeks
if ASYMPTOMATIC in 4 weeks

- Use the checklist below and the annual review guidance to ensure all aspects of care covered.

Book Third appointment
if SYMPTOMATIC in 2 weeks
if ASYMPTOMATIC in 4 weeks

- Use the checklist below and the annual review guidance to ensure all aspects of care covered.

Book Next appointments
- Use the checklist below and the annual review guidance to ensure all aspects of care covered.
- Follow Practice protocols
### Education checklist for diet/tablet treated diabetes

See [second part](#) on next page also

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**What is diabetes?**

- **What is good control?**
  - short term
  - long term

**Diet**

- Basic dietary advice
- Detailed dietary advice

**Lifestyle**

- Advice on weight
- Exercise
- Special needs
- Alcohol
- Tobacco

**Testing**

- Urine testing
- Timing/frequency
- Blood testing
- Timing/frequency
- Recording results
- Interpreting results
- Safe disposal of lancets

**Action of tablets**

- Dose
- When to take

**Hyperglycaemia**

- Signs/symptoms
- Causes
- Prevention
- Illness
- Sick day rules

**Hypoglycaemia**

- Causes
- Recognition
- Avoidance
- Treatment
- Effect of exercise

**Driving**

- DVLA
- Insurance
- Hypos
## Education checklist for diet/tablet treated diabetes

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<td>Diabetes UK</td>
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**Activity and Lifestyle Advice**

**General advice**
Increase activity levels within patient capability
Initially may be by reducing sedentary behaviour at home and increasing walking

**Benefits**
- Weight loss and improved insulin sensitivity
- Lower blood glucose
- Increase HDL and lower LDL cholesterol
- Lower blood pressure

**Aims**
Current activity recommendations are:
- 30 minutes of moderate activity on at least 5 days of the week  OR
- 10,000 steps a day

**Schemes**
There are a number of activity schemes throughout Nottinghamshire:
- Ashfield Go for Fit
- Get Moving Nottingham - LEAP
- Exercise Referral Schemes including:
  Positive Moves, Exercise for Health in Rushcliffe, Broxtowe Borough Exercise for Health
- Walking the Way to Health Schemes including:
  Arnold Golden Amblers, Walk off Weight, Broxtowe Borough Walk and Talk, Hucknall Taking Steps, Best Foot Forward, Trent Tickers

Further information on these schemes and other ways of increasing activity:
[www.nottinghamhearthealth.nhs.uk](http://www.nottinghamhearthealth.nhs.uk)
Basic Dietary Guidance / Advice

Literature and training is available for non-dietetic staff

Aims:
- Minimise symptoms of hyperglycaemia and fluctuations in blood glucose
- Minimise the risk of hypoglycaemia
- Minimise the long term macro- and microvascular complication of diabetes
- Promote weight loss in people who are overweight
- Reduce the risk of coronary artery disease

Advise on diet following assessment of:
- Readiness to make changes to diet and lifestyle
- Lifestyle
- Social circumstances
- Current intake

The recommended diet follows the UK healthy eating guidelines.

Dietary changes should be negotiated with each patient using the following general principles:
- Modify existing eating habits rather than attempt major changes to the patient’s pattern of eating
- When weight loss is advised reduce total calorie intake by 500 kcal to
  - promote a weight loss of 1 to 2 kg/month
  - aim for an agreed target weight
- At least half of the energy intake should comprise carbohydrate with the majority in the form of complex carbohydrate, with a high fibre content, especially soluble fibre
- Increase:
  - fruit and vegetables to at least 5 portions/day to achieve recommended antioxidant intakes
- Encourage:
  - low glycaemic index foods at each meal as part of a balanced diet
  - 1-2 portions of oily fish a week.
- Reduce:
  - intake of refined carbohydrate, especially sugary foods and drinks
  - total fat and replace saturated fat with monounsaturated and polyunsaturated fats
  - dietary salt to less than 6g/day. Avoid salt substitutes
  - alcohol. Maximum of 14 units for women and 21 units for men per week, including 1 to 2 alcohol free days each week
- Special diabetic products are high in calories, cause gastrointestinal upset and are not recommended.
Community Dietetic Services for Patients with Diabetes

