Type 2 Diabetes Guidelines

Version 4
Revised September 2012
for the
DECENT Network

Diabetes Education Care & Evaluation
North of the Tees

Covering the Stockton on Tees, Hartlepool and Easington areas
NICE Diabetes in adults Quality Standards of Care 2011

1. People with diabetes and/or their carers receive a structured educational programme that fulfils the nationally agreed criteria from the time of diagnosis, with annual review and access to ongoing education.

2. People with diabetes receive personalised advice on nutrition and physical activity from an appropriately trained healthcare professional or as part of a structured educational programme.

3. People with diabetes participate in annual care planning which leads to documented agreed goals and an action plan.

4. People with diabetes agree with their healthcare professional a documented personalised HbA1c target, usually between 48 mmol/mol and 58 mmol/mol, and receive an ongoing review of treatment to minimise hypoglycaemia.

5. People with diabetes agree with their healthcare professional to start, review and stop medications to lower blood glucose, blood pressure and blood lipids in accordance with NICE guidance.

6. Trained healthcare professionals initiate and manage therapy with insulin within a structured programme that includes dose titration by the person with diabetes.

7. Women of childbearing age with diabetes are regularly informed of the benefits of preconception glycaemic control and of any risks, including medication that may harm an unborn child. Women with diabetes planning a pregnancy are offered preconception care and those not planning a pregnancy are offered advice on contraception.

8. People with diabetes receive an annual assessment for the risk and presence of the complications of diabetes, and these are managed appropriately.

9. People with diabetes are assessed for psychological problems, which are then managed appropriately.

10. People with diabetes with or at risk of foot ulceration receive regular review by a foot protection team in accordance with NICE guidance, and those with a foot problem requiring urgent medical attention are referred to and treated by a multidisciplinary foot care team within 24 hours.

11. People with diabetes admitted to hospital are cared for by appropriately trained staff, provided with access to a specialist diabetes team, and given the choice of self-monitoring and managing their own insulin.

12. People admitted to hospital with diabetic ketoacidosis receive educational and psychological support prior to discharge and are followed up by a specialist diabetes team.

13. People with diabetes who have experienced hypoglycaemia requiring medical attention are referred to a specialist diabetes team.
Introduction to Diabetes Guidelines

Aim of Diabetes Guidelines
The aim has been to provide an updated evidence based approach to current practice in order to improve quality and access to care for patients with diabetes and their carers. These local guidelines have been developed by the specialist team from North Tees and Hartlepool NHS Foundation Trust in partnership with the North Tees and Hartlepool Primary Care Trusts and staff from the Easington community. They are structured around the National Service Framework Standards of care. The recommendations should be considered as guidance only, since judgement regarding a particular clinical treatment must be made in the context of the clinical features, the wishes and expectations of the patient, the diagnostic information and the treatment options available to ensure good prescribing practice is adhered to.

- No single agent is suitable for ALL patients
- No one drug will provide lasting control for a patient over the complete course of their disease. Combination drug therapy will be used more frequently in treatment of Type 2 diabetes.
- The implementation of any treatment guidelines should not result in any change to a patient’s medication unless for issues of efficacy, tolerability or safety. The practitioner must make decisions to adopt any particular recommendation in the light of each individual patient’s circumstances and informed wishes.
- Healthcare professionals should also note information contained within the British National Formulary when selecting a drug for specific patients.

Data and Reference Sources
Where available, guidance has been collated from NICE, SIGN, Joint British Societies including Diabetes UK and the International Diabetes Federation, with additional evidence taken from peer reviewed sources where that best evidence succeeds published guidance.

Skills For Health
The Skills for Health diabetes competence framework document (Skills for Health, 2004) is designed to support the delivery of the Diabetes NSF by highlighting the performance criteria to be met by members of the multi-professional diabetes care team.
See Appendix 8 for the list of competencies.

Contents

1. Screening At Risk Patients

NSF Standard 1: Prevention of Type 2 Diabetes
The NHS will develop, implement and monitor strategies to reduce the risk of developing Type 2 diabetes in the population as a whole and to reduce the inequalities in the risk of developing Type 2 diabetes.

2. Diagnosis of Diabetes

NSF Standard 2: Identification of people with diabetes
The NHS will develop, implement and monitor strategies to identify people who do not know they have diabetes.

3. Patient Centred Education & Empowerment

NSF Standard 3: Empowering people with diabetes
All children, young people and adults with diabetes will receive a service which encourages partnership in decision-making, supports them in managing their diabetes and helps them to adopt and maintain a healthy lifestyle. This will be reflected in an agreed and shared care plan in an appropriate format and language. Where appropriate, parents and carers should be fully engaged in this process.
4. Management of People with Type 2 Diabetes

NSF Standard 4: Clinical care of adults with diabetes
All adults with diabetes will receive high-quality care throughout their lifetime, including support to optimise their control of their blood glucose, blood pressure and other risk factors for developing the complications of diabetes.

NSF Standards 5 & 6: Clinical care of children & young people with diabetes
All children and young people with diabetes will receive consistently high-quality care and they, with their families and others involved in their day-to-day care, will be supported to optimise the control of their blood glucose and their physical, psychological, intellectual, educational and social development.

All young people with diabetes will experience a smooth transition of care from paediatric diabetes services to adult services, whether hospital or community-based, either directly or via a young people's clinic. The transition will be organised in partnership with each individual and at an age appropriate to and agreed with them.

- **Lifestyle changes**
  - Dietary management
  - Physical exercise
  - Obesity Management
  - Stop smoking

- **Glycaemic Control**
  - NSF / NICE / UKPDS recommendations
  - Targets for Glycaemic Control
  - Measuring Glycaemic Control
  - Treatment with Oral Hypoglycaemic Agents or Insulin
    - Oral therapies as mono- or combination therapy
    - Novel agents GLP-1 Mimetics / Enhancers
    - Considering Insulin Transfer

- **Managing Cardiovascular Risk Factors**
  Use appropriate risk engine depending upon local needs profile (eg UKPDS, JBS2, QRISK etc)
  - **Blood Pressure Management in Type 2 Diabetes**
    Targets for Blood Pressure Control
    Measuring Blood Pressure
    Lifestyle Management
    Drug Therapy
  - **Lipid Management**
    Targets
    Measuring Lipid levels
    Lifestyle Management
    Drug therapy
  - **Use of low dose aspirin**

5. Annual Review

NSF Standard 10: Detection and management of long-term complications
All young people and adults with diabetes will receive surveillance for long-term complications of diabetes.
- NSF / NICE
- Diabetes / Registers
6. Complications Screening

- Diabetic Retinopathy
- Renal Disease in Type 2 Diabetes
- Foot Care in People with Type 2 Diabetes
- Autonomic neuropathy
- Erectile dysfunction
- Depression

7. Monitoring

- Practice Monitoring
- Suggested Protocols
- Self Monitoring

8. Complications Management

**NSF Standard 11 & 12: Detection and management of long-term complications**
The NHS will develop, implement and monitor agreed protocols and systems of care to ensure that all people who develop long-term complications of diabetes receive timely, appropriate and effective investigation and treatment to reduce their risk of disability and premature death. All people with diabetes requiring multi-agency support will receive integrated health and social care.

- Diabetic Retinopathy
- Renal Disease in Type 2 Diabetes
- Foot Care in People with Type 2 Diabetes
- Autonomic neuropathy
- Erectile dysfunction
- Depression

9. Referral to Specialist Services

**NSF Standard 7: Management of diabetic emergencies**
The NHS will develop, implement and monitor agreed protocols for rapid and effective treatment of diabetic emergencies by appropriately trained healthcare professionals. Protocols will include the management of acute complications and procedures to minimise the risk of recurrence.

**NSF Standard 8: Care of people with diabetes during admission to hospital**
All children, young people and adults with diabetes admitted to hospital, for whatever reason, will receive effective care of their diabetes. Wherever possible, they will continue to be involved in decisions concerning the management of their diabetes.

**NSF Standard 9: Care of women in pregnancy**
The NHS will develop, implement and monitor policies that seek to empower and support women with pre-existing diabetes and those who develop diabetes during pregnancy to optimise the outcomes of their pregnancy.

10. Appendices

**Appendix 1**  Oral Glucose Tolerance Test
**Appendix 2**  DESMOND Education Referral Form
**Appendix 3**  Guidelines for Referral to the Department of Nutrition and Dietetics, NorthTees and Hartlepool NHS Foundation Trust (including referral form and pathway)
1. Screening At Risk Patients

Current evidence supports active, systematic case finding and screening of selected groups within the general population. Factors indicating a higher risk of developing diabetes include age, ethnicity, family history and obesity, particularly if centrally distributed giving a high waist–hip ratio. It is recommended that individuals at increased risk of developing diabetes should be advised on how they can reduce their risk, and should be supported to lose weight and increase physical activity.

