Hertfordshire
Diabetes Clinical Guidelines
July 2010

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CONTENTS

1  INTRODUCTION
Integrated diabetes service model + link to Care Pathway ............................................................. 6
Philosophy of Care and Key Components ............................................................................................ 7
The Diabetes Pathway Framework ........................................................................................................ 8

2  SUMMARY GUIDES
Screening for Diabetes Mellitus ............................................................................................................. 9
Impaired Glucose Tolerance and Impaired Fasting Glucose ................................................................. 9
Diagnosing Diabetes .................................................................................................................................. 10
Structuring Care post diagnosis and ongoing management ................................................................. 11
Annual Review ........................................................................................................................................ 12
At a glance management of the patient with Type II Diabetes ............................................................. 13
Does the newly diagnosed patient need insulin? .................................................................................. 14

3  DIABETES VIGNETTES
Vignettes to Aid Clinical Decision Making .......................................................................................... 15-16

4. MANAGEMENT OF TYPE 1
Aims of Care ............................................................................................................................................ 17
Injection sites and Insulin Injections ..................................................................................................... 18
Sick Day Rules Type I .............................................................................................................................. 19
Ketone Testing and when to give extra insulin (Basal bolus regime) ..................................................... 20
Ketone Testing and when to give extra insulin (Twice daily by phasic) ............................................... 21
Diabetic Keto-Acidosis (DKA) ............................................................................................................... 22
Insulin Pumps (CSII) .............................................................................................................................. 23

5. MANAGEMENT OF TYPE 2
Treatment algorithm ................................................................................................................................. 24
Oral Hypoglycaemia Agents (OHAs) ................................................................................................... 25-26
Non Injectable Therapies New Agents .................................................................................................. 27
Does the patient need insulin .................................................................................................................. 28
Insulin initiation flowchart ..................................................................................................................... 29
Sick Day Rules Type II ........................................................................................................................... 30-31
Hyper-Osmolar State - HOS (formerly HONK) ..................................................................................... 32
Steroid induced Type 2 diabetes - diagnosis ......................................................................................... 33
Treatment algorithm of steroid induced diabetes ................................................................................ 33
Management of patients on multiple doses of oral high dose steroids ............................................... 34

6. HOME BLOOD GLUCOSE MONITORING
Home Blood Glucose Monitoring (HBGM) ............................................................................................ 35-37

7  HYPOGLYCAEMIA
Hypoglycaemia and treatment ................................................................................................................. 38
Hypo unawareness – principles of management ..................................................................................... 39

8. DIETETICS
The aims of dietary treatment ................................................................................................................ 40
## APPENDICES

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Page No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SPOC Referral Form</td>
<td>83-87</td>
</tr>
<tr>
<td>2.</td>
<td>Non GP SPOC Referral and Triage Form</td>
<td>88-89</td>
</tr>
<tr>
<td>3.</td>
<td>Healthy Diet Information Sheet for patients</td>
<td>90-93</td>
</tr>
<tr>
<td>4.</td>
<td>DVLA Advice</td>
<td>94-97</td>
</tr>
<tr>
<td>5.</td>
<td>East Retinal Screening Referral</td>
<td>98</td>
</tr>
<tr>
<td>6.</td>
<td>West Retinal Screening Referral</td>
<td>99</td>
</tr>
<tr>
<td>7.</td>
<td>East Podiatry Referral Form</td>
<td>100-102</td>
</tr>
<tr>
<td>8.</td>
<td>West Podiatry Referral Form</td>
<td>103-104</td>
</tr>
<tr>
<td>9.</td>
<td>HMMC Exenatide (Byetta) Recommendations</td>
<td>105-106</td>
</tr>
<tr>
<td>10.</td>
<td>Guidelines for Insulin Pump Therapy</td>
<td>107-111</td>
</tr>
<tr>
<td>11.</td>
<td>Lantus (glargine) insulin and cancer – A Summary</td>
<td>112</td>
</tr>
<tr>
<td>12.</td>
<td>HBGM Leaflet</td>
<td>113-114</td>
</tr>
<tr>
<td>13.</td>
<td>Patient Information Sheet (New Service)</td>
<td>115-116</td>
</tr>
</tbody>
</table>

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These Guidelines were written by consensus by members of the Clinical Guidelines Group, members of whom are listed above. These Guidelines are evidence based (NICE etc) and intended to be a GUIDE to high quality care, but they are not exhaustive or a wholesale replacement for judgement of individual clinicians.

The Guidelines are intended to be pragmatic about how General Practice ‘really’ works and some sections make suggestions for structuring care based upon this: these remain suggestions, not instructions and no re-direction is necessary for those who already successfully provide good care using other strategies.

The Guidelines will be updated June 2012 – any major interim change to Guidelines will be disseminated by email notification.
INTEGRATED DIABETES SERVICE: THE ADULT MODEL

PERSON WITH DIABETES

GP

Acute ill
- bleep Medical Reg
send to A & E

URGENT HOT FOOT
refer to Specialist MDT
Foot Team directly

CONFIRMED PREGNANCY
Refer to Joint Diabetes
Antenatal Clinic

SPOC
Using Referral Form
(See Appendix 1)
Fax No. 01707 621178

COMMUNITY
SPECIALIST
DIABETES
TEAM

?Admission
and
Inpatient/Acute
Diabetes Team

COMMUNITY
SPECIALIST
DIABETES
TEAM

SPECIALIST
DIETITIAN
DIABETES
SPECIALIST
NURSE
SPECIALIST
PODIATRY
COMMUNITY
CONSULTANT
CLINICS
RETINAL
SCREENING
GROUP
EDUCATION
PROGRAMME
DAPNE (Type 1)
DESMONÓ (Type 2)
CONSULTANT /
JOINT
SPECIALITY
CLINICS
DIABETES
SPECIALIST
NURSE
OBSTETRICS
PUMPS

ACUTE
DIABETES
TEAM

INAPPROPRIATE
REFERRAL
Send BACK TO
POINT OF ORIGIN

Other referrals into
SPOC may come from
- All community staff
- Ward staff
- Dietitians
- Podiatrists
- AHP
- Ambulance
- Acute
- Other
(Patients may self refer into Service)

?Acute ill
- bleep Medical Reg
send to A & E

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(Patients may self refer into Service)
PHILOSOPHY OF CARE AND KEY COMPONENTS

The Hertfordshire model of diabetes care supports:

- The current Diabetes Clinical Guidelines
- The Referral Framework (see page 6)
- PCT and PBC Commissioning intentions (available on internet/intranet)
- West Herts Diabetes Commissioning Pathway which concords with East and North Model

All of these documents have been drafted with multidisciplinary input from primary, community and secondary care and endorsed by the Diabetes Implementation Group. It is anticipated that this will be a seamless service where patients with diabetes will be at the forefront of planning. It is further envisaged that this new service will ensure equity of care for everyone with diabetes, including the housebound, those in care homes, the mentally ill, vulnerable groups including patients with learning disabilities and those patients in prison.

The Pathway, Framework and Guidelines are designed:

- To encourage care to be offered at the most appropriate site by the most appropriate method administered by the most appropriate clinical professional(s)
- For care to be as near to the patient’s home and/or usual environment as possible
- To encourage patient involvement in their own care by equipping them with education which will empower them to self-manage their condition with help from appropriately trained health care professionals.
- To foster professional development and training about diabetes, by:
  - Enlarging knowledge basis
  - Acquiring appropriate skills
  - Increasing confidence about advising and / or treating people with diabetes.

Some Key Components

A key component of the philosophy is the support and development of practice based diabetes clinics. This component consists of several elements:

- Fostering a multidisciplinary approach where possible, with elements of for example, Podiatrist, Dietitian, Specialist Nurse, Diabetologist, Psychologist, Pharmacist.
- Individualisation of targets for each specific patient, agreeing care plans and individual target setting
- Re-enforcing a commitment to an initial assessment by the GP and appropriate regular access thereafter for all patients who are diagnosed and will be in receipt of diabetic care in a primary care setting.
- 6 monthly reviews would generally be considered appropriate and sufficient professional care especially if the patient is involved and is taking some responsibility for their care. If a problem (e.g. sub-optimal blood pressure) is present, more frequent supervision is indicated.
- Ensuring the appropriate professional is involved at the appropriate stage of care (e.g. specialist nurse, consultant, Pharmacist etc) especially if the disease progresses or changes.
- Ensure referral to appropriate professional, if the disease progresses or changes, at the appropriate stage of care.

Another key component is to foster the involvement of patients with diabetes in their own care. To develop the confidence to take some of this responsibility, advice given needs to be consistent. This is a particular challenge when patients are seeing several clinical professionals for their condition.

Important elements of providing a quality service include:

- Consistent use of the ‘What Care to Expect’ leaflet
- Good communication facilitated by a patient hand held record
- Care planning with active patient participation
- Standardised information leaflets regardless of setting of care

Optimal patient care necessitates use of a patient held clinical record. This may take the form of a completed diabetes record care (which is available at the back of the Diabetes Handbook). Alternatively, a completed current QOF template may be printed out at Practice Annual Review and supplied to the patient. Patients should be advised to request all additional information is added after assessments by other Health Care Professionals (e.g. Podiatry, Specialist Services).

These and other measures will help to ensure that the patient and all potential care professionals have access to the same up to date patient information whoever is involved in any assessment and decisions about management of their condition.
THE DIABETES REFERRAL FRAMEWORK

COMMUNITY DIETITIAN:
- Pre diabetes
- Type 1
- Type 2
- Education/Support
- Carbohydrate counting/Information course
- DAFNE/IDAC
- DESMOND - New/Ongoing
- Professional education
- Pumps
- AN Care/ Gestational
- Disordered eating
- Weight management

COMMUNITY DIABETES SPECIALIST NURSE:
- Type 1 & Type 2
- Insulin Conversion
- Regimen Change
- Education
- Support
- New to insulin
- Hypo/Hyper
- Troubleshooting
- Stable Co-morbidities
- Steroids
- Palliative Care
- Secondary Care inaccessible
- DESMOND
- DAFNE
- Resource for Primary Care
- Care Homes
- Housebound

COMMUNITY PODIATRY:
- Neuropathy
- Foot Ulceration
- Foot wounds
- DESMOND
- Patient Education

COMMUNITY CONSULTANT CLINIC:
- Complex Lipids
- Complex BP
- BMI>35 max oral agents
- DNA Hospital
- Active Community Foot Disease
- Hypo Unawareness
- Stable complex
- New Agents GLP-1 analogues e.g. exenatide
- Type 1 where appropriate

HOSPITAL CONSULTANT SPECIALIST CLINIC:
- Joint Eye
- Joint Foot
- Young Adult
- Joint Renal
- Genetic DM
- Joint Antenatal
- Insulin Pumps
- CBGM
- Inpatients
- IDAC

HOSPITAL DIABETES SPECIALIST NURSES:
- All inpatients
- Joint Antenatal
- Insulin Pumps
- CBGM
- Young Adult
- Joint Foot
- IDAC
SCREENING FOR DIABETES MELLITUS

The following are at high risk for DM, and merit an annual venous FBG at least opportunistically or as ideally as part of structured annual chronic disease management/review.

- Family history of DM
- Obesity, especially with central distribution
- South Asians and Afro-Caribbean
- Patients with CVD, peripheral vascular disease, hypertension or dyslipidaemia
- Patients with previous IFG/IGT
- Patients with erectile dysfunction
- Patients treated with steroids
- Patients treated with thiazides, beta blockers, especially in combination
- Patients treated with newer antipsychotic drugs
- History of gestational DM, or baby >4kg
- Pancreatic disease
- Thyroid/ adrenal disease
- Leg/foot ulceration
- Patients with acute deterioration of visual acuity
- Obese PCOS

IMPAIRED GLUCOSE TOLERANCE AND IMPAIRED FASTING GLUCOSE

Both IFG and IGT are risk markers for the development of Diabetes Mellitus and IGT is strongly associated with high CVD risk

**Good clinical practice**

- Devise a practice register of patients with IFG and/or IGT.
- Encourage weight loss of 5 – 10% of body weight if appropriate – BMI <25 may delay or prevent development of DM; consider dietitian referral and encourage moderate exercise of 30 minutes per day (confers benefit even in the absence of weight loss).
- Encourage moderate exercise of 30 minutes/day confers benefit evening the absence of weight loss.
- Offer a baseline CVD risk assessment; treat hypertension (avoiding combination of Beta blocker and diuretic if possible) and dyslipidaemia to DM target levels; consider primary prevention with aspirin if high estimated CVD risk (see page 36); pro-actively address obesity, smoking, diet and exercise, examine for peripheral vascular disease.
- Ideally repeat the OGTT annually, but minimum fasting glucose annually and OGTT every 2 or 3 years
- Annual review via the register – may overlap with current emphasis on high CVD risk patients plus patients on certain antipsychotics and previous gestational diabetes.
**DIAGNOSING DIABETES**

### WHO Diagnostic Criteria Diabetes Mellitus

<table>
<thead>
<tr>
<th>Plasma Glucose</th>
<th>Diabetes Confirmed</th>
<th>Impaired Glucose Tolerance</th>
<th>Impaired Fasting Glycaemia</th>
</tr>
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<tbody>
<tr>
<td>FBG</td>
<td>≥ 7.0</td>
<td>&lt; 7.0</td>
<td>≥ 6.1</td>
</tr>
<tr>
<td>OGGT 2 hour value</td>
<td>≥ 11.1</td>
<td>&gt; 7.8</td>
<td>&lt; 7.1</td>
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</tbody>
</table>

**NB:** In the absence of osmotic symptoms, 2 consecutive venous samples are required to diagnose Diabetes Mellitus.

**NOTE:** Diagnosis should never be made on the result of urine or fingerprick tests.

*HbA1c can be considered as an alternative to a GTT if is being considered for diagnosis of diabetes. An HbA1c of >6.5% (IFCC >48mmol.ml) is compatible with the diagnosis of diabetes. HbA1c is not a reliable diagnosis test in conditions of altered cell turnover (anaemia, renal failure, haemoglobinopathy).*

**Impaired Fasting Glucose/Impaired Glucose Tolerance:** Monitor annually as patients are already at increased cardiovascular risk and progression to diabetes mellitus may occur. Review and monitor risk factors. Symptom enquiry and examination for ischaemic heart disease and peripheral vascular disease.
STRUCTURING CARE POST DIAGNOSIS AND ONGOING MANAGEMENT

TIME SPENT EARLY IN DISEASE MANAGEMENT ADDRESSING PATIENT CONCERNS AND EXPECTATIONS IS ESSENTIAL FOR ONGOING PATIENT ENGAGEMENT AND COMPLIANCE WITH TREATMENT

Add the patient to the practice register and recall system.

**GP diagnosing patient should:**
Take careful history of illness including osmotic symptoms, duration of symptoms and family history etc. Investigate possible underlying causes of diabetes.
- Read Code as Type 1 or Type 2 diabetes
- Refer to retinal screening programme
- Refer for specialist dietetic input Type 1 for CHO counting plus DAFNE/IDAC via SPOC
- Refer Type 2 patients for DESMOND / other structured education via SPOC
- Give a copy of Patient Diabetes Handbook.
- Have initial discussion:
  - Simple explanation of diabetes including nature and significance of diabetes – taking account of any fears and anxieties.
  - Lifestyle in relation to diabetes – including advice to stop smoking, diet and exercise.
  - Discuss potential for complications including role of screening in early detection of complications and management
  - Inform about Diabetes UK / Support Groups
  - Explanation of the practice organisation, the roles of each primary care team member and how to get advice when needed.
  - Explain briefly how specialist diabetes nurse and consultant advice available in community and hospital clinics
  - Inform about vaccinations

**If unwell refer to specialist team via community or hospital DSN/medical reg on call, ie:-**
- Significant ketones
- Type 1 newly diagnosed

**Paediatrician on call:**
- Children (same day)

**Joint Antenatal Diabetes Clinic:**
- Pregnancy (urgent)
- Gestational Diabetes

**Consider referral via SPOC to relevant Speciality/Specialist Community Clinic:**
- Retinopathy
- Nephropathy
- Neuropathy
- CVD
- Impotence
- Infected / Ischaemic feet
- Persistent symptoms

**Offer patient 20 minute education slot with Practice Nurse within 2 -3 weeks of diagnosis** for more evidence-based dietary education, explanation of condition and what care to expect and assessment for need of podiatry referral. This is the start of personal care planning for diabetes. Advice can also be given about Diabetes UK.

When the patient is first started on any medication for diabetes:
- Advise to inform the DVLA and their car and life insurance companies.
- Give out the sick day rules leaflet and ensure they understand the basic rules of diabetes self-management during inter-current illness.
- Discuss role of home blood glucose monitoring if on sulphonylureas
- Advise patient re exemption from prescription costs

If patient is started on any diabetes medication which can cause hypoglycaemia:
- ensure they understand how it acts and how to recognise hypos, how to avoid them, and DVLA requirements re blood glucose testing.
ANNUAL REVIEW

All patients must have at least an annual diabetes check in general practice and should preferably have HbA1c six monthly. Annual assessment is a QOF requirement – Inform patients that they must attend the Practice for these checks, even if attending other specialist Diabetes Clinics (do not expect the specialist community service or the Acute Clinic to undertake the annual review!) Primary Care should aim to commence a care planning approach and encourage self management from the beginning if possible. Patients should receive a recent copy of their QOF Diabetes Template showing results and take this with them if attending for specialist DSN/Consultant input.

If a review takes place in a hospital or community setting - ALL information should be forwarded to the GP for their records.

Components of the annual review

- Patient concerns
- Significant events:
  - hypo's / hypo unawareness
  - new diagnosis e.g. MI, CVA, PVD (update register)
- Monitoring – blood glucose diaries / other results
- Review current medications and note side effects
- Symptoms:
  - ischaemic (chest pain, intermittent claudication, TIA)
  - neuropathic (change in sensation, pain, numbness)
  - vision (change in V/A, optician report)
  - erectile dysfunction
- Review diet – consider re-referral to dietitian / DAFNE / IDAC / Desmond / other education
- Lifestyle – smoking, alcohol, exercise – offer advice
- Check patient has had retinal screening and flu vaccination in the last year
- Assess cognitive (and dexterity skills if on insulin) function and concordance with treatment
- Assess if meeting local criteria to: continuing of GIP-1 and DPP4 inhibitors
- Assess if planning pregnancy

Examination

- Weight, height and BMI
- Blood pressure
- Feet – callosities/deformity/skin changes
- Peripheral pulses
- Neurology – ankle jerks/sensation with monofilament/vibration sense
- Injection sites (lipohypertrophy)
- Depression

Investigations

- Urinalysis for proteinuria (if negative assess for microalbumin, see monitoring section, if positive send MSU & refer to monitoring & nephropathy section)
- HBA1c
- Fasting lipids
- Urea, creatinine and electrolytes
- LFT (if on statins or glitazones) and TFT if clinically indicated

Management plan

- Record findings
- Adjust medication
- Provide appropriate information to patient
- Arrange for interval reviews (e.g. for BP or blood tests)
- Make necessary referrals e.g. specialist, dietitian, foot health / DSN / Education / Preconception advice
- Assess appropriateness and frequency of blood glucose monitoring
- Discuss & agree goals for the next year and agree care plan
- ? Flu vaccination
AT A GLANCE MANAGEMENT OF THE PATIENT WITH TYPE II DIABETES

DIETARY ADVICE
- Main goal is to achieve/maintain a healthy BMI to reduce insulin resistance, thereby achieving better glycaemic and blood pressure control.
- Diet must also focus on prevention of vascular complications – anti-oxidants (fruit and vegetables), omega-3 fatty acids (oily fish) and fats as monounsaturates (olive oil).
- Modify eating habits (realistic for patient), eat regularly with complex carbohydrates as the basis for meals, eat low glycaemic index foods, e.g. wholemeal pasta, pulses, granary bread and oats.

INSULIN
- Insulin initiation requires known retinal status – referral to joint diabetes ophthalmology service if moderate retinopathy or worse.
- Insulin initiation in other cases through primary care where GP/PN competent, or via community diabetes specialist nurse.
- Early introduction of insulin therapy at step 2 of treatment pathway if early complications, possible older type 1.
- Re-refer to dietitian for insulin specific advice to minimise weight gain and hypoglycaemia risk.
- Consider Specialist Community referral if painful neuropathy, poor control with weight loss, cardiac, renal or liver disease with poor glycaemic control despite maximum oral Rx (HbA1C >9%).
- Urgent referral if patient ill (vomiting, semi-conscious or ketogenic).

HYPERTENSION
- Target 140/80 (130/80 if microalbuminuric).
- Start by reducing weight (10% is beneficial), fat, salt and alcohol.
- Initial ACEI with dose titration (ARB if intolerant) and add thiazides or calcium antagonists depending on co-morbid pathology.
- May need 3+ agents to achieve target.
- 4th line add adrenergic blockade.
- Monitor with regular BP, U&E and yearly urine albumin/creatinine.
- Dual-triple blockade of RAAS – specialist diabetes referral.

RETINAL SCREENING
- All patients with diabetes should ideally have annual screening with digital retinal photography.
- Fast track service for new diagnoses.
- More frequent imaging requires ophthalmology referral.
- Moderate retinopathy – joint diabetes ophthalmology referral.

OBESITY MANAGEMENT
- Low fat low carb calorie restriction in most cases.
- Consider weight reducing therapy as 2nd line agent after metformin if BMI > 35.
- Weight loss, regular clinical/dietetic review for initiation and continuation of orlistat.

BLOOD GLUCOSE CONTROL**
- Adequate trial of diet (ideally 6/52 to 3/12 with referral to dietitian).
- Aim for FPG 7 mmol/L & HbA1c 6.5%.*
- First-Second Line Drugs
  - Metformin – drug of choice in overweight patients – start 500mg OD and titrate upwards. Metformin SR if GI side effects. Avoid if creatinine > 150 umol/l.
  - Sulphonylureas unless BMI > 35 – note risk of hypoglycaemia.
  - Glitazones – added to metformin and/or sulphonylureas. Pioglitazone preferable. Avoid if CCF-fractures evident or high risk.
  - Acarbose – limited role.

NEPHROPATHY
- Dipstick test for protein – if positive, check MSU for infection – Rx and repeat.
- Check urinary A:C ratio if dipstick negative for microalbuminuria – care with interpretation in the elderly as non-specific elevation is common.
- Established proteinuria – exclude other causes, use ACEI / ARB and refer if renal function deteriorates (especially K+).
- Aim for BP < 130/80 in patients with established proteinuria refer to Community consultant clinic if ACR>100.

HYPERLIPIDAEMIA
- Reduce total fats (especially saturated fats and alcohol).
- Start statins early in patients with high cardiovascular risk.
- Check lipid profile and LFTs after 2/12 and adjust dose.
- Fibrate if high triglyceride (>4.5) or low HDL cholesterol (<1).
- Monitor LFTs annually -? NAFLD – specialist referral.
- Selective use of statins in type 1 DM aged < 50.

FOOT HEALTH
- Look for high risk foot (neuropathy, ischaemia, deformity, callous, oedema, ulceration or previous ulceration).
- Refer all ‘high risk feet’ to the Community podiatry for assessment.
- Active foot problems refer to specialist MDT diabetes foot care team.

DIABETES CLINICAL GUIDELINES V21.0 20.07.10

Offer aspirin to all for secondary prevention and on a case by case basis for primary prevention, especially to those over age 50 and those with a high estimated CVD risk. Ideally, BP should be <145/90 before initiating aspirin, but clinical discretion is indicated.

**Gliptins – current status: as 3rd line agents where BMI > 30 and/or glitazone use inappropriate. Caution with combined sulphonylurea and gliptins. Longer term safety/efficacy unclear.
DOES THE NEWLY DIAGNOSED PATIENT NEED INSULIN TREATMENT?

**Typical symptoms and diagnostic blood sugar (random ≥ 11.1 mmol/l)**

- **YES**
- **NO**

**Is the patient ill? (vomiting or semi-conscious)**

- **YES**
- **NO**

**Is there moderate /heavy ketonuria?**

- **YES**
- **NO**

**Are two or more of the following present?**

- Severe symptoms (nocturia x 3-4)
- Short history (weeks)
- Marked weight loss (irrespective of absolute weight)

- **YES**
- **NO**

**Is the patient under 30 years of age?**

- **YES**
- **NO**

No immediate need for insulin - follow protocol for hyperglycaemia management in T2DM with EARLY and frequent patient review until blood glucose stable.

Is BM >20 mmols and mild osmotic symptoms? – need to start SU’s for short period in addition to metformin (Note – if patient has been drinking high calorie drinks because of polydipsia, BG may settle very quickly – check of capillary BM premeal worthwhile for 3 weeks. Otherwise follow Guidelines for management of Type 2.

**Strong indication for insulin - telephone referral for urgent appointment to community DSN.**

If no reply from DSN ring Head Office on 01707 621152 and they will get DSN to ring you (important to leave your surgery bypass or mobile number) If out of hours/at weekend, contact Medical Registrar on call.

Consider MODY (Maturity Onset Diabetes of the Young) if:

- pt BMI >27 or
- pt has 1st deg relative diagnosed with DM at age <30.

Does not need immediate insulin start – can refer routinely to DSN / Community Consultant Clinic.
VIGNETTES TO AID CLINICIANS DECISION MAKING

PRINCIPLES OF TREATMENT IN TYPE 2 DIABETES

- Diabetes treatment is frequently complex and challenging.
- Increasingly stringent QOF targets for diabetes can lead to ‘results’ rather than ‘patients’ being treated!
- A key principle is to manage the patient holistically. This means considering the patient’s age, duration of diabetes, co-morbidities and wishes when choosing appropriate HbA1c, lipid and BP targets, rather than blanket QOF ‘one-size-fits all’ targets.
- Recent studies (Early control works – the UKPDS follow up – Holman et al. NEJM 2008; 359:1577-89) suggest that aggressive early treatment of patients’ glycaemic control and CVD risk factors immediately after diagnosis has a persistent benefit throughout life, even if control deteriorates in later years.
- Conversely, the ACCORD study (ref: NEJM, 2008; 358: 2545-59) shows that aggressive HbA1C and BP lowering in elderly patients with established cardiovascular disease, may actually increase mortality.
- Primary care have a vital role in using tailored treatment strategies to maintain HbA1c < 7% within the first 5 years after diagnosis. This will require earlier consideration of triple oral therapy, and use of injectable therapies.
- A key question to ask is ‘what am I aiming to achieve or prevent for this patient?’ Your answers should ideally be shared and agreed upon by the patient.

The following vignettes may illustrate these principles:

Mr J is aged 52, was diagnosed with type 2 DM 3 years ago. He has a BMI of 32, is hypertensive on amlodipine and BFZ, is a smoker of 10/day and was recently diagnosed with early proliferative retinopathy in both eyes, for which he has had laser Rx. His HbA1c is 7.4%, BP 145/85, cholesterol 5.0, TGs 1.7, and LDL 3.0. He has modest persistent microalbuminuria, no neuropathy and no other significant co-morbidities. He is on maximal dose metformin and gliclazide. How would you manage him?

This patient is at high risk for further sight-threatening eye damage, premature IHD and renal impairment, which you need to advise him of and then aim to prevent – his HbA1c should ideally be lower, aiming for 7% - consider gliptin, glitazone (Glitazone only if no maculopathy) or Exenatide next. His BP and lipid profile satisfy QOF requirements, but are still too high in his case – evidence suggests BP of 130/80 (he has microalbuninuria) and chol 4.0/ LDL 2.0 would reduce his risk of future MI (smoker and obese). He would benefit from ACEI for renoprotection and treating his BP. Clearly his smoking and weight need addressing, plus aspirin as 2ndry prevention. Refer to specialist Dietitian for Carbohydrate Counting and Weight Loss. Ensure taking medication at appropriate times. Eliminate absence of hypo’s with raised HbA1c being due to rebound hyperglycaemia. Would benefit from BGM short term for post prandial and FBG information.