- **Diabetes Education Groups**
  - Held at various health centres around Nottingham Health District
  - Patients will be offered a place if one is held in their area
  - Contact the Community Nutrition and Dietetic Service for further information

- **Clinics** in health centres and clinics throughout Nottingham Health District.
- Dietary management of some patients can be dealt with in general practice.
- **Referral may be appropriate** when more specific advice is needed – if unsure seek advice from a dietitian prior to written referral.
- One 30-minute appointment is offered:
  - detailed patient assessment
  - care plan or dietary targets agreed
  - referrer and GP informed
  - follow up in primary care recommended
- Support available includes:
  - telephone advice
  - dietetic information for non-dietetic staff
  - training for non-dietetic staff

**Whom to refer to Community Dietitian**

First-line advice when newly diagnosed with

- Type 2 Diabetes
- Impaired fasting glycaemia
- Impaired glucose tolerance

Follow up support for those initially advised by a dietitian

Yes

In the first instance, advice from

- General Practitioner
- Practice Nurse
- Community Nurse

Following appropriate training and using appropriate literature

No

Specialist advice from a Registered Dietitian:

- CHD risk factors and diabetes
- Poor control - HbA1c consistently >8%
- Poor understanding of dietary management following first line advice

Referral letter to include:

- Body mass index (BMI)
- Relevant blood results
- Current medication
- Whether interpreter required and language spoken
Dietetic Information for Non-dietetic Staff

Patient Literature – available from Community Dietetic Service
The following information should be given to all patients with diabetes:

- **Healthy Eating for Diabetes – Advice for Lowering Blood Sugar Levels.** This is an A4 sheet giving basic guidance on dietary management of diabetes.
- **AND/OR**
- **Eating, Drinking and Diabetes – a Guide for You.** This is a booklet giving comprehensive dietary advice on the dietary management of diabetes. 2nd edition 2003.

Further dietary information is available from the:
- [www.bda.uk.com](http://www.bda.uk.com)
- [www.bdaweightwise.com](http://www.bdaweightwise.com)
- [www.diabetes.org.uk](http://www.diabetes.org.uk)

Staff Training Courses

Suitable for anyone whose role includes discussion on food and nutritional related issues:
- Practice Nurses, School Nurses, District Nurses, Health Visitors
- Community Health Doctors, General Practitioners

**The Balance of Good Health** - Half day, bi-monthly

Learning Outcomes
- Current evidence based healthy eating messages
- The use of the National Food Guide “The Balance of Good Health” as a teaching tool for different client groups

**Dietary Management of Diabetes and Hyperlipidaemia** - Half day, twice yearly

Learning Outcomes
- Current evidence based dietary advice for diabetes and hyperlipidaemia
- Reinforce the use of the Balance of Good Health model as a tool for education
- Eliminate misconceptions concerning dietary advice for these conditions

**An Holistic Approach to Obesity Management** - Half day, twice yearly

Learning Outcomes
- Current evidence based dietary advice for the management of obesity
- Reinforce the use of the Balance of Good Health model as a tool for education
- Eliminate misconceptions concerning dietary advice for these conditions

Contact: Community Dietetic Service

Cost: £30 for each course, to those not exempt from charges

Courses advertised in:

“Learning & Development Opportunities Brochure”
Nottingham PCTs Learning & Development Shared Services
Standard Court
1 Park Row
Nottingham
NG1 6GN
Tel 9123344
Smoking Cessation

New Leaf is a free NHS service for any one that wants to stop smoking. It offers support from trained advisors at over 40 clinics across the Greater Nottingham District.

Further information on Nottingham Heart Health website: www.nottinghamhearthealth.nhs.uk or by contacting the service:

New Leaf
The Voluntary Action Centre
7 Mansfield Road
Nottingham
NG1 3FB
0115 934 9526

Asian Diabetes Liaison Worker

Preventative programmes of care:
- Developing / facilitating exercise in the community
  - safe levels of exercise
  - cultural / religious appropriateness
- Health Promotion
  - raise awareness of diabetes - incidence, recognition of symptoms and referral routes.
- Development of community initiatives to:
  - Promote healthy eating messages and increase intake of fresh fruit and vegetables.
  - Improve links between voluntary and statutory organisations.