Criteria for screening for diabetes within targeted asymptomatic populations

Diabetes UK recommends recurring screening for diabetes in the following groups or conditions:

a) White people aged over 40 years and people from Black, Asian and minority ethnic groups aged over 25 with one or more of the risk factors below:
   - a first degree family history of diabetes
   - overweight/obese/morbidly obese with a ≥ BMI of 25-30 kg/m² with a sedentary lifestyle (BMI may be overestimated in very muscular people or underestimated in those who have lost muscle mass)
   - waist measurement of over ≥ 94cm (≥ 37 inches) for White and Black men and ≥ 80cm (≥ 31.5 inches) for White, Black and Asian women, and ≥ 90cm (≥ 35 inches) for Asian men
b) Existing ischaemic heart disease, cerebral or peripheral vascular disease or treated hypertension
c) Previous gestational diabetes with normoglycaemia following delivery
d) Polycystic ovarian syndrome with BMI ≥ 30 kg/m²
e) Known impaired glucose tolerance or impaired fasting glycaemia
f) Severe mental health problems
g) Hypertriglyceridemia not due to alcohol excess or renal disease

Patients with 2 or more risk factors should be offered screening every year with fasting venous blood glucose. Those with values between 6.1 – 6.9 mmol/l (IFG) should be offered HbA1c for further clarification and risk stratification (see algorithm).

In pregnancy the possibility of pre-existing undiagnosed diabetes or of developing gestational diabetes should be considered in patients at risk and referral made to the Specialist Team.

Diabetes and CHD

- Screening for diabetes is related to screening for cardiovascular risk. Diabetes itself confers a significantly increased risk of cardiovascular disease: secondary prevention measures for CHD are appropriate for patients with Type 2 diabetes. Consideration should be given to joint chronic disease management, given the relationship between diabetes and CHD.
- CHD is associated with increased prevalence of impaired fasting glucose and impaired glucose tolerance. These states herald the onset of overt diabetes: patients are candidates for lifestyle interventions to delay the onset of diabetes as well as management of cardiovascular risk factors.
Patients with the following symptoms should be tested promptly for diabetes

- weight loss, thirst, polyuria or other urinary symptoms, e.g. incontinence, recurrent cystitis
- recurrent infections, particularly of the skin, recurrent thrush, balanitis, boils and leg ulcers
- peripheral neuropathic symptoms such as pain, numbness and paraesthesia in hands and feet
- visual changes, visual symptoms, dry eyes, cataracts
- vague or unexplained symptoms, tiredness, pruritis

Please see Section 9 for Referral to Specialist Services.

Quality Outcomes Framework (GMS2)
DM32 The Practice can produce a register of all patients age 17 & over with diabetes mellitus which specifies the type of diabetes where a diagnosis has been confirmed (points 6)

2. Diagnosis of Diabetes

The purpose of an accurate diagnosis of type 2 diabetes is to:

- establish whether a patient presenting with symptoms of polyuria, thirst, unexplained weight loss has diabetes
- identify those patients who are at risk of developing complications of diabetes, both macro- and micro-vascular
- assess whether the patient with diabetes is likely to have Type 1 disease (ketosis prone with insulin deficiency requiring insulin replacement therapy) or Type 2 disease (insulin resistance with relative insulin deficiency)
- assess whether referral to a specialist diabetes team is necessary

A diagnosis of diabetes has important medical and legal implications therefore it is essential to be secure in the diagnosis. It is necessary to consider the effect of other medication (e.g. steroids) or concurrent illness (e.g. acute MI) on glucose levels

Impaired Fasting Glucose and Impaired Glucose Tolerance

Impaired fasting glucose and impaired glucose tolerance are not benign conditions. They are associated with increased risk of large vessel disease (2-5x risk of CHD) and with increased risk of progression towards overt diabetes. These patients will need to be monitored in the long term for the development of overt diabetes and should have appropriate risk management for their large vessel disease. Changes in lifestyle have been shown to reduce progress to overt diabetes in impaired glucose tolerance (Diabetes Prevention Programme 2002).

Methods and Criteria for Diagnosing Diabetes Mellitus (WHO 2011 definition)

With symptoms (polyuria, thirst, unexplained weight loss)

- A random venous plasma glucose concentration ≥ 11.1mmol/l or
- A fasting venous plasma glucose concentration ≥ 7.0mmol/l (whole blood ≥ 6.1 mmol/l).
- HbA1c ≥ 48 mmol/mol

With no symptoms

- A diagnosis must not be based on a single glucose determination. It requires a confirmatory venous plasma test. At least one additional glucose result on another day with a value in the diabetic range is essential. This can be either fasting or from a random sample
Use of Haemoglobin A1c (HbA1c) in the diagnosis of diabetes mellitus
The implementation of World Health Organisation (WHO) guidance 2011

Professor W Garry John, Clinical Biochemist, Norfolk and Norwich Hospital
Dr Rowan Hillson MBE, National Clinical Director for Diabetes
Professor Sir George Alberti, Chair, Diabetes UK and expert group*

WHO Recommendation 2011

HbA1c can be used as a diagnostic test for diabetes providing that stringent quality assurance tests are in place and assays are standardised to criteria aligned to the international reference values, and there are no conditions present which preclude its accurate measurement. An HbA1c of 48 mmol/mol is recommended as the cut point for diagnosing diabetes. A value of less than 48 mmol/mol does not exclude diabetes diagnosed using glucose tests. An expert group* have discussed the WHO report. The group agrees that the WHO requirements are met in the UK. HbA1c is not suitable for use in everyone. Do not use HbA1c to diagnose diabetes in pregnancy.

The test

Analysis of venous HbA1c in UK laboratories participating in national quality assurance schemes currently fulfils WHO requirements. HbA1c should usually be measured on a laboratory venous blood sample. Point-of-care HbA1c should not be used for diagnosis unless the healthcare staff have been appropriately trained and the HbA1c method used can demonstrate an internal quality control and external quality assessment performance that matches that of a laboratory method. Confirm a point-of-care diabetes diagnosis with laboratory venous HbA1c.

Most patients

HbA1c ≥48 mmol/mol can be used to diagnose diabetes in most situations. In patients without diabetes symptoms repeat venous HbA1c in the same lab within 2 weeks. If the second sample is <48 mmol/mol treat as high risk of diabetes and repeat the test in 6 months or sooner if diabetes symptoms develop. In symptomatic adults with relatively slow onset of symptoms a single result ≥48 mmol/mol will suffice

Situations where HbA1c must not be used as the sole test to diagnose diabetes

HbA1c reflects glycaemia over the preceding 2 – 3 months so may not be raised if blood glucose levels have risen rapidly. Examples:
ALL symptomatic children and young people
Symptoms suggesting Type 1 diabetes (any age)
Short duration diabetes symptoms
Patients at high risk of diabetes who are acutely ill
Taking medication that may cause rapid glucose rise e.g. corticosteroids, antipsychotics
Acute pancreatic damage/pancreatic surgery
Do an immediate quality-assured finger-prick capillary glucose test. Check blood/urine ketones if available. If glucose is >11.0 mmol/l seek same-day specialist diabetes advice. For children and teenagers phone the specialist paediatric diabetes team same day. Send same day laboratory venous glucose, adding HbA1c to exclude stress hyperglycaemia and/or for baseline, but do not delay seeking advice whilst awaiting the result.

Presence of factors that influence HbA1c and its measurement

Annex 1 from WHO report adapted from Gallagher et al.

<table>
<thead>
<tr>
<th>1. Erythropoiesis</th>
<th>Increased HbA1c: iron, vitamin B12 deficiency, decreased erythropoiesis. Decreased HbA1c: administration of erythropoietin, iron, vitamin B12, reticulocytosis, chronic liver disease.</th>
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<tr>
<td>2. Altered Haemaglobin</td>
<td>Genetic or chemical alterations in haemoglobin: haemoglobinopathies, HbF, methaemoglobin, may increase or decrease HbA1c.</td>
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<tr>
<td>4. Erythrocyte destruction</td>
<td>Increased HbA1c: increased erythrocyte lifespan: Splenectomy. Decreased HbA1c: decreased erythrocyte lifespan: haemoglobinopathies, splenomegaly, rheumatoid arthritis or drugs such as antiretrovirals, ribavirin and dapsone.</td>
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Some of the above interfering factors are ‘invisible’ in certain of the available assays
Discuss the patient with your local laboratory or specialist diabetes team or use glucose testing

Patients whose HbA1c is <48 mmol/mol

These patients may still fulfil WHO glucose criteria for the diagnosis of diabetes which can be used in patients with symptoms of diabetes or clinically at high risk of diabetes. Glucose tests are not recommended routinely in this situation.
WHO did not provide specific guidance on HbA1c criteria for people at high risk of diabetes. Clinicians should consider the individual patient’s personal risk of diabetes and provide advice and monitoring accordingly. Pending NICE2 guidance (see consultation) the expert group suggested using HbA1c values below.

High risk of diabetes HbA1c 42-47 mmol/mol

Provide intensive lifestyle advice. Warn patients to report symptoms of diabetes. Monitor HbA1c annually. Use clinical judgement on whether (and when) to offer standard release metformin
(unlicensed indication – informed consent should be obtained and documented) to support lifestyle change for people whose HbA1c or fasting plasma glucose blood test results have deteriorated despite participation in an intensive lifestyle change programme or they are unable to participate in an intensive lifestyle change programme. Explain that long-term lifestyle change can be more effective than drugs in preventing or delaying type 2 diabetes. Check renal function before starting treatment, and then twice yearly (more often if they are older or if deterioration is suspected). Prescribe metformin for 6-12 months initially. Monitor fasting plasma glucose or HbA1c levels at 3 month intervals and **stop the drug if no effect is seen.**

**HbA1c <42 mmol/mol**

Some of these patients may still be at risk of diabetes. If clinically at high risk manage as above. A detailed report will be available shortly. This guidance is supported by the Association of British Clinical Diabetologists (ABCD), Community Diabetes Consultants (CDC), Diabetes UK, NHS Diabetes, Primary Care Diabetes Society (PCDS), Training, Research, and Education for Nurses in Diabetes UK (TREND UK).