Mr F, aged 80, was diagnosed with type 2 DM aged 60. He is frail and infrequently leaves home. He has mild Parkinson’s disease, diverticular disease, glaucoma, and was treated successfully for early prostate cancer 2 years ago. His HbA1C is 8.0%, BP 160/78, chol 6.0, LDL 2.8. He has reduced sensation in his feet and background retinopathy only. He is on maximal metformin, acarbose and 80mg gliclazide bd. How would you manage him?

Begin by discussing with the patient what he sees as the aim of Rx for him. It is likely to be to improve the quality of his life and to minimise unwanted SE’s of all his medications. If he is experiencing osmotic symptoms, he will definitely need additional glycaemic medication ?increased gliclazide dose- monitor carefully for hypoglycaemia, which may present as funny turns, giddiness and falls. If he is asymptomatic and not keen for additional medications after sympathetic counselling about the potential benefits of improved glycaemic, bp and lipid control, then further aggressive management may not be indicated for one or even all of these QOF targets. These decisions should be reviewed annually and earlier if new co-morbidities arise. He should continue to be offered a full DM review annually and it is especially important that he has a regular foot review in view of his likely peripheral neuropathy, which may lead to ulceration. These reviews will need to be done at his home if he becomes housebound. BP check and HbA1c b 4 monthly (by DN) to ensure does not slowly develop osmotic symptoms and predispose to BP dropping and infection. Be concerned to ensure that his appetite is not affected adversely by metformin.
Mrs S is a sprightly 70 year old, who has had diabetes on oral medications for 10 years. She had an MI aged 64, and attends your surgery infrequently, including missing the last three annual DM reviews. She has recently returned from a cruise and attends because of a UTI. You opportunistically notice that her HbA1C has been around 10% for around 4 years. Her BP is 160/100, chol 4.0, LDL 2.0, mild CKD stage 3 with eGFR 50ml/min and diabetic retinopathy treated with laser in 2008. Her BMI is 27 and she has no osmotic symptoms and no angina. She is compliant with her medications including metformin 500mg bd, gliclazide 80mg bd, simvastatin 40mg, aspirin and 4 antihypertensives including max dose irbesartan. How would you manage her?

Begin by discussing her high risk for a future MI. Increasing her metformin and gliclazide to maximum doses is unlikely to bring her HbA1C down to a target ideal of 7 to 7.4%. Additional oral medications are also unlikely to achieve this-she is likely to need insulin now. This may not be an easy discussion, and DSN and dietitian support may be helpful. She will need additional antihypertensive medication and this may necessitate specialist input, as she is already on 4 drugs and BP remains uncontrolled.
TYPE 1 DIABETES - AIMS OF CARE

1. Help patients cope psychologically and practically with their disorder.
2. Control blood glucose so that the patient is asymptomatic from either hyperglycaemia or hypoglycaemia.
3. Aim to help the patient achieve optimal glycaemic control – HbA1c 6.5% - 7.0%.
4. Screen annually and treat factors for microvascular and macrovascular complications, retinal screening and visual acuity, blood pressure, estimation of proteinuria, examination of feet for peripheral pulses and evidence of neuropathy, examine injection sites, ask about hypos, hypo unawareness and discuss smoking and body weight.
5. Inform patients about newer developments in treatment in terms of insulin delivery and glucose monitoring.
6. Blood glucose monitoring assessment
7. Assess patient suitability for DAFNE / IDAC/ CHO Counting

DISCONTINUATION OF HUMAN MIXTARD 30/70
Human Mixtard 30/70 will be discontinued at the end of December 2010. This will affect all patients using this insulin in cartridge form, vials and via Innolet devices. It is recommended you refer your patients via SPOC for suitable alternative, ie Humulin M3

INSULINS AVAILABLE
- Rapid acting analogue
- Short acting
- Intermediate acting
- Slow / Long acting (peak less)
- Analogue mixtures
- Mixtures

INSULIN REGIMES
There are a vast number of different insulins and insulin regimes. It is not appropriate to be specific in guidelines. Patients should be on the right insulin regime for them and this is best discussed with the diabetes team, especially the specialist nurses.

Common regimes

1 QDS Regime
- Soluble insulin (Humulin S or Humalog/Novorapid or Apidra) given 3 times daily before or with meals according to carbohydrate intake
- Longer acting insulin (Levemir or Lantus) at night. Please note Levemir action is shorter than Lantus and therefore Levemir may need to be taken twice daily
- Analogue / Soluble Insulin

Advantages:
More flexibility

Disadvantages
Difficulty of injecting away from home / at work etc

2 BD fixed mixture
We recommend Humulin M3 given twice daily, ideally 30 minutes before meals as per local guidelines. For those patients unable to manage basal bolus regime.

Advantages:
Fewer injections

Disadvantages:
- Harder to achieve good glycaemic control without increased risk hypoglycaemia
- A lack of flexibility
INJECTION SITES AND INSULIN INJECTIONS

Sites to inject into:
- Abdomen
- Thighs
- Buttocks
- Arms but this area is not recommended
- Injection sites should ideally be checked at each visit or annually

To ensure the reliable absorption of insulin, injections must be given into subcutaneous (fatty) tissue and not into the muscle or dermis. The depth of the subcutaneous tissue varies considerably between individuals and from one body region to another.

- An appropriate injection technique combined with the correct length of needle is essential.
- Rotating injection sites helps prevent damage to the skin and underlying tissue.
- Insulin can be irritating and cause hardening of the skin (lumps, bumps and dimpling) and weakening of fatty tissue under the skin.
- Over time, thickened skin may not have nerve endings anymore.
- Injections may become painless as a result, which is an indication that the skin is becoming more damaged.
- Continued injections in the same place have been shown to be one of the causes of lipodystrophy causing disfiguration and are also responsible for erratic and unpredictable absorption.

How to check for lipodystrophy (lipos):
- Lipos can have different shapes, sizes and appearance, are often easier to feel than to see.
- Look for any lump swelling or redness at injection sites.
- Feel for any irregular or hardening of the skin at the same injection site.
- Examination is best done with the patient standing up and the areas exposed.

Use correct needle length:
- Needle size is very important – use 5mm, 6mm needles or 8mm only (12.7 mm length should not be used for pen tip needles or syringes). Community nurses using pens to inject patients must use “Novo fine autocover needles” to avoid needlestick injury – however these needles are very expensive and it might be more cost effective to use an alternative insulin which is available in vials, thus allowing syringes to be used.
SICK DAY RULES - TYPE 1

- Patients who are unwell/ vomiting must test for urinary ketones 4 hourly. Patients can easily become dehydrated if pyrexial or vomiting and this can lead to Diabetic keto-acidosis (DKA), which is dangerous and usually preventable.

- Please ensure patients have adequate supplies of “in date” Ketostix to test urine for this purpose. Remember that they go out of date within 6 months of opening.

- Some patients i.e. Dose Adjustment For Normal Eating (DAFNE) or insulin pump patients, use meters such as “Optium Medisense “ which test blood ketones and again they should have adequate strips for this purpose.

Main principles to prevent DKA - see below for more explicit detail depending on insulin regime.

Advise the patient to:

- Continue taking insulin- take carbohydrates in the form of a light diet or sugary fluid substitute if unable to eat a light diet.

- Drink fluids liberally – aim for 5 pints /24 hours of sugar free liquids, especially water. This is approximately one glass per hour, with regular sipping over the hour if necessary.

- Test for ketones 4 hourly - aim to suppress urinary ketones to ‘small, a trace, or negative’ - supplemental insulin may be required – see chart below.

- Test Blood glucose 2 - 4 hourly – aim to keep blood glucose under 13mmols/l.

- Take Dioralyte if diarrhoea is problematic and Buccastem for persistent vomiting.

- Contact the GP/Diabetes Specialist Nurse if the vomiting persists for >24 to 36 hours.

- If vomiting, the patient should eat a light diet e.g. toast, crackers etc or if unable to do this, to replace meals with sugary fluids to prevent hypoglycaemia, such as ordinary lemonade, fresh fruit juice, soup, lucozade or ordinary cola - see below. Take around 15 - 20 g carbohydrate every hour if possible and. Examples of 15 - 20 g carbohydrate include:
  - Fruit Juice (unsweetened) -------- 150- 200 mls (half a tea cup)
  - Lucozade -------------------------- 100- 120 mls(half cup)
  - Coca-Cola (not diet)-------------- 150- 200 mls (one cupful)
  - Glucose tablets ------------------ 4- 6 are usually required
  - Lemonade (fizzy/sweetened) ----- 150mls- 200 mls
  - Ice cream ------------------------ 1 -2 briquette or 1 scoop
  - Jelly (ordinary)------------------ 2- 3 tablespoons
GUIDE FOR PATIENTS ON EXTRA QUICK ACTING INSULIN IN THE PRESENCE OF KETONES AND ON BASAL BOLUS SYSTEM I.E 4/5 INJECTIONS DAILY

<table>
<thead>
<tr>
<th>Blood Glucose level (mmol/L)</th>
<th>Blood Ketone level</th>
<th>Urine Ketone level</th>
<th>Advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG less than 8mmol/L</td>
<td>Between 0.0 to 0.6 mmol</td>
<td>Negative / trace</td>
<td>1. Continue normal insulin doses and try to drink as much unsweetened fluids as possible (i.e. 100 mls per hour).</td>
</tr>
</tbody>
</table>
| BG between 8- 13mmol/L      | Between 0.0 to 0.6 mmol | Negative / trace | 1. Continue normal insulin doses and correct blood glucose above 8.0mmol/L by taking extra quick acting insulin based on one unit insulin reducing blood glucose by 3mmol/L.  
2. Try to drink as much unsweetened fluid as possible (i.e 100 mls per hour) |
| BG between 8- 13mmol/L      | Between 0.6 to 2.0mmol | Mild + to moderate ++ | 1. Take basal (slow) insulin as normal.  
2. Calculate your Total Daily Dose (TDD) of insulin: add up how much insulin you would have in a typical 24hours – that is both Quick Acting AND your basal insulin.  
3. Take 10% of TDD of Quick acting insulin every 4 hours until BG in target and ketones reduced to trace. NB Take in addition to your normal quick acting insulin.  
4. Take 100ml/hour of fluids if possible. |
| BG more than 13 mmol/L      | Between 2.1 and 3mmol | Large +++ | 1. Add up your meal time insulin and your basal insulin = total daily dose (TDD).  
2. Take your normal basal insulin.  
3. Take 20% of TDD of Quick acting insulin every 4 hours until blood glucose in target and ketones reduced to trace. NB Take in addition to your normal quick acting insulin  
4. Take 100ml/hour of fluids if possible. |

If blood glucose <4mmol/l, patient may need to reduce insulin dose by 2- 3 units or more – based on assumption that one unit insulin can reduce blood glucose by 2- 3mmol/l. The patient may also need to take quick acting glucose orally to treat this hypoglycaemia i.e. non-diet lemonade or Lucozade 100 – 150 mls).
GUIDE FOR EXTRA INSULIN IN THE PRESENCE OF KETONES FOR PATIENTS ON A TWICE DAILY BI-PHASIC INSULIN REGIME E.G. HUMULIN M3, NOVOMIX 30/70 OR HUMALOG MIX 25.

<table>
<thead>
<tr>
<th>Blood Glucose level (mmol/L)</th>
<th>Blood Ketone level</th>
<th>Urine Ketone level</th>
<th>Advice</th>
</tr>
</thead>
</table>
| BG less than 8mmol/L        | Between 0.0 to 0.6 mmol | Negative / trace | 1. Continue the same doses of your twice daily insulin.  
2. Take 100ml/ hour of fluids if possible. |
| BG between 8-13mmol/l       | Between 0.0 to 0.6 mmol | Negative / trace | 1. Continue with your usual insulin doses.  
2. If your blood glucose is high (even though ketones negative) i.e. greater than 13mmol/L, you can take extra insulin as you normally would based on 1 unit reducing blood sugar by 3 mmol/l.  
3. Take 100ml/hour fluids if possible. |
| BG between 8-13mmol/l       | Between 0.6 to 2.0 mmol | Mild to moderate ++ | 1. Calculate your Total Daily Dose (TDD) of insulin: add up how much insulin you would have in a typical 24 hours.  
2. Take 10% of the TDD in addition to your normal twice daily insulin dose.  
3. Test blood glucose at lunchtime. If not due to inject and BG more than14mmol/l, take an extra 2 units of mixed insulin.  
4. Test blood glucose at bedtime. If BG more than 14mmol/l, take an extra 2 units of mixed insulin.  
5. Drink 100ml/hour of fluids. |
| BG more than 13 mmol/l      | Between 2.1 and 3mmol | Large +++ | 1. Calculate your Total Daily Dose (TDD) of insulin: add up how much insulin you would have in a typical 24 hours.  
2. Take 20% of TDD in addition to your normal insulin dose.  
3. Test blood glucose at lunchtime. If not due to inject and BG more than14mmol/l, take an extra 3 units of mixed insulin.  
4. Test blood glucose at bedtime. If BG more than 14mmol/l, take an extra 3 units of mixed insulin.  
5. Take 100ml fluids hourly. |

As patient recovers and blood glucose improves and ketonuria resolves, reduce insulin back towards usual dose gradually.

Call 999 for Emergency admission if:
- Suspicion of underlying diagnosis that requires hospital admission, e.g. myocardial infarction, intestinal obstruction – admit immediately.
- Inability to swallow or keep down fluids – admit if persists more than a few hours.
- Significant ketosis (large > +++ - ketones) in Type I despite optimal management and supplementary insulin.
- Blood glucose persistently >20mmol/l despite supplementary therapy.
- Any clinical signs of ketosis or worsening condition, e.g. Kussmaul respiration, severe dehydration, abdominal pain.
- Patient who is unable to manage adjustment of normal diabetes care.
- Patients who live alone and have no support who may be at risk of slipping into unconsciousness.
DKA IN TYPE1 (Diabetic Keto Acidosis)

**Definition**
Diabetic keto-acidosis (DKA) is a life-threatening acute complication of diabetes mellitus. It occurs when insulin therapy is absent, or becomes inadequate for the current physiological state, usually as a result of intercurrent illness. It is seen in patients with type 1 diabetes and may be a presenting feature of undiagnosed type 1 diabetes, particularly in children.

(It is very rare in Type II diabetes – they are much more likely to suffer from HONK)

**DKA Presentation**
It manifests clinically as a state of severe uncontrolled diabetes and gross dehydration which will inevitably progress unless it is corrected by rehydration with intravenous fluids and adequate insulin. Its characteristic biochemical features are:

- Hyperglycaemia
- Polydipsia / Polyuria
- Weight loss - if new presentation
- Significant ketonaemia
- Nausea and vomiting
- Non specific abdominal pain
- Lassitude, weakness often occur
- Severe metabolic acidosis
- Glycosuria and ketonuria

Breathlessness due to an increase in respiratory rate, attempting to compensate by blowing off CO₂ is a serious sign

**Treatment Medical Emergency – dial 999 and ADMIT**

**Precipitating causes include:**

- Infection
- Inadequate insulin/non-compliance (15 to 41% of people with diabetes)
- Undiagnosed diabetes
- Other medical illness
- Eating disorders
- Mental health
- Emotional disturbances
- Patient: not testing / no test strips / ran out of insulin/ forgot insulin

**Preventing recurrence**

- Education of patient and HCP
- Psychological support
- Education of Out of Hours staff

**NOTE TO GPs:**
*Blood Ketone testing is limited to small minority of patients who use specific meters which allow this. The majority of patients will have to use urine ketone testing using ketostix*
INSULIN PUMPS

**Continuous Subcutaneous Insulin Infusion (CSII) Insulin Pump Therapy**

Continuous Subcutaneous Insulin Infusion (CSII) or pump therapy provides significant improvement in glycaemic control and quality of life for some people with Type 1 diabetes.

NICE criteria recommend pump therapy as an option for people with Type 1 diabetes provided multiple dose insulin (MDI) has failed, disabling hypoglycaemia defined as repeated and unpredictable occurrence and associated with adverse effect on quality of life, or HbA1c levels remained high i.e. 8.5% or above on MDI therapy (including if appropriate, the use of long acting insulin analogues) despite a high level of care.

Individuals considered for CSII should have the commitment and competence to use the therapy effectively.

Prior to referral the individual should have received an externally validated structured education programme (IDAC or DAFNE).

Those who have not yet received a structured education programme may still be referred for assessment if deemed appropriate by the referring physician.

Insulin is administered over 24 hours via a small needle inserted under the skin. A small amount of insulin is administered continually (basal) and a dose with meals related to the amount of carbohydrate to be consumed (bolus) or to reduce raised blood glucose levels (correction) dose.

Safe and effective use requires the individuals to monitor their blood glucose levels a minimum of 4 times a day so that they can make sound decisions.

Insulin pumps can make it easier to achieve healthy blood glucose levels with less danger of severe and disabling hypoglycaemia.

Education and regular support from a specialist team are essential for the individuals using insulin pumps.

*Further details/guidelines can be found in Appendix 10.*
**TYPE 2 DIABETES TREATMENT ALGORITHM**

**HbA1c target depends on duration of diabetes, co-morbidities, patient’s age and wishes**
- Consider using a gliptin, glitazone or exenatide instead of insulin if:
  - Insulin is unacceptable for employment, social, recreational or other personal issues.
  - The patient is obese (BMI > 30), as insulin will probably make obesity worse.

**Insulin conversion in moderate - severe retinopathy** - refer to hospital specialist joint diabetes ophthalmology service i.e. refer all cases of pre-proliferative or proliferative retinopathy or maculopathy or severe background changes including multiple dots and blots.

---

**HbA1c still >= 6.5%* after 12/52 of life style advice**

1. Metformin with active dose titration:
   - Initiate on 500mg od (with food).
   - Increase very slowly (no more than 500 mg/day/week to maximum 1g tds if tolerated).
   - If serum creatinine ever consistently increases to > 130, decrease metformin dose. If > 150, or eGFR < 30, stop metformin.
   - Warn patient of GI effects – usually subside after 7-10 days.
   - If patient unable to tolerate standard preparation at dose < 1g bd, try m/r metformin.

2. **Consider sulphonylurea 1st line if**:
   - Pt not overweight.
   - Metformin CI’d or not tolerated on standard or m/r prep.
   - A rapid therapeutic response is required for hyperglycaemic symptoms.

---

**HbA1C >= 6.5%* on maximum tolerated dose of metformin**

**HbA1C < 6.5%* recheck every 4-6/12**

**Re-enter algorithm if HbA1C rises to >6.5%**

---

**Add sulphonylurea with active dose titration:**
- Maximum dose gliclazide in 160mg bd (with meals).
- Advise pt about risk of hypoglycaemia.
- Advise pt to omit that dose if s/he misses meal.

**HbA1C >= 7.5%* on maximum tolerated doses of metformin and/or sulphonylurea**

**CHECK PATIENT CONCORDANCE BEFORE ADDING TREATMENTS**

---

**3rd Line Options**

1. Glitazone (if BMI>27 and insulin resistant)
2. If BMI > 30 and HbA1c < 8.5% and problematic hypoglycaemia and obesity, then consider Gliptin *
3. If BMI > 30 and HbA1c > 8.5%, then consider Exenatide
4. Insulin (initiate in house if skilled or refer to Community DSN via SPOC; see Page 19 for algorithm)

---

**3rd Line Therapy only to be continued after 6 months if HbA1c improves by 0.5%**

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*HbA1c target depends on duration of diabetes, co-morbidities, patient’s age and wishes*
ORAL HYPOGLYCAEMIA AGENTS (OHA’s)

Sulphonylureas

Sulphonylureas act on the K+ channel of the beta cell, sensitising them to the action of glucose leading to an increase in insulin secretion.

The major side effects are weight gain and hypoglycaemia. Glibenclamide has been superseded by gliclazide and should be avoided (note contra-indicated in age>65).

- In elderly patients +/- renal impairment, when commencing Gliclazide start with 40mg o.d. otherwise, 80mg o.d. pre-breakfast to a maximum of 160mg b.d. (pre-breakfast and pre-evening meal).
- Advise patient to take tablet(s) 15-20 minutes before meals to stimulate insulin release from the pancreas.
- Specify pre-breakfast and pre-evening meal and NOT any other time.
- Monitor effect either through HBGM or three-monthly HbA1c and titrate upward as necessary.
- Weight gain can often be reduced if medication is appropriately titrated. If titrated upwards too quickly, patients may gain weight in excess of 4kg due in part to overeating in response to low blood sugars.
- Educate patients in recognising and treating hypoglycaemia (see treatment pathway & notes below).
- Emphasise importance of eating three meals a day, avoiding missing a meal, however advising only small carbohydrate portions with each meal.
- Exercise caution with sulphonylureas in moderate to severe renal failure — as may cause hypoglycaemia and therefore insulin may be a preferable option.

See Page 38 for Signs, symptoms and emergency treatment of hypoglycaemia.

Metformin

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

If the patient is complaining of GI symptoms and is on Metformin consider stopping Metformin for one month before referring for endoscopic procedures.

Glitazones (Thiazolidinediones)

- Not for patients with CCF or LV dysfunction.
- Avoid/stop if exudative-ischaemic maculopathy.
- Not for patients with osteoporosis or at high risk of osteoporosis.
- Use pioglitazone 15, 30 or 45mg od maximum.
- Continue rosiglitazone 4-8mg od maximum only in existing patients (provided no CCF or LV dysfunction).
- Check LFTs, before use, 2/12 later and annually thereafter.
• Advise patient about side effects of weight gain and fluid retention.
• Fluid retention can range from troublesome leg oedema alone to pulmonary congestion or frank CCF – do ECG + CXR? BNP.
• **Stop** glitazone if results indicate CCF.
• Troublesome leg oedema can be treated with diuretic e.g. amiloride.
• Consider referral to Community Consultant Clinic if planning combined use with insulin.

• Glitazones are **licensed for use** as follows:
  1. Monotherapy (where metformin is CI’d or not tolerated)
  2. 2\textsuperscript{nd} line therapy with metformin, where sulphonylurea (SU) could cause problematic hypoglycaemia.
  3. 2\textsuperscript{nd} line with SU where metformin is CI’d or not tolerated.
  4. Triple therapy with SU **and** metformin.
  5. Only Specialists to initiate pioglitazone with insulin

**Gliptins (DPP -4 Inhibitors)**

• Role in obese patients with hypoglycaemia with sulphonylureas and/or metformin intolerance
• Only consider if no hepatic dysfunction and eGFR > 60
  • Sitagliptin – current first choice gliptin. Once daily 100mg dosage. Licensed as monotherapy, alongside metformin, or sulphonylurea, or glitazone for dual-triple therapy and for use with insulin
  • Sitagliptin - No LFT monitoring required
  • Gliptins have a role in obese patients and those with hypoglycaemia from sulphonylureas and/or those patients who are Metformin metformin intolerant
  • Vildagliptin 50 mg od/bd licensed for dual therapy alongside metformin or sulphonylurea or glitazone - LFT monitoring advised 3 monthly with Vildagliptin in first year
  • Caution with introduction of potentially nephrotoxic drugs
  • Continue treatment after 6 months ONLY if HbA1c has decreased by at least 0.5%. **If this HbA1C reduction is not achieved after 6 months, the gliptin should be stopped.**

• Gliptins are **licensed for use** as follows:
  1. With metformin if the patient is at particular risk of hypoglycaemia or its consequences or does not tolerate SU.
  2. With SU where metformin is CI’d or not tolerated.
  3. Triple therapy with metformin and SU, if glitazones are not indicated or tolerated or in whom further wt gain would be problematic (glitazones and insulin both increase body wt).

**Acarbose**
Limited role, mainly in elderly patients - consider for patients who have exhausted other oral options.

**Repaglinide and Nateglinide** (oral rapid acting insulin secretagogues)
Consider for patients with erratic lifestyles or where hypoglycaemia could be problematic. Licensed for use:
• Repaglinide used as monotherapy or with metformin
• Nateglinide licensed only for use with metformin.
NEW AGENTS INJECTABLE THERAPIES

Exenatide (Subcutaneous GLP-1 Analogue)
licensed for use as follows:

1. Patients with BMI >30, whose HbA1C remains ≥ or = 8.5% despite maximum tolerated/indicated triple/dual therapy, who would otherwise be starting on insulin.

2. Exenatide is not licensed as an add-on to insulin, glitazones or gliptins.

Currently, specialists only to initiate and monitor exenatide use. Continue exenatide treatment after 6 months only if HbA1c has decreased by at least 1% and/or weight loss of at least 3% of initial body weight at 6 months. If these targets are not reached, the Community Clinic consultant/DSN is responsible for discontinuing this medication.

HMMC Exenatide Recommendations - See Appendix 9
DOES THE TYPE 2 PATIENT NEED INSULIN?

1. Typical symptoms and diagnostic blood sugar (random ≥ 11.1mmol/l)
   - YES
   - NO

2. Is the patient ill? (vomiting or semi-conscious)
   - YES
   - NO

3. Is there moderate /heavy ketonuria?
   - YES
   - NO

4. Are two or more of the following present?
   - Severe symptoms (nocturia x 3-4)
   - Short history (weeks)
   - Marked weight loss (irrespective of absolute weight)
   - YES
   - NO

5. Is the patient under 30 years of age?
   - YES
   - NO

Strong indication for insulin - telephone referral for urgent appointment to community DSN. If no reply from DSN ring Head Office on 01707 621152 and they will get DSN to ring you (important to leave your surgery bypass or mobile number) If out of hours/at weekend, contact Medical Registrar on call.

Consider MODY (Maturity Onset Diabetes of the Young) if:
- pt BMI >27 or
- pt has 1st deg relative diagnosed with DM at age <30.

Does not need immediate insulin start – can refer routinely to DSN / Community Consultant Clinic.