Diabetes Education Role
- Group sessions amongst the Asian population
  - at GP practices and other venues
  - allow patients to share experiences and practical ways of managing diabetes
- Participation in local events to raise awareness of diabetes.
Oral Hypoglycaemic Agents (Tablets)

See Notes on next page

Education, lifestyle, diet

Glycaemic target achieved?

No

Yes

Review every 2 - 6 months

Normal weight (BMI 20-25 kgm$^{-2}$)

Gliclazide 40-80mg od

Overweight OR Obese (BMI 25-30 kgm$^{-2}$) (BMI > 30 kgm$^{-2}$)

Metformin 500mg od

Adjust dose every 1-3 months to optimise glycaemic control or until maximal tolerated dose reached

Glycaemic target achieved?

No

Yes

Review every 2 - 6 months

Add metformin 500 mg od

Add gliclazide 40-80mg od

glitazones – see notes

Adjust dose every 1-3 months to optimise glycaemic control or until maximal tolerated dose reached

Glycaemic target achieved?

No

Yes

Review every 2 - 6 months

Trial of insulin?
Notes for Oral Hypoglycaemic Agents (Tablets)

Only prescribe **one agent from each class** – there is no point prescribing two sulphonylureas together. Substituting agents is unlikely to significantly improve glucose control – swapping metformin plus sulphonylurea for metformin plus glitazone is unlikely to significantly improve glucose control. The addition of a **third agent** to a combination of two oral hypoglycaemic drugs taken at maximally tolerated doses is unlikely to significantly improve glucose control. If a glitazone is used as a third agent, do not stop either of the first two agent as this may precipitate significant deterioration in control.

**Glycaemic Target**

A target should be discussed with each patient.

- Tight control (HbA1c 6.5 - 7.5% / fasting glucose < 6 mmol/l) is an appropriate aim for most patients providing they are not having frequent hypoglycaemia.
- In the very elderly or frail, symptom control alone may be the priority.

**Metformin** – see BNF for prescribing guidance

- Take tablets with or immediately after a meal to increase insulin sensitivity
- Consider in all patients with diabetes with residual functioning islet cells
- **Increase dose every 2-4 weeks** to achieve glycaemic target up to 1 gram three times daily
- Diarrhoea occurs in up to 20%, is dose dependent and may resolve with dose reduction
- Alternatively, try modified release preparation
- **AVOID** in patients with
  - creatinine >150 µmol/l / eGFR<60ml/min, severe heart failure / severe liver disease (lactic acidosis risk)
- Stop metformin 48 hours before
  - radiological procedure needing intravenous contrast
  - surgery requiring general anaesthesia
  - re-start if renal function stable after the intervention completed
- May reduce cardiovascular events in obese patients

**Sulphonylureas – gliclazide, glimepiride, glibenclamide...** – see BNF for prescribing guidance

- Take tablets before meals to stimulate insulin release from the pancreas
- Increase dose every 4-6 weeks to achieve glycaemic target or maximal dose is reached
- Average weight gain is 2-4 kg and in some patients this may exceed 10kg. However, there is little evidence to support routine use of a glitazone as a second agent in overweight patients
- Educate patients in recognising and treating hypoglycaemia
- **AVOID** long acting sulphonylureas - Glibenclamide and Chlorpropamide
  - in patients over 70 years old
  - in those with poor renal function
- Glimepiride has a lower risk of hypoglycaemia / weight gain than glibenclamide.

**Thiazolidinediones (Glitazones)** – see BNF for NICE and prescribing guidance

- Reduce insulin resistance and increase glucose uptake into muscle
- Licensed as monotherapy and as ‘add on’ therapy
  - patient already taking one oral hypoglycaemic **and**
  - glycaemic targets not achieved **and**
  - metformin / sulphonylurea not tolerated as 2nd agent
- Little evidence to support routine use as second agent in overweight patients or in triple therapy – though probably effective in some patients.
  - if glitazone used as third agent, do not stop either of the first two agents immediately as this may precipitate abrupt deterioration in control
  - if unsure, discuss with Diabetes Consultant / Registrar at UHN / CHN
- Associated with modest weight gain (few kg)
- Maximal therapeutic effect in 3-6 months
- Not licensed for combination with insulin
  - if unsure, discuss with Diabetes Consultant / Registrar at UHN / CHN
- **AVOID** in patients with heart failure (fluid retention recognised side effect), acute liver disease or ALT 2.5 x upper limit of normal
**Insulin Therapy in Type 2 Diabetes**