**Reference**


**Acting on test results**

**What to do if the screening test is negative and the person has no symptoms**

If the person has no symptoms, information, advice and support should be provided to help them change behaviour as appropriate and reduce risk factors, where possible. They may not have diabetes currently or raised blood glucose levels, but they will still be at risk of developing diabetes and cardiovascular disease in the future, so must be informed of any plans for recurring screening.

**What to do if the screening test is negative but the person has symptoms**

If the screening test result is negative but the individual shows symptoms or signs suggestive of diabetes or its complications, s/he should be told that diabetes has not been excluded. Follow up with an HbA1c and if the result is indeterminate (40 – 48mmol/mol) then, and only then, do an OGTT to establish true diagnosis. Re-screen every year or sooner according to clinical need.

**What to do if screening test is positive**

If the screening test result is positive, the person should be given written details of the screening procedure and the precise result of the test. S/he should be told that the test has indicated a possible rise in blood glucose that needs further checking and should be reassured as far as possible while ensuring their understanding of the importance of completing the tests to confirm/refute the diagnosis.

**Therapy should not be instigated until diagnosis has been confirmed**

The person should be asked not to make any changes in diet or drug therapy but should make a routine appointment with the GP in the two to four weeks following screening (an earlier appointment may be necessary if the person is symptomatic).

Once a diagnosis of Type 2 diabetes has been confirmed, the person should be given an explanation of diabetes and referred to relevant members of the diabetes team and for structured education. Discuss self monitoring and, if appropriate, start blood glucose or urine monitoring. Agree a shared care plan with the individual and consider screening them for other health-related conditions.
Flowchart for screening and diagnosis using WHO 2009 & 2011 criteria and ABCD statement 2010

Increased risk

Fasting Venous plasma glucose (mmol/L)

Less than 6.0, repeat annually, earlier if symptoms develop

IFG 6.1-6.9

HbA1c

Less than 40 – exclude and monitor

40 – 47 mmol/mol

Symptomatic – do OGTT

Asymptomatic – recall for annual FBS & HbA1c

No Symptoms = Do HbA1c to confirm

Symptoms = confirmed diagnosis

> 7.0

See Appendix 1 for Oral 75g Glucose Tolerance Test protocol.
3. Patient Centred Education & Empowerment

‘The active involvement of people with diabetes in the provision of their own care is the cornerstone of good diabetes care. This requires the provision of effective, ongoing education and support, which is matched to the individual’s ability and capacity to learn and recognize the importance of the individual’s lifestyle, culture and religion’ (Recommendations for the Provision of Services in Primary Care for People with Diabetes, Diabetes UK, 2005).

The impact of the diagnosis of a chronic incurable condition on a person’s life should not be underestimated. It takes time for people to adjust. Patience and understanding are required from all members of the healthcare team. Education must be tailored to the individual’s needs and take account of previous health beliefs and cultural differences.

Lifestyle changes to promote a healthy balanced diet, weight control, stopping smoking and regular exercise are crucial to the attainment of good diabetes control and reduction of associated risks. Lifestyle changes as detailed above should be agreed with each individual, followed by ongoing support and review from healthcare professionals to help maintain improvements. The healthcare team should work with the person with diabetes, their family and carers to achieve the goals of self management and living healthily with diabetes.

Knowledge, behavioural skills and self-responsibility can help the patient to self-manage their diabetes and make more informed choices. In order to support and encourage self-care and self management, DUK (2005) recommend all healthcare staff should:

- Treat individuals with respect and dignity.
- Ensure that people with diabetes know how to contact members of the team providing their diabetes care and ideally have a named person who is their main contact.
- Provide high quality care and regularly review their clinical and psychological needs.
- Answer any questions about the quality of services received.
- Provide interpreting services if English is not the person’s first language and seek appropriate services for those with sensory impairment or learning disability.
- Provide information and structured education about diabetes management and local health related services. Diabetes UK has produced a leaflet for people with diabetes entitled ‘What Care to Expect’ which is useful for patients and carers.
- Remain up to date about diabetes and its care and treatment, in order to keep people with diabetes up to date about their condition.
- Facilitate access to a second opinion if desired (subject to agreement of the GP or consultant).
- Give information about Diabetes UK or other reputable sources for information and support.

Northern & Yorkshire Diabetes UK 01325 488606 or email north&yorks@diabetes.org.uk
Customer Services 020 7424 1010 or email customerservices@diabetes.org.uk.
Diabetes UK Careline 0845 120 2960 or email careline@diabetes.org.uk.
For a free catalogue listing all Diabetes UK information call 0800 585 088.
American Diabetes Association www.diabetes.org
Access to DESMOND Education Programme for the newly diagnosed

DESMOND programmes are available for patients in the Stockton, Hartlepool and Easington areas led by members of the multi-professional team. Referral of newly diagnosed patients with Type 2 diabetes can be made via the Retinal Screening Office. (see Referral Form Appendix 2) Practice teams are encouraged to register patients for the programme as a matter of course in the processing of newly diagnosed patients.

Referred patients are encouraged to bring a partner or carer to the sessions which are interactive group meetings covering aspects of diagnosis, treatment, monitoring and self-care. The sessions are designed to build an understanding of diabetes leading to the development of shared targets for care.

The programme is subject to centralised assessment and audit with continuing training of course leaders. This fulfils NICE requirements for quality control of Education Programmes in diabetes. Further modules are becoming available for continuing education for previously diagnosed patients or for ethnic groups.

Local Diabetes Groups

The Stockton on Tees Group contacts are:
Peter and Debbie Smith on 01642 550255 and Jim Beall on 01642 871759
E mail diabetesstockton@ntlworld.com

Hartlepool Diabetes Voluntary Support Group – meets 1\textsuperscript{st} and 3\textsuperscript{rd} Fridays in the Central Library at York Road
Contact Denice O’Rourke on 01429 863425

- Middlesbrough (Diabetes UK South Cleveland Voluntary Group) Tel: Secretary Mrs Irene Angel 01287 678150.

DVLA Regulations

Drivers of cars or motorcycles with Diabetes treated by tablets, diet or both should be made aware of the DVLA regulations relating to diabetes and how any changes in their treatment or development of complications affects their legal entitlement to drive. See Appendix 12. 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 otherwise they are legally obliged to let the DVLA know;

- treatment with insulin, even if temporary eg pregnancy or post MI.
- laser treatment to both eyes or in the remaining eye if sight in one eye only.
- problems with vision in both eyes, or in the remaining eye if sight in one eye only.
- any problems with the circulation or sensation in your legs or feet which make it necessary to drive certain types of vehicles only, for example automatic vehicles or vehicle a hand operated accelerator or brake. This must be noted on driving licence.
- more than one episode of disabling hypoglycaemia (low blood glucose) within 12 months, or if you or your carer feel you are at high risk of developing disabling hypoglycaemia.
- impaired awareness of hypoglycaemia.
- disabling hypoglycaemia at the wheel.
- an existing medical condition worsens or any other condition that may affect safe driving develops.

To report diabetes patients fill in a DIAB1 medical questionnaire about Diabetes. Download this from www.direct.gov.uk/motoringdriverhealth Telephone: 0870 600 0301
Drivers Medical Group, DVLA Swansea SA99 1TU E-mail: eftd@dvla.gsi.gov.uk
New regulations came into effect Nov 15\textsuperscript{th} 2011 allowing drivers with diabetes to apply for consideration to drive lorries and buses. More information can be found at www.direct.gov.uk/motoring where you can also order the D2 application form. An information leaflet on how to complete the application can be found at www.direct.gov.uk/motoringleaflets.

See Appendix 12 for further details.
4. Management of People with Type 2 Diabetes

Lifestyle Changes

Dietary Management
Dietary management is not just about reduction of glucose levels but includes modification of all risk factors. Dietary management, weight loss (if necessary), physical activity and drug therapies are partners in achieving and maintaining low risk blood glucose, blood lipid and blood pressure levels.

All newly diagnosed patients with Type 2 diabetes should be given appropriate initial advice by a trained professional and referred to DESMOND. The general principles of dietary advice include:

- Eat regular meals planned around starchy foods, such as bread, potatoes, rice, pasta and cereals.
- Reduce fried and fatty foods and change to skimmed or semi-skimmed milk.
- Eat more high fibre starchy carbohydrate foods.
- Eat at least five portions of fruit, vegetables or pulses each day.
- Reduce sugar-containing foods.
- Aim to achieve and maintain a healthy weight, BMI <25 is desirable.
- Reduce dietary salt intake.
- Drink alcohol only in moderation – sensible limits are 14 units for women and 21 units for men.
- Avoid binge drinking.
- Alcohol can cause hypoglycaemia and hypoglycaemia can be mistaken for alcohol intoxication.
- Avoid special diabetic foods – they can be expensive and are often high in fat and calories.

All dietary advice is based around healthy eating principles and lifestyle changes. Slow steady weight loss is more effective in maintaining weight loss.