No immediate need for insulin - follow protocol for hyperglycaemia management in T2DM with EARLY and frequent patient review until blood glucose stable

Is BM >20 mmols and mild osmotic symptoms? – need to start SU’s for short period in addition to metformin (Note – if patient has been drinking high calorie drinks because of polydipsia, BG may settle very quickly – check of capillary BM premeal worthwhile for 3 weeks. Otherwise follow Guidelines for management of Type 2.
**INSULIN INITIATION**

<table>
<thead>
<tr>
<th>STRONG INDICATIONS</th>
<th>POSSIBLE INDICATIONS</th>
<th>EXCLUDE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Despite max tolerated oral agents:</td>
<td>• Need to stop oral(s)</td>
<td>• Non-concordance with medication</td>
</tr>
<tr>
<td>• HbA1c above acceptable level for individual</td>
<td>• Declining renal function</td>
<td>• Mistiming of medication</td>
</tr>
<tr>
<td>• Symptomatic hyperglycaemia</td>
<td>• Retinopathy – see caution</td>
<td>• Underlying infection</td>
</tr>
<tr>
<td>• Acute/recurrent infection</td>
<td>• Personal preference</td>
<td>• Underlying condition</td>
</tr>
<tr>
<td>• Foot ulceration/charcots</td>
<td>• Steroid therapy</td>
<td>• Room for significant, realistic dietary improvement – refer to dietitian/DSN for education</td>
</tr>
<tr>
<td>• Painful neuropathy</td>
<td></td>
<td></td>
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<tr>
<td>• Unintentional weight loss in someone of low or normal weight.</td>
<td></td>
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<tr>
<td>• Pregnancy / planning pregnancy – refer to pregnancy guidelines</td>
<td></td>
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</tr>
</tbody>
</table>

**Consider:**
- Age
- Lifestyle
- Mental/physical capacity
- Suitability of injection devices
- Need/availability DN input
- Quality of life
- Current HbA1c Level
- Target HbA1c
- Pattern of glycaemia
- Work implications
- Retinal status

**DECISION TO START INSULIN**

Involve patient in decision making – qds blood glucose monitoring, must have seen dietitian, must have retinal screen report

<table>
<thead>
<tr>
<th>HbA1c &lt;= 8.5% or Elderly with CVD &amp; target HbA1c &gt; 7% or personal preference</th>
<th>HbA1c &gt; 8.5% Marked post prandial hyperglycaemia Regular mealtimes</th>
</tr>
</thead>
</table>

**Add bedtime NPH insulin**

Usually continue metformin and sulphonylurea. Stop Rosiglitazone - refer to specialist care if Pioglitazone is to be continued. Consider basal analogue insulin instead only if:

- High risk off/from hypog 
- Very obese BMI > 35 (no need for bedtime snack) 
- Needs morning injection by District Nurse 
- Cannot manage NPH device

**Commence NPH insulin - Insulatard or Humulin I**

Starting dose dependent on BMI and fasting glucose levels and risk off/from hypog. Those with high BMI and very high fasting levels may need 50-100% more. If patient c/o’s hypo’s may need to change to Lantus or Levemir

Adjust dose every 3-7 days to achieve fasting glucose of 5-7.0mmol/l unless episodes of hypoglycaemia (Agree individual targets)

**Fasting glucose > 10mmol/l**

Consider dose increase of 4 units N.B. consider possibility of nocturnal hypoglycaemia and rebound highs also

**Fasting glucose 5-10 mmol/l**

Consider dose increase of 2 units

Agreed target achieved after 6 months?

- Yes Agree review date
- No Reconsider regimen Consider referral to DSN

**Start twice daily pre-mixed human insulin**

20-30 minutes before breakfast and evening meal. Continue metformin, usually stop sulphonylurea, stop Rosiglitazone Refer to specialist care if Pioglitazone to be continued.

Consider pre-mixed analogue insulin instead if:

- Immediate injection before meal required
- Hypoglycaemia a problem
- Cannot manage other devices

Commence Humulin M3 or analogue mixtures: NovoMtx30; HumalogMtx25; HumalogMtx50 Starting dose 6-10 units bd

Adjust dose(s) every 3-7 days to achieve fasting/pre-meal blood glucose 5-7.0mmol/l (set individual targets) without hypoglycaemia Review HBGM results closely to determine which dose requires adjusting

**Basal Bolus Regimen Recommended if:**

- Tight control required
- Or has variable: Lifestyle e.g. work
- Physical activity
- Meal times
- Meal sizes – regimen can help weight management as no need to ‘match food intake’ to previous injection.

Refer to DSN
- Unless able to initiate/manage regimen in practice

**CLINICAL GOVERNANCE**

All insulin initiation to be carried out by DSNs or HCP considered clinically competent in specific insulin regimens i.e. with accredited certificate following 10 supervised insulin initiations and evidence of annual update.
SICK DAY RULES TYPE II

People with diabetes do not get more illness that other people, however, if you do become ill, your diabetes control may be upset. This is because your body’s natural response to illness is to make more sugar (glucose). This can make your blood sugar level rise, even if you are vomiting and unable to eat or drink.

When you are ill:
- Continue taking your tablets, unless advised to stop by your GP/Diabetic nurse (usually only patients taking metformin who are vomiting may be advised to stop the metformin until they recover).
- Try to test your urine or blood at least four times a day.
- Drink at least five pints of sugar free liquids, especially water, a day.
- Try to eat your normal diet. If you are unable to do this, replace your meals with fluids such as milk, fresh fruit juice, soup or lucozade (see below).

Try to take a small amount every hour if possible. Here are some examples of how much to take every hour:

- Milk -------------------------- 1 cup (200mls)
- Fruit Juice (unsweetened) ------ 1 small glass (100mls)
- Lucozade ---------------------- 50 mls
- Coca Cola (not diet)------------ 150 mls
- Lemonade (fizzy/sweetened) ---- 150 mls
- Ice cream --------------------- 1 briquette or 1 scoop
- Jelly (ordinary) ------------- 2 tablespoons
- Yoghurt (fruit) -------------- ½ small carton (60gms)
- Yoghurt (plain) ------------- 1 small carton (120gms)

If you are vomiting and unable to keep anything down, speak to your GP or Diabetes Specialist Nurse. You may need to be admitted to hospital, or to start home blood glucose monitoring, or require anti-vomiting medication.

1. Patients on metformin who are vomiting
- should contact their GP – the usual advice is to stop taking metformin until the vomiting stops.

2. Patients who are on gliclazide and vomiting
- should continue to take gliclazide, but may need to monitor their blood glucose level every 4 to 6 hours – it is possible for the blood sugar to fall too low if you are not eating enough and also vomiting, causing symptoms such as headache, irritability, tremor, hunger, sweating and feeling faint. You should have lucozade or glucogel to hand. If the BM falls <4, drink 15 to 20g of quick acting carbohydrate immediately e.g.

- Fruit Juice (unsweetened)------ 150- 200 mls (half a tea cup)
- Lucozade ---------------------- 100- 120 mls (half cup)
- Coca-Cola (not diet) ----------- 150- 200 mls (one cupful
- Glucose tablets -------------- 4- 6 are usually required
- Lemonade (fizzy/sweetened)---- 150mls- 200 mls
- Ice cream --------------------- 1 briquette or 1 scoop
- Jelly (ordinary) ------------- 2- 3 tablespoons

**Slower acting Carbohydrates**

Do not eat chocolate, biscuits, milk, crisps and bread to treat a low blood sugar, because their high fat content slows down the action of the sugar.

- Once blood glucose >5mmol/L, eat a slow release carbohydrate e.g. toast or plain biscuits to prevent another hypo.
SICK DAY RULES TYPE II…Cont’d

3. **Type 2 patients on diabetic tablets plus insulin and vomiting**
   - Contact your Diabetes Specialist nurse or your GP for advice- you may need to stop your tablets and increase your insulin dose.
   - You must try and slowly drink 5 pints of sugar free liquids/24 hours.
   - Always continue taking your insulin, even if you’re not eating,
   - Test your blood glucose level 2-4 hourly
   - If you are unable to eat a normal meal because you feel ill or are vomiting, you should eat a light diet e.g. toast, crackers etc or if unable to do this, to replace meals with sugary fluids to prevent hypoglycaemia. Take around 15g – 20 carbohydrates every hour if possible. Examples of 15g- 20 gms carbohydrate include:
     - Fruit Juice (unsweetened)------- 150- 200 mls (half a tea cup)
     - Lucozade -------------------------- 100- 120 mls (half cup)
     - Coca-Cola (not diet) --------------- 150- 200 mls (one cupful)
     - Glucose tablets ------------------- 4- 6 are usually required
     - Lemonade (fizzy/sweetened)----- 150mls- 200 mls
     - Jelly (ordinary) ........................ 2- 3 tablespoons
     - Fruit Juice (unsweetened)------ 1 small glass (100ml)

Aim to keep blood glucose < less than 13mmol/l – ketones are very rare in Type 2
Suggested extra Insulin to be taken to maintain blood glucose levels in the range of < 13mmol/L.

(Remember 1 unit insulin reduces blood glucose by 2 – 3mmol/L)

1. Below 10mmol/l .......................... Take usual dose of insulin
2. Between 10 and 15 mmol/l------ Take 4 extra units of insulin
3. Between 15 and 20 mmol/l----- Take 6 extra units of insulin
4. More than 20mmol/l .............. Take 8 extra units of insulin
HOS HYPER-OSMOLAR STATE (formerly HONK)

DEFINITION:
HONK is defined by the presence of hyperglycaemia associated with dehydration +/- a raised sodium level in the absence of significant acidosis or ketonuria.

HONK is a complication of Type 2 Diabetes that occurs in the presence of untreated hyperglycaemia without the presence of ketones. It may be a presenting feature of newly diagnosed Type 2 Diabetes and is commonly seen in patients from residential setting. HONK may also occur in patients with previously well controlled Type 2 Diabetes when associated with intercurrent illness e.g. pneumonia. Patients can quickly become dehydrated from prolonged hyperglycaemia and eventually if untreated disturbances in osmolality occur and the patient may become hypotensive and collapse.

Despite the condition's name, coma is a relatively rare feature affecting only about 10% of those who present with the relevant metabolic abnormalities. Progression to coma represents severe disease.¹

**Signs and symptoms:**
- Osmotic symptoms
- Malaise
- Signs of infection
- Hot and flushed
- Blood glucose 30-80 mmols
- Glycosuria+++ 
- Dehydration

**Treatment - Admit as Emergency – may need ITU/ HDU**

**Following discharge:**
- Ensure close follow up to monitor Blood sugar
- Monitor BP frequently in first few months – as antihypertensives may have been stopped when patient was in shock
- Some newly diagnosed patients may be discharged on insulin but may be able to be transferred to oral hypoglycaemic drugs – refer to DSN or can be done in – house if expertise available

**Those at risk of HONK**
- Undiagnosed patients
- People with eating / drinking disorders – signs of diabetes may be missed
- Palliative care patients – where treatment and monitoring has been discontinued
- Patients in residential settings
STEROID INDUCED DIABETES

Diagnosis of steroid induced diabetes

1. Patients with known DM on insulin +/- oral hypoglycaemic therapy
   - Monitor QDS BG levels and adjust subcutaneous (sc) insulin as required. Continue normal oral hypoglycaemic agents.
   - Patients using only basal insulin i.e. Lantus/Levemir or Insulatard: Increase basal insulin as required to achieve fasting BG < 7 mmol/l. However if fasting BG is < 7 mmol but BG levels are raised during the day, patient may require additional bolus quick acting insulin at lunch and pre-bed meal.

2. Patients previously non-diabetic or diet-controlled DM
   - Make diagnosis of steroid-induced DM if previously non-diabetic
   - If treatment is required this needs to be decided based on the highest value on the BG profile:
     - Metformin – should always be used initially if tolerated and add sulphonylurea- second line
     - Commence gliclazide initially at a dose of 80mg at lunchtime. Titrate to 160mg if required. It is very important to test blood glucose QDS and target medication accordingly otherwise the risk of hypoglycaemia is high. Titrations should not be carried out more frequently than every 2-3 days. If BG levels remain uncontrolled despite maximum dose of sulphonylurea, add insulin to oral hypoglycaemic therapy (once daily isophane – see above)

STEROIDS (TAKEN IN THE MORNING) INCREASE BLOOD SUGAR BETWEEN LUNCH AND PRE-BED- therefore if you start patients with diabetes on steroids you should warn them to expect this and to ensure they have access to blood glucose monitoring and be aware of when to contact the surgery. Advise them to check their blood sugar once daily and alternate between pre breakfast and pre evening meal.

Treatment algorithm for patients on once daily steroids, previously non-diabetic or diet-controlled

- Determine treatment based on highest value during BG profiling
  - If all values <9, continue to monitor
  - If highest value 9-15, start metformin initially if tolerated and may need to add sulphonylurea to target high levels between lunch and pre-bed
  - If no response to OHA’S, may require insulin

- Send venous glucose to Confirm diagnosis and check base line HbA1c
- Repeat CBG at same time on weekly basis whilst patient still on steroids

- If CBG ≥ 9
  - Capillary BG (finger-prick) pre-evening meal
  - If CBG or VG < 9
    - If CBG ≥ 9
      - Send venous glucose to Confirm diagnosis and check base line HbA1c
      - Repeat CBG at same time on weekly basis whilst patient still on steroids

- If VBG ≥ 9
  - If all values <9, continue to monitor
  - If highest value 9-15, start metformin initially if tolerated and may need to add sulphonylurea to target high levels between lunch and pre-bed
  - If no response to OHA’S, may require insulin

1. Patients with known DM on insulin +/- oral hypoglycaemic therapy
   - Monitor QDS BG levels and adjust subcutaneous (sc) insulin as required. Continue normal oral hypoglycaemic agents.
   - Patients using only basal insulin i.e. Lantus/Levemir or Insulatard: Increase basal insulin as required to achieve fasting BG < 7 mmol/l. However if fasting BG is < 7 mmol but BG levels are raised during the day, patient may require additional bolus quick acting insulin at lunch and pre-bed meal.

2. Patients previously non-diabetic or diet-controlled DM
   - Make diagnosis of steroid-induced DM if previously non-diabetic
   - If treatment is required this needs to be decided based on the highest value on the BG profile:
     - Metformin – should always be used initially if tolerated and add sulphonylurea- second line
     - Commence gliclazide initially at a dose of 80mg at lunchtime. Titrate to 160mg if required. It is very important to test blood glucose QDS and target medication accordingly otherwise the risk of hypoglycaemia is high. Titrations should not be carried out more frequently than every 2-3 days. If BG levels remain uncontrolled despite maximum dose of sulphonylurea, add insulin to oral hypoglycaemic therapy (once daily isophane – see above)
Starting Insulin
Start isophane insulin (Insulatard or Humulin I) sc once daily in the morning to target the lunchtime blood glucose increase from steroids. Starting dose should be 8-10 units. Titrate upwards every 1-2 days by 2-4 units according to teatime and pre-bed BG readings.

Probably worth referral to Community DSN via SPOC at this stage

3. Patients with known DM on oral hypoglycaemics
   - If highest value > 10 and patient on maximum dose of sulphonylurea, insulin may need to be added (i.e. once daily Insulatard).

Management of patients with diabetes and on multiple daily doses of oral high dose hydrocortisone (50mg), Prednisolone (>20mg), dexamethasone (>4mg)
   - Patient on oral therapy being commenced on high dose steroids will undoubtedly need insulin. Keep on usual oral therapy, and in addition prescribe insulin. However you could reduce the dose of the sulphonylurea.
   - Remember that the effect of steroids on glycaemic control is cumulative and therefore insulin doses may need to be increased on a daily basis until BG levels safely <10.
   - REMEMBER that once steroids are reduced or stopped, SBGM should be continued and sulphonylurea or insulin therapy reduced/stopped accordingly as BG concentrations start to fall.
   - Following high dose or prolonged steroid therapy blood glucose control may not return to pre-therapy levels. A previously non-diabetic patient may therefore develop permanent diabetes. Similarly, a diabetic patient whose therapy has been increased as a result of steroids may need to continue this long-term.
   - If postprandial hyperglycemia is the predominant concern, a short-acting insulin secretagogue (e.g. repaglinide) may be sufficient for diabetic control.
HOME BLOOD GLUCOSE MONITORING (HBGM)

Patients on oral hypoglycaemic drugs

- Many people with type 2 diabetes, especially those who are either diet controlled, or taking only metformin and/or a glitazone and/or a gliptin do not need to perform home blood glucose monitoring. There is potentially no risk of hypoglycaemia and glycaemic control is adequately monitored by 4 – 6 monthly testing of HBA1C.

- Patients with type 2 diabetes who are taking a sulphonylurea are at risk of hypoglycaemia and so have a greater need to self-monitor blood glucose especially before driving, following medication increase and to encourage self management.

- Patients on maximum oral hypoglycaemic drugs should perform HBGM to inform next steps particularly if insulin is indicated.

- It is not known what the ideal frequency of self-monitoring should be in type 2 diabetes. Current recommendations are based on consensus opinion – see below.

- Patients with type 2 diabetes on insulin with/ without oral hypoglycaemic agents should be encouraged to self monitor at least once daily initially, varying the time between fasting, pre-meal and post-meal, to identify trends. Later when stable this can be reduced to three or four times weekly plus before driving, sport/ physical exercise and during inter-current illness.

Who should have access to self blood glucose monitoring?

Patients with:

- Type I diabetes.
- Type 2 diabetes on sulphonylureas particularly after medication increase, or if c/o symptoms of hypoglycaemia, or during illness or for assessment prior to insulin initiation and prior to driving if h/o hypoglycaemia and in severe renal disease.
- Type 2 diabetes patients who use insulin.
- Type 2 patients commenced on high dose steroids (more than 10 - 20mg prednisolone or 4mg dexamethasone daily).
- Patients with diabetes when they have intercurrent illness.
- All women with diabetes who are pregnant or planning a pregnancy.

Strict control of blood glucose levels improves the outcomes in patients with either type I or type 2 diabetes. For self-monitoring of blood glucose to be most useful, it should form part of a wider programme of education to facilitate patient empowerment and management. People with diabetes must be instructed appropriately on the use of a meter and educated on how to interpret the results.

Patients must be able to understand why they are testing, how to interpret the results and what action to take and what constitutes an emergency and what doesn’t. They should document the results and if unusually high or low they should discuss with their HCP in case medication changes are indicated or if they need increased management of hypoglycaemia.

The DoH places great emphasis on the need to put the patient at the forefront of the management of their diabetes. Access to self blood glucose monitoring is an integral part of the toolkit to enable patients to learn the effects of carbohydrates, exercise, inactivity and illness on their blood glucose. However for many patients with Type 2 diabetes, this will be inappropriate and unnecessary for many reasons.

Decisions should be made on an individual basis, often for short periods while monitoring response to extra medication etc

NICE recommends that:

- Self-monitoring should not be considered as a stand alone intervention.
- Self-monitoring should be taught if the need/purpose is clear and agreed with the patient.
- Self-monitoring can be used in conjunction with appropriate therapy as part of integrated self-care.

Patients on oral hypoglycaemic drugs who may be experiencing hypos, MUST be shown how to do HBGM.
HOME BLOOD GLUCOSE MONITORING (HBGM)...Cont’d

In principle patients should aim for these levels:

<table>
<thead>
<tr>
<th></th>
<th>TYPE 1 Children &amp; Young People</th>
<th>TYPE 1 Adults</th>
<th>TYPE 2 Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>aim for a sugar before meals</td>
<td>4-8 mmols/l</td>
<td>4-7 mmols/l</td>
<td>4-7 mmols/l</td>
</tr>
<tr>
<td>aim for 2 hours after meals</td>
<td>less than 10 mmols/l</td>
<td>less than 9 mmols/l</td>
<td>less than 9 mmols/l</td>
</tr>
</tbody>
</table>

FREQUENCY OF TESTING

**Type 1 Diabetes**
- Blood glucose testing is essential for ALL people with Type 1 Diabetes
- If taking basal bolus regimen this could be up to 6 times a day more often qds
- People on BD insulin should have equal access to number of strips as those on Basal bolus
- Extra testing may be required before and after and during exercise.
- Frequency may be increased during intercurrent illness.
- Drivers should maintain a record (as per DVLA recommendations) and test prior to driving and 2 hourly during long journeys.
- Pre-pregnancy and pregnancy – may be necessary to test up to 6 times daily

**Type 2 Diabetes**
- Patients who are on oral agents excluding sulphonylureas do not need to monitor blood glucose levels on a daily basis. Ensure 4 to 6 monthly HbA1C.
- **Type 2 on sulphonylurea (+/- other agents) eg: Exenatide and Gliclazide**
  - Are at increased risk of hypos and testing may be necessary before driving or exercise or when symptomatic of hypo.
- **Type 2 on insulin therapy**
  - Following initiation – usually need to test twice daily until stable.
  - If stable, 2 – 3 times a week at different times and always before driving and exercise and if unwell or c/o hypo.
- **Type 2 on intensive insulin therapy**
  - May be necessary up to 6 times daily.

**Pre-Pregnancy and pregnancy**
- May be necessary up to 6 times daily

See Type 1 Diabetes for DVLA recommendations.

Approximate usage of blood glucose test strips:
(Each pack contains 50 strips)
- Type 1 and gestational DM may need 2 to 4 packs per month.
- Type 2 on oral agents **excluding sulphonylureas** who are stable, asymptomatic and with optimal HbA1C – do not need to test.
- Type 2 patients on **sulphonylureas** (+/- other agents) – will need to test if clinical suspicion of hypoglycaemia only. If no symptoms suggestive of hypos, and patient has optimal HbA1C, there is no need to test regularly.
- Type 2 not on insulin but either newly diagnosed, symptomatic, newly on steroids or with a changing clinical picture – may need to test regularly up to twice daily for a short period, as advised by a clinician. One pack may therefore last 4/52.
- Type 2 on insulin – testing needs will vary significantly dependent on patient lifestyle. For example, a young pt who drives to work daily may need to test twice daily prior to driving, plus prior to exercise, plus once daily at different times. This type of patient therefore needs approx 25 strips per week, so 1 pack will last 2 weeks. A non-driver who infrequently exercises however, may only need to test once daily at different times – this patient therefore needs 10 strips per week, so 1 pack may last 4-6/52. Remember to take a holistic approach to the patient’s testing needs and lifestyle.
Prescriptions for more than 1 pack at a time should be reserved for insulin users, whether type 1 or 2 on insulin.

For non insulin users, consider issuing only as acute rather than repeat scripts, thereby affording an opportunity to discuss usage with the patient at each issue.

Consider using the ‘minimum no of days since last issue’ facility on the repeat screen for those using clinically excessive amounts of equipment.

When initiating blood glucose monitoring the following process should take place:

- Offer choice from standardised range of meters according to Type of Diabetes, patient needs, dexterity and vision.
- Demonstrate chosen meter and finger pricking device, identifying procedure for patient to follow.
- Allow patient time to practice.
- Issue sharps box and complete information for GP for computer register for future prescriptions including sharps bin where required (some Local Authorities will issue containers for clinical waste and provide a free collection service from domestic addresses. Advise patient to contact relevant Council). N.B Community pharmacies are unable to take sharps bins back for disposal.
- Issue blood glucose monitoring diary indicating individual agreed target range and frequency of testing (see previous page).
- Give information to patient regarding interpretation of results and explanation of error codes.
- Ensure patient has 2 contact numbers for access to appropriate HCP if concerned.
- Stress importance of understanding test results in collaboration with food eaten, exercise etc.
- Arrange to review self testing results at a suitable interval and throughout life with diabetes.
HYPOGLYCAEMIA AND TREATMENT

**Signs and Symptoms:** Anxiety, Hunger, Trembling, Sweaty, Tingling Lips, Palpitations, Giddy

**TREAT IMMEDIATELY**

**Responsive**
- Administer: 1 1/2-2 Rapid Acting Carbohydrate Portion eg 120ml lucozade, 200ml fruit juice or 200ml cola (NOT DIET)
- Recheck Blood Sugar within 5-10 minutes

- Blood Sugar less than 4mmol/l repeat as above
- If blood sugar greater than 4mmol/l eat next meal if due
- If blood sugar greater than 4mmol/l and between meals eat 1-2 Digestive Biscuits or 1 slice of bread

**Unresponsive**
- Nil by Mouth & Place Patient in Recovery position
- Are you trained to give Glucagon? Is it available?

- No
  - Call 999 & stay with patient
  - Determine Potential Cause of Hypo
  - Liaise with DSN team as appropriate if ongoing concern

- Yes
  - Give Glucagon and stay with patient
  - When conscious Administer 2 Rapid Acting CPs plus 4 slow acting CPs
  - FOR EXAMPLE: 120ml lucozade and 2 slices of bread
  - Contact DSN within 24 hrs for review and determine cause of hypo.

**Remember:**
- Post hypo a patient could be at an increased risk of further hypoglycaemia.
- Sulphonylurea induced, prolonged and more severe hypoglycaemia may be noted amongst the elderly or those patients with renal impairment.
- Advise patient to monitor blood glucose closely.

Carbohydrate Portion (CP) = 10g Carbohydrate

**Examples of rapid acting CP:**
- 100-120ml Lucozade, 3-6 Dextrose Tablets,
- 150-200ml Fruit Juice, 150-200ml Coke,
- 1-2 Hypostop

**Examples of slow acting CP:**
- 2 slices of bread, 4 plain digestive biscuits, 2 weetabix with milk.
HYPO UNAWARENESS

Hypoglycemia unawareness is a common but potentially serious condition which can occur in all people treated with insulin. Hypoglycaemia occurs when the blood glucose is <4mmol/L. Normally, a person will feel warning symptoms when their blood glucose goes low such as shaking and sweating caused by release of stress hormones. However, those with hypoglycemia unawareness have reduced warning signals and do not recognize their blood glucose are low. Even if they happen to do a blood glucose test they may not realize what they need to do to treat the low level. Luckily, stress hormone release is usually adequate to eventually raise the glucose level, although this may take several hours to work.

Hypoglycemia unawareness may be triggered by:

- A recent history of frequent low blood sugars
- A rapid drop in blood sugar
- Having diabetes for many years
- Stress or depression
- Situations where self-care is a low priority
- Alcohol consumption in the last 12 hours
- A previous low blood sugar in the last 24 to 48 hours
- Use of certain medications like beta blockers
- Expect the next HbA1c to be higher

Driving and Hypo unawareness - Explore issues round driving as it is illegal to drive if hypo unaware

How to regain hypo awareness - Avoidance of low blood glucose for between 3 weeks and 3 months helps regain hypo awareness.

To reverse hypoglycemia unawareness

- Reduce the frequency of low blood glucose levels
- Test blood glucose frequently and aim to keep blood glucose between 5 mmol/L and 12mmol/L until hypo awareness returns
**DIETARY ADVICE**

**The overall aims of dietary treatment are:**

- For people with type 1 diabetes the goal is matching insulin dosage to dietary intake and activity to achieve the optimum glycaemic control with the fewest hypoglycaemic incidents and the avoidance of ketoacidosis.
- For people with type 2 diabetes the major goal is to achieve or maintain a healthy BMI in order to reduce insulin resistance, achieve good glycaemic control and tight BP control.
- For all people with diabetes the goal is to reduce the risk of all complications by dietary manipulation and advice on lifestyle factors.

**Aims of dietary advice**

- Minimise fluctuations of blood glucose to as near normal as possible while maintaining optimal nutrition.
- Minimise the risk of hypoglycaemia for people with diabetes treated on insulin and/or oral hypoglycaemic agents.
- Promote weight loss in people who are overweight (BMI >25) with an initial goal of 10% weight loss.
- Maintain lipid levels within agreed levels and by nutritional changes to reduce the risk of vascular complications.
- Reduce blood pressure in hypertensive patients.

It is recommended that UK Nutritional guidelines and current dietary recommendations for people with diabetes are followed.

All patients at diagnosis should see a Registered Dietitian to help implement dietary advice through education, motivational interviewing and shared problem solving.

**Dietary information leaflets**

To ensure correct and up to date advice, only nutrition and diet leaflets, which the local nutrition and dietetic department has approved, should be used.

*See Appendix 3 for more detailed dietary information.*
**EXERCISE ADVICE**

Encourage sedentary people with diabetes to build up gradually to 30 minutes moderate activity most days e.g. walking, yoga, housework, gardening, DIY, bowling.

Encourage active people to do aerobic exercise every 2nd or 3rd day. e.g. swimming, cycling, brisk walking, dancing.

Advise that physical exercise can improve insulin sensitivity, BP and lipid control.

Patients using sulphonylureas, exenatide, repaglinide, nateglinide and gliptins may be at risk of hypoglycaemia during exercise – advise that patient may need a carbohydrate snack before, during or after exercise.