There is no ‘best’ insulin regimen for patients with type 2 diabetes. Consider a trial of insulin in all patients who remain symptomatic or do not achieve their glycaemic target despite maximal doses of two oral agents. Local audit data suggest that patients with HBA1c >8.7% despite optimal diet and tablet therapy are most likely to benefit from a trial of insulin therapy.

**Tablets and insulin**
Combining insulin with metformin may help to limit weight gain - particularly useful in overweight patients. Commonly used regimens include:
- twice daily pre-mixed insulin with twice or three times daily metformin
- bedtime intermediate / long-acting acting insulin and twice or three times daily metformin (and other oral hypoglycaemics)
Combination with thiazolidinediones (glitazones) is not currently licensed but probably safe.

**Insulin alone**
- Where continuing metformin therapy is unacceptable.
- Twice daily pre-mixed insulin is generally used first but four times daily insulin may be necessary

**How to start insulin treatment**

UHN and CHN offer audited ‘insulin start’ services – refer by letter / fax / electronic
- generally using twice daily mixed insulin with metformin if appropriate
- patient reviewed by Consultant
- insulin initiation led by Specialist Nurse and Specialist Dietitian
- appropriate use of home blood glucose monitoring
- autonomy in insulin adjustment
- what to do during illness
- UHN offers small group and ‘one-to-one’ teaching to start insulin
- CHN offers ‘one-to-one’ teaching to start insulin

Insulin starts in Primary Care depend on local expertise.

**Clinical Waste / Sharps**
Sharps boxes for syringes, needles and fingerprick testing equipment should be provided on FP10. Collection of full sharps boxes from people with diabetes is from the Health Centres below. Health centres do not issue new sharps boxes. They need to be provided on FP10.

<table>
<thead>
<tr>
<th>GEDLING</th>
<th>NOTTINGHAM CITY</th>
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All GP surgeries in EREWASH will accept full sharps boxes from patients who are registered at that surgery.
Type 1 Diabetes

Structured Diabetes Education for Type 1 Diabetes

- Intensive education programmes to promote empowerment for people with Type 1 diabetes
- Supported by NICE guidance
- Suitable for people with type 1 diabetes who are prepared to manage diabetes intensively
  - blood testing four or more times daily
  - insulin four or more times daily
  - carbohydrate counting
- Referral is via the respective diabetes service

University Hospital
DAFNE – Dose Adjustment For Normal Eating
Part of the national DAFNE collaborative
Associated with long term reduction in HbA1c, weight stability and improved quality of life
- One week, non-residential course for up to 8 participants at Queens Medical Centre
- People attend introduction evening prior to enrolment on DAFNE course
- Diabetes specialist nurse and diabetes specialist dietitian jointly facilitate each course with input from a diabetologist
- Long term follow up in a DAFNE clinic is offered

Nottingham City Hospital
EDWARD - Education for Diabetes Without A Restricted Diet
Based on the existing BERTIE Model of Patient Education
- A series of workshops held one day a week for four consecutive weeks at Dundee House
- People attending EDWARD have a pre-assessment appointment with a Diabetes Specialist Nurse and then join an EDWARD programme with up to 8 participants.
- Diabetes specialist nurse and diabetes specialist dietitian jointly facilitate each workshop with input from a diabetologist
- A further 3 month post Edward follow up is offered
- Long term follow up is offered

Insulin Pump Service for Adults

- Supported by NICE guidance
- Suitable for people with type 1 diabetes
- Referral to pump team via secondary care diabetes services at UHN and CHN

Suitable for people with type 1 diabetes who:
- Have attended an intensive Type 1 diabetes education programme (with carbohydrate counting)
- Use a basal bolus (multiple injection) insulin regimen.
- Find it impossible to maintain HbA1C <7.5% without disabling hypoglycaemia despite a high level of self care of diabetes and adequate trials of analogue (short and/or long acting) insulins.
- Have no medical, communication, psychological or personal problem which would prevent insulin pump use