Please see the following appendices which offer referral guidelines and support:
- Appendix 3 for the Guidelines for Referral to the Department of Nutrition and Dietetics
- Appendix 4 for the Referral to the Easington Community Diabetes Dietician
- Appendix 5 Healthy Eating for Type 2 Diabetes Patient (Advice Leaflet)

Obesity Management

- For people who are overweight or obese, weight loss and physical exercise should be encouraged.
- Consideration should be given to patterns of over-eating and related psychological issues when agreeing targets and weight loss strategies. Depressive features are not uncommon in the obese population; psychological support may be required.
- Anti-obesity medication may also be considered as part of a weight loss strategy when patients have made strenuous efforts to lose weight by diet and exercise. Weight loss has such an impact on cardiovascular risk that successful use of anti-obesity drugs is cost-effective in long term management of patients with diabetes who are obese.
- Anti-obesity medication must not be used as a single measure in the management of obesity. Patients may need encouragement to continue with associated exercise programmes once medication is used.
- Anti-obesity drugs should be reviewed and discontinued if there is no evidence of weight loss.
- Public Health Departments have work in progress around obesity prevention and management in the areas of Stockton, Hartlepool and Easington.
Anti-obesity drugs

<table>
<thead>
<tr>
<th>Orlistat</th>
<th>BMI &gt; 30kg/m² or BMI &gt; 28kg/m² with other risk factors</th>
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<tbody>
<tr>
<td></td>
<td>Consider for patients who have not reached their target weight loss or have reached a plateau on dietary, activity and behavioural changes alone. Age 18-75 yrs. Stopped after 3 months unless 5% of body weight lost. Stopped after 6 months unless 10% of body weight lost. Restriction of duration of treatment to 2 yrs has been removed from SPC but continue beyond 12 months, usually for weight maintenance, only after discussing potential benefits and limitations with the patient. Stockton and Hartlepool PCTs have local guidance in place limiting use to no more than 2 starts per year to ensure patient commitment and avoid waste.</td>
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Quality Outcomes Framework (GMS2)
DM2. The percentage of patients with diabetes whose notes record BMI in the previous 15 months (points 1, max threshold 90%)
Public health map: recommendations on delivery

Adults

**NHS: community**
- Focus on activities that fit easily into people’s everyday lives, such as walking.
- Use multicomponent interventions such as dietary assessment and targeted advice, family involvement and goal setting.
- Offer tailored advice based on individual preferences and needs.
- Provide ongoing support – by telephone, post or internet.
- Include promotional, awareness-raising activities as part of long-term interventions, not as one-off activities.
- Address concerns about: the availability of services; the cost of changing behaviour; the taste of healthier foods; the safety of walking and cycling.
- Support and promote retail and catering schemes that promote healthy choices: cycling and walking routes; behavioural change programmes and tailored advice.
- Support implementation of workplace programmes on obesity.

**NHS: primary care**
- Advise people who are concerned about their weight.
- Discuss weight, diet and activity at times when weight gain is more likely, for example: during and after pregnancy; the menopause; stopping smoking.
- Tell people who are stopping smoking where they can get advice on weight management; offer advice and encourage physical activity to people who are concerned.

**Local authorities and partners**
- Identify environmental barriers to eating healthily and being physically active.
- Address concerns about safety, crime and inclusion.
- Encourage active travel, for example through cycle lanes and bike stands; walking routes, including area maps and pedestrian crossings; traffic calming measures; improved street lighting.
- Ensure building designs encourage the use of stairs and walkways.
- Encourage local shops and caterers to promote healthy food and drink choices via signs, posters and pricing.
- Address concerns about the availability of services, costs of making change, and mixed messages in media.

**Workplaces**
- Address weight, diet and activity in any health checks.
- Implement tailored physical activity programmes and cross organisational policies which promote and facilitate physical activity.
- Improve food provision – actively promote healthier choices in line with existing guidance and educational and promotional activities.
- Establish partnerships with local PCTs
- Any incentive schemes to be long term and part of wider programme(s) to manage weight, diet and activity.

**Self-help, commercial and community weight-loss programmes**
- Follow best practice standards.
- Local authorities and PCTs should endorse programmes or recommend them to patients only if they meet best practice standards.

**Adults**
- Follow NICE guidance and other advice on healthy eating and physical activity.
- Reduce the time spent in front of a screen and increase activity, for example by walking or cycling and building enjoyable activity into everyday life.
- Seek advice from a health professional if concerned.
Physical Exercise

- Physical exercise should be taken every 2-3 days for optimum effect. The physical activity should be distributed over at least 3 days per week, with no more than 2 consecutive days without physical activity.
- Examples: brisk walking for 30 minutes per day, active swimming for one hour three times a week; activity at work, getting to and from work; activity during domestic activities and hobbies all contribute to a physical exercise programme.
- Unless contraindicated, people with type 2 diabetes should be encouraged to perform resistance exercise 3 times per week, targeting all major muscle groups. This should progress to 3 sets of 8 to 10 repetitions at a weight that cannot be lifted more than 8 to 10 times.
- Patients should be advised that:
  - Exercise may increase the risk of acute and delayed hypoglycaemia.
  - Alcohol may exacerbate the risk of hypoglycaemia after exercise.
  - People with diabetes may need advice on extra blood testing in the context of exercise.
  - Exercise may cause foot damage (patients should receive appropriate advice on footcare & exercise).
  - In those with ischaemic heart disease medical advice should be sought.

Each PCT offers physical activity support – please contact your local PCT for further information.

Recommended lifestyle measures for prevention of type 2 diabetes

- People with impaired glucose tolerance should begin and continue a program of weight control through healthy eating, including at least 150 minutes per week of moderate to vigorous physical activity.
- For long-term maintenance of major weight loss (≥ 13.6 kg or 30 lb), larger volumes of exercise (7 hours per week of moderate or vigorous aerobic physical activity) may be helpful.


Stopping Smoking

Patients need to be aware that smoking increases the risk of cardiovascular disease and the risk of all of the microvascular complications of diabetes. Smoking cessation advice should be offered. NICE recommend that either of the following nicotine replacement therapy, Bupropion (NICE TAG 39) or Varenicline (NICE TAG 123) should be offered to smokers who have expressed a desire to quit smoking and commits to a target stop date. Therapy is chosen according to the smoker's likely concordance, availability of counselling and support, previous experience of smoking cessation aids, contraindications or adverse effects and the smoker’s preference.

See below for full description of options

Quality Outcomes Framework (GMS2)

Smoking 1. The percentage of patients with any or any combination of the following conditions: coronary heart disease, stroke or TIA, hypertension, diabetes, COPD or asthma whose notes record smoking status in the previous 15 months. Except those who have never smoked whose smoking status may need only be recorded once since diagnosis (points 33, max threshold 90%)

Smoking 2. The percentage of patients with any or any combination of the following conditions: coronary heart disease, stroke or TIA, hypertension, diabetes, COPD or asthma who smoke whose notes contain a record that smoking cessation advice or referral to a specialist service, where available, has been offered within the previous 15 months (points 35, max threshold 90%)
## NRT products

Duration of nicotine replacement therapy (NRT) in people maintaining abstinence from cigarettes is usually 8-12 weeks (depending on which form and dose of NRT is used), followed by a gradual reduction in dose. Use should be restricted to the licensed duration of the form of NRT used [NICE]. More dependent smokers tend to use NRT for longer; if treatment is stopped too soon these people might relapse (McRobbie and McEwen, 2005). NICE states that In trials a combination of two different NRT products was in general more effective than a single NRT for high dependency patients (NICE TAG 39). NRT should be discontinued if the attempt to quit is abandoned [NICE]. All formulations are available on NHS prescription. NRT patches, gum, lozenges, inhalators and nasal sprays are also available for general OTC sale from pharmacies. Patches and gum are suitable first line options.

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Duration</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transdermal patches</td>
<td>16-hour and 24-hour preparations, both releasing approximately 1 mg nicotine per hour. Steady-state nicotine levels are achieved 8-10 hours after application.</td>
<td></td>
</tr>
<tr>
<td>Oral products</td>
<td>Nicotine absorption via the buccal mucosa, with peak plasma concentration occurring after 20-30 minutes. Oral formulations include gum, inhalator, sublingual tablets, lozenges, and Oral spray. Inhalators and oral spray are expensive and therefore not first line choice.</td>
<td></td>
</tr>
<tr>
<td>Nasal spray</td>
<td>The most rapidly acting form of NRT available. It is available on NHS prescription and OTC from pharmacies. Due to cost it should not be first line choice, should be reserved for heavier more dependent smokers.</td>
<td></td>
</tr>
<tr>
<td>Bupropion</td>
<td>Licensed in the UK for use as an aid to smoking cessation in conjunction with behavioural support. It is a relatively weak but selective inhibitor of the neuronal re-uptake of dopamine and noradrenaline. Exact mechanism of action in smoking cessation is unclear; presumed to affect brain pathways of addiction and withdrawal.</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>Recommended treatment dose is 150 mg once a day for 6 days, increasing to 150 mg twice a day (doses at least 8 hours apart). Continue the lower dose of 150 mg once a day if: &gt; 65 years of age, existing hepatic impairment (mild to moderate) or existing renal impairment. Record a baseline BP &amp; monitor periodically during treatment. Advise the person to stop smoking 7-14 days after starting bupropion. Consult latest SPC or BNF for contra-indications and interactions.</td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>Recommended course 7-9 weeks, if abstinence not achieved at 7 weeks discontinue treatment.</td>
<td></td>
</tr>
<tr>
<td>Varenicline</td>
<td>Licensed in the UK for use as an aid to smoking cessation for smokers who have expressed a desire to quit smoking. Varenicline should normally be provided in conjunction with counselling and support, but if such support is refused or is not available, it should not preclude treatment (NICE TGA123) Consult latest BNF for contra-indications and cautions in use.</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>Dosing to start 1 to 2 weeks before planned cessation date. 0.5mg once daily for 3 days then 0.5mg twice daily for next 4 days followed by 1mg twice daily for 11 weeks.</td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>Patients should be treated with varenicline for 12 weeks. For patients who have successfully stopped smoking at the end of 12 weeks, an additional course of 12 weeks treatment at 1 mg twice daily may be considered (Due to cost our current PCT guidance recommends an interval of at least 3 months. Maximum TWO treatments a year). Patients who come to the end of their 12 week treatment and may benefit from weaning off Varenicline rather than stopping on 1mg can be prescribed the starter pack and used in reverse, either in the last 2 weeks, or as an additional 2 week course, making it 14 weeks.</td>
<td></td>
</tr>
</tbody>
</table>
Glycaemic Control