Patients on insulin are at risk of hypoglycaemia during, soon after exercise or delayed for some time after exercise:

1. consider reducing insulin dose or taking extra carbohydrates before exercise.
2. avoid injecting insulin into muscle groups involved in the exercise.
3. consider reducing the insulin dose further if hot weather.
4. be aware that alcohol post exercise may exacerbate the risk and severity of hypoglycaemia.

For patients with established type 1 diabetes, who are poorly controlled with HbA1C >10%, advise avoiding all but mild exercise e.g. walking, until able to stabilise and improve control.

For patients with complications of diabetes, but who are well controlled:

1. Eye disease – avoid isometric exercise, as it can significantly increase blood pressure (i.e. pushing/pulling against an immovable wall or bar anchored to the ceiling etc).
2. CVD – avoid high cardiovascular activities
3. Renal – avoid body building and high protein diet
4. Foot problems – avoid jogging and football, wear comfortable appropriate footwear and check feet post exercise.

For patients who are complicated and poorly controlled, refer to specialist.
SMOKING CESSATION

- Is a clinical priority for patients with diabetes.
- Success rates are highest when delivered as part of a ‘stop smoking’ programme.
- Most smokers ‘fail’ to quit several times before finally stopping.
- Assess where the patient is in the ‘cycle of change’ – if not yet contemplating stopping smoking, provide information about the increased health risks of smoking.
- If contemplating stopping smoking, refer to a local intermediate level provider or provide services in-house.
**BLOOD PRESSURE MANAGEMENT**

**Targets**
- < 130/80 mm Hg - if kidney (including microalbuminuria), eye or cerebrovascular disease (tighter targets in selected circumstances)
- <140/80 mm Hg – all others (tighter targets in selected circumstances)

If target is reached, and remains consistently at the target, monitor 4-6 monthly. Check for adverse effects of antihypertensive therapy including those from unnecessarily low BP.

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**Measure blood pressure at each visit and if > target * repeat measurement within:**
- 1 month if >150/90 mmHg
- 2 months if > 140/80 mmHg
- 2 months if > 130/8 mmHg and kidney, eye or cerebrovascular damage

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**BP above target**
- Average of 3 measurements to confirm
- Advise on lifestyle measures – reduce salt intake, lose weight, stop smoking, increase exercise

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**BP above target**
- Start generically-available ACE inhibitor (ACEI) & titrate dose (if of African-Caribbean descent, add diuretic or CCB to ACEI)

---

**BP above target**
- Add CCB or bendroflumethiazide

---

**BP above target**
- Add Bendroflumethiazide or CCB (whichever not tried above)

---

**BP above target**
- Add α-blocker, β-blocker or potassium-sparing diuretic (use latter with caution if already on ACEI or AIIRA/ARB

---

**BP above target**
- Refer to specialist

---

**For women with a possibility of becoming pregnant, start with a CCB**

---

**If continuing intolerance to ACE inhibitor (other than renal deterioration or hyperkalaemia) change to AIIRA/ARB**. NB if this does not stop cough, change back to ACE inhibitor.

---

**Offer aspirin to all for secondary prevention and on a case by case basis for primary prevention, especially to those over age 50 and those with a high estimated CVD risk.**

Ideally BP should be <145/90 before initiating aspirin, but clinical discretion is indicated.
ASPIRIN AND ANTI-PLATELET THERAPY

Aspirin therapy should be offered to all patients with high cardiovascular risk, unless there is a clear contra-indication, namely anaphylactic allergy or documented GI bleeding with anti-platelet therapy.

Those at high CVD risk will have established CHD, peripheral vascular disease, previous stroke, or established nephropathy.

Those with an estimated 20% risk over 10-years for CVD, or aged 40 with microalbuminuria, smokers, those with hypertension, or moderate-severe diabetic retinopathy should also be considered for aspirin therapy according to their individual level of risk.

Aspirin dosage is not fully defined for diabetes, but should usually be 75mg daily. The role of aspirin in primary prevention of CVD is not currently clear.

If a patient requires gastroprotection, a generically-available PPI can be co-prescribed with dispersible aspirin, e.g. omeprazole 20mg daily.

Alternative or additional anti-platelet therapies have limited roles in diabetes. Those with recurrent ischaemic/thrombo-embolic cerebro-vascular disease may benefit from the addition of dipyridamole (Persantin retard 200 mg bd).

The role of clopidogrel should currently be limited to the in patient management of acute coronary syndrome or for a one year period following angioplasty with stenting, as advocated by cardiology. There is limited data suggesting greater efficacy in diabetes CVD prevention in comparison to aspirin. At present its role as an alternative to aspirin should be limited to those with genuine allergy or documented GI bleeding with aspirin. It is not licenced for the primary prevention of CVD. A PPI should not be co-prescribed with clopidogrel since recent evidence shows the antiplatelet activity may be compromised.

Recurrent CHD-CVD events despite aspirin - add on clopidogrel in exceptional circumstances under specialist care.
MANAGEMENT OF BLOOD LIPIDS

Review CV risk status annually
- assess risk factors, including features of metabolic syndrome and waist circumference
- note changes in personal or family CV history
- perform full lipid profile (including HDL-C and TG) – also perform after diagnosis and repeat before starting lipid-modifying therapy
- If history of elevated serum TG, perform full fasting lipid profile (including HDL-C and TG)

Consider to be at high CV risk unless all of the following apply:
- not overweight (tail or with body-weight-associated risk assessment according to ethnic group)
- normotensive (<140/80 mmHg in absence of antihypertensive therapy)
- no microalbuminuria
- non-smoker
- no high-risk lipid profile
- no history of CV disease
- no family history of CV disease

Estimate CV risk from UKPDS risk engine annually if assessed as not at high CV risk (see www.dtu.ox.ac.uk)

Simvastatin 40mg
£1.35 for 28 day supply
Reduce dose to 20mg (97p) od in case of interacting drugs
If intolerant to Simvasta, try pravastatin 20mg and increase to 40mg (£2.59) od if tolerated

Renal Impairment
- If creatinine clearance < 30ml/min use doses of Simvastatin > 10mg with caution
- Start with lower doses of pravastatin if creatinine clearance < 20ml/min

Monitoring Lipids Screen/Profile
Should be measured:
- Before therapy is initiated
- At 6-8 weeks after initiation or change of drug or dose
- At 12 monthly intervals thereafter

Liver Function Tests
Should be measured:
- Before therapy is initiated
- At 6-8 weeks after initiation or change of drug or dose

Creatine Kinase
Should be measured:
- Before therapy initiated
- Repeat only when symptoms of muscle pain as distinct from muscle soreness
- IF MYOSITIS IS PRESENT OR SUSPECTED, DISCONTINUE IMMEDIATELY.

OTHER
- If drugs that interfere with statin metabolism are introduced for another illness, consider reducing the statin dose or temporarily or permanently stopping it.
- If unexplained peripheral neuropathy develops stop statins and seek specialist advice.

TARGETS TO GUIDE TREATMENT
Secondary & Primary Prevention
Total Cholesterol ≤4mmol/l OR
LDL Cholesterol ≤2mmol/l
It should be recognised that less than half of patients will achieve this.

High serum TG

Assess possible secondary causes (including poor glycaemic control) and treat if identified

If TG remains >4.5mmol/litre (despite optimised glycaemic control), offer fibrate (if acute need, may be necessary to start fibrate before statin)

If lifestyle measures and fibrate therapy have proven ineffective, consider a trial of highly concentrated, licensed omega-3 fish oils

Age under 40 years and poor CV risk factor profile
Consider statin

Assess CV risk using UKPDS risk engine

CV risk >20% / 10 years
Offer generic simvastatin (to 40 mg) or a statin of similar efficacy and cost
If becoming pregnant is a possibility, discuss issues surrounding statin use and agree next step with woman

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**MANAGEMENT OF HIGH SERUM TRIGLYCERIDES**

**HIGH SERUM TG**

Assess possible secondary causes (including poor glycaemic control, hypothyroidism, high alcohol intake, obesity) and treat if identified

- **TG > 4.5 mmol/L (despite optimised glycaemic control)**
  - Add fibrate to statin (if >10mmol/L, refer to specialist) (do not use gemfibrozil with statins)
  - TG > 4.5 mmol/L (Despite both fibrate and statin therapy)

- **High CV risk & TG 2.3- 4.5 mmol/L, despite statin therapy**
  - Consider adding fibrate to statin (do not use gemfibrozil with statins)
  - TG 2.3- 4.5 mmol/L, despite both statin & fibrate therapy

**REFER TO SPECIALIST**

**CAUTION:** statin-fibrate combination has increased risk of myositis and rhabdomyolysis, especially if renal function is impaired – monitor LFTS, U&Es CK
MANAGEMENT OF ABNORMAL LFTs IN T2DM

Mildly elevated LFTs (i.e. any single LFT ≥ 2x ULN). (raised GGT is most common abnormality in NAFLD)

- Encourage weight loss and exercise.
- Metformin (only if normal clotting and no advancing liver disease i.e. no hypoalbuminaemia or ascites etc).
- Withdraw sulphonylurea in advancing liver disease.
- Statins – abnormal baseline LFTs do not predict statin-induced hepatotoxicity, so can initiate, but monitor LFTs at 6/52, 3 months and 6 monthly thereafter.
- Specialist may recommend pioglitazone in selected cases.

Exclude other causes:
- Hepatitis B and C screen
- Ferritin saturation (?haemochromatosis)
- Auto-immune serology/Immunoglobulin

If above all negative, diagnosis is probably either non-alcoholic fatty liver disease (NAFLD) or non-alcoholic steato-hepatitis (NASH), both of which can lead to cirrhosis.

Normal LFTS in a T2DM pt does not exclude liver disease.

Arrange liver US on selected pts:
- Pts in whom LFTs get worse over time – minor elevation of GGT and ALT common and not significant.
- Pts in whom ALT >3x ULN.
- Pts in whom ALP is ≥ 2 x ULN (not a typical feature of NAFLD).
- Pts with enlarged liver and/or enlarged spleen on examination
- US on obese patients may be technically difficult with inconclusive results – refer to specialist.

Refer to diabetologist or hepatologist:
- Abnormal US or inconclusive result due to obesity.
- ALT/GGT ≥ 3 ULN.
- Anyone with signs of liver disease or enlarged liver and/or spleen requires urgent hepatology referral.
- Where there is clinical suspicion of liver disease.

All T2DM are at risk of progressive NASH leading to cirrhosis with risk of hepatocellular carcinoma

Refer to diabetologist or hepatologist:
- Abnormal US or inconclusive result due to obesity.
- ALT/GGT ≥ 3 ULN.
- Anyone with signs of liver disease or enlarged liver and/or spleen requires urgent hepatology referral.
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Rx of NAFLD:
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- Statins – abnormal baseline LFTs do not predict statin-induced hepatotoxicity, so can initiate, but monitor LFTs at 6/52, 3 months and 6 monthly thereafter.
- Specialist may recommend pioglitazone in selected cases.
MICROALBUMINURIA, NEPHROPATHY AND CKD

NB: Nephropathy is persistent microalbuminuria over four months

**PLEASE NOTE THAT THESE TESTS ARE IN ADDITION TO THE eGFR**

DIPSTICK URINE FOR PROTEIN USING MULTISTIX / ALBUSTIX

IF NEGATIVE

- Collect early morning urine for Albumin / Creatinine ratio (ACR)
- Normal ACR
  - males < 2.5 mg / mmol
  - females < 3.5 mg / mmol
- If specimen is within normal range retest annually
- If positive, repeat x 2 within 3-4/12 (microalbuminuria confirmed if at least 2 positive)

Microalbuminuria is a non-specific marker of renal disease. A reduction in albuminuria excretion has been shown to independently reduce the rate of decline in glomerular function.

SEE eGFR GUIDELINES

IF POSITIVE

- If 1st specimen is abnormal exclude UTI (collect MSU)
- If 2nd specimen is dipstick protein positive, quantify proteinuria by sending for ACR
- Aggressively treat to target
  1. BP (Aim <130/80)
  2. Glycaemic control
  3. Commence ACE inhibitor and titrate to full dose, or ARB if intolerant of ACEI (Irbesartan has licence in microalbuminuria)
  4. Note: ACEI/ARB contra-indicated in pregnancy
- Repeat ACR after 6 months
- If specimen is abnormal, refer to specialist care according to CKD guidelines

- Microalbuminura must be confirmed in a sterile urine sample i.e. if urine dip is suggestive of UTI, send MSU and treat the infection, then re-dipstick post Abs and send for ACR – remember that proteinuria occurs in both UTI and nephropathy.

Refer to diabetologist if ACR is greater than 100mg /mmol (consider referral if >30mg/mmol)
INDICATIONS FOR REFERRAL TO UROLOGY:

All macroscopic haematuria should be referred to the Urology Department

- Isolated microscopic haematuria (after excluding UTI) should be sent to Urology if patient > 50 years
- Isolated microscopic haematuria (after excluding UTI) should be sent to Nephrology if patient < 50 years
- Microscopic haematuria and proteinuria – refer to Nephrology if < 50 years; if > 50 years refer to Nephrology only if Urology Investigations negative.

WHEN TO SUSPECT RENAL DISEASE OTHER THAN DIABETIC NEPHROPATHY IF URINE ACR RAISED

- no significant or progressive retinopathy
- BP particularly high or resistant to Rx
- previously normal ACR and develops ACR>100mg/mmol
- significant haematuria
- rapidly deteriorating GFR

Renovascular disease

- Up to 20% of hypertensive type 2 DM
- Up to 40% if PVD
- Exacerbated by full RAAS inhibition
- Impact on creatinine and potassium may be delayed. Referral to joint renal clinic if >50% rise in creatinine after RAAS Rx changes
CKD AND eGFR in DIABETES MELLITUS

Chronic Kidney Disease (CKD) and the estimated Glomerular Filtration Rate (eGFR)

- Chronic Kidney Disease (CKD) is common. It affects approximately 10% of the population and is often asymptomatic until renal function is severely reduced.
- Serum creatinine has traditionally been the mainstay for the initial identification of renal disease. Serum creatinine on its own does not detect minor degrees of kidney impairment and is not directly related to the GFR.
- eGFR forms the basis for the classification and management of CKD.
- CKD is an important risk factor for Cardiovascular problems. eGFR makes it easier to tell who should be offered treatment.
- Hospital laboratories will calculate the eGFR using the following variables: creatinine, age, sex.
- Ethnicity should be factored in by multiplying the result by 1.212 in patients of African – Caribbean origin. This should be done by a clinician.
- eGFR is not applicable in people <18 years, acute renal failure, pregnancy, amputees, extremes of body weight, single kidney.

<table>
<thead>
<tr>
<th>Stage</th>
<th>eGFR result</th>
<th>Severity of CKD</th>
<th>Frequency of testing</th>
<th>Referral to renal team</th>
<th>Type of referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&gt; 90</td>
<td>Normal</td>
<td>Annually</td>
<td>Only if specifically indicated See table 1</td>
<td>See below</td>
</tr>
<tr>
<td>2</td>
<td>60 - 89</td>
<td>Mild impairment 60 – 90 % renal function</td>
<td>Annually</td>
<td>As for Stage 1 See table 1</td>
<td>See below</td>
</tr>
<tr>
<td>3</td>
<td>30 - 59</td>
<td>Moderate impairment 30 – 60% renal function</td>
<td>3 – 6 monthly</td>
<td>NO – ONLY if deteriorating function See table 2</td>
<td>Routine referral – See below</td>
</tr>
<tr>
<td>4</td>
<td>15 - 29</td>
<td>Severe impairment 15 – 30% renal function</td>
<td>3 monthly</td>
<td>Yes See table 3</td>
<td>Urgent referral or discussion</td>
</tr>
<tr>
<td>5</td>
<td>&lt; 15</td>
<td>Established CKD</td>
<td>3 monthly</td>
<td>Yes See table 3</td>
<td>Immediate referral or discussion</td>
</tr>
</tbody>
</table>

PATIENT WITH HIGH CREATININE AND LOW eGFR

In all cases initial assessment of high creatinine / low eGFR should include:

- Is the patient well? Is there a history of significant disease?
- History of significant associated disease?
- Clinical assessment: Look for signs of sepsis, heart failure, hypovolaemia, bladder enlargement
- Medication Review: Look for recent additions, e.g. ACE inhibitors, ARB’s, NSAIDS, Antibiotics, diurectics, Mesalazine, PPIs
- Blood tests: HbA1c, Ca2+, PO4, FBC, CRP. Hypercalcaemia may cause acute renal impairment or deterioration
- Urine tests: Dipstick for blood and protein
- BP / Cardiovascular assessment (including peripheral circulation) : Malignant hypertension and Grade 4 retinopathy needs immediate referral to on call medical team
- Imaging: Required if function is deteriorating and of unknown origin. Urgency will be ascertained by speed of deterioration

REFER TO APPROPRIATE TABLE
Stage 1 & 2 ··········· Table 1
Stage 3 ············· Table 2
Stage 4 & 5 ········· Table 3
### TABLE 1
Management of Stage 1 and 2 CKD in Diabetes Mellitus

<table>
<thead>
<tr>
<th>MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Patients with Stage 1 and 2 CKD can be managed in Primary Care</td>
</tr>
<tr>
<td>• Patients with Nephrotic range proteinuria &gt;3g / 24 hours or PCR &gt;300 mg / ml – refer to specialist Diabetes Renal Clinic</td>
</tr>
</tbody>
</table>

**Initial assessment to include:**

- **Blood tests:** HbA1c, TFTs, Ca2+, PO4, FBC, CRP
- **Urinalysis:** Dipstick for blood and protein
- **BP/Cardiovascular assessment (including peripheral circulation)**

**Ongoing Management:**

- Blood tests annually for:
  - HbA1c
  - U&E
  - Cholesterol
- Urinalysis: Annually for blood and protein
- Meticulous control of BP ≤130/80
- Smoking, exercise and lifestyle advice
- Aspirin
- Cholesterol lowering therapy
- Dual or triple renin-angiotensin system blockade e.g. ARB plus ACEI, requires specialist renal or diabetologist care.
### TABLE 2
Management of Stage 3 CKD in Diabetes Mellitus

**MANAGEMENT**
- Patients with stable eGFR or creatinine - best managed on a shared care basis
- Referral to specialist Diabetes Renal Clinic is not required unless eGFR is 30–60 mls/min*

**EXCEPTIONS**
- Hyperkalaemia
- Dual-triple RAAS blockade
- Renal vascular disease

**Initial assessment to include:**
- **Review previous results**: Assess whether stable or deteriorating. Repeat within 2 weeks if patient appears well. If patient is unwell repeat within 2 days. NB Slight changes in eGFR may move patients frequently from one stage to another. **Look for average readings**
- **Assess for the following:**
  - Is the patient well?
  - **Clinical assessment** for heart failure, sepsis, hypovolaemia, examination for bladder enlargement (may need imaging if obstruction) and rectal examination for prostate enlargement
  - **Medication review**: Look for recent additions, e.g. ACE inhibitors, ARBs, NSAIDs, Masalazine, Antibiotics, Diuretics
  - **Blood Tests**: HbA1c, Ca2+, Phosphate, Hb, Cholesterol,
  - **Urinalysis**: Dipstick urine for blood and protein
  - **Cardiovascular assessment**: BP and peripheral vascular disease
  - **Imaging**: Exclusion of obstruction
  - **Specialist management of bone and foot health**

**Ongoing Management:**
**IF CREATININE IS >150 mmol/l OR THE eGFR <30 STOP METFORMIN**
- Blood tests initially to be done 3 monthly then 6 – 12 monthly when stable for:
  - HbA1c
  - Creatinine and Potassium
  - Calcium and Phosphate
- **Urine Tests:**
  - Protein estimation is proteinuria
  - If MICROSCOPIC haematuria – Urology referral if >50 years old, if <50 years old Nephrology referral. All MACROSCOPIC haematuria needs urology referral
- **Blood Pressure**: Meticulous control of BP ≤130/80 – dual-triple RAAS blockade under specialist advice-shared care
- **Smoking, exercise and lifestyle advice**
- **Aspirin**
- **Lipid lowering therapy**
- **Immunisation for influenza and pneumococcus**
- **Medication Review**: Regular review of medication to minimise nephotoxic drugs (particularly NSAIDs) Please exercise caution with bisphosphonates
<table>
<thead>
<tr>
<th>TABLE 3</th>
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<tr>
<td>Management of Stage 4 and 5 in Diabetes Mellitus</td>
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### GENERAL
- Patients will be referred to the renal clinic and may be cared for on a shared care basis

### EXCEPTIONS
- If severe renal impairments is part of another terminal illness – frail demented elderly
- Those patients for whom further management is clearly inappropriate
- There is a clear End of Life pathway already in place

### Assess for following:
- **Clinical Assessment and Medication Review as per Stage 3 CKD**
- Assess whether values are deteriorating. Repeat within 2 weeks or if patient is unwell repeat within 2 days.
- Is the patient well? / Clinical assessment: Is there significant associated disease? If yes, consider urgent referral
- Blood tests: HbA1c, Ca2+, Phosphate, Hb, cholesterol, PTH
- Urinalysis: Dipstick urine for blood and protein
- BP / Cardiovascular assessment
- Dietary assessment

### Ongoing management:
**METFORMIN SHOULD BE STOPPED IN ALL PATIENTS WITH eGFR <30**
- Blood tests 3 monthly for:
  - HbA1c and Lipids
  - Creatinine, Potassium and bicarbonate
  - Ca2+
- Hb, Ferritin, B12 and folate
- Phosphate
- PTH

- **Urine Tests:**
  - Protein estimation if proteinuria
  - Haematuria as in Stage 3

- **Correction of acidosis:** Oral bicarbonate only after discussion with renal team

- **Blood Pressure:** Meticulous control of BP ≤130/80
- **Smoking, exercise and lifestyle advice**
- **Aspirin**
- **Cholesterol lowering therapy**
- **Immunisation for influenza and pneumococcus. In Stage 4 & 5 CKD Hepatitis B is also added**
- **Medication review:** Regular review of medication to minimise nephrotoxic drugs (particularly NSAIDs).
- Caution with bisphosphonates
## SIGNS AND SYMPTOMS OF NEUROPATHY

### DIAGNOSIS

- **HISTORY**
  - Consider differential diagnosis (alcohol excess, B12 deficiency, malignancy)
  - Sometimes acute, sometimes insidious onset and progressive
  - Paraesthesia in toes, feet and shins
  - Anaesthesia
  - Hyperaesthesia
  
  *Symptoms often worse at night or at rest*

- **PAIN**
  - A wide variety of descriptions of peripheral symptoms can be present.
  - Careful patient questioning is necessary as symptoms can be confusing
  
  **Symptoms may include**
  - Numbness
  - Tingling
  - Prickling
  - Pins and Needles
  - Aching
  - Dull pain
  - Burning
  - Buzzing
  - Cold
  - Sharp
  - Knife-like
  - Electric shocks

  The severity of individual patient symptoms will influence which step of the care pathway is appropriate for commencement of treatment

### SIGNS

- **WEAKNESS**
  - Distal and/or proximal
  - Loss of reflexes

- **NEUROPATHIC EXAMINATION**
  - 10 g Monofilament,
  - Vibration perception (tuning fork 128 Hz), calibrated tuning fork, Bio / Neurothesiometer
  - Proprioception
  - Light touch (often retained long after pain has gone)
  - Sensory loss glove and stocking distribution
PERIPHERAL NEUROPATHY HAS BEEN DIAGNOSED

STEP ONE
- Improve glycaemic control. Liaise with diabetes nursing team / dietitian if appropriate. Aim for normoglycaemia.
- Prescribe analgesia and advise to take regularly, consider for mild to moderate pain prescribing,
  - Paracetamol 1 g qds.
  - Ibuprofen 400 mg tds or Diclofenac 75 – 150 mg bd/tds.
  - Co- Dydramol 10/500 mg. 1 to 2 tablets tds or qds
  - Tramadol 50 mg – 100 mg qds
- If patient is experiencing night time cramps only, consider prescribing:
  - Quinine sulphate 200 – 300 mg nocte (inform patient that it may take up to 1 month to see an improvement)
  - May benefit from Low calorie Indian tonic water (not available on FP10).
  - Reassure. (Use of pain diary may be useful.)
- Review in 1 month

STEP TWO
- Review symptoms, pain and glycaemic control.
- If pain still present, reassure.
- Check concordance with analgesia previously prescribed in Step 1.
- If pain is still present, prescribe:
  - Amitryptyline 25 mg – 75mg at night (unlicensed for this indication) or nortriptyline 10-25mg at night.
  - Gabapentin 300 – 900 mg daily in divided doses.
- Review in 1 month

STEP THREE
- Review symptoms, pain and glycaemic control.
- If pain still present / no improvement in symptoms, refer for specialist input.
- Monitor therapy, and increase, up to maximum licensed dosage.
- Consider prescribing:
  - Pregabalin 150 – 600 mg in divided doses if Gabapentin is not effective at maximum dosage or not tolerated.
  - Duloxetine 60mg daily (child and adolescent under 18 years not recommended).
  - Capsaicin cream 45 g, noting that initially there may be an intense burning sensation.

STEP FOUR
- Review symptoms, pain and glycaemic control.
- If pain is not controlled referral to specialist pain clinic.
ERECTILE DYSFUNCTION

Affects >40% of men with DM – enquire routinely.

Identify treatable causes:
- Medication? – Beta blockers, anti-hypertensives, psychotropic agents, antidepressants, high dose steroids, decongestants, etc
- Lifestyle? – smoking, excess alcohol, substance abuse
- Optimise glycaemic control
- Examine patient - ?endocrine pathology/ secondary sexual characteristics present?
- Baseline 9am testosterone – if less than 9 nmol/l – repeat with SHBG, prolactin, LH, TFTs.
- Refer to specialist endocrinology if confirmed hypogonadal-endocrinopathy
- Psychological - refer for psychosexual counselling *
- Other causes – vascular (PVD, CKD), urological (pelvic/prostatic surgery, radiation, previous injury) and neurological (MS, Parkinsons etc) – refer appropriately.

Check medications – PDE5 inhibitors are contra-indicated with nitrates. Uncontrolled hypertension must be treated prior to initiation. Risk of 1st dose hypotension where pre-existing postural hypotension

PDE5 inhibitors
Sildenafil (Viagra), vardenafil (Levitra) or tadalafil (Cialis)
- DoH suggests 1 treatment/week – consider on individual basis.
- Effective in up to 60% men.
- Safe in stable CHD (if not on nitrates).
- Continue trial for 6 months before deeming ineffective.
- Onset of action often delayed in DM – advise to take vardenafil/sildenafil 2 hours before planned activity (tadalafil up to 36 hours prior).

Alternative therapies*
- Alprostadil intracavernosal injection (caverject)
- Alprostadil urethral application (MUSE) – less effective.
- Vacuum devices – safe, efficacious, no restriction on frequency of use. Through referral to Specialist Men’s Health Service
- Penile implants – GP request in limited cases via exceptional treatment panel or privately funded

*Advice: Joyce Corkin, Men’s Health Nurse, 01707 369203 or joyce.corkin@nhs.net
Specialist Referral for complex non-responders with ED: via Mr Tim Lane, Consultant Urologist, Lister/QEII Hospitals or WHHT
MANAGEMENT OF THE DIABETIC FOOT

- At least 50% of foot amputations are amongst people with diabetes
- Patients are at risk for progressive foot problems if they have diabetic peripheral neuropathy and/or peripheral vascular disease
- Attention to glycaemic control, smoking and control of CVD risk factors is essential to maintain foot health
- Standardised annual foot assessment in hospital and community settings is the basis for risk classification and an ongoing management plan
- Education about foot care and foot wear by podiatry and the multi-disciplinary diabetes team is an integral part of effective care
- Ensure that patients having regular private chiropody have standardised information recorded in primary-secondary care notes and patient hand held records
- All people with diabetes and neuropathy-peripheral vascular disease should have access to an HPC Registered podiatrist.