Requires: assessment for individual NHS funding arrangements – “NICE approval”
use of pager-sized insulin infusion pump 24 hours a day
replacement of infusion set and subcutaneous cannula every ~3 days
ongoing support from trained insulin pump team
Paediatric Services

General Information
- UHN and NCH services are closely integrated, sharing Diabetes Specialist Nurses (DSN) and a common approach to management. Children and adolescents are managed on insulin regimens comprising 2, 3 or 4 injections daily and using pen injection devices.
- There are a small number of patients on insulin pumps.
- The DSNs facilitate close liaison with families, General Practitioners, nurseries and schools and work to promote education and self-care.
- Transition arrangements are made to the geographically appropriate adult team.

Emergencies
Families are encouraged to seek prompt medical or specialist nurse advice in order to anticipate and prevent problems of hypoglycaemia, illness induced ketoacidosis and persistent poor control.

Contact numbers

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<tr>
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<th>City Hospital</th>
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<tr>
<td>Dr T Randell and Dr L Denvir secretary</td>
<td>Dr J Drew secretary</td>
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<tr>
<td>Tel 0115 9249924 Ext 43343</td>
<td>Tel 0115 9691169 Ext 49792</td>
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<tr>
<td>Fax 0115 9709763</td>
<td>Fax 0115 9620564</td>
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Paediatric DSN
- Vreni Verhoeven 0115 9346411 Full time (MAILBOX)
- Karen Cuttell 0115 9346412 Full time (MAILBOX)
- Glyn Feerick 0115 9345951 Full time (MAILBOX)

Emergency Pager FOR URGENT MEDICAL ADVICE ONLY
- 8.00am – 6.00pm Tel 0765 913 2445 – Leave a short message including name and number. (If no answer after 15 mins please try again). Monday – Friday only.
- 6.00pm – 8.00am Contact on-call Paediatric Medical Registrar at relevant hospital (and at WEEKENDS AND BANK HOLIDAYS)

Outpatient Clinics
Dr T Randell and Dr L Denvir
- UHN Friday am (1st and 3rd + occasional 5th) age banded 6-18 yr
- UHN Thursday am (1st) pre-school
- Newark Monday pm (2nd) Newark & Grantham area
- UHN Friday pm Nurse led/pump patients

Dr J Drew
- NCH Wednesday pm (1st, 3rd + occasional 5th) age banded 8-16 yr
- NCH(Dundee Hs) Wednesday pm (2nd) Transition clinic 16-18yr
- NCH Monday am (2nd of month) age banded 0-7 yrs
- NCH Thursday (4th) Nurse led/Drop in

Patients have 3 or 4 clinic reviews per year. An annual review incorporates retinal examination, blood pressure measurement and screening for microalbuminuria, coexistent autoimmune thyroid disease or coeliac disease. The erratic nature of diabetes in the young is such that there is considerable additional home visiting and telephone contact.

Newly diagnosed (or suspected) patients
Urgent (same day) telephone referral to Paediatric Medical on-call team at UHN or CHN
Pregnancy, Fertility and Contraception

Gestational Diabetes
See Notes and post-natal advice on next page.

- Obesity - BMI >40 kg/m2
- Prior macrosomia 97th centile for gestational age or >4.5 kg at term
- Prior unexplained intra-uterine death
- Prior gestational diabetes

Yes → High Risk Pregnancy

No → Book with Consultant Obstetrician

Glucose tolerance test at 14 weeks gestation
Ethnicity

- Obesity - BMI >35 kg/m2
- Large for dates baby FAC >97th centile
- Polyhydramnios
- 1st degree relative with Type 2 or gestational diabetes
- Polycystic ovarian syndrome

Yes → Increased Risk of Gestational Diabetes

No → Usual antenatal care

Glucose tolerance test at 28 weeks gestation

Test for glycosuria at each antenatal visit

Absent → Usual antenatal care

Present → Check random glucose and note last time of meal

> 9mmol/l → Check urine ketones

Present → Possible type 1 diabetes
Refer same day to Diabetes Service

Absent → Refer next diabetes antenatal clinic

Over 6 mmol/l fasted OR 7 - 9 mmol/l within 2 hr of meal → OGTT via antenatal clinic