Targets for Glycaemic Control

NICE/NSF/DUK/ADA>IDF
- Any improvement in glycaemic control is likely to reduce the risk of diabetic complications: the lower the glycaemia the lower the risk of complications.
- In the observational part of the UKPDS an 11mmol/mol lower HbA1C was associated with a:
  - 21% reduced risk of diabetes related death, 37% reduced risk of microvascular complications
- NICE recommends a target HbA1C of 48 mmol/mol in general, significantly lower than QOF targets, but target should be discussed and agreed with the patient and individualized to their specific circumstances.
- Highly intensive management to HbA1C levels below 48 mmol/mol is to be avoided outwith pregnancy.
- Standard targets may not be relevant to the individual patient; their circumstances, capabilities and willingness to improve control should be taken into account.
- Less intensive glycaemic controls may be indicated in severe or frequent hypoglycaemia.
- Children, pregnant women and the elderly require specific consideration.

Measuring Glycaemic Control

Across the UK the range for HbA1C changed from July 09. After the DCCT, a new standard specific for HbA1C was prepared by the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC). Manufacturers now supply IFCC standardised values for their calibrators as well as DCCT-aligned values. The units for reporting HbA1C have changed so that HbA1C reported by laboratories is traceable to the IFCC reference method. Global comparison of HbA1C results is now possible. HbA1C results traceable to the IFCC reference method will be expressed as mmol per mol of haemoglobin without glucose attached.

A reminder of the new values:

<table>
<thead>
<tr>
<th>DCCT- HbA1C %</th>
<th>6.0</th>
<th>6.5</th>
<th>7.0</th>
<th>7.5</th>
<th>8.0</th>
<th>9.0</th>
<th>10.0</th>
<th>11.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFCC-HbA1C mmol/mol</td>
<td>42</td>
<td>48</td>
<td>53</td>
<td>59</td>
<td>64</td>
<td>75</td>
<td>86</td>
<td>97</td>
</tr>
</tbody>
</table>

The equivalent of the current DCCT HbA1C targets of 6.5% and 7.5% are 48 mmol/mol and 59 mmol/mol in the new units, with the non-diabetic reference range of 4.0% to 6.0% being 20 mmol/mol to 42 mmol/mol.

IDF Global Guideline Clinical Monitoring Recommendations for Standard care
- Site-of-care plasma glucose monitoring at random times of day is not recommended.
- Monitor blood glucose control by HbA1C every 2 to 6 months depending on level and stability of blood glucose control, and change in therapy.
- Provide measurement of HbA1C, before clinical consultation
- Communicate the HbA1C result to the person with diabetes.

IDF Global Guideline Clinical Monitoring Recommendations for Secondary care
- As above plus
- Use appropriate alternative measures where HbA1C methods are invalidated by haemoglobinopathy or abnormal haemoglobin turnover.
- Continuous glucose monitoring is an additional option in the assessment of glucose profiles in people with consistent glucose control problems, or with problems of HbA1C estimation.

Local Recommendations from North Tees and Hartlepool Biochemistry Department
- HbA1C should be measured at 3-6 monthly intervals, depending on level and stability of blood glucose control, and change in therapy.
- Shorter intervals may be clinically appropriate for selected patients (pre-pregnancy planning, pre-operative assessment), but this should be discussed with the laboratory on a case by case basis.

### Quality Outcomes Framework (GMS2)

<table>
<thead>
<tr>
<th>DM5.</th>
<th>The percentage of diabetic patients who have a record of HbA(_1C) in the previous 15 months (points 3, max threshold 90%).</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM25.</td>
<td>The percentage of patients with diabetes in whom the last HbA(_1C) is ≤ 9 (HbA(_1C) IFCC 86 mmol/mol) or less in the previous 15 months (points 11, max threshold 90%).</td>
</tr>
<tr>
<td>DM23.</td>
<td>The percentage of patients with diabetes in whom the last HbA(_1C) is ≤ 7.0 (HbA(_1C) IFCC 59 mmol/mol) or less in the previous 15 months (17 points, max threshold 50%).</td>
</tr>
</tbody>
</table>
Available Hypoglycaemic Therapies: oral and injectable

**Metformin**

Metformin is the usual first choice for monotherapy. In UKPDS, metformin in overweight patients with Type 2 diabetes was associated with 32% lower relative risk for any diabetes-related endpoint, 42% for diabetes-related death and 36% for all-cause mortality, in comparison with conventional treatment. There is a reduction in the incidence of obesity related cancer in those patients taking metformin. Therapy should be introduced gradually to minimise GI side effects.

Prolonged release metformin is available in the form of Glucophage SR. Whilst some patients may find this a more acceptable preparation, it is more expensive. Consider a trial when GI tolerability prevents continuation of standard metformin.

A powdered formulation for suspension and a syrup formulation of metformin are available.

Caution should be exercised in renal impairment and liver disease. Review dose if serum creatinine >130 micromol/l or eGFR < 45 ml/min/1.73 m². Stop metformin if serum creatinine >150 micromol/l or eGFR < 30 ml/min/1.73 m². Prescribe with caution for those at risk of sudden deterioration in kidney function.

**Sulphonylurea**

A sulphonylurea is considered first line in the non-obese, if metformin is not tolerated or is contraindicated or if rapid symptom control is needed (NICE). Add as second line if blood glucose control remains or becomes inadequate with metformin unless there are significant concerns regarding metabolic syndrome or risk of hypoglycaemia.

The common sulphonylureas used locally are Gliclazide and Glipizide. Glibenclamide should not be used due to increased risk of hypoglycaemia. A once daily long acting sulphonylurea can be used if concordance is a problem.

Caution is needed with all sulphonylureas when used in mild to moderate hepatic and renal failure. Tolbutamide may be used in renal impairment (as may gliclazide) but careful monitoring of blood glucose concentration is essential. Care is required to choose the lowest possible dose that produces adequate control of blood glucose. Although newer agents are associated with significantly lower incidence of hypoglycaemia than older agents such as chlorpropamide or glibenclamide, any of the drugs in this class can cause hypoglycaemia, particularly if used in combination with gliptins or insulin. Patients who are malnourished for any reason or use alcohol in excess are particularly at risk.

**Rapid-acting secretagogue**

Repaglinide is a short acting agent, with similar pharmacological structure to sulphonylureas, licensed for monotherapy or in combination with metformin but has a limited indication for patients with erratic lifestyles where glycaemic control has proven difficult with other oral drugs.

**Glitazones**

Enhance peripheral glucose uptake, particularly into fat cells. They have additive effects to SU, metformin and insulin. EMEA license changes for glitazones indicate that these drugs can be used as monotherapy when metformin is contraindicated or not tolerated. This may be particularly appropriate in the obese, especially South Asian patients (Association of British Clinical Diabetologists Position Statement on Glitazones, September 2004). Glitazones can take up to 12 weeks to reach full effect so are not useful in rapid symptom control. Main side effects are fluid retention leading in some patients to cardiac failure and macular oedema; anaemia; weight gain; and peripheral fractures. They should not be used in patients with cardiac failure. Rosiglitazone had its marketing authorisation suspended in September 2010 following a review by the EMA which concluded that the benefits of rosiglitazone do not outweigh the cardiovascular risks. There is a small increased risk of bladder
cancer associated with pioglitazone use. However, in patients who respond adequately to treatment, the benefits of pioglitazone continue to outweigh the risks. Pioglitazone should not be used in patients with active bladder cancer or a past history of bladder cancer, or in those with uninvestigated macroscopic haematuria. Pioglitazone should be used with caution in elderly patients as the risk of bladder cancer increases with age.

Consider adding Pioglitazone to metformin as alternative to sulphonylurea where risk of hypoglycaemia particularly relevant; adding to sulphonylurea if metformin not tolerated; and to combined metformin plus sulphonylurea where insulin is likely to be unacceptable or ineffective due to hypoglycaemic risk, employment considerations, needle anxiety or obesity/metabolic syndrome. Pioglitazone should only be continued if HbA1C is reduced by > 5 mmols/mol in six months.

Triple therapy (metformin, glitazone, sulphonylurea) is clinically effective. Triple therapy may be useful temporarily if a sulphonylurea has been introduced because of hyperglycaemic symptoms. Consider gradual sulphonylurea withdrawal in these patients after full effect of glitazone has been achieved (>12 weeks) to minimise weight gain.

Multiple drug therapy can result in reduced concordance. Combination preparations may therefore be useful once doses of individual drugs have been titrated if their use reduces number of tablets or dose frequency. Pioglitazone/Metformin (Competact) combination is available.