**FAST TRACK FOOT REFERRAL – ACTIVE FOOT PROBLEMS / HOT FOOT REFER IMMEDIATELY TO THE ACUTE.**

Patients with significant foot problems and suspected or documented peripheral vascular disease should be under the care of the vascular team/joint vascular foot clinic. Enquiry regarding intermittent claudication or rest pain is required. All patients with PVD must have attention to smoking cessation, be considered for anti-platelet and statin-fibrate therapy. Orthopaedic input to the foot care service is being sought.

The majority with diabetic peripheral neuropathy are asymptomatic. Clinical assessment uses the standardised screening method to assess fine touch and vibration sensation.

Both symptomatic and asymptomatic peripheral neuropathic patients are at increased risk of foot ulceration. Regular podiatry for debridement is needed in this situation.

Foot deformity and/or the development of callous on pressure points are also features which predispose to neuropathic ulcerations.

Symptomatic neuropathy can take different forms. These may include reporting of numbness, burning, or pain or dysaesthesiae. A feeling of ‘walking on cotton wool or on pebbles’ may be reported. Pain may be severe and lancinating and occasionally there may be involuntary muscle jerking of the feet. Symptoms are often worst at night. Night cramp is a common feature in patients with neuropathy and neuro-ischaeamia

Treatment of neuropathy: Effective glycaemic control often helps symptom control and this may require conversion to insulin. Rarely as in the case of retinopathy, insulin conversion can lead to symptomatic deterioration (‘insulin neuritis’) and secondary care is recommended for the management of difficult symptomatic neuropathy.
FOOT HEALTH - THE ACUTE FOOT

Foot lesion detected

Spreading or deep infection, wet necrosis critical ischaemia and/or systemically unwell?
Suspicion of fracture or foreign body?
Red, hot swollen foot (Charcot?)

Yes

ADMIT

No

Ulceration and absent foot pulses or Ulceration and infection present for >2 weeks

Yes

Refer to MDT via Podiatry

No

Previous loss of part/all of either foot?
Previous vascular intervention?
Lesion occurred in bespoke footwear?

Yes

Refer to Podiatry

No

Assess foot

Assess footwear

Look for intrinsic foot factors (callus/deformity)

Assess blood supply

Treat infection

Dress wound

Refer to Podiatry

Review no later than 1 week

Admit at weekend if any concern, otherwise refer urgently to MDT via Podiatry on Monday

Pain is not a reliable measure of severity; limb threatening lesion are often painless

If in doubt at any point contact Podiatry Office – See Pages 79-81 for contact details

See Page 59 for Explanatory Notes on superscripts
DIABETIC FOOT ALGORITHMS – EXPLANATORY NOTES

This algorithm should be used to guide timely and appropriate management of foot lesions in patients with diabetes mellitus. It is NOT a guide for routine foot assessment.

1. The lack of pain in a swollen, red foot can be falsely reassuring. Sensory neuropathy means antecedent trauma causing a fracture is not recalled and foreign bodies embedded in the foot go unnoticed. Continued weight bearing in these circumstances can jeopardize the stability of the foot. If the patient has sensory neuropathy, have a very low threshold for imaging feet which "flare up" with no apparent cause.

2. Past history should be taken seriously – previous amputation predicts future amputation. The same pathological processes which led to toe/foot loss before are likely still to be at play and further problems (e.g. vascular insufficiency) may have accrued over time. It is one thing to live life with a single below knee amputation but quite another to be a bilateral amputee.

3. Shoes should be foot shaped. Match the site of the lesion to its corresponding spot in the shoe – are there clues in the shoe to indicate that part of the foot is under pressure? Until pressure is taken off the lesion will not heal. This can often be done by simply changing footwear to a shoe that will accommodate the foot shape but may require more specialist attention (total contact insole, bespoke footwear).

4. Has the lesion arisen because foot deformity (e.g. arthritic process, Charcot) has placed a part of the foot in a precarious position, subjecting it to pressure and stresses that it was never designed to withstand? The deformity may easily be accommodated in bespoke footwear but, on occasion, may be suitable for surgical correction. Callus formation is a reaction to excessive pressure and/or friction and requires debriding. Incorrect debridement can worsen lesions and should only be done by staff competent to undertake the procedure.

5. A normal foot has 2 pulses. The presence of a lesion in the absence of both pulses can indicate that vascular insufficiency is contributing to the problem. The vasculature may require imaging and intervention.

6. The diagnosis of infection is a clinical one (discharge, erythema, swelling, odour, discolouration). Clean and debride the open wounds/ulcers first before taking deep swabs from the ulcer base. Common pathogens in acute wounds include *Staph. aureus* and haemolytic *Strep* but if known MRSA +ve will need appropriate targeted therapy. Chronic wounds may be polymicrobial (3-5 organisms).

7. No dressing will ever compensate for inadequate footwear, vascular insufficiency or untreated infection.

8. This is critical to determine that previous interventions have been effective. This should be no later than one week but patients must be told to make contact sooner if the lesion has deteriorated in the interim. If a lesion is deteriorating or not improving seek help. Late referrals lead to early amputations.
FOOT HEALTH REFERRAL GUIDE

Differential diagnosis

Please Note: patients may have neuroischaemic ulceration

<table>
<thead>
<tr>
<th>Site</th>
<th>Neuropathic</th>
<th>Ischaemic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight bearing areas, e.g. metatarsal heads, tips of toes and heel</td>
<td>Great toes, medial and lateral margin of the foot</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Neuropathic</th>
<th>Ischaemic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Well defined, punched out</td>
<td>Necrotic centre surrounding erythema</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Callus</th>
<th>Neuropathic</th>
<th>Ischaemic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Not usually</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pain</th>
<th>Neuropathic</th>
<th>Ischaemic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not usually</td>
<td>Yes *Neuroischaemic more prevalent than ischaemia alone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infection</th>
<th>Neuropathic</th>
<th>Ischaemic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Often</td>
<td>Often</td>
</tr>
</tbody>
</table>

Referral guide for diabetes patients by risk classification – See Appendix 7 / 8 for Podiatry Foot Health Assessment Application Forms for East and North and West Herts.

<table>
<thead>
<tr>
<th>Risk Classification</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Ischaemia / Neuropathy</td>
<td>Annual Review - give general Diabetic foot care advice in Practice Diabetes Clinic</td>
</tr>
<tr>
<td>No Ischaemia / Neuropathy but Presence of Callus / Nail deformity</td>
<td>1 At increased risk Refer to the Podiatry clinic - give general Diabetic foot care advice</td>
</tr>
<tr>
<td>Ischaemia and/or Neuropathy (no Callus, Nail or Foot Deformity)</td>
<td>3 At increased risk 6-12 Monthly Review in Primary Care If unable to manage nail care, refer to podiatry - give At-Risk foot care advice</td>
</tr>
<tr>
<td>Ischaemia and/or Neuropathy + Callus or Nail deformity or Foot Deformity</td>
<td>4 At high risk Refer to the Podiatry clinic - give At-Risk foot care advice</td>
</tr>
<tr>
<td>Amputation or Previous/Active Ulceration or CNA</td>
<td>5 Ulcerated foot IMMEDIATE Podiatry Referral if there is Active Ulceration or Infection</td>
</tr>
</tbody>
</table>
CLINICAL CLASSIFICATION OF DIABETIC FOOT INFECTION

Clinical classification of a diabetic foot infection - IDSA guidelines
(remember the ulcer itself is NOT an infection)

<table>
<thead>
<tr>
<th>Infection severity</th>
<th>Clinical manifestation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninfected / colonisation</td>
<td>Wound lacking purulence or any manifestations of inflammation</td>
</tr>
<tr>
<td>Mild</td>
<td>Presence of $\geq 2$ manifestations of inflammation (purulence, or erythema, pain, tenderness, warmth, or induration), but any cellulitis/erythema extends $\leq 2$ cm around the ulcer, and infection is limited to the skin or superficial subcutaneous tissues; no other local complications or systemic illness.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Infection (as above) in a patient who is systemically well and metabolically stable but which has $\geq 1$ of the following characteristics: cellulitis extending $&gt;2$ cm, lymphangitic streaking, spread beneath the superficial fascia, deep-tissue abscess, gangrene, and involvement of muscle, tendon, joint or bone</td>
</tr>
<tr>
<td>Severe</td>
<td>Infection in a patient with systemic toxicity or metabolic instability (e.g., fever, chills, tachycardia, hypotension, confusion, vomiting, leukocytosis, acidosis, severe hyperglycemia, or azotemia)</td>
</tr>
</tbody>
</table>

**NOTE.** Foot ischemia may increase the severity of any infection, and the presence of critical ischaemia often masks any signs of infection therefore leading to severe infection.

All patients with moderate to severe foot infections will require admission to hospital.

**The priorities are to**
- treat any infection that is present
- treat vascular disease, if present
- alleviate the pressure to aid healing (off-loading)
- achieve good metabolic control and control of risk factors for cardiovascular disease
ANTIBIOTIC GUIDELINES – FOOT INFECTION

Superficial neuropathic ulcer with no sign of infection does not need antibiotic treatment and can be managed as outpatient.

Diabetic foot ulcer

Mild

PO coamoxiclav 625 TDS
OR
PO Erythromycin 500mg TDS/Clarithromycin 500mg BD (if pen allergic) AND metronidazole 500mg TDS

(PO Clindamycin may be appropriate in selected cases. Please discuss with consultant diabetologist or microbiologist)

Duration of treatment 7-10 days

Arrange follow up with the Diabetic podiatry clinic (should be seen in the following week)

Moderate

Admit

Severe

Admit

Clinical failure of appropriate antibiotic therapy might be because of antibiotic resistance, inappropriate antibiotic or dosage, undiagnosed deep abscess, osteomyelitis, or severe tissue ischaemia.

Discontinuation of antibiotics should be considered when all signs and symptoms of infection have resolved, even if the wound has not completely healed. Osteomyelitis may require more than 6 weeks of antibiotics.

Reassess 24 to 72 hours later to evaluate the response and to modify the antibiotic regimen, if indicated by early culture results.
DIAGNOSIS AND TREATMENT OF DIABETIC RETINOPATHY

- Diabetic retinopathy is still the major cause of blindness in people of working age in the UK.
- Hyperglycaemia is the basis for diabetic retinopathy and there is irrefutable evidence that improved glycaemic control can reduce the development and progression of diabetic retinopathy.
- Rapid tightening of glycaemic control in established retinopathy can lead to permanent retinopathic visual damage, especially when there is coexistent hypertension – joint ophthalmology-diabetes secondary care advised in this situation.
- Hypertension, albuminuria and smoking independently contribute to retinopathy.
- Hyperlipidaemia may increase the risk of retinopathy, especially exudative maculopathy.

All patients should undergo annual retinal screening. QoF demands recording only that the retinal screening has been done. Because it is possible that retinal pathology could be missed/mis-managed we urge everyone to use read codes at all times (see below). Efforts to ensure information is also available in patient hand held records should take place.

Most patients with moderate severe active diabetic retinopathy should be under secondary care for both diabetes and ophthalmology.
- Urgent ophthalmology referral is required if sudden severe loss of vision or new sight-threatening retinopathy (maculopathy or new vessel formation) is suspected.
- Gradual tightening of glycaemic control, blood pressure control, and attention to smoking and dyslipidaemia are essential in active retinopathy.
- If there are any doubts regarding retinal status then hospital ophthalmology referral is recommended.

Surgeries are screened one at a time in turn. The screening programme sends the list of patients to each surgery for updating immediately before each round of screening. GPs should not exclude any patients from the list – exclusions are managed by the programme. All diabetic patients, both Type 1 and Type 2, should be included on the GP list.

- Patients who are attending an eye clinic for any condition will still be offered screening, as the images provide valuable additional information and retinopathy may be overlooked in ophthalmology clinics.
- Fundus examination by an optometrist does not count as screening in East and North Herts PCT area as optometrists are not part of the screening programme. Patients should continue to see their optometrist every 2 – 3 years for a routine sight test as well.
## READ CODES AND INSTRUCTION FOR GP MANAGEMENT

<table>
<thead>
<tr>
<th>Screening result</th>
<th>Read code</th>
<th>Action required by GP</th>
<th>Action by screening programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>R0: no diabetic retinopathy</td>
<td>2BBI, 2BBJ (R), 2BBK (L)</td>
<td>Normal vigilance</td>
<td>Annual rescreen</td>
</tr>
<tr>
<td>R1: mild non proliferative diabetic retinopathy</td>
<td>2BBP (R), 2BBQ (L)</td>
<td>If new onset in younger patients, especially if sub-optimal control of BS, BP and lipids, recall patient for early interim diabetes review. Consider community specialist advice.</td>
<td>Annual rescreen</td>
</tr>
<tr>
<td>R2: (moderate non-proliferative/pre-proliferative)</td>
<td>2BBR (R), 2BBS (L)</td>
<td>Recall patient for early diabetes review (as above). Consider referral to specialist community diabetes service.</td>
<td>Depending on severity, arrange 6 monthly or 12 monthly review under ophthalmology or under screening programme</td>
</tr>
<tr>
<td>M: Maculopathy</td>
<td>2BBO</td>
<td>Recall patient for early diabetes review. Consider referral to secondary diabetes care. Consider stopping glitazones if macular oedema is present. NB seek clarification from ophthalmologist if macular oedema is not specifically reported.</td>
<td>Recall for laser treatment within 3 months. Arrange ongoing ophthalmology review and treatment if necessary</td>
</tr>
<tr>
<td>U : unassessable</td>
<td>F4202</td>
<td>Normal vigilance</td>
<td>Recall for slit lamp screening</td>
</tr>
<tr>
<td>Exempt from screening</td>
<td>816F</td>
<td>Normal vigilance. Continue to include patient on the annual list sent to the screening programme.</td>
<td>Exemptions are managed by the screening programme. The commonest reasons are attendance at a retinal clinic or medically unfit.</td>
</tr>
</tbody>
</table>
## READ CODES AND INSTRUCTION FOR GP MANAGEMENT…Cont’d

<table>
<thead>
<tr>
<th>Event</th>
<th>Read code</th>
<th>Action by GP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optometrist reports background retinopathy</td>
<td>2BBP (Right eye) 2BBQ (Left eye)</td>
<td>No referral needed. Annual screening will continue under screening programme. If retinopathy is new consider recalling patient for early diabetes review.</td>
</tr>
<tr>
<td>Optometrist reports sight threatening retinopathy - ie maculopathy, pre proliferative or proliferative retinopathy</td>
<td>2BBY 2BB0 2BBT 2BBV 2BBR 2BBS</td>
<td>Refer urgently to ophthalmology</td>
</tr>
<tr>
<td>Optometrist reports vitreous haemorrhage</td>
<td>2BBT (R) 2BBV (L) 2BBY (referral)</td>
<td>Refer to eye accident service</td>
</tr>
<tr>
<td>Patients symptomatic</td>
<td>2BBY (referral)</td>
<td>Refer to ophthalmologist</td>
</tr>
<tr>
<td>Type 2 patient converting to insulin if known to have moderate retinopathy (R2)</td>
<td>2BBY (referral)</td>
<td>Refer via SPOC</td>
</tr>
<tr>
<td>Pre-conception</td>
<td>8HI1 (referral for screening)</td>
<td>Special referral to retinal screening using fax template provided by the screening programme, unless screened by screening programme within previous 6 months. Annual screening thereafter.</td>
</tr>
<tr>
<td>Antenatal patient</td>
<td>8HI1 (referral for screening)</td>
<td>Special referral to retinal screening as soon as possible using fax template provided by the screening programme. Patients will be screened immediately and again at 28 weeks, according to NICE guidelines. If retinopathy is present at the first screen an additional screen will be carried out at 16 weeks. Sight threatening retinopathy detected on screening will be referred to ophthalmology directly from screening.</td>
</tr>
<tr>
<td>Newly diagnosed with diabetes</td>
<td>8HI1 (referral for screening)</td>
<td>Special referral to retinal screening using fax template provided by the screening programme. Will be screened within 3 months of referral.</td>
</tr>
<tr>
<td>Patient new to area</td>
<td>8HI1 (referral for screening)</td>
<td>Add to diabetes register and ensure patient is added to the annual list given to screening. Patient will be screened in the next round.</td>
</tr>
<tr>
<td>Rapid fall in HbA1c of more than 3% within 6 months and pre-existing retinopathy</td>
<td>2BBY (referral)</td>
<td>Refer to ophthalmology for monitoring</td>
</tr>
<tr>
<td>Patient has never been screened</td>
<td>6N4P (DNA) 68AB (offered)</td>
<td>Check patient is on GP diabetic register and on list sent to screening programme. If patient appears on list and address is correct then patient has probably DNAd screening. In exceptional circumstances GP may request another offer of screening.</td>
</tr>
<tr>
<td>Patient is housebound</td>
<td>816F (screening not indicated)</td>
<td>Still include the patient on the annual list of patients given to screening. The programme will exclude the patient from screening. Nursing homes usually arrange for a visiting optometrist, but this is not essential. It is not possible to treat housebound people with laser, so screening is not useful.</td>
</tr>
<tr>
<td>Patient is medically unfit for screening – unable to sit up to the camera or laser.</td>
<td>816F (screening not indicated)</td>
<td>Still include the patient on the annual list given to screening. The programme will exclude the patient from screening. A letter to the programme would be helpful if the disability is a new development.</td>
</tr>
</tbody>
</table>
### DIABETIC RETINOPATHY READ CODES FOLLOWING RETINAL SCREENING

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2BBI</td>
<td>No retinopathy</td>
</tr>
<tr>
<td>2BBJ</td>
<td>No right diabetic retinopathy</td>
</tr>
<tr>
<td>2BBK</td>
<td>No left diabetic retinopathy</td>
</tr>
<tr>
<td>2BBP</td>
<td>Right eye background diabetic retinopathy</td>
</tr>
<tr>
<td>2BBQ</td>
<td>Left eye background diabetic retinopathy</td>
</tr>
<tr>
<td>2BBR</td>
<td>Right eye pre-proliferative diabetic retinopathy</td>
</tr>
<tr>
<td>2BBS</td>
<td>Left eye pre-proliferative diabetic retinopathy</td>
</tr>
<tr>
<td>2BBT</td>
<td>Right eye proliferative diabetic retinopathy</td>
</tr>
<tr>
<td>2BBV</td>
<td>Left eye proliferative diabetic retinopathy</td>
</tr>
<tr>
<td>2BBY</td>
<td>Referral for diabetic retinopathy</td>
</tr>
<tr>
<td>2BBO</td>
<td>Sight threatening diabetic retinopathy</td>
</tr>
<tr>
<td>C10E7</td>
<td>Type 1 diabetes mellitus with retinopathy</td>
</tr>
<tr>
<td>C10F6</td>
<td>Type 2 diabetes mellitus with retinopathy</td>
</tr>
<tr>
<td>68AB</td>
<td>Digital retinal screening offered</td>
</tr>
<tr>
<td>68A8</td>
<td>Digital retinal screening</td>
</tr>
<tr>
<td>8HBG</td>
<td>Retinopathy follow up</td>
</tr>
<tr>
<td>8H11</td>
<td>Referral for diabetic retinal screening</td>
</tr>
<tr>
<td>813X</td>
<td>Diabetic retinal screening refused</td>
</tr>
<tr>
<td>816F</td>
<td>Diabetic retinal screening not indicated</td>
</tr>
<tr>
<td>8HBG</td>
<td>Diabetic retinopathy 12 month review</td>
</tr>
<tr>
<td>8HBH</td>
<td>Diabetic retinopathy 6 month review</td>
</tr>
<tr>
<td>F4200</td>
<td>Background diabetic retinopathy</td>
</tr>
<tr>
<td>F4202</td>
<td>Diabetic retinopathy not otherwise specified</td>
</tr>
<tr>
<td>6N4P</td>
<td>Did not attend diabetic retinopathy clinic</td>
</tr>
</tbody>
</table>

*For contact details see Pages 79-81.*
CHILDREN AND ADOLESCENTS

All children and adolescents should ideally be under the specialist secondary care MDT. In addition, the PDSN’s work closely with colleagues in primary care, including Health Visitors and School Nurses, to provide a seamless, holistic care package for children and families. There are regular non-attenders to clinic and it is hoped that closer liaison between the community and hospital based PDSNs will enable some form of ongoing community review for these cases.

All children and adolescents should have diagnosis confirmed and the majority can be treated at diagnosis without admission. However, for some an in-patient stay is necessary. Follow-up in the community via home visits, school visits and telephone liaison is a vital part of continuing care and health promotion for these families.

Current paediatric clinics provide support from PDSN’s. Joint adolescent clinics also benefit from the support of adult DSN’s. Dietitian and podiatry support is incomplete. At Lister a dietitian is available via the Dietetic department for families. At QEII dietetic support is provided for families at every other paediatric and every other adolescent clinic as well as through the dietetic department. Podiatry support at QEII is provided at every adolescent clinic and by appointment via the podiatry department as appropriate. There is no current clinical psychology support for this service. However, at Lister site there is a Family Therapist who is accessible to families as appropriate.

Families with major behavioural or psychological problems can be referred separately to Child & Adolescent Mental Health services (CAMHS).

For further advice or information on paediatric & adolescent diabetes services please contact the PDSN as appropriate.
PRECONCEPTION CARE FOR WOMEN WITH DIABETES

Pre-existing diabetes

Refer to acute joint diabetes specialist nurse, dietitian, midwife, consultant clinic. Obstetrician input first or second visit

Type 2
Self home blood glucose monitoring
Stop oral hypoglycaemic agents (except metformin)
Start Insulin if it is needed.
Standard advice given re driving and inform DVLA & car insurance (if commenced on insulin)
Aim for the level of optimal glycaemic control that is safely achievable as near to 6.1% as possible
1-3 monthly appointments

Type 1 diabetes
Aim for the level of optimal glycaemic control that is safely achievable as near to 6.1% as possible
Ensure hypo management up to date including glucagonmanagement
Appointments 1-3 monthly
Monitor 4+/per day
Structured education i.e DAFNE prior to pregnancy
May need insulin pump therapy

1. Aim to continue contraception until optimal glycaemic control achieved as conception can occur within 2-3 months of stopping contraception in many cases.
2. Screen for Nephropathy Retinopathy, Neuropathy and macrovascular disease and onward management as required
3. Stop ACE inhibitors, ARBs, diuretics and statins and other contra-indicated medications. Switch to appropriate drugs if necessary eg anti-hypertensive drugs Methyldopa, labetalol, Nifedipine MR.
4. Commence Folic Acid 5mgs
5. Check HbA1c and TFT’s, B12 if they are on metformin
6. Refer to smoking cessation service, advice about alcohol
7. Provide information leaflet and tailored counselling about diabetes and pregnancy and risks of malformation, fetal loss, pre-eclampsia and other adverse pregnancy outcomes
8. Consider screen type 1 for coeliac disease
**GESTATIONAL DIABETES**

**Diagnosis:**
- Fasting glucose ≥ 6.1 mmol/l
- 2 hr > 7.8 mmol/l

**Refer directly to Joint Diabetes Antenatal clinic**

- **Review by Dietitian and give Healthy Eating in Pregnancy information booklet**
- **DSN/Midwife to teach self blood glucose monitoring.**
  - Aim to achieve fasting glucose < 5.5 mmol/l, and one hour post meal glucose < 7.8 mmol/l, two hour targets if appropriate
- **Insulin and/or metformin if targets are not met OR evidence of fetal Macrosomia > 97th centile**
- **Consider Induction/Delivery before 40 weeks or according to individual needs**
- **If on hypoglycaemic therapy, stop treatment following delivery; Monitor blood glucose for 24hrs. Post-natal advice regarding prevention of future diabetes. Hyperglycaemia management according to need and breastfeeding status**

**Arrange ultrasound growth scan 4 weekly or more frequently if indicated**

**OGTT 6-12 weeks if persistent diabetes not already diagnosed**

- **New Diabetes-management according to type of diabetes, breastfeeding, future pregnancy risk-need to identify Maturity onset of Youth**
- **Risk of future pregnancy or high risk of progression to permanent diabetes (e.g. IGT)**
  - Lifestyle advice
  - OGTT at 12 months
- **No risk of future pregnancy (e.g. Tubal ligation)**
  - Lifestyle advice
  - Annual screening
OBESITY

NB current service provision and funding availability do not match the ideal levels of care described below, but patients with diabetes remain a priority within obesity services.

Level 1 care
- To be based within General Practice.
- Evidence-based weight management programmes, such as Counterweight or Pro-Health Clinical (a lottery funded project currently being rolled out in Herts, end date 2011).
- Exercise on prescription if available

Level 2 care
- could be provided at practice or locality/ PBC/ PCT level. The level 2 team as a minimum should include a (community) dietician and prescriber with additional training in anti-obesity medication (such as a GPwSI in obesity).

Level 3 care
- should only be provided at a designated specialist centre. In addition, only patients with a BMI >35 with co-morbidities, or >40 without co-morbidities should be usually referred, and only after failure of level 1 and 2 services (exceptions for direct referral to level 3 described in box 2 on following page).

Level 4 care
- i.e. bariatric surgery will be approved on a case-by-case basis by the Specialist Commissioning Group for requests where the patient is aged between 18 and 60, the BMI is >40 and a co-morbidity of sleep apnoea or diabetes is present.