Less than 6 mmol/l fasted OR Less than 7 mmol/l with 2 hr of meal → Diabetes unlikely
Notes for Gestational Diabetes

Glucose Tolerance Testing in Pregnancy
- Risk of GDM increases with duration of pregnancy: normal OGTT in early pregnancy does not exclude possibility of GDM later on in pregnancy.
- There is no universal agreement about the interpretation of the OGTT in pregnancy. Patients with fasting glucose ≥6 or 2 hrs ≥7.8 mmol/l will generally require specialist supervision but this will depend on the individual patient.

Diabetes Ante-Natal Clinics
- Pregnancy Assessment Centre (PAC) at UHN ext 44873 or via Diabetes Service
- Ante-natal clinic at CHN ext 45244 or via Diabetes Service

Post- Natal Glucose Testing
- 75g OGTT at 6-8 weeks usually arranged by hospital
- Women with GDM have a 50% risk of developing Type 2 diabetes over the following 15 years
- Recommend:
  - lifestyle advice
  - annual fasting blood glucose
  - counselling and assessment prior to future planned pregnancy
Diabetes and Contraception

As with all patients seeking contraception, discussion should be in the context of what will best suit the need of the patient. Condom use is encouraged to help prevent sexually transmitted infection.

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
- Injectable contraception 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/US
- Safe in women with diabetes. Avoid in women with multiple sexual partners

Barrier methods
- Safe but less reliable than hormonal contraceptives. Encourage use to help prevent sexually transmitted infection.

Hormone Replacement Therapy
- Evidence from randomised trials suggests that HRT increases the risk of cardiovascular disease during the first few years of use.
- Not recommended for routine use.
- Use should be restricted to women:
  - with severe, intractable symptoms of oestrogen insufficiency
  - in the lowest dose and for the shortest duration possible
  - following clear counselling about cardiovascular risk

Summary

Under 35 years choose from
- Combined oral contraceptives
- IUCD/IUS POP
- Depo Provera Implanon
- Barrier

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

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.
Diabetes and Erectile Dysfunction

Inability to obtain and sustain an erection suitable for intercourse

History and examination

**Psychogenic cause suggested by:**
- Sudden onset of erectile dysfunction
- Early collapse of erection
- Good quality spontaneous / self stimulation / waking erections
- Premature ejaculation or inability to ejaculate
- Relationship / psychological problems or major life events

**Organic cause suggested by:**
- Normal libido
- Gradual onset of erectile dysfunction
- Partial erection achieved
- Normal ejaculation

**Risk factors:**
- Smoking
- Alcohol
- Current medication
- Operation / radiotherapy or trauma to pelvis / scrotum

HbA1c
Creatinine
LH / FSH / testosterone
TSH
Prolactin

Endocrine opinion if testosterone / prolactin abnormal

If physical treatment appropriate / desired

PDE5 inhibitor
Sublingual apomorphine
Vacuum device
Urethral alprostadil
Intracavernosal alprostadil

In surgery or via referral to diabetes erectile dysfunction service at UHN / CHN

Poor response / not tolerated?
References and Other Guidance Used


National Institute for Health and Clinical Excellence guidance: www.nice.org.uk

Technology appraisals:
- smoking cessation 39
- long acting insulin analogues 53
- insulin pump therapy 57
- patient education models 60
- glitazones 63

Guidelines
- Type 1 diabetes CG15
- Type 2 diabetes – blood glucose Sep 2002
- Type 2 diabetes – footcare CG10
- Type 2 diabetes – management of blood pressure and blood lipids Oct 2002
- Type 2 diabetes – renal disease Feb 2002
- Type 2 diabetes – retinopathy Feb 2002

The Renal Association: www.renal.org
The National Kidney Foundation www.kidney.org
The British Hypertension Society: www.bhsoc.org
Diabetes UK: www.diabetes.org.uk
The American Diabetes Association: www.diabetes.org

Diabetes and Foot Care: Time to Act. International Diabetes Federation, 2003
The Diabetic Foot: Amputations are preventable. International Diabetes Federation 2005