Pioglitazone is also licensed for combination with insulin in type 2 diabetes mellitus patients with insufficient glycaemic control on insulin, but the risk of oedema and heart failure is increased.

Acarbose
Acarbose is licensed for monotherapy, but has limited glycaemic efficacy and is not well tolerated due to GI upset. Some centres do use it in combination with insulin.

GLP-1 mimetics and enhancers

Incretin mimetics and gliptins have the potential to improve glucose control with minimal risk of hypoglycaemia. They promote glucose dependent peptide mediated insulin secretion and lower glucagon secretion and may be used in combination with some other oral hypoglycaemic agents. Exenatide and liraglutide are injectable preparations while sitagliptin, vildagliptin, saxagliptin and linagliptin are oral agents. These novel therapies show promising trial results in terms of glycaemic control and weight loss and are likely to have an increasing role in the management of Type 2 diabetes in the future.

Exenatide is licensed for use in combination with metformin and sulphonylurea but is not recommended for routine use. Consider adding to metformin and a sulphonylurea if HbA1C remains at or above 59 mmol/mol AND BMI > 35 kg/m² for Europids (lower BMI can be used for other ethnic groups) with problems associated with high weight OR BMI < 35 kg/m² for Europids (lower BMI can be used for other ethnic groups) where insulin is unacceptable because of occupational implications or weight loss would benefit other co-morbidities. Exenatide should only be continued if reduction in HbA1C is ≥ 11mmols/mol and weight loss is ≥ 3% of initial body weight after six months of treatment. Exenatide should not be used if there is a history of acute pancreatitis and withdrawn if the patient develops symptoms or signs of acute abdomen or pancreatitis. Risk factors for pancreatitis such as hypertriglyceridaemia or alcohol excess should be considered in the initial assessment. See Shared Care Guidance for Exenatide at Appendix 7i. There is also a once weekly preparation of exenatide available with the same indications and place in therapy as the daily product.

Liraglutide is a once daily preparation licensed for use in combination with sulphonylurea or metformin monotherapy, when control is not achieved with maximal doses of the primary hypoglycaemic agent,
or as a third line agent in combination with metformin plus sulphonylurea or metformin plus thiazolidinedione. (See Shared care guidance at Appendix 7ii)

Saxagliptin, sitagliptin and vildagliptin are licensed for use in combination with metformin or a sulphonylurea (if metformin inappropriate) or pioglitazone, when treatment with either metformin or a sulphonylurea or pioglitazone fails to achieve adequate glycaemic control. Sitagliptin is also licensed for use as monotherapy (if metformin inappropriate) or in combination with both metformin and a sulphonylurea, or both metformin and pioglitazone when dual therapy with these drugs fails to achieve adequate glycaemic control. The combination of sitagliptin and insulin (with or without metformin) is also licensed for use when a stable dose of insulin has not provided adequate glycaemic control. Consider gliptin if: BMI > 30 kg/m² for Europids (lower BMI relevant for other ethnic groups); problems arising from body weight; HbA₁c ≥ 59mmol/mol despite metformin; or if glitazone or insulin would otherwise be started. Gliptins should only be continued if HbA₁c is reduced by > 5mmol/mol in six months.

Do NOT combine gliptins with incretin mimetics as there is no pharmacological justification.

(See prescribing information & BNF for individual products & side effect profiles as they do differ among agents and note updated DVLA guidance as follows:)

Treatment with Exenatide (Byetta), Liraglutide (Victoza) or Gliptins

Exenatide has been licensed as a treatment for use in type 2 diabetes, in combination with metformin and or sulphonylureas. Trials published to date show a small but significant risk of hypoglycaemia when exenatide is used in conjunction with a sulphonylurea. It would also appear that when the gliptins (DPP4 inhibitors) or liraglutide are used with sulphonylureas, the hypoglycaemia risk is similarly raised.

The increased risk of hypoglycaemia from exenatide, liraglutide or gliptins when used in combination with sulphonylureas is such that these are felt to be a potentially high risk treatment for drivers holding Group 2 (LGV or PCV) licences and that individual assessment will be required.

Group 2 drivers are required to notify DVLA if they have diabetes treated with tablets. If they are then started on exenatide, liraglutide or a gliptin they are only required to notify DVLA if this is in combination with a sulphonylurea.

The use of exenatide, liraglutide or gliptins currently carries no specific driving restrictions for Group 1 (car or motorcycle) licences.

Considering Insulin Transfer

The use of insulin can significantly worsen obesity and thus increase cardiac risk. Concentrating solely on HbA₁c may not be appropriate for the individual patient in terms of their overall management. Use of insulin may impact on employment, be socially difficult or be practically difficult. In these circumstances use of other therapies in combination may be the best option for the patient concerned even though target HbA₁c may not be achieved.
Particular forms of employment may be affected: people using insulin cannot hold an LGV or PCV licence and must undergo a medical assessment before applying for a C1 licence. Employers may not view insulin treatment favourably (e.g. off-shore workers, Armed Forces, dangerous chemical or machinery workers) and shift patterns may be relevant.

It is not unusual to continue metformin when transferring to insulin but this requires careful consideration of individual needs and the cautions around metformin use. For some individuals it may be appropriate to combine multiple oral agents, including pioglitazone, with insulin but this requires specialist evaluation due to the clinical risks of combination therapies.

Starting insulin requires lengthy consultations and patients may need considerable support in the short term, including out of hours access to advice. When initiating insulin it is important to consider the competences of the team involved. Detailed competences are given in Skills For Health competences Diab_HA11 & Diab_HA12 for insulin management (2004). Training is needed in appropriate choice of insulins, choice of injection devices, choice of monitoring devices and insulin dose adjustment. As devices change on a not infrequent basis, the team has to have mechanisms for regular skills updates. Liaison with the Secondary Care team may be valuable both for individual patient referral and in developing training programmes.

Appendix 7  Skills for Health Diabetes competences
Appendix 8  Choosing the right insulin regimen
Appendix 9  Referral form for Diabetes Specialist Nursing Services (Stockton on Tees)

Health Care Professional Education: The MERIT Programme

Reflecting the emphasis on diabetes treatment and prevention that is now placed on primary care, the MERIT (Meeting Educational Requirements, Improving Treatment) Programme has been developed in collaboration with secondary care specialists and a panel of primary care providers. The overall aim of the programme is to provide relevant, tailored training to enhance diabetes education for primary care professionals caring for patients and train them in the subsequent use of insulin and other injectables as a treatment for diabetes. The modular programme, which is non-promotional though developed with NovoNordisk, is based around the skills required for effective diabetes care, as listed by the Skills for Health Competency Framework Guide and can be adapted to suit local needs (using a Needs Assessment Questionnaire) and to the time available in each primary care trust or practice. Each module includes presentations, workshops and case studies, and is delivered by the local specialist team in conjunction with a Novo Nordisk Link Nurse.

Contact the Diabetes Specialist Nurses for more information or details of forthcoming courses.
HbA1c < 48 mmol/mol
Revert to routine monitoring for expected deterioration

HbA1c ≥ 48 mmol/mol
Review lifestyle intervention and start monotherapy

---

**LIFESTYLE INTERVENTION and PATIENT INVOLVEMENT**
Up to 3 month trial of lifestyle modification depending on symptoms. Consider appropriateness of target HbA1c for individual and agree target with individual and/or carers at each stage taking lifestyle and safety issues into account

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**METFORMIN**
Introduce gradually to minimize side effects.
Titrate to maximal tolerated dose.
If not tolerated consider modified release formula

**SULPHONYLUREA (Gliclazide/Glipizide)**
Consider first line: If BMI <25 OR
If glucose levels high & rapid response needed OR
If metformin is contraindicated or not tolerated

---

**ADD SULPHONYLUREA OR METFORMIN as second line therapy**
Consider use of DPP-4 inhibitor (gliptin) or glitazone if either second line agent is contra-indicated or not tolerated.

**METFORMIN+SU or METFORMIN+GLIPTIN or METFORMIN+GLITAZONE or SU+GLIPTIN or SU+GLITAZONE**
Risk of hypoglycaemia or CKD status may be relevant to choice. Addition of gliptin to sulphonylurea needs caution to avoid hypoglycaemia. Consider using glitazone if risk of hypoglycaemia relevant to lifestyle or occupation. Metformin+glitazone can be useful in obese. Glitazone contraindicated in cardiac failure, acute coronary syndrome, active macular oedema or high fracture risk.

---

**TRIPLE THERAPY: Consider referral for specialist advice on appropriate regimen and intervention**

**METFORMIN + SU + GLITAZONE**
Triple therapy with metformin, SU and glitazone may be useful if insulin is unacceptable due to lifestyle, employment or personal issues or if concern regarding obesity/metabolic syndrome.

**OR**

**METFORMIN + SU + GLIPTIN**
Triple therapy with gliptin may be an option to starting insulin in combination with metformin or glitazone in patients unsuitable for sulphonylureas.

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**INTENSIFIED INSULIN REGIMEN IN COMBINATION WITH ORAL HYPOGLYCAEMIC AGENTS**
Metformin, pioglitazone and sitagliptin may be used with insulin if insulin resistance and weight gain are of concern

Consider referral for specialist advice and intervention
ALGORITHM FOR COMMENCING INSULIN IN TYPE 2 DIABETES

Consider appropriateness of Insulin Therapy for Individual
- Review lifestyle intervention & oral hypoglycaemic doses.
- Consider patient willingness to accept insulin therapy.
- Ensure recent HbA₁C available as baseline for insulin therapy.