Definitions (Box 1):
- Overweight = BMI 25-29.9
- Obese I = BMI 30-34.9
- Obese II = BMI 35-39.9
- Obese III = BMI 40 more
- Waist circumference low = <94cm (Male) <80cm (Female)
- Waist circumference high = 94-102cms (Male) 80-88 cms (Female)
- Waist circumference very high = >102 cms (Male) >88 cms (Female)
- Co-morbidities = Significant disease condition (for example type 2 diabetes mellitus or severe sleep apnoea) that could be improved with weight loss

References

The Human Rights Act has been considered in the formation of this policy statement

CARE PATHWAY OVERWEIGHT AND OBESE

Patient Identification

Weight management assessment and assessment for co-morbidities (See Box 1)

Level 1 – Primary Care and Community Interventions

- Lifestyle advice and information (diet, physical activity and behaviour)
- Local physical activity options
- Local weight management programme (e.g. Counterweight)

Target Group

- All except those meet criteria for direct referral to Level 3 services (Box 2)

Level 2 - Primary Care Plus and Community Interventions

- Referral Community/Primary Care Dietetic Service
- Local physical activity options
- Anti-obesity medication
- Primary Care based behaviour modification

Target Group

- Patients who have failed to lose and maintain >5% bodyweight at Level 1 and who may benefit with drug therapy and/or behaviour modification

Level 3 – Specialised Weight Management Service

- Anti-obesity medication
- Referral specialist weight management dietitian
- Referral psychological service
- Local physical activity options
- Endocrinological assessment
- Genetic screening

Target Group

- Patients who have failed to lose and maintain weight reduction at levels 1 and 2 BMI >35 with co-morbidities
- BMI >40+/- co-morbidities

Level 4 - Obesity Surgery

- Referral to obesity specialist surgeon
- BMI >40 with type 2 DM and/or severe sleep apnoea
- Age group 18-60 and fit for surgery
- All approved non-surgical interventions have been tried for at least 6 months and failed to lose and maintain bodyweight

Target Group

- BMI >40 with type 2 DM and/or severe sleep apnoea
- Age group 18-60 and fit for surgery
- All approved non-surgical interventions have been tried for at least 6 months and failed to lose and maintain bodyweight

Weight and lifestyle maintenance with follow up

Weight loss >5% of bodyweight in 6-9 months

Desired weight loss

Weight loss <5% bodyweight in 6-9 months

Repeat Level 1 or go to Level 2 if considering drug therapy and/or behaviour modification

Reassess patient motivation

Weight and lifestyle maintenance with follow up

Weight loss >5% of bodyweight

Weight loss <5% bodyweight

Repeat Level 2 or go to Level 3 if BMI>40 or >35 with co-morbidities

Reassess patient motivation

Weight and lifestyle maintenance with follow up in primary care

Weight loss 5 to 10% bodyweight

Weight loss <5% bodyweight

Repeat Level 3 or go to Level 4

Reassess motivation

Regular monitoring reassess at 6-9/12

Weight and lifestyle maintenance with follow up

Weight loss >5% of bodyweight

Weight loss <5% bodyweight

Repeat Level 2 or go to Level 3 if BMI>40 or >35 with co-morbidities

Reassess patient motivation

Regular monitoring reassess at 6-9/12

Weight and lifestyle maintenance with follow up

Weight loss attainment

Regular monitoring and reassessment by Specialist Weight Management Service
DRIVING

- Patients on dietary management only need not inform DVLA, unless develop a relevant disability e.g. retinopathy affecting visual acuity or fields.
- Type 2 patients on oral hypoglycaemics, insulin or other medications must inform DVLA and car insurance company.
- Patients on sulphonylureas, exenatide, insulin (type 1 or type 2) or gliptins, are all at risk of hypoglycaemia. They should explicitly be asked about hypos at the annual DM review at the least.
- Questions to ask to elicit hypoglycaemia awareness and appropriate patient management:
  1. do you check your blood glucose before and after driving routinely?
  2. do you have a carbohydrate source adjacent to you whilst driving?
  3. have you ever had hypos without any warning? (may also need to ask a relative or carer about this).
  4. have you ever had a hypo with BM <4 without warning? = MODIFIED HYPO AWARENESS.
- Hypo modified awareness is NOT a basis for withdrawal of license but requires specialist referral. It can occur in patients with type 1 and type 2 DM.

All type 1 Diabetes with important modified hypo awareness should be under hospital specialist care – this will ensure ability for specialist doctor to complete DVLA forms and review impact of altered therapy if license revoked or held back pending review. Type 1 with modified awareness should all have had access to insulin dose adjustment courses (IDAC-DAFNE) and may be considered for insulin pump therapy or rarely tertiary referral.

- Patients on insulin who do not require a special licence (LGV or PCV) should be able to renew their licence every 3 years, as long as they recognise hypoglycaemia warning symptoms and meet required visual standards. Where they are being managed solely in primary care, the GP will need to be competent in assessing hypo awareness in order to complete the DVLA form or else refer to the specialist in the community DM clinic – DSNs currently do not complete these forms.
- Patients on insulin who hold LGV or PCV licences (Class 2) need regular specialist review as only consultants are currently able to complete the appropriate DVLA form.
- Patients already on insulin who develop frequent hypoglycaemia, especially without warning, should be advised to temporarily stop driving, until control improves.
- Patients who require insulin temporarily, e.g. gestational diabetes, post-MI, participants in trials etc may retain their ordinary driving licence, but stop driving if having disabling hypoglycaemia. If temporary treatment continues for >3/12, the patient must inform the DVLA.
- Group 2 entitlement (HGV/PCV) –
  1. need not notify DVLA if diet controlled only.
  2. if managed by exenatide or gliptins in combination with sulphonylurea – will be assessed by the DVLA on individual basis.
  3. if on any other tablet combination, will be licensed unless develops relevant disability.
  4. if on insulin, will be barred in law from driving HGV or PCV from 1/4/1991. If licensed before this date and on insulin, DVLA will decide on individual cases.
  5. if temporarily put on insulin, this is a legal bar to holding HGV/PCV licence. May reapply once insulin stopped.
  6. all patients with an HGV licence who plan to convert to insulin, should be seen by a consultant diabetologist.


See Appendix 4 for more information.
DIFFICULT TO REACH PATIENTS WITH DIABETES

Include:
- Patients who persistently DNA appointments
- Housebound patients
- Patients in residential care settings
- Patients with mental health co-morbidities

Strategies to deal with these patients may include:
- Persistent DNA’s – an individualised letter to the patient from their own GP, outlining their diabetic history, including known complications and risks etc, should ideally be offered to all patients who have DNA’d 3 standardised invitations, before a decision is made to exempt the patient from QOF targets, on the grounds of informed dissent.
- Consider auditing all patients over age 65 who serially DNA DM review invitations – enquire whether they have become housebound recently.
- Housebound, residential and nursing home patients merit annual review in the same way as ambulatory patients and it is the responsibility of the GP/practice nurse to undertake this. Under the SUDs redesigned service, DSNs will also provide domiciliary input as clinically appropriate, but not simply to undertake routine DM checks or the annual foot check.
- Patients with mental health problems may be prescribed psychotropic drugs that increase the risk of DM e.g. olanzapine – screen with fasting glucose prior to initiation and 6 monthly thereafter. Depression should be actively managed as it increases the risk of poor glycaemic control, recurrent hypoglycaemia and recurrent DKA in type 1 DM. These patients are also more likely to DNA diabetic appointments and may need active encouragement to attend.
PATIENTS IN RESIDENTIAL OR NURSING CARE HOMES

The following guidance represents good clinical care and is compliant with the current LES for patients in Nursing and Residential Care.

When a patient is newly admitted to residential care, the health assessment (within 1/52 of admission) should be used to do an annual DM review and to ensure the patient is added to the practice’s DM register practice and DM recall system.

Do a medication review, assessing the patient specifically for osmotic symptoms, hypos and diarrhoea side effects from metformin.

- **metformin should be withdrawn if:**
  1. creatinine > 150, or eGFR <30.
  2. BMI <20 with a history or anorexia or wt loss
  3. patient being treated with Ensure etc
  4. patient vomiting and unwell as high risk of lactic acidosis

- **insulin treated patients in care homes should all have glucagel 6x25g (2 boxes) prescribed for prn use in case of hypos.**

If the patient has a low HbA1c i.e. <6.5% on medications, they may well be having hypos – ask DSN to assess.

Consider undiagnosed DM/hyperglycaemia in patients with new onset urinary continence/frequency or increasing thirst, repeated UTI or non-healing ulcer.

It is especially important for a baseline foot examination to be done. Most residential care homes will have a visiting podiatrist to cut nails etc, but this does not count as a diabetic foot assessment!

Ensure that the patient has been referred into the retinal digital eye screening programme. If the patient cannot sit with their head still for 5 minutes, digital screening will not be possible – refer to a local optometrist who is willing to do a domiciliary visit for direct fundoscopy – this is not gold or NICE standard and cannot count as screening for QOF purposes, but it is still better than nothing.

DSNs will do residential home visits for those DM patients who need specific specialist input (refer via SPOC) - they are not contracted to do the routine annual review. This remains core QOF work.

In a pyrexial patient who has diabetes, remember to uncover and check the feet as they may be the source of infection!

Diabetes control may deteriorate during intercurrent illness – the District Nurses (for Residential homes) or Nurses (for Nursing homes) should be advised to follow the sick day rules protocols, including blood glucose and urine testing.

If the patient is unwell and not eating, the carers should omit sulphonylurea until the patient improves (increased risk of hypo). Refer for DSN advice as may need short term monitoring.
DIABETES AND PATIENTS WITH LEARNING DISABILITIES

The Department of Health’s White Paper 'Valuing People' set a wide-ranging strategy to help health care professionals identify and improve access for people with learning disabilities and their families. Improving health and access to health care was a major part of the strategy, with the overall objective being "to enable people with learning disabilities to access a health service designed around their individual needs, with fast and convenient care delivered to a consistently high standard, and with additional support where necessary" (Department of Health 2001c, page 26).

The Royal College of Nursing Learning Disability Nursing Forum has published a guide to support colleagues in other branches of nursing in delivering quality healthcare to people with learning disabilities (Royal College of Nursing 2006a).

A report by the former Disability Rights Commission found that in England and Wales people with learning disabilities and mental health problems were more likely to have significant health risks and major health problems including diabetes (Disability Rights Commission 2006).

These findings have been reaffirmed by the Independent Inquiry into Access to Healthcare for People with Learning Disabilities. The Inquiry report 'Healthcare for All' has highlighted the continuing difficulties of access to assessment and treatment for people with learning disabilities, especially where health problems are not directly connected with the learning disability. The Disability Discrimination Act (1995) underlined the duty to make 'reasonable adjustments' to services to accommodate different needs and the Inquiry report makes a series of recommendations around the implementation and monitoring of 'reasonable adjustments' (Independent Inquiry into Access to Healthcare for People with Learning Disabilities 2008).

- The potential for delayed diagnosis of diabetes in people with learning disabilities is great.
- Hypoglycaemia is often difficult to recognise in people with learning disabilities, as they may be unable to recognise signs of impending hypoglycaemia or be able to articulate that they feel unwell.
- Health inequalities need to be addressed to ensure that diabetes is monitored and managed effectively.
- People with learning disabilities must be valued as individuals, however, there is little guidance and literature available for people with learning disabilities and their families and carers.
DIABETES AND MENTAL HEALTH

Consideration of psychological factors is very important in the management of diabetes. Certain complications such as symptomatic neuropathy are associated with depression, and concerns regarding the psychological impact of retinopathy, hypoglycaemia, CHD, and erectile dysfunction should be expressed.

Psychological support may be required for patients experiencing obsessional symptoms with excessive home blood glucose monitoring. Psychological assessment may be required in those who wish to be considered for CSII or other intensive therapy.

An increasing number of psychotropic drugs can lead to obesity and subsequent diabetes. Patients receiving Olanzapine, Risperidone and related drugs should be considered to be at risk of diabetes if other risk factors (obesity, family history etc) are present. Ideally there should be screening (fasting glucose) prior to initiation of therapy, and certainly consideration of 6 monthly-annual fasting glucose checks thereafter. Such patients should be considered to have type II diabetes.

Depression and low self-esteem can lead to:

- Recurrent keto-acidosis in type I diabetes
- Recurrent hypoglycaemia
- Poor glycaemic control
- Attempts at self-harm
- Eating disorders should be considered in younger women with type I diabetes who present with such problems
- Caution with psychotropic medication – may mask hypoglycaemia or make it difficult for patient to recognise impending hypoglycaemia.
- Depression screening is part of the QOF annual review for diabetes.
- Consider the impact of ED, recurrent hypos, reduced vision, painful neuropathy and CHD in patients with anxiety, obsessional symptoms (e.g, excessive HBGM) and depression.
- Frequent attenders in primary care and those who elicit the heartsink response of transference in healthcare professionals may also be experiencing psychological distress.
- Patients with chronic serious mental health issue may be more challenging when it comes to attaining cardiometabolic QOF targets and may require individualised more conservative targets.
- Refer to counselling patients unable who cannot effectively self manage their psychological symptoms.
**IMMUNISATION**

**Influenza**
- For all patients with DM.
- Practice nurses are responsible for undertaking immunisation of housebound patients and those in residential or nursing homes – District nurses may no longer undertake this work.

**Pneumococcus**
- Single vaccine for all diabetic patients on oral hypoglycaemic drugs or insulin, and all those aged >65 and those with chronic heart, renal or liver dx. i.e. diet controlled age <65 with no complications are not considered high risk.

**Tetanus**
- Ensure up to date with tetanus in patient with open wound e.g. foot ulcer.
<table>
<thead>
<tr>
<th></th>
<th>GENERAL MEASURES TO UPSKILL AND IMPROVE KNOWLEDGE IN PRIMARY CARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Locality Diabetes Forums</td>
</tr>
<tr>
<td>2.</td>
<td>Community Consultant Diabetologist Sessions</td>
</tr>
<tr>
<td>4.</td>
<td>Module 2 Certificate in diabetes care</td>
</tr>
<tr>
<td>5.</td>
<td>Module 3 Certificate – Skills in insulin management and Insulin initiation</td>
</tr>
<tr>
<td>6.</td>
<td>Consultant Community clinics – For governance Stable co morbidities, and other groups with special needs</td>
</tr>
<tr>
<td>7.</td>
<td>Diabetic Foot examination training</td>
</tr>
<tr>
<td>8.</td>
<td>Dietetic training –CHO counting</td>
</tr>
<tr>
<td>9.</td>
<td>Assessment &amp; Appraisal</td>
</tr>
</tbody>
</table>
### LOCALITY BASED CONTACT DETAILS

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</table>
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<tbody>
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</tbody>
</table>
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### Hemel Hempstead Pregnancy and diabetes

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### Caroline Harris
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  - **Lead DSN:** Tessa Judge
  - Telephone: 01442 287482

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### Diabetes Foot Referral: St Albans
  - **Diabetes Office:** Secretary Elizabeth Searle
  - Telephone: 01727 897858  Fax: 01727 897518

### Diabetes Foot Referral: Hemel Hempstead
  - **Diabetes Office:** Secretary Lisa Green
  - Telephone: 01442 287083  Fax: 01442 287492
APPENDICES
# Appendix 1: Diabetes SPOC Referral Form

## Hertfordshire Community Diabetes Service

**Single Point of Contact (SPOC) Referral Form**

### INCOMPLETE REFERRALS WILL REQUIRE US TO CONTACT YOU BY PHONE FOR MISSING INFORMATION. THIS COULD RESULT IN A DELAY IN PROCESSING YOUR REFERRAL.

NB. Patients are not to be referred to the Community Diabetes Service for routine QOF Annual Reviews.

This form is to be used for all non-emergency referrals for people with T1DM or T2DM, who are requiring an enhanced level of specialist diabetes management.

Submit form via [Choose and Book](http://www.chooseandbook.nhs.uk) OR Fax 01707 621178 OR Email [Hertscommunity.Diabetes@nhs.net](mailto:Hertscommunity.Diabetes@nhs.net) OR Mail Community Specialist Diabetes Service, Potters Bar Hospital, Potters Bar, EN6 2RY (Tel 01707 621152).

(If attaching this referral form to an email, please email ONLY from an nhs.net email address for patient confidentiality. Other emails addresses are not secure.)

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### 1. Unwell Newly Diagnosed?

Is the patient unwell with ketones present in the urine?

If YES please refer **immediately** to the on-call Medical Registrar.

### 2. “Acute Foot”

- refer **immediately** to On-call medical registrar
- *e.g. sign of infection (such as cellulitis or osteomyelitis) not responding to standard first-line GP care*

### 3. Diabetes and Pregnancy

- refer **urgently** to antenatal clinic (will liaise with hospital specialist diabetes services)

### 4. In exceptional circumstances, you may wish to refer to a particular consultant or clinic. Please state your reasons here. The triage team may ring you for clarification within 72 hours.

---

## Patient Details

<table>
<thead>
<tr>
<th>Field</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surname</strong>:</td>
<td>~[Surname]</td>
</tr>
<tr>
<td><strong>Forename (s)</strong>:</td>
<td>~[Forename]</td>
</tr>
<tr>
<td><strong>Preferred Calling Name</strong>:</td>
<td>~[Calling Name]</td>
</tr>
<tr>
<td><strong>DOB</strong>:</td>
<td>~[Date Of Birth]</td>
</tr>
<tr>
<td><strong>Age</strong>:</td>
<td>~[Patients Age]</td>
</tr>
<tr>
<td><strong>NHS Number</strong>:</td>
<td>~[NHS Number]</td>
</tr>
<tr>
<td><strong>Address</strong>:</td>
<td>~[Patient Address Line 1]</td>
</tr>
<tr>
<td></td>
<td>~[Patient Address Line 2]</td>
</tr>
<tr>
<td></td>
<td>~[Patient Address Line 3]</td>
</tr>
<tr>
<td></td>
<td>~[Patient Address Line 4]</td>
</tr>
<tr>
<td></td>
<td>~[County]</td>
</tr>
<tr>
<td><strong>Postcode</strong>:</td>
<td>~[Post Code]</td>
</tr>
<tr>
<td><strong>Telephone</strong>:</td>
<td>~[Telephone Number]</td>
</tr>
<tr>
<td><strong>Referral Date</strong>:</td>
<td>~[Today...]</td>
</tr>
</tbody>
</table>

## GP Details

<table>
<thead>
<tr>
<th>Field</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Referrer</strong>:</td>
<td>~[Free Text:FULL name of who is referring:]</td>
</tr>
<tr>
<td><strong>GP name</strong>:</td>
<td>Dr ~[Free Text:GP to whom letters should be sent back]</td>
</tr>
<tr>
<td><strong>Surgery</strong>:</td>
<td>~[Surgery Address Line 1]</td>
</tr>
<tr>
<td></td>
<td>~[Surgery Address Line 2]</td>
</tr>
<tr>
<td></td>
<td>~[Surgery Address Line 3]</td>
</tr>
<tr>
<td></td>
<td>~[Surgery Address Line 4]</td>
</tr>
<tr>
<td></td>
<td>~[Surgery Address Line 5]</td>
</tr>
<tr>
<td><strong>Telephone</strong>:</td>
<td>~[Surgery Tel No.]</td>
</tr>
<tr>
<td><strong>Fax</strong>:</td>
<td></td>
</tr>
</tbody>
</table>

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### Mobility Problems?

- [ ]

### Visual Impairment?

- [ ]

### Hearing Impairment?

- [ ]

### Learning Disability?

- [ ]

### Cognitive Problem?

- [ ]

### Next of Kin name (if known):

- [ ]

### NoK Relationship (if known):

- [ ]

### NoK Phone no. (if known):

- [ ]

### Lives alone?

- [ ]

### Any risks to lone worker?

- [ ]

### None known:

- [ ]

### Yes

- [ ]

### If YES: details

---

### Translator required?

- [ ]

### Specify language:

- [Free Text:Spoken language (if non-English speaker)]

### Ethnicity:

- [ReadCode:9i~20Y~R~Coded Data~0]
- [ReadCode:9S~20Y~R~Coded Data~0]
### Reason for Referral (tick as many as you feel are required)
- Patient education: **T2DM** (e.g. DESMOND for new and established patients)
- Patient education: **T1DM** (e.g. DAFNE etc)
- Special Dietetic Advice (NOT routine advice)
- Individual Podiatry Assessment (NOT routine check)
- Hyperglycaemia / High HbA1c
  - Oral Medication Optimisation
  - Incretin Mimetic / GLP-1 Analogue consideration (e.g. exenatide, liraglutide)
  - Insulin Management
  - Insulin Initiation
- Hypoglycaemic episodes (e.g. if on sulphonylureas or insulin)
- Device Management & Support (e.g. pens, machines, aids if rheumatoid or blind)
- Transient Complex Medical Problems (e.g. steroid use in PMR, terminal care)
- Other

### Identified Diabetic Complications
- No currently identified diabetic complications
- The patient has identified diabetic complications
  - Diabetic nephropathy details?
  - Diabetic retinopathy details?
  - Diabetic foot neuropathy details?
  - Other diabetic complications details?

History of MI or other ischaemic heart disease? Yes [ ] No [ ]

History of CVA or TIA? Yes [ ] No [ ]

History of Peripheral Vascular Disease? Yes [ ] No [ ]

### FOR COMPLETION AT THE SPOC (SINGLE POINT OF CONTACT)

**Referral redirected to Secondary Care Service via Choose and Book – reason:**
- Complex diabetes [ ]
- Acute Foot [ ]
- Renal [ ]
- Other [ ]

**Specify**

<table>
<thead>
<tr>
<th>Appointment priority (please tick)</th>
<th>within 24-48h</th>
<th>within 1 week</th>
<th>within 1 month</th>
<th>within 2 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Nurse Consultant / Specialist Nurse Clinic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultant Community Clinic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combined Consultant / DSN Clinic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preconception Clinic</td>
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</tr>
<tr>
<td>Podiatrist</td>
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<tr>
<td>Dietitian</td>
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</tbody>
</table>

(Please email ONLY from an nhs.net email address for patient confidentiality. Other emails addresses are not secure.)
An EMIS LV printout is acceptable if this data is not automatically added.

**WEIGHT (kg)** – last three recorded entries

~[ReadCode:22A~~M3~R~Coded Data|Date~1]

**BMI (kg/m²)** – last three recorded entries

~[ReadCode:22K~~M3~R~Coded Data|Date~1]

**BLOOD PRESSURE** – last three recorded entries

~[Blood Pressure:3]

**CURRENT SMOKING STATUS** – date of last recorded entry

~[ReadCode:137~~M1~R~Date|Coded Data|Free Text~1]

**GLYCAEMIC CONTROL**

*HbA1c (DCCT aligned)* – last three recorded entries

~[ReadCode:42W4~~M3~R~Date|Coded Data~1]

*HbA1c (IFCC standardised)* – last three recorded entries

~[ReadCode:42W5~~M3~R~Date|Coded Data~1]

*Plasma Fasting Glucose* – last three recorded entries

~[ReadCode:44g1~~M3~R~Date|Coded Data~1]

**LIPIDS** – last two years

*Serum Total Cholesterol*

~[ReadCode:44P~2Y~~R~Date|Coded Data~1]

*Serum LDL Cholesterol*

~[ReadCode:44P6~2Y~~R~Date|Coded Data~1]

*Serum Triglycerides*

~[ReadCode:44Q~2Y~~R~Date|Coded Data~1]
**RENAL FUNCTION** – last three recorded entries

*Serum Sodium*
~[ReadCode:44I5~~M3~R~Date|Coded Data~1]

*Serum Potassium*
~[ReadCode:44I4~~M3~R~Date|Coded Data~1]

*Serum Urea*
~[ReadCode:44J9~~M3~R~Date|Coded Data~1]

*Serum Creatinine*
~[ReadCode:44J3~~M3~R~Date|Coded Data~1]

*eGFR (MDRD formula)*
~[ReadCode:451E~~M3~R~Date|Coded Data~1]

*UACR (Urine Albumin:Creatinine Ratio)*
~[ReadCode:46TC~~M3~R~Date|Coded Data~1]

**LIVER FUNCTION** – last three recorded entries

*Alkaline Phosphatase*
~[ReadCode:44F~~M3~R~Date|Coded Data~1]

*ALT/SGPT*
~[ReadCode:44G3~~M3~R~Date|Coded Data~1]

*Serum Gamma-GT*
~[ReadCode:44G9~~M3~R~Date|Coded Data~1]

**THYROID FUNCTION** – last two recorded entries

*Serum Thyroid Stimulating Hormone*
~[ReadCode:442W~~M2~R~Date|Coded Data~1]

*Serum free-T4 level*
~[ReadCode:442V~~M2~R~Coded Data|Date|Free Text~1]

**HAEMOGLOBIN** – last recorded entry
~[ReadCode:423~~M1~R~Coded Data|Date|Free Text~1]
**RETINAL SCREENING** – date of last recorded episode – and coded outcome (if recorded)

~[ReadCode:68A8~M1~R~Date|Coded Data|Free Text~0]

~[ReadCode:2BB~M2~R~Coded Data|Date|Free Text~0]-

**ACTIVE PROBLEMS** – active significant, active minor and past significant problems

~[Active Problems:AS~AM~PS~FT]

**CURRENT PRESCRIBED MEDICATION** *(no current prescribed medication if this section is blank)*

~[Medication]

**RECORDED ALLERGIES** *(no allergies have been recorded in EMIS if this section is blank)*

~[Allergies]
Appendix 2  NON GP DIABETES SPOC REFERRAL AND TRIAGE FORM

Diabetes SPOC Referral and Triage Form non GP
Community Diabetes Specialist Service

Please post to: Single Point of Contact (SPOC), Community Diabetes Service, Potters Bar Hospital, Potters Bar, EN6 2RY, or fax to SPOC on 01707 621178 or e.mail Hertscommunity.diabetes@nhs.net

<table>
<thead>
<tr>
<th>Patient Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: ................................................. NHS no: ....................................................</td>
</tr>
<tr>
<td>Address: ................................................... Male / Female: ...........................................</td>
</tr>
<tr>
<td>Postcode: .................................................. Mobile / Housebound: ...................................</td>
</tr>
<tr>
<td>Contact telephone no: ................................ Interpretor required – please state language:</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Reason for Referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>(tick as many as you feel required)</td>
</tr>
<tr>
<td>Patient Education T2DM (eg. Desmond for new and established Patients)</td>
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<tr>
<td>Patient Education TD1M (eg. Dafne etc)</td>
</tr>
<tr>
<td>Hyperglycaemia/ High HbA1c State latest HbA1c</td>
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<tr>
<td>Insulin Management</td>
</tr>
<tr>
<td>Insulin Initiation</td>
</tr>
<tr>
<td>Hypoglycaemia</td>
</tr>
<tr>
<td>Device advice</td>
</tr>
<tr>
<td>Other (incl relevant PMH)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Known diabetes complications (please tick)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVD / Foot ulcer / injury Neuropathy</td>
</tr>
<tr>
<td>Renal Retinopathy</td>
</tr>
</tbody>
</table>

| Referred by: Name: ............................................... Designation: .................................... Date referred: ......... |
| Contact number of referrer (mobile preferable) .......................................................... |
| GP Surgery ........................................................................................................................................... |

Please include a computer printout of patient medical history / discharge letter with all clinical data

HCDF 1nonGPSPOC June 2010
### Patient name:: **NHs no:**

<table>
<thead>
<tr>
<th>Diabetes Medication (including insulin)</th>
<th>a.m.</th>
<th>Lunch</th>
<th>Evening meal</th>
<th>Pre Bed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**HBGM - Minimum 6 (at different pre meal times ) before referral**

<table>
<thead>
<tr>
<th>Pre breakfast</th>
<th>Pre lunch</th>
<th>Pre eve meal</th>
<th>Pre bed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

**Routine urine dipstick (tick if positive)**

- Leucocytes
- Nitrates
- Ketones (T1 only)

**Patient understands diet**

- yes
- no

**Do you consider this referral to be**

- urgent
- routine

Referrals from Community Nurses –

Initial assessment (unless urgent) should be done jointly with Community Nurse and Diabetes Specialist Nurse

Please include a GP computer printout of patient medical history if possible and hospital staff please attach “legible” discharge letter with all clinical data.

HCDF 1nonGPSPOC June 2010
What kind of diet?

There is no “special diet” required - the most important aspect is to eat healthily and regularly. A healthy diet is recommended for everyone so all the family can eat the same meals. Try to eat three meals a day and avoid overeating or missing meals. Each meal should contain some starchy carbohydrate food such as wholemeal bread, cereals, potatoes, pasta, rice or chapatti. Vegetables and salads can be eaten liberally.

What is a healthy diet for diabetes?

- Choose a wide variety of foods
- Eat regular meals
- Have a starchy food at mealtime
- Eat plenty of fruit and vegetables everyday including peas, beans or lentils
- Limit fried and fatty foods
- Avoid sugary foods and sweet drinks
- Reduce salt and salty foods
- If you drink alcohol, take in moderation and never drink on an empty stomach
- Aim to be a healthy weight and stay there. If you are overweight then loosing weight can improve your diabetic control

This type of diet has been shown to lead to a better control of your diabetes and reduce some of the complications of diabetes.

How to eat less sugar

- Do not add sugar to drinks; if you would like something sweet use an artificial sweetener instead of sugar
- Avoid sugary drinks, use diet drinks and low sugar squash instead. Limit your intake of unsweetened fruit juice to no more than 100ml a day
- Biscuits, cakes, chocolates and sweets are high in both fat and sugar; best to avoid if possible
- Choose low fat and low sugar puddings where possible. Low fat puddings may still contain a lot of sugar so have a small portion
- Choose fruit tinned in natural juice rather than syrup
- Choose sugar free jelly instead of ordinary jelly
- Use jam or marmalade sparingly on bread or toast or use reduced sugar varieties
- It is not necessary to avoid sugar completely as long as your diet is high in fibre. Some foods such as baked beans, breads, breakfast cereals, cooked meats, canned vegetables contain a little sugar but do not need to be avoided

How to eat less fat

There are several ways of reducing fat in your diet. Here are some ideas to try:

- Avoid pastry dishes such as pies, pasties, sausage rolls and pork pies
- Grill, microwave, oven cook, boil or steam rather than frying
- Be mean with whatever spread you use on your bread or toast, ideally one based on olive oil or rapeseed oil
- Choose lean cuts of meat and avoid large portions. Keep to no more than 4oz/100g (cooked weight)
- If you have to use ready prepared meals choose healthy eating options and add a side salad or extra vegetables
- Use skimmed or semi-skimmed milk rather than full fat
- Eat fewer chips, crisps and nuts
- Limit you intake of hard or other full fat cheese to twice a week. You can eat low fat cheese spread or cottage cheese in addition to these 2 servings
- Cut down on mayonnaise and dishes containing mayonnaise such as coleslaw and potato salad. You can use fat free salad dressing
- Avoid breads containing fat such as croissants, garlic bread and naan
- Try to avoid take away food as these are high in fat
**Best type of fats to choose?**
- Spreads made from olive, rapeseed or soya oils. Ideally choose a low fat one
- Olive oil or rapeseed oil - remember to use a small amount
- Have oily fish such as salmon, mackerel, sardines, pilchards, trout, herring twice a week

**How to eat more fibre and carbohydrate and starchy foods?**

There are several ways; here are some ideas:
- Include granary, multigrain and multiseeded breads. Also pitta, crisp bread and high fibre crackers
- Choose a high fibre breakfast cereal such as porridge, low sugar muesli, Weetabix or Shredded Wheat
- Pasta, rice, couscous, potatoes, sweet potato, noodles, yam, cassava and chapattis are good choices but limit high fat types such as chips, roast potatoes or fried rice

**How much fruit and vegetables?**

Fruit and vegetables especially peas, beans, lentils help in the control of blood glucose levels. Aim for five or more portions of fruit and vegetables a day.

A portion equals:
- 1 apple, orange or banana
- 1 tablespoon of dried fruit
- 2 tablespoons of vegetables
- 1 dessert bowl of salad

Vegetables can be eaten fresh, frozen or canned.

Fruit can be eaten, fresh, frozen, cooked without sugar, dried or canned in natural juice. Spread fruit throughout the day, having one or two portions at a time.

**Can I eat special diabetic foods?**

These are not advised because they often contain sorbitol and fructose, which can cause stomach upsets. They also contain calories. It is preferable to choose small amounts of ordinary foods instead.

**MEAL IDEAS**

<table>
<thead>
<tr>
<th><strong>BREAKFAST</strong></th>
<th><strong>LUNCH</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Porridge, Weetabix, Muesli or Shredded Wheat with sliced banana or other fruit - use low fat milk</td>
<td>Thick lentil or vegetable soup with granary bread or roll</td>
</tr>
<tr>
<td>Toast/roll (granary or multigrain preferable) thinly spread with olive oil based margarine, marmalade or jam (low sugar varieties)</td>
<td>Baked beans/tinned fish/scrambled eggs/cheese on toast</td>
</tr>
<tr>
<td>Healthy eating or diet yoghurt</td>
<td>Jacket potato with one of these toppings: tuna and sweetcorn, baked beans, grated or cottage cheese and add a portion of salad</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>EVENING MEAL</strong></th>
<th><strong>DESSERTS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat and bean casserole</td>
<td>Fresh fruit or tinned in natural juice</td>
</tr>
<tr>
<td>Poached, oven baked or steamed fish with vegetables and new potatoes</td>
<td>Diet or healthy eating yoghurt</td>
</tr>
<tr>
<td>Couscous or sweet potato with roasted vegetables</td>
<td>Sugar free jelly with fruit pieces</td>
</tr>
<tr>
<td>Lentil curry with rice or chapatti</td>
<td>Milk puddings made with artificial sweetener</td>
</tr>
<tr>
<td>Spaghetti bolognaise serve with salad</td>
<td>Stewed fruit with custard made with artificial sweetener</td>
</tr>
<tr>
<td>Shepherds pie served with peas and sweetcorn</td>
<td></td>
</tr>
</tbody>
</table>
Because we all enjoy different food and have varying appetites, you may wish to see a dietitian to discuss your personal tailored eating plan. If this has not been arranged, ask your GP, hospital specialist, practice nurse or diabetes specialist nurse to refer you. Remember, dietitians can help you with a range of dietary needs, not just weight loss.

**Food Labels**

Looking at the label can help you decide whether the product contains ‘a little’ or ‘a lot’ of fat, sugar, salt and fibre.

<table>
<thead>
<tr>
<th>THIS IS A LOT (per 100g)</th>
<th>THIS IS A LITTLE (per 100g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20g fat or more</td>
<td>3g fat or less</td>
</tr>
<tr>
<td>5g saturated fat or more</td>
<td>1g saturated fat or less</td>
</tr>
<tr>
<td>10g sugars or more (5g = 1 teaspoon)</td>
<td>2g sugars or less</td>
</tr>
<tr>
<td>1.2g salt or more</td>
<td>0.25g salt or less</td>
</tr>
<tr>
<td>0.5g sodium or more</td>
<td>0.1g sodium or less</td>
</tr>
<tr>
<td>3g fibre or more</td>
<td>0.5g fibre or less</td>
</tr>
</tbody>
</table>

The above table guides you as to how much nutrients are in your food or drink per 100g so check against your actual serving size.

**What can I drink?**

For example:
- Water
- “No added sugar” squashes
- Diet fizzy drinks
- Flavoured spring water
- Tea and coffee

Try to have 8-10 cups of fluid daily. Water is best but if this is not acceptable, choose diet or those labelled “no added sugar”. Use sweeteners in tea/coffee if needed but it is preferable not to, and to get used to less sweet tasting drinks. Pure fruit juices, even those marked “unsweetened” are high in natural fruit sugar so limit to 100ml a day.

**Alcohol?**

The maximum recommended alcohol intake for a person with diabetes is:
- 3 units per day for men
- 2 units per day for women
- 1 unit = ½ pint beer or larger / 1 small glass of wine / 1 pub measure of spirits such as whisky or gin

Remember alcohol is high in energy (calories) and can affect your blood pressure, liver, weight, triglycerides and glucose levels.

**Remember to -**
- Use diet/low calorie mixers
- Do not drink on an empty stomach. Always eat something starchy before or with alcohol
- Avoid drinks that are high in sugar e.g. sweet sherry, sweet wine, cocktails and liqueurs
- Drinking a lot is not good for anyone but for people on insulin it can pose extra dangers. Always have something to eat before and after drinking because alcohol can lower your blood sugar and decrease your body’s natural response to hypoglycaemia (low blood sugar). Excess alcohol can cause delayed hypoglycaemia, often up to 12-24 hours afterwards.
Activity and diabetes

Activity will improve your diabetes control by increasing the body's sensitivity to insulin and by reducing the blood glucose. It also improves circulation and reduces the risk of cardiovascular disease.

It can:

- Lower blood sugar and can sometimes reduce your dose of medication
- Improve your circulation and reduce risk of heart disease
- Lower harmful blood lipids (fats)
- Help you to lose weight
- Control blood pressure
- Keep you mobile and independent
- Make you feel good and reduce stress

Getting started

Activity need not involve a formal structured programme. Become more active in the daily routine e.g. use the stairs instead of the lift, walk or cycle instead of driving. Aim to get off the bus a stop early or park the car a little bit further away from your destination. Other activities include housework, gardening, golf, swimming or other sports.

Try to join a local group that is involved in physical activity e.g. Ramblers, “Extend” (movement to music for over 60s) and other walking groups - the local library should have details.

Always start slowly and increase gradually. It is important to choose an activity that is enjoyable. Exercising at home can be just as valuable - any amount of exercise is valuable provided it is at a pace to raise the heartbeat and make you feel warm and slightly out of breath - walking is ideal. If you are housebound please ask a health professional for information on armchair exercises.

If you have concerns about taking up a new activity then discuss with the practice nurse.

Exercise on prescription

Some Primary Care Trusts have special schemes for people with diabetes to have “exercise on prescription”. Ask your health professional to refer you.

Exercise

Exercise is fun and is essential to stay mentally and physically well. It improves circulation and reduces the risk of cardiovascular disease as well as improving diabetes

Never use diabetes/insulin as an excuse to not exercise

You may need a snack before you exercise and if the exercise is prolonged you may also need to stop for some extra snacks. You will need to discuss this with your Diabetes Care Team. The type of snack and size will vary with the type of exercise you take.

Remember:

- You may need to adjust insulin dose to accommodate exercise
- Try to arrange activity for 1 - 2 hours after a meal
- Hypos can occur 6 - 24 hours of exercise
- Don’t inject near exercising muscle (the insulin is absorbed very quickly)
- Wear appropriate footwear
- Tell your friends about hypos and how they can help
- Carry hypo treatment with you
- If you have type 1 diabetes don’t exercise when you are ill or have ketones
- Drink extra fluids

Above all enjoy yourself!
### CHAPTER 3
**DIABETES MELLITUS**

<table>
<thead>
<tr>
<th>DIABETES MELLITUS</th>
<th>GROUP 1 ENTITLEMENT</th>
<th>GROUP 2 ENTITLEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INSULIN TREATED</strong>&lt;br&gt;Drivers are sent a detailed letter of explanation about their licence and driving by DVLA.&lt;br&gt;See Appendix to this Chapter for a sample of this letter (DIABINE)&lt;br&gt;TEMPORARY INSULIN TREATMENT e.g. gestational diabetes, post-myocardial infarction, participants in oral/inhaled insulin trials.</td>
<td>Must recognise warning symptoms of hypoglycaemia and meet required visual standards. 1, 2 or 3 year licence. Need not notify DVLA but should stop driving if experiencing disabling hypoglycaemia. Notify DVLA if treatment continues for more than 3 months.</td>
<td>New applicants on insulin or existing drivers are barred in law from driving LGV or PCV vehicles from 1/4/91. Drivers licensed before 1/4/91 on insulin are dealt with individually and licensed subject to satisfactory annual Consultant assessment. Regulation changes in April 2001 allow “exceptional case” drivers to apply for or renew their entitlement to C1/C1E to drive small lorries with or without a trailer subject to meeting all “Qualifying Conditions”. (See Appendix to this Chapter for full details)&lt;br&gt;Legal bar to holding a licence while insulin treated. May reapply when insulin treatment is discontinued.</td>
</tr>
<tr>
<td><strong>MANAGED BY TABLETS</strong>&lt;br&gt;See Appendix to this Chapter for INF188/2</td>
<td>If all the requirements set out in the attached information on INF188/2 are met, DVLA does not require notification. This can be printed and retained for future reference. Alternatively if the information indicates that medical enquiries will need to be undertaken DVLA should be notified. For drivers taking medication likely to cause hypoglycaemia such as a sulphonylurea, it may be appropriate to monitor blood glucose regularly and at times relevant to driving to enable the detection of hypoglycaemia.</td>
<td>Drivers will be licensed unless they develop relevant disabilities e.g. diabetic eye problem affecting visual acuity or visual fields, in which case either refusal, revocation or short period licence. If becomes insulin treated will be refusal or revocation. Drivers are advised to monitor their blood glucose regularly and at times relevant to driving, particularly if taking medication likely to cause hypoglycaemia such as a sulphonylurea.</td>
</tr>
<tr>
<td><strong>MANAGED BY EXENATIDE OR GLIPTINS IN COMBINATION WITH A SULPHONYLUREA</strong>&lt;br&gt;See above for managed by tablets</td>
<td>Individual assessment Further information on this topic can be found on the DVLA website: <a href="http://www.dft.gov.uk/dvla/medical/Treatment%20with%20Exenatide%20Liraglutide%20or%20Gliptins.aspx">http://www.dft.gov.uk/dvla/medical/Treatment%20with%20Exenatide%20Liraglutide%20or%20Gliptins.aspx</a></td>
<td></td>
</tr>
<tr>
<td><strong>MANAGED BY DIET ALONE</strong></td>
<td>Need not notify DVLA unless develop relevant disabilities e.g. Diabetic eye problems affecting visual acuity or visual field or if insulin required.</td>
<td>Need not notify DVLA unless develop relevant disabilities e.g. Diabetic eye problems affecting visual acuity or visual field or if insulin required.</td>
</tr>
</tbody>
</table>

See Appendix at end of this Chapter
-The applicant or licence holder must notify DVLA unless stated otherwise in the text.

<table>
<thead>
<tr>
<th>DIABETIC COMPLICATIONS</th>
<th>GROUP 1 ENTITLEMENT</th>
<th>GROUP 2 ENTITLEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent hypoglycaemic episodes likely to impair driving</td>
<td>Cease driving until satisfactory control re-established, with consultant/GP report.</td>
<td>See above for insulin treated. Refusal or revocation.</td>
</tr>
<tr>
<td>Impaired awareness of Hypoglycaemia</td>
<td>If confirmed, driving must stop. Driving may resume provided reports show awareness of hypoglycaemia has been regained, confirmed by consultant/GP report.</td>
<td>See above for insulin treated. Refusal or revocation.</td>
</tr>
<tr>
<td>Eyesight complications (affecting visual acuity or fields)</td>
<td>See Section: Visual Disorders</td>
<td>See above for insulin treated and Section: Visual Disorders.</td>
</tr>
<tr>
<td>Renal Disorders</td>
<td>See Section: Renal Disorders</td>
<td>See Section: Renal Disorders</td>
</tr>
<tr>
<td>Limb Disability e.g. peripheral neuropathy</td>
<td>See Section: Disabled Drivers at Appendix 1</td>
<td>As Group I</td>
</tr>
</tbody>
</table>

See Appendix at end of this Chapter

### APPENDIX

- **Police, Ambulance and Health Service Vehicle Driver Licensing**

The Secretary of State’s Honorary Medical Advisory Panel on Diabetes and Driving has recommended that drivers with insulin treated diabetes should not drive emergency vehicles. This takes account of the difficulties for an individual, regardless of whether they may appear to have exemplary glycaemic control, in adhering to the monitoring processes required when responding to an emergency situation.

*Caveat: The advice of the Panels on the interpretation of EC and UK legislation, and its appropriate application, is made within the context of driver licensing and the DVLA process. It is for others to decide whether or how those recommendations should be interpreted for their own areas of interest, in knowledge of their specific circumstances.

A Guide for Drivers with Insulin Treated Diabetes who wish to apply for C1/C1E Entitlement

Drivers may apply for or renew their entitlement to categories C1/C1+E to drive small lorries with or without a trailer.

They may also be eligible to renew category C1E, to drive small lorries with a combined weight of 12 tonnes, if they have passed category CE, although this does not apply if they have previously held CE (102). **They will not be entitled by law to hold Category D1 (Minibuses)**

### Qualifying Conditions you must meet

- They must have had no hypoglycaemic attacks requiring assistance whilst driving within the previous 12 months.
- They will not be able to apply for category C1 or C1E entitlement until their condition has been stable for a period of at least one month.
- They must regularly monitor their condition by checking their blood glucose levels at least twice daily and at times relevant to driving. We advise the use of a memory chip meters for such monitoring.
- They must arrange to be examined every 12 months by a hospital consultant, who specialises in diabetes. At the examination the consultant will require sight of their blood glucose records for the last 3 months.
- They must have no other condition, which would render them a danger when driving C1 vehicles.
- They will be required to sign an undertaking to comply with the directions of doctors(s) treating the diabetes and to report immediately to DVLA any significant change in their condition.
Information for drivers of cars or motorcycles with Diabetes treated by tablets, diet or both

Please keep this leaflet safe so you can refer to it in the future.

Drivers do not need to tell DVLA if their diabetes is treated by tablets, diet or both and they are free of the complications listed below.

Some people with diabetes develop associated problems that may affect their driving.

What you need to tell us about

By law you must tell us if any of the following apply:

- you need treatment with insulin.
- you need laser treatment to both eyes or in the remaining eye if you have sight in one eye only.
- you have problems with vision in both eyes, or in the remaining eye if you have sight in one eye only. By law you must be able to read, with glasses or contact lenses if necessary, a car number plate in good light at 20.5 metres (67 feet) or 20 metres (65 feet) where narrower characters 50mm wide are displayed.
- you develop any problems with the circulation or sensation in your legs or feet which make it necessary for you to drive certain types of vehicles only, for example automatic vehicles or vehicles with a hand operated accelerator or brake. This must be noted on your driving licence.

HYPOGLYCAEMIA

The risk of hypoglycaemia (low blood sugar) is the main hazard to safe driving and can occur with diabetes treated with insulin or tablets or both. This may endanger your own life as well as that of other road users. Many of the accidents caused by hypoglycaemia are because drivers continue to drive even though they are experiencing warning signs of hypoglycaemia. If you experience warning signs of hypoglycaemia while driving you must always stop as soon as safely possible – do not ignore the warning signs.

You must inform DVLA if:

- you suffer more than one episode of disabling hypoglycaemia (low blood sugar) within 12 months, or if you or your carer feels you are at high risk of developing disabling hypoglycaemia.
- you develop impaired awareness of hypoglycaemia. (difficulty in recognising the warning symptoms of low blood sugar)
- you suffer disabling hypoglycaemia while driving.
- an existing medical condition gets worse or you develop any other condition that may affect you driving safely.

In the interests of road safety you must be sure that you can safely control a motor vehicle at all times.

How to tell us

If your doctor, specialist or optician tells you to report your condition to us, you need to fill in a DIAB1 medical questionnaire about diabetes.

You can download this from www.direct.gov.uk/driverhealth

Phone us on: 0870 600 0301

Write to: Drivers Medical Group, DVLA Swansea SA99 1TU

E-mail: eftd@dvla.gsi.gov.uk

Useful addresses

Diabetes UK Cymru, Argyle House, Castlebridge, Cowbridge, Road East Cardiff CF11 9AB

Diabetes UK Scotland, Savoy House, 140 Sauchiehall Street, Glasgow G2 3DH

Diabetic UK Central Office, Macleod House, 10 Parkway, London NW1 7AA

Diabetes UK website http://www.diabetes.org.uk

Ref: Tab1 - Rev Feb 09
Information for drivers of cars or motorcycles with Insulin Treated Diabetes

Drivers who have any form of diabetes treated with any insulin preparation must inform DVLA

EYESIGHT

All drivers are required by law to read, in good daylight, a car number plate from a distance of 20 metres or 20.5 metres where the old style number plate is used.

You must inform DVLA

- If you are unable to meet the number plate requirement.
- Of any problems that affect your field of vision.
- Of any conditions that affect both eyes or the remaining eye if you have sight in one eye only.
- If you have had laser treatment to both eyes for retinopathy, or to the remaining eye if monocular.

HYPOGLYCAEMIA

The risk of hypoglycaemia (low blood sugar) is the main hazard to safe driving. This may endanger your own life as well as that of other road users. Many of the accidents caused by hypoglycaemia are because drivers continue to drive even though they are experiencing warning signs of hypoglycaemia. If you experience warning signs of hypoglycaemia whilst driving you must always stop as soon as safely possible – do not ignore the warning signs.

You must inform DVLA if:

- you suffer more than one episode of disabling hypoglycaemia (low blood sugar) within 12 months, or if you or your carer feels you are at high risk of developing disabling hypoglycaemia.
- you develop impaired awareness of hypoglycaemia. (difficulty in recognising the warning symptoms of low blood sugar)
- you suffer disabling hypoglycaemia while driving.
- an existing medical condition gets worse or you develop any other condition that may affect you driving safely.

LIMB PROBLEMS

Limb problems/amputations are unlikely to prevent driving. They may be overcome by either restricting driving to certain types of vehicles e.g. those with automatic transmission, or by adaptations such as hand operated accelerator/brake.

You must inform DVLA

- If you develop problems with either the nerves or the circulation in your legs which prevent safe use of the foot pedals.

Drivers with insulin treated diabetes are advised to take the following precautions:

- Do not drive if you feel hypoglycaemic or if your blood glucose is less than 4.0 mmol/l.
- If hypoglycaemia develops while driving stop the vehicle as soon as possible in a safe location, switch off the engine, remove the keys from the ignition and move from the drivers seat.
- Do not resume driving until 45 minutes after blood glucose has returned to normal. It takes up to 45 minutes for the brain to fully recover.
- Always keep an emergency supply of fast-acting carbohydrate such as glucose tablets or sweets within easy reach in the vehicle.
- Carry your glucose meter and blood glucose strips with you. Check blood glucose before driving (even on short journeys) and test regularly (every 2 hours) on long journeys. If blood glucose is 5.0mmol/l or less, take a snack before driving.
- Carry personal identification indicating that you have diabetes in case of injury in a road traffic accident.
- Particular care should be taken during changes of insulin regimens, changes of lifestyle, exercise, travel and pregnancy.
- Take regular meals, snacks and rest periods on long journeys. Always avoid alcohol.

CONTACT US

Web site: www.direct.gov.uk/driverhealth
Tel: 0870 600 0301 (8.00 am. to 5.30pm. Mon – Fri) & (8.00 am. to 1pm. Sat)
Write: Drivers Medical Group, DVLA, Swansea SA99 1TU
E-mail: eftd@dvla.gsi.gov.uk

Rev: Aug 08
Appendix 5  EAST RETINAL SCREENING REFERRAL FORM

(Request copy from Retinal Screening Office)

RETINAL SCREENING REFERRAL TEMPLATE

Fax to

East and North Hertfordshire NHS
East & North Herts Diabetes Eye Screening Programme
Q 93 The Mezzanine
Queen Elizabeth II Hospital
Howlands
WELWYN GARDEN CITY
Herts AL7 4HQ
Tel 01707 365557

Special Referral for Diabetes Eye Screen-

Newly Diagnosed Diabetic [Date of diagnosis]...........................................
Pre-conception diabetic patient
Antenatal diabetic patient [LMP date]...................................................

Your patient will be sent the next available screening appointment at their nearest hospital on receipt of this form provided ALL 9 FIELDS are filled out legibly.

PLEASE NOTE: Do not refer patients for routine screening. Surgeries are screened in rotation and we arrange this directly with the GP practice.

GP Surgery ................................................................. Ward ..............................................................

NHS No .................................................................

Mr / Mrs / Ms / Miss / Dr / Rev / Prof Surname ......................................................

First name ..................................................... Further initials ................................

Address ......................................................................................................................

Postcode .................................................................

Date of birth .................................................................

Phone No Home................................................................ Work................................................................ Mobile....................................................................
REFERRAL FORM FOR DIABETIC RETINAL SCREENING

Please give as much detail as possible or use a patient detail sticker

<table>
<thead>
<tr>
<th>Patient Name:</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Birth:</td>
<td></td>
</tr>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>NHS Number:</td>
<td></td>
</tr>
<tr>
<td>Tel Number:</td>
<td>Home:</td>
</tr>
<tr>
<td>GP Surgery:</td>
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</tr>
<tr>
<td>Diabetic clinics attended</td>
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</tr>
<tr>
<td>(Consultant name and hospital)</td>
<td></td>
</tr>
<tr>
<td>Ophthalmology clinics attended</td>
<td></td>
</tr>
<tr>
<td>(Consultant name and hospital)</td>
<td></td>
</tr>
<tr>
<td>Newly diagnosed</td>
<td>New to West Herts area</td>
</tr>
</tbody>
</table>

Referred by (please print)
APPLICATION FOR FOOT HEALTH ASSESSMENT

In order to provide a quality podiatry service all referrals are assessed and prioritised. This enables us to see those patients with the most severe foot problems or those with relevant medical conditions, for example diabetes, as quickly and frequently as necessary.

We are unable to offer a service to those patients with no relevant medical conditions who require nail cutting only.

After we have received your application a podiatrist may telephone you so that we can find out more about your foot health needs and medical condition.

You will then be offered one of three options:

- Advice on the telephone.
- An invitation to attend an information/education session to help you cope with your foot health needs.
- An appointment for an assessment with the podiatrist.

Please return the completed form to:

Department of Podiatry and Foot Health
Bull Plain Clinic
27 Bull Plain
HERTFORD
SG14 1DX
01992 528100
The information you give will be held in the strictest confidence. Failure to complete this form fully will delay your application.

<table>
<thead>
<tr>
<th>SURNAME Mr/Mrs/Miss</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FORENAMES</td>
<td></td>
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<tr>
<td>ADDRESS</td>
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<tr>
<td>TOWN</td>
<td></td>
</tr>
<tr>
<td>POSTCODE</td>
<td></td>
</tr>
<tr>
<td>TELEPHONE NUMBER</td>
<td></td>
</tr>
<tr>
<td>MOBILE TELEPHONE NUMBER</td>
<td></td>
</tr>
<tr>
<td>EMAIL ADDRESS</td>
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</tr>
<tr>
<td>DATE OF BIRTH</td>
<td></td>
</tr>
<tr>
<td>NHS NUMBER</td>
<td></td>
</tr>
<tr>
<td>DOCTORS NAME</td>
<td></td>
</tr>
<tr>
<td>ADDRESS</td>
<td></td>
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<tr>
<td>TOWN</td>
<td></td>
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<td>POSTCODE</td>
<td></td>
</tr>
<tr>
<td>TELEPHONE NUMBER</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NEXT OF KIN OR EMERGENCY CONTACT DETAILS (Son, Daughter/Husband/Wife/Parent/Other)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
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<tr>
<td>ADDRESS</td>
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<tr>
<td>TOWN</td>
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<td>POSTCODE</td>
<td></td>
</tr>
<tr>
<td>TELEPHONE NUMBER</td>
<td></td>
</tr>
</tbody>
</table>

Please state briefly the nature of your **FOOT** problem:

__________________________________________________________________________

How long have you had trouble with your feet?

__________________________________________________________________________

Please list your current medication and the conditions for which they were prescribed:

__________________________________________________________________________

__________________________________________________________________________
Please list all illnesses where it has been necessary to consult your doctor or a hospital clinic

Do you suffer from any of the following (please tick)?
Diabetes □  Foot ulcers □
Septic or discharging foot problems □  Loss of feeling in your feet □
Gangrene □

**Have you ever had (Please tick)**
Amputation of the toes/part of the foot □
A heart of circulatory condition, please name ________________
Blood Disorders, please name ____________________________
Please list all surgery that you have had and the dates

Is there any other information that you think we should be aware of?