Patient Assessment if Insulin Appropriate
- Lifestyle including employment and mealtime routine.
- Dietary habits.
- Weight.

Select Insulin Regimen*
- Agree pen device and appropriate insulin regime with patient.
- Decide if or when to stop OHAs.
- Agree date to commence insulin.

Patient & Carer Education
- Injection technique
- Blood glucose monitoring technique
- Hypoglycaemia management
- Insulin storage & titration
- Waste disposal
- Sick day management
- Driving & DVLA regulations
- Provide supporting literature
- Including insulin passport and leaflet

Make First Injection Arrangements
- Insulin should be started near the beginning of the week.
- Decide whether observed, unobserved or with District Nursing support.
- Provide a contact number for advice.
- Contact should be made the day after first injection.

Follow up Arrangements
- Maintain regular contact to support and titrate insulin dose according to glucose self monitoring results.
- Review HbA₁C at 3 months to assess therapy.
- Reinforce previous education.

Please refer to competences Diab_HA11 & Diab_HA12 (Skills For Health) for insulin management.
Insulin Adjustment and Problem Solving

There are some general guidelines to help you to adjust your insulin doses and resolve problems with your blood glucose levels. These guidelines relate to 2 injections each day.

You should only change insulin doses if there is a trend of three or more high or low blood glucose levels. It is important to only change one of the doses of insulin at a time and to wait for 2-3 days before making any further changes. If the blood glucose levels do not respond as you expected, please ring a member of the Diabetes Team for advice.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>High blood sugar Pre Lunch</td>
<td>Put am insulin up by: 1-2 units</td>
</tr>
<tr>
<td>Low blood sugar Pre Lunch</td>
<td>Put am insulin down by: 1-2 units</td>
</tr>
<tr>
<td>High blood sugar Pre Tea</td>
<td>Put am insulin up by: 1-2 units</td>
</tr>
<tr>
<td>Low blood sugar Pre Tea</td>
<td>Put am insulin down by: 1-2 units</td>
</tr>
<tr>
<td>High blood sugar Pre Bed</td>
<td>Put pm insulin up by: 1-2 units</td>
</tr>
<tr>
<td>Low blood sugar Pre Bed</td>
<td>Put pm insulin down by: 1-2 units</td>
</tr>
<tr>
<td>High blood sugar Pre Breakfast</td>
<td>Put pm insulin up by: 1-2 units</td>
</tr>
<tr>
<td>Low blood sugar Pre Breakfast</td>
<td>Put pm insulin down by: 1-2 units</td>
</tr>
<tr>
<td>Low blood sugar Pre Bed and</td>
<td>Put pm insulin down by: 1-2 units</td>
</tr>
<tr>
<td>during night, then High</td>
<td></td>
</tr>
<tr>
<td>Pre Breakfast</td>
<td></td>
</tr>
<tr>
<td>Hypo – after or during exercise</td>
<td>Give extra sugary snack before exercise, extra starch afterwards and possibly reduce insulin by 1-2 units if exercise is very strenuous</td>
</tr>
<tr>
<td>Blood glucose going up and down – no pattern</td>
<td>Major food and insulin changes. Make earlier clinic appointment. Contact Diabetes Team.</td>
</tr>
<tr>
<td>Blood glucose high after meals then zooming down low. Hypos with no pattern or reason</td>
<td>Try changing the injection site and reduce the insulin. Contact the Diabetes Team</td>
</tr>
</tbody>
</table>

Type 2 Diabetes Guidelines for the DECENT Network
# INSULINS USED IN NORTH TEES AND HARTLEPOOL

<table>
<thead>
<tr>
<th>INSULIN NAMES</th>
<th>CLEAR/CLOUDY</th>
<th>SPECIFIC TO MEAL TIMES</th>
<th>DISPOSABLE PEN DEVICE</th>
<th>CARTRIDGE AND INSULIN PEN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actrapid</strong></td>
<td>Clear</td>
<td>No – For use with IV therapy only</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>ASPART/Novorapid®</strong></td>
<td>Clear</td>
<td>Yes, just before or just after breakfast, lunch and evening meal</td>
<td>Yes Flexpen</td>
<td>Yes Novopen</td>
</tr>
<tr>
<td><strong>LISPRO/Humalog®</strong></td>
<td>Clear</td>
<td>Yes, just before or just after breakfast, lunch and evening meal</td>
<td>Yes KwikPen</td>
<td>Yes Humapen</td>
</tr>
<tr>
<td><strong>Novomix 30</strong></td>
<td>Cloudy</td>
<td>Yes, just before breakfast and evening meal</td>
<td>Yes Flexpen</td>
<td>Yes Novopen</td>
</tr>
<tr>
<td><strong>Humalog Mix 25</strong></td>
<td>Cloudy</td>
<td>Yes, just before breakfast and evening meal</td>
<td>Yes KwikPen</td>
<td>Yes Humapen</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Humulin M3</strong></td>
<td>Cloudy</td>
<td>Yes 20–30 mins before breakfast and evening meal</td>
<td>Yes KwikPen</td>
<td>Yes Humapen</td>
</tr>
<tr>
<td><strong>Humulin S</strong></td>
<td>Clear</td>
<td>Yes, 15–30 mins before breakfast, lunch and evening meal</td>
<td>No</td>
<td>Yes AutoPen Classic or Humapen</td>
</tr>
<tr>
<td><strong>Humulin I</strong></td>
<td>Cloudy</td>
<td>No</td>
<td>Yes KwikPen</td>
<td>Yes AutoPen Classic or Humapen</td>
</tr>
<tr>
<td><strong>DETEMIR/Levemir®</strong></td>
<td>Clear</td>
<td>No</td>
<td>Yes Flexpen</td>
<td>Yes Novopen</td>
</tr>
<tr>
<td><strong>GLARGINE/Lantus®</strong></td>
<td>Clear</td>
<td>No</td>
<td>Yes SoloStar</td>
<td>Yes Clickstar</td>
</tr>
<tr>
<td><strong>Insulatard</strong></td>
<td>Cloudy</td>
<td>No</td>
<td>Yes Innolet</td>
<td>Yes Novopen</td>
</tr>
</tbody>
</table>
Managing Cardiovascular Risk Factors

Type 2 diabetes is a cardiovascular disease associated with hyperglycaemia.

Cardiovascular disease is the major cause of death in people with diabetes. It is therefore important to manage cardiovascular risk factors as well as improving glycaemic control. Lifestyle intervention, lipid management, blood pressure management and use of low dose aspirin should be considered (NICE, UKPDS). People with diabetes over 50 or who have over 10 years’ duration of known diabetes have a cardiovascular risk similar to non-diabetic patients post MI. The UKPDS risk engine can be useful for those patients under 50 years to estimate 10-year cardiovascular event risk and the need for therapy, but for older patients the excess risk is high enough to justify intervention, particularly with aspirin and ’statins (BHS IV). Diabetes can be associated with silent cardiac ischaemia so risk assessment should include an ECG.

UKPDS Risk engine [www.dtu.ox.ac/index.php?maindoc=/riskengine/]

Blood Pressure Management in Type 2 Diabetes

NSF / NICE / UKPDS / BHS
Hypertension is associated with an increased risk of many complications of diabetes, including cardiovascular disease.
- 40-60% of people with Type 2 diabetes (aged 45-75) have hypertension
- The majority will need combination therapy to meet BP targets
- Tight BP control reduces the risk of any diabetic complications and of diabetes related death
- Tight BP control confers more benefit than tight glucose control in reducing complication risk

Targets for BP Control

Differing targets for blood pressure control have been suggested by nGMS, NICE and BHS.
- nGMS targets are population based but NICE and BHS targets take other factors, such as existing complications or 10 year cardiovascular event risk, into account for the individual.
- With the increasing prevalence of Type 2 diabetes in younger people, it must be remembered that the NICE target of 140mmHg systolic is well above the 75th centile for men under 30 and women under 40 years of age. Even the BHS “optimal” target is above the 75th centile for 20 year old females.
- Aggressive management of hypertension also increases the risk of postural hypotension, particularly in the elderly. Any reduction in blood pressure, even though target levels are not achieved, is still worthwhile in terms of reducing risk of vascular events. Standard targets may be quite unsuitable.