Have you received podiatry (chiropody) treatment previously?
YES/NO     If YES please give details

I am the patient/doctor/nurse/other (please state) _____________

SIGNATURE OF APPLICANT ________________________________

DATE ______________________________

Contact telephone number (if not the patient) _______________

If you require this form in a different format please contact the Podiatry Department using the telephone number on the front of this form.
## WEST PODIATRY REFERRAL FORM

**FOOT HEALTH SERVICE REFERRAL FORM**

Foot Health Service  
St Peter’s House, 2 Bricket Road, St Albans, Herts AL1 3JW  
Tel: 01727 829405  Fax: 01727 898225

<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>NHS No:</td>
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</tr>
<tr>
<td>NI No:</td>
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<tr>
<td>Date:</td>
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</tr>
<tr>
<td>Site:</td>
<td></td>
</tr>
<tr>
<td>Hospital No:</td>
<td></td>
</tr>
<tr>
<td><strong>Service User Details:</strong></td>
<td></td>
</tr>
<tr>
<td>Mr/Mrs/Ms</td>
<td></td>
</tr>
<tr>
<td>DoB:</td>
<td></td>
</tr>
<tr>
<td>M/F</td>
<td></td>
</tr>
<tr>
<td>Surname:</td>
<td></td>
</tr>
<tr>
<td>First Name:</td>
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<td>Preferred Name:</td>
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<td><strong>GP:</strong></td>
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<td>Address:</td>
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<td>Post Code:</td>
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<td>Tel No:</td>
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<td><strong>Main Carer:</strong></td>
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<tr>
<td>Name:</td>
<td></td>
</tr>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>Post Code:</td>
<td></td>
</tr>
<tr>
<td>Tel No:</td>
<td></td>
</tr>
<tr>
<td><strong>Is a carer’s assessment needed?</strong></td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>Ethnicity:</strong></td>
<td></td>
</tr>
<tr>
<td>Religion:</td>
<td></td>
</tr>
<tr>
<td>Language/Communication needs:</td>
<td></td>
</tr>
<tr>
<td>Is a translator needed?</td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>Next of kin different:</strong></td>
<td></td>
</tr>
<tr>
<td>Name:</td>
<td></td>
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<td>Address:</td>
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<td>Post Code:</td>
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<tr>
<td>Tel No:</td>
<td></td>
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<tr>
<td><strong>For Mental Health Act purposes only:</strong></td>
<td></td>
</tr>
<tr>
<td>Mental Health Act status</td>
<td></td>
</tr>
<tr>
<td>MHA Nearest Relative</td>
<td></td>
</tr>
<tr>
<td><strong>Hospital Contact – this admission:</strong></td>
<td></td>
</tr>
<tr>
<td>Hospital:</td>
<td></td>
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<tr>
<td>Ward:</td>
<td>N / A</td>
</tr>
<tr>
<td>Date of Admission:</td>
<td></td>
</tr>
<tr>
<td>Date of Section 2 Notification:</td>
<td></td>
</tr>
<tr>
<td><strong>Type of accommodation (access issues):</strong></td>
<td></td>
</tr>
<tr>
<td>Lives alone:</td>
<td>Yes / No</td>
</tr>
<tr>
<td>If No, who else lives in household?</td>
<td></td>
</tr>
<tr>
<td><strong>Details of other professionals involved, eg District Nurse</strong></td>
<td></td>
</tr>
<tr>
<td>Name:</td>
<td></td>
</tr>
<tr>
<td>Address:</td>
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<td>Post Code:</td>
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<td>Tel. No:</td>
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<td>Post Code:</td>
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<tr>
<td>Tel. No:</td>
<td></td>
</tr>
</tbody>
</table>

Print  
Signature  
Date
Please tick criteria for assessment appropriate to this individual and elaborate below.

CRITERIA

The patient has:

- Diabetes (Stage 2 and above as per West Herts guidelines)
- Rheumatoid Arthritis plus associated conditions
- Peripheral Vascular Disease
- Peripheral Neuropathy
- Severe structural anomaly of the whole foot, congenital or acquired, requiring specialist treatment and management
- Ingrowing toenail or nail pathology requiring surgery under local anaesthetic
- Musculo-skeletal foot/leg problem – please elaborate on patient’s problem below
- Other – if you believe your patient to be high risk please state your reason below for consideration

This patient takes:

- Steroids
- Anticoagulants (not aspirin)
- Immunosuppressants

Please elaborate on the patient’s foot problems so that we can prioritise the appointment.

Summary of general health problems plus current medication.

Does this patient pose any risk to staff?  
Yes / No
If yes, please specify:

Does this patient have MRSA or any blood borne infection?  
Yes / No

If the patient is a temporary resident please contact the service for further information.

*The Foot Health Service no longer carries out home visits. If the patient falls within our criteria, they will be offered an appointment at the nearest appropriate clinic for their care.*

C:/document template/referral form updated April 09
Exenatide (Byetta®)
RECOMMENDED IN LINE WITH FOLLOWING CRITERIA

**Inclusion criteria:**
Patients aged between 40 years to 70 years who fit the following criteria

1. Obese patients (BMI ≥ 30kg/m²) who failed triple therapy at maximally tolerated doses (metformin + sulphonylurea + Glitazone) AND HBA1c ≥ 8.4%  
   o who would otherwise need insulin therapy. In these, patients, the addition of Exenatide will necessitate the withdrawal of Glitazone, as the latter is not currently licensed with Exenatide.

2. Obese patients (BMI ≥ 30kg/m²) who failed maximal dose of dual therapy (Metformin + Sulphonylurea, Metformin + Glitazone or Sulphonylurea + Glitazone) AND  
   ▪ with HbA1c ≥ 8.4% and  
   ▪ in whom add-on therapy of a drug in the third category is contraindicated or not tolerated and who would otherwise be considered for insulin therapy

**Exclusion Criteria**
- Patients older than 70 years; BMI ≤ 30kg/m²; HBA1c ≤ 8.4%.
- Severe renal impairment (creatinine clearance < 30ml/min)
- Diabetic gastropathy with recurrent vomiting
- Gastro-intestinal disease with delayed gastric emptying and/or recurrent vomiting.
- Post myocardial infarction (insulin preferred) unless insulin therapy declined.
- Heart failure, pulmonary hypertension and liver failure (no safety data)
- History of pancreatitis
- Gall stones or heavy alcohol intake (risk of pancreatitis)

**Criteria for stopping treatment:**
1- Drug intolerance
2- If a beneficial metabolic effect has not been obtained, defined less than 1% improvement in HbA1c after 6 months.
3- Patient’s choice
4- Permanent occurrence of any of the exclusion criteria.
5- Need for Insulin therapy or oral drug treatment – gliptin or glitazone. Exenatide is not licensed as add-on therapy with insulin, glitazone or gliptin.

**ADVICE:**
Initiation of treatment should be undertaken by specialists. (Careful patient selection is necessary to minimise risk of pancreatitis). All patients should be on the hospital specialist managed database and outcomes to be recorded on this database.

Management by GPs: Under Shared-care with specialists.
**Cost and estimated Impact to the NHS**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Usual daily dose range</th>
<th>Approx. annual cost (Drug Tariff Dec 08)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metformin</td>
<td>1000-2000mg</td>
<td>£22.88 - £45.76</td>
</tr>
<tr>
<td>Metformin S/R</td>
<td>500mg od – 2g in divided doses</td>
<td>£41.06 - £166.40</td>
</tr>
<tr>
<td>Gliclazide</td>
<td>80-320mg</td>
<td>£13.91 - £55.64</td>
</tr>
<tr>
<td>Gliclazide SR</td>
<td>30mg – 120mg</td>
<td>£40.04 - £159.12</td>
</tr>
<tr>
<td>Glimepiride</td>
<td>1-4mg</td>
<td>£25.87 - £72.02</td>
</tr>
<tr>
<td>Glipizide</td>
<td>5-20mg</td>
<td>£16.38 - £65.52</td>
</tr>
<tr>
<td>Pioglitazone</td>
<td>15-45mg</td>
<td>£295.23 - £480.48</td>
</tr>
<tr>
<td>Sitagliptin</td>
<td>100mg</td>
<td>£432.38</td>
</tr>
<tr>
<td>Insulin glargine</td>
<td>See below</td>
<td>£253.50</td>
</tr>
<tr>
<td>Biphasic insulin aspart</td>
<td>See below</td>
<td>£191.30</td>
</tr>
<tr>
<td>Biphasic isophane insulin</td>
<td>See below</td>
<td>£130.52</td>
</tr>
<tr>
<td>Exenatide</td>
<td>20mcg</td>
<td>£887.12</td>
</tr>
</tbody>
</table>

Costs for insulin are calculated on cartridge costs, assuming the patient is using 50 units daily of short acting insulin or 25 units daily of longer acting insulin.

December 2008
Appendix 10 GUIDELINES FOR INSULIN PUMP THERAPY

*Patients on Pump Therapy will be given individual and tailored instructions for managing Hypo- and Hyperglycaemia. They should follow these guidelines, given to them by the clinician initiating this Pump Therapy

GUIDELINES FOR INSULIN PUMP THERAPY IN TYPE 1 DIABETES

Section 1-Patient’s Identification and Referral:

Use of insulin pump therapy should be considered for all eligible patients who may benefit from such treatment. This stipulates that adult patients with type 1 diabetes mellitus who fulfill the NICE criteria for consideration of CSII (below) should be identified by the managing Diabetologist, GP or DSN and referred to the Insulin Pump Team for further assessment for suitability for such treatment. Patients who request to go on pump therapy and those who are unsure about having such treatment should still be referred to have their needs and concerns explored by the Insulin Pump Team and treatment discussed so that they are provided with enough information before making a final decision. Children and adolescents who are already on pump therapy should be referred when their care is transferred from paediatric to adult services.

NICE criteria: continuous subcutaneous insulin infusion (CSII or ‘insulin pump therapy’) is recommended as an option for people with type 1 diabetes provided that:

1. Multiple-dose insulin (MDI) therapy (including, where appropriate, the use of long acting insulin analogues) has failed.

2. People for whom MDI therapy has failed are considered to be those for whom it has been impossible to maintain a haemoglobin A1c level no greater than 7.5% (or 6.5% in the presence of microalbuminuria or other complications) without disabling hypoglycaemia occurring, despite a high level of self care of their diabetes.

   Disabling hypoglycaemia for the purposes of this guidance means the repeated and unpredictable occurrence of hypoglycaemia requiring third-party assistance that results in continuing anxiety about recurrence and is associated with significant adverse effect on quality of life.

3. Patients considered for CSII should have the commitment and competence to use the therapy effectively. This stipulates that prior to referral the patient should have received an externally validated structured education programme.

   Patients who have not received structured educational programmes may still be referred for assessment if deemed appropriate by the referring physician.

Particular consideration should be given to those patients who have made significant efforts to optimize control but failed and whom further intensification of MDI therapy is believed to result in unacceptable increase in risk of severe or disabling hypoglycaemia and patients with special situations such as:

1. Accelerated complications
2. Pregnant ladies or those planning pregnancy
3. Hypoglycaemia unawareness
4. Extreme insulin sensitivity
5. Needle phobia
6. Severe insulin resistance with poor metabolic control
7. Acute painful peripheral neuropathy if conventional treatment has failed.
8. Symptomatic autonomic neuropathy if conventional treatment has failed.
9. Specific quality of life issues:
   a) Excessive number of injections for optimised control
   b) Unacceptable number of sick days
   c) Pathological fear of hypoglycaemia
   d) Marked glycaemic excursions/dawn phenomenon
   e) Impaired exercise capacity
   f) Abnormal eating behaviour
   g) Shift work
   h) Frequent travel across zones
   i) Suboptimal school/college performance
   j) Adverse impact on family dynamics

CSII is not currently recommended for people with type 2 diabetes who require insulin therapy.

Section 2-Patient’s Assessment:

Comprehensive patient’s assessment will be undertaken in the Insulin Pump Clinic by the specialist pump team comprising of the lead diabetologist with interest in CSII, pump-trained DSN and a dietician. All elements of this process should be clearly discussed with the patient. A decision about suitability for pump therapy should be agreed by all parties and should have taken into account the following:

1. Eligibility according to NICE guidelines:
   a) Failed basal bolus regimen with long acting insulin analogue.
   b) Repeated episodes of hypoglycaemia
   c) Unawareness of hypoglycaemia

2. Special situations and quality of life issues (as mentioned above)

3. Patient’s life style, job nature, social circumstances and most importantly patient’s psychological, intellectual and physical capacity to cope with the demands of insulin pump therapy:
   a) Be motivated to succeed.
   b) Have realistic expectations
   c) Be willing to monitor blood glucose at least 4 times a day.
   d) Be willing to work with multidisciplinary team
   e) Demonstrate self-management skills including carbohydrate counting for meals and awareness of other dietary factors that will affect their control/insulin requirements, adjusting insulin dosing during physical activity, alcohol drinking and sickness, driving precautions, hypoglycaemia, hyperglycaemia and ketone testing.
   f) Understand the need to revert to MDI therapy when appropriate.

3- The goals of pump therapy and the anticipated benefits for the individual:
   a) Improved glycaemic control (lower mean blood glucose and/or less glycaemic excursions and fewer episodes of hypoglycaemia).
   b) A greater degree of flexibility in lifestyle (less rigid meal times, ability to do shift work and take part in social and physical activities).
   c) Reduced patient’s anxiety about episodes of hypoglycaemia.
   d) Greater patient’s self-control over their condition.
   e) Overall perceived improvement in quality of life.
   f) Other criteria of patient’s or physician’s choice (to be clearly justified and agreed)
Previous diabetes management will be reviewed carefully and confirmed to have been impeccable and adhered to best practice in all aspects. CSII will be deferred if there is room to further adjustment. Details of the assessment process including all points mentioned above, particularly an up-to-date review of diabetes control (HbA1c), insulin requirements, frequency and severity of hypoglycaemia, presence of any complication, presence of other medical problems, results of most recent blood tests should be clearly documented in the notes. The decision to initiate pump therapy should be clearly justified and the goals clearly outlined in a comprehensive care plan that has to be agreed with the patient, documented in the notes and communicated to patient’s GP in a written letter.

In those where CSII is deferred, any adjustment in existing therapy should be managed by the Insulin Pump Team if appropriate, and reassessment for pump therapy should be repeated if the adjustment fails to produce the expected results within a reasonable period of time (3-6 months).

Patients who are unsuitable for pump therapy or those who declined such therapy should be referred back to the referring physician.

**Section 3-Patient's Education and Initiation of Insulin Pump Therapy:**

Before assessment for CSII, the patient should have successfully completed an externally validated structured education programme. The IDAC course is currently provided locally and is acceptable for this purpose. It provides comprehensive education about diabetes and its complication and, in particular, the action of short and long acting insulin and various insulin regimens; it is specifically designed to enable the development of skills and competency to provide optimal use of basal bolus insulin therapy, including carbohydrate counting, insulin dose adjustment during exercise, management of hypoglycaemia, hyperglycaemia and ketosis, alcohol advice and sick day rules.

Further education about the principles of CSII therapy and specific technical training in pump use are primarily provided by the pump company representative, who is highly experienced in this field. This is supplemented by clinical input from the pump specialist team.

Initial dosing schedule will be determined in agreement with the patient taking into account their existing insulin requirements and all other relevant factors. Ongoing support is given after initiation of CSII by all parties in the pump specialist team, whether by phone or review in the diabetes centre, until safe and effective use of pump therapy by the patient has been achieved.

Insulin pump training should include the following:

1. The mechanism for the insulin pump.
2. Using insulin pump and programming of CSII including:
   a) Variable basal rate infusion
   b) Temporary basal rate infusion
   c) Different bolus options and bolus wizard depending on carbohydrate count, glycaemic index, insulin sensitivity and mealtime span.
3. The concept of insulin resistance (e.g. during illness or menstruation) and the need for insulin dose adjustment under these circumstances and during exercise.
4. Pump malfunction and troubleshooting
   a) Insulin stacking and unexplained hypoglycaemia
   b) Unexplained hyperglycaemia e.g. insulin crystallization in the tube (blocked cannula tubing.
   c) Ketoacidosis due to lack of insulin infusion in cases of pump malfunction.
   d) Catheter site infection (which can be prevented by regular change of the infusion cannula and a high order of personal hygiene.

**Section 4-Follow up and Continuing CSII Therapy:**

Once initiated on insulin pump, patients should be able to continue on CSII so long as they are happy to do so and the diabetes care objectives that have been set within their care plan are being met.
Follow up clinic appointments will be provided as frequently as deemed necessary by the specialist team, especially soon after initiating CSII. With the current capacity, it is anticipated that patients will have 2-4 clinic appointments per year, depending on their clinical needs. This will be provided in the pump clinic run jointly by the lead diabetologist and a pump-trained DSN. A yearly nutritional review will also be provided if deemed necessary.

Section 5-CSII and Hospital Admission for Acute Conditions:

Patients admitted with acute diabetic complications (e.g. hypoglycaemia, severe hyperglycaemia or ketosis) or any other acute medical illness that will lead to a sudden and unpredictable change in food intake and insulin requirement should have their pump therapy interrupted and managed with intravenous insulin sliding scale or basal bolus until the patient is stabilized and reviewed by the specialist pump team.

Section 6-CSII and Pregnancy:

Women should continue pump therapy if they fall pregnant, unless they are not doing well. Frequent reviews will be provided by the pump team in the joint antenatal clinic, as their insulin requirement will continue to change as they progress in pregnancy. Where practical, continuous subcutaneous glucose monitoring should be implemented in difficult cases. Pump therapy is to be interrupted during labor, a time when intravenous insulin sliding scale is normally initiated. Reinitiating pump therapy after delivery should be done under the care and supervision of the specialist pump team.

Section 7-Patient’s Support and Continuing Education:

Continuing clinical support and advise is normally provided by the specialist pump team daily between 9am to 5 pm. Continuing technical support is provided 24 hour a day by the supplier company’s representative or helpline.

Continuing education should also involve group meetings of pump users and potential pump candidates facilitated by the specialist pump team. It is envisaged that such exercise can promote patients’ understanding and involvement, allow pump users to provide feedback on the service and how it can be improved or changed, and may help to develop an Expert Patient Group that can support other pump users to make the best of this technology.

The specialist pump team should be committed to organize group meeting of pump users at least twice yearly so that experience and learning can be exchanged between patients and updates on technology can be discussed and disseminated.

Section 8-Workforce:

The specialist members in the insulin pump team are committed to develop and maintain the necessary skills and core competencies in pump therapy, as outlined in the report from the Insulin Pumps Working Group. This is to be achieved by:

1. Attending a recognized course in CSII with regular updates courses afterwards.
2. Self-education and updating through active literature search and review.
3. Promoting links and networking with larger/national pump centres.
4. Promoting and building experience from auditing local service delivery.

Section 9-Pump Suppliers and Ordering of Pumps and Consumables:

Currently, the pump most widely used in this Trust is Medtronic. Although, in principle patients should have a choice of pumps, this may not be practically feasible for the time being, as the staff in the pump team are familiar with the use of Medtronic pump, the pump has proved to be safe and effective and met with patients’ satisfaction and there is nothing to suggest that other pumps in the UK market are technically superior or safer. In addition, the supplier company provides comprehensive education to staff
and patients with 24-hour technical helpline. However, the pump team is committed to learn more about other available pumps and be able to inform patients about the differences between various pumps so that they can choose the most suitable pump for their needs. Any patients established on a particular pump and whose care has been transferred to our Trust should be allowed to continue with that pump unless there is clinical need to change to another model.

One CSII is approved, a pump will be ordered from the supplying company and the invoice will be sent directly to the PCT finance department, as agreed with Dr. J. Bonnet. The ordering of consumables should be the patient's responsibility and it should be done directly with the supplying company, which should guarantee home delivery. Invoicing of the consumable should be directed to the PCT finance department, but a copy of the invoice should be sent to the Diabetes Centre at QEII hospital to monitor each individual usage of consumables. Alternative ordering may be considered in the future through the NHS Supply Chain, when it is made available, to reduce pump and consumables cost.
Lantus (glargine) insulin and cancer: a possible link that needs further investigation.

Summary

What is the issue?

Four recent research papers have examined a possible link between an long-acting insulin analogue (modified insulin) called Lantus (glargine) insulin and the likelihood of being diagnosed with cancer. Lantus insulin is used by people with both Type 1 and Type 2 diabetes. The studies compared the rate of tumour diagnosis in patients, most of whom had type 2 diabetes and compared Lantus with other types of insulin. Between them, the studies included details of about 300,000 patients, more than 10% of who were on Lantus insulin. Two of these studies suggested that people with type 2 diabetes treated with Lantus (glargine) insulin alone were at some increased risk of being diagnosed with cancer. No increase was seen in type 1 diabetes, or in those treated with Lantus plus rapid-acting insulins. A third study showed a borderline increase that the investigators attributed to differences between the types of patients compared rather than to the type of insulin they were on. The fourth study showed no difference in cancer risk between glargine and other insulins. The researchers involved in four studies all agree that these findings are not conclusive, and that further very large studies are urgently needed.

Lantus is a popular and widely used insulin. Many physicians and patients have found it helpful on an individual basis, but systematic evidence from clinical trials has not shown it to provide better overall glucose control than human insulin in type 2 diabetes. The authors do not recommend that you stop taking insulin Lantus (glargine), particularly if you have found it helpful in the management of your own diabetes. People with diabetes do, however, have the option of using long-acting human insulin (e.g. NPH insulin) or a mixture of long- and short-acting human insulin twice a day instead of the once-daily analogue. You may wish to consider this option if you already have a cancer, or, for women, if there is a family history of breast cancer.

Current National Institute for Health and Clinical Evidence (NICE) guidelines for the management of Type 2 diabetes (clinical guideline 87) advise that people with Type 2 diabetes who need insulin should start with human NPH insulin injected at bed-time or twice daily according to need. NICE advise considering a long-acting insulin analogue (insulin detemir or insulin glargine) in situations where the NPH insulin needs to be injected twice a day and that would cause problems, or the person’s lifestyle is restricted by recurrent symptomatic hypoglycaemic episodes, or the person cannot use the device to inject NPH insulin.

Do not make any change in your insulin treatment without consulting your own doctor, and no account stop taking your insulin. If you stop taking your insulin you could become very ill.
Appendix 12  HOME BLOOD GLUCOSE MONITORING PATIENT LEAFLET

- In patients who are not on insulin, but feel the need to confirm on an intermittent basis that glucose control is adequate and there is no regular high level of glucose in the urine.

I want to know more

- Quite a few people were advised to carry out self-monitoring of blood glucose levels in the past. Now that the Government advisory body, the National Institute for Health and Clinical Excellence (NICE) has reviewed any benefits and issued guidelines, it is more widely recognised that self-monitoring may not lead to better control of blood glucose levels if not used as an integral part of self-management education (CG66, CG87).


- People with type 2 diabetes may wish to discuss their monitoring requirements with their GP, Practice Diabetes Nurse or Diabetes Nurse Specialist.

- If you require any further advice or information regarding your diabetes or blood glucose testing, please ask your local surgery or pharmacy for advice.

- It is important to keep your blood glucose levels under control. Please check with your practice nurse or GP if you don’t know how to arrange for your regular blood test or how often to have one done.

National Support Group—Diabetes UK

In addition to local support for advice on overall healthcare, diabetes and dietary control.

Diabetes UK Careline, 10 Parkway, London, NW1 7AA
Diabetes UK careline: 0845 120 2960
Website: www.diabetes.org.uk

Summary

- Good control of your blood glucose is important for all patients with diabetes to reduce complications. The gold standard of measuring this is the HbA1c test.

- A balanced diet and exercise play a very important part in maintaining or improving your health.

- Local diabetes experts advise that if you do not use insulin, you may need to test your blood glucose under special circumstances (e.g. pregnancy, poor control and during illness).

- The Primary Care Trust advises only appropriate prescribing of test strips for patients who do not use insulin if there is a clinical condition.

All other patients will have to purchase their testing strips if they wish to monitor their blood glucose more frequently than recommended.

Information produced in conjunction with local experts in diabetes
April 2010
I'm thinking of buying a blood glucose meter

The local diabetes experts ask that you don't buy a machine without first consulting them or your GP Practice. They are not necessary for all patients with diabetes.

Why will my doctor sometimes be unwilling to prescribe blood glucose test strips?

- For patients with type II diabetes who use diet control alone or are well controlled on oral agents: clinical data shows that self-monitoring with blood testing strips does not in itself lead to better control of blood glucose levels.
- Our aim is to achieve the best possible balance between patient convenience, appropriate prescribing (good clinical practice) and best use of NHS resources.

For these reasons doctors will not necessarily prescribe testing strips just because you have diabetes.

If you wish to continue testing more frequently than recommended, you can buy testing strips from your community pharmacy.

How is blood glucose best monitored?

- When you have a diabetes check-up, a blood sample is usually taken from your arm for the HbA1c test. This is considered to be the gold standard method for measuring diabetes control over the previous 8—12 weeks. For many patients this is the only test/monitoring necessary.
- Your doctor will usually ask for this test twice a year if your blood glucose level is stable, or four times a year if it is not yet stabilised / if you have any changes made to your medication.
- There are some circumstances in which self-monitoring is still appropriate. If you are asked by your GP or nurse to monitor your blood glucose values you must record them and take them along to your next review.
- A balanced diet and exercise play a very important part in maintaining or improving your health.

You should only be asked to test your blood if you have one of the following:

1. Diabetes which is treated with insulin, or if insulin treatment is being considered.
2. If your diabetes is poorly controlled.
3. If you have diabetes in pregnancy
4. Your doctor/nurse has specifically recommended you monitor your blood glucose values regularly.
5. If you are at increased risk of hypoglycaemia.

6. If self-monitoring is though to be helpful while learning about the effect of diet and exercise on sugar levels.

- If your doctor/nurse thinks you need to self-test, make sure you understand the purpose of testing, when to test, and what to do with the results.
- If you need further prescriptions for test strips, your doctor or nurse will arrange for you to obtain them.
- Generally, a pack of 50 strips could be expected to last 4 months (depending on manufacturer’s expiry). You may need more than this if you are on insulin, or have diabetes in pregnancy.
- Bear in mind that there is an expiry period for the strips once a pack has been opened.

Should I use urine glucose test strips instead?

Urine glucose testing offers no benefit over regular testing offered by your doctor or diabetes nurse (see above).

Urine glucose testing is less reliable than blood glucose monitoring, but may have a restricted role.

- In patients who are unable or unwilling to carry out blood glucose monitoring where blood glucose monitoring was of help.
You should continue to see your GP for your annual diabetes check, even if you attend a Community Clinic or a Hospital Diabetes Clinic to ensure you are receiving the full range of diabetes care available, including:

- Annual eye screening
- Annual foot check
- Review of any diabetes medication you may be taking
- Organising any necessary blood or urine tests needed for your diabetes care
- Annual flu vaccination and checking you have had a one-off vaccination against pneumonia
- Screening for depression, which is more common in people with diabetes and other chronic conditions.
- Access to Smoking Cessation services if required.
- Help with your diet and weight management as appropriate.

If you are unclear about these new services and how they might affect you, please discuss this with your GP, Consultant or Diabetes Specialist Nurse.

Hertfordshire

DIABETES SERVICES HAVE CHANGED IN HERTFORDSHIRE

As a result of these changes, additional services are available and, if you are currently being seen at your local hospital, you may now be offered the following:

- Continued care at your local hospital
- Community Clinic appointment with a Hospital Diabetes Consultant
- Community Clinic appointment with a Diabetes Specialist Nurse
- Diabetes care provided solely by your GP and Practice Nurse

June 2010
NHS Hertfordshire is currently changing the services available for people with diabetes across the county.

In the next few months, more community clinics will be up and running, in 11 different locations across the county, this will enable patients to be seen closer to their homes, by the most appropriate healthcare professional.

Hospital diabetes
Consultants will be running clinics in the community; rather than all patients attending the hospital for their appointments.

If you currently see a diabetes consultant in hospital they will be reviewing your notes in the next few months to see if your care can be transferred to a community clinic.

People with complex diabetes may continue to be seen at the hospital clinics.

Your consultant will write to advise both you and your GP if your care is to be transferred in this way.