Measuring BP

- Measure BP at least twice on 2 separate occasions with the patient sitting quietly for 5 minutes.
- Validated device should be used with correct cuff for arm size, with cuff kept at heart level
- Standing BP is useful particularly in the elderly
- “White coat hypertension” cannot be assumed to be benign
- 24 hour ambulatory monitoring can be useful but daytime ambulatory readings should be 10/5 mmHg below sitting clinic targets; loss of nocturnal dipping is an indicator of cardiovascular risk

[http://publications.nice.org.uk/hypertension-cg127]
MANAGEMENT OF HYPERTENSION IN ADULTS WITH TYPE 2 DIABETES

Lifestyle Management

Management of blood pressure should include lifestyle interventions which have a blood pressure lowering effect: weight management, salt intake, alcohol use, physical activity

Smoking cessation should be discussed in terms of the increased risk of cardiovascular disease and microvascular complications of diabetes

Drug Therapy

- Thiazide diuretics, beta-blockers, ACE inhibitors and angiotensin 2 receptor antagonists (AIIA/ARB) have all been shown to reduce cardiovascular mortality and morbidity in Type 2 diabetes.
- Most patients locally are established on Ramipril or Lisinopril as first line ACEI. None of the ACEI has a specific diabetes related licence. The cardio-and reno-protective effects are class related.
- ARBs vary in their current licensing: Losartan is licensed for hypertension,(including reduction of stroke risk in hypertension) chronic heart failure & diabetic nephropathy,Candesartan is licensed for hypertension and cardiac failure management as is valsartan where cardiac failure occurs post-MI; irbesartan is licensed for hypertension and renal disease in hypertensive Type 2 diabetes
- Beta-blockers are no longer preferred as a routine initial therapy for hypertension (BHS,NICE).
- Thiazides carry theoretical risk of worsening glycaemia and hyperlipidaemia, but the benefits in terms of systolic reduction outweigh the risks.
- The presence or absence of complications can guide the choice of first line agent.
- Drugs may be introduced for dual effect on blood pressure and angina.
- ACEI or ARBs will cause a rise in serum creatinine but should be withdrawn if rise > 50 micromols/l, or a significant drop in eGFR >20ml/min/1.73m²
- Combination therapy is likely to be needed and may be helpful in maintaining electrolyte balance.
- The balance of current evidence suggests that alpha blockers are not suitable as first line agents but can be useful in combination. There is no evidence of benefit of Doxazosin MR preparation over standard preparation though number of tablets may be an issue at high doses.

Quality Outcomes Framework (GMS2)

DM11. The percentage of patients with diabetes who have a record of the blood pressure in the previous 15 months (points 3, max threshold 90%)

DM12. The percentage of patients with diabetes in whom the last blood pressure is 145/85 or less (points 18, max threshold 60%)

DM13. The percentage of patients with diabetes who have had microalbuminuria testing in the previous 15 months (exception reporting for patients with proteinuria) (points 3, max threshold 90%)

DM22. The percentage of patients with diabetes who have a record of serum creatinine in the past 15 months (points 3, max threshold 90%)

DM15. The percentage of patients with diabetes who have proteinuria or microalbuminuria treated with ACE inhibitors or AIIA (points 3, max threshold 85%)
Algorithm for Management of Hypertension in Type 2 Diabetes
Target <130/80 mmHg with retinopathy, cerebrovascular disease or microalbuminuria
Other patients Target <140/80 mmHg

Safety considerations:
- These drugs are contraindicated in pregnancy.
- Before commencing anti-hypertensive therapy the possibility of pregnancy must be discussed and contraceptive advice given as appropriate to women of child bearing potential.
- Seek specialist advice for pre-pregnancy planning or pregnancy management.
- Allow individualised targets and a slower rate of change if necessary, particularly in the elderly.
- Intensive therapy increases the risk of postural hypotension.
- Allow up to 4 weeks for full response to changes in therapy.
- ACE inhibitors are contra-indicated in severe bilateral renal artery stenosis, therefore caution in severe PVD.
- NSAIDs should be avoided in patients taking an ACE inhibitor due to risk of irreversible renal failure.
- Dry cough is a common side-effect of ACE inhibitors, if intolerable for the patient consider A2RB.
- If amiodipine results in peripheral oedema diltiazem can be substituted. Note caution if on a beta-blocker.
- See BNF or SPC for full prescribing information.

Potassium Levels
- Hypokalaemia noted at baseline or readily induced by low-dose diuretic, should prompt referral for further investigation.
- Hyperkalaemia is a common problem with ACEI and A2RBs. If chronic it may require loop diuretic therapy or potassium reduced diet. Acute hyperkalaemia may require inpatient management.
- Potassium based dietary salt replacement must be avoided when ACEI / A2RB / potassium sparing diuretics prescribed.

Beta-blockers:
- Are no longer first-line therapy for hypertension but consider their use second line where there is intolerance or contra-indication to ACEI or A2RBs or where there is increased sympathetic drive.
- Avoid where possible if metabolic syndrome.
- Beta-blockers should still be used where there is a compelling indication e.g. angina or MI.

Aspirin
Once BP < 145/90 mmHg CONSIDER aspirin dispersible
75mg daily - assess individual balance of benefits & risks.

Lipids
10-year CVD risk ≥ 20% start statin
Refer to separate prescribing guidance.

Smoking Cessation
Refer to separate prescribing guidance.

If BP above target repeat measurement within
1 month if >150/90 mmHg
2 months if >140/80
2 months if >130/80 and complications present

BP above target
Advise on lifestyle measures
Weight, activity, alcohol, smoking, salt intake

BP above target
Start ACE inhibitor
Titrate dose up to maximum tolerated.
Check U&E’s and renal function: before starting, 1-2 weeks after starting treatment and after each dose change, then every 6-12 months.

Add Indapamide 2.5mg daily
Monitor U&E’s and renal function after 4-6 weeks then every 6-12 months.
OR
Add Amlodipine (5-10mg daily)
Continue monitoring renal function 6-12 monthly.
If BP above target with first choice add second choice of these agents.

BP above target
Add Beta-blocker Bisoprolol (2.5-10mg daily)
OR
Alpha-blocker Doxazosin (1-16mg daily)
Continue monitoring renal function 6-12 monthly.
If BP above target with first choice add second choice of these agents.

BP above target
Consider potassium sparing diuretic
OR
Angiotensin 2 receptor blockade
Either of these significantly increases risk of electrolyte disturbance or renal failure.

OR

Consider referral for Specialist advice.
LIPID MANAGEMENT FOR ADULTS WITH TYPE 2 DIABETES

NSFs for Diabetes, CHD, Older Persons / NICE / HPS / CARDS
- Raised blood lipid levels are known to be a risk factor for coronary heart disease.
- Management of blood lipid levels can add to reduction in cardiovascular risk in Type 2 diabetes.
- All patients with Type 2 DM, irrespective of age and initial cholesterol levels should be considered for treatment with a statin unless clearly at low cardiovascular risk or statins are contraindicated.
- Newer lipid lowering agents do not possess better evidence bases.
- Consideration must be given to pre-pregnancy planning in women of child bearing age and caution exercised in managing people under 18 years.

Targets and Treatment

Patients with Type 2 diabetes are considered to be at high risk of cardiovascular disease, requiring secondary prevention therapies, unless all of the following apply:

Not overweight
Normotensive in the absence of anti-hypertensive therapy
No microalbuminuria
Non-smoker
No family history of cardiovascular disease
No personal history of cardiovascular disease
No high risk lipid profile

Estimate risk annually in this group: www.dtu.ox.ac/index.php?maindoc=/riskengine/ and manage as high risk if estimated risk is >20% over 10 years.

Total Cholesterol, HDL-Cholesterol and LDL-Cholesterol

The aim is to maintain total cholesterol < 4.0 mmol/l for all treated patients. If the total cholesterol remains above 4.0 mmol/l, lifestyle intervention alongside drug titration is necessary unless the patient has a high HDL-Cholesterol (>1.4 mmol/l) or low LDL-Cholesterol (<2.0 mmol/l), both of which confer a reduced risk ratio.

Dyslipidaemia in Type 2 diabetes is more commonly characterised by decreased HDL cholesterol levels. Low HDL-Cholesterol is an indication for review of diet and other lifestyle measures. Exercise and dietary measures have more impact on HDL-Cholesterol than drug management. Aim to maintain HDL-Cholesterol >1.0 mmol/l in men and >1.2 mmol/l in women.

Triglycerides

Triglycerides have been shown to be independent risk factors in certain groups of people with diabetes. Initial treatment with statins will have an impact on triglycerides levels as well as cholesterol. Triglyceride treatment targets are as follows:
- Ideally triglyceride levels should be <2.3mmol (CHD & Diabetes NSFs, DUK, NICE).
- Abnormal levels indicate need for dietary and lifestyle change (especially alcohol consumption).

Measuring Lipid Levels

A fasting lipid profile should be assessed at diagnosis when Type 2 diabetes is diagnosed. Further monitoring can be done on non-fasting samples, including total cholesterol (TC), low density lipoprotein (LDL-C), high density lipoprotein (HDL-C) and triglycerides (TG). Lipid profile can be done as part of the Annual Review. Interim monitoring can be done to assess effect of dose titration but it may take over 6 weeks to see the impact of dose changes.
**Lifestyle Management**
Management of lipids should include lifestyle interventions which have a lipid altering effect, particularly: weight management, alcohol use, physical activity.

Smoking cessation should be discussed in terms of the increased risk of cardiovascular disease and microvascular complications of diabetes.

**Statin therapy**

The evidence basis for the use of statins in diabetes is strongest for simvastatin and atorvastatin but statins do vary in their risk of interactions, tolerability and potency. Although the most common form of dyslipidaemia in diabetes is low HDL cholesterol and elevated triglycerides, the roles of fibrates and the nicotinic acid group are still unclear and a statin is the drug class of first choice. Dose titration may be required to achieve the targets but side effects, especially myopathy, are dose related, which must be taken into consideration when advising patients.

Ezetimibe is currently licensed for the management of primary hypercholesterolaemia and homozygous familial hypercholesterolaemia. Consider referral to a specialist if combination therapy is needed, whether considering a statin plus fibrate or ezetimibe. The combination of a statin with a fibrate significantly increases the risk of rhabdomyolysis, especially in patients with impaired renal function. Close monitoring of symptoms and a low threshold to check creatinine kinase (CK) is required.

**Quality Outcomes Framework (GMS2)**

DM16. The percentage of patients with diabetes who have a record of total cholesterol in the previous 15 months (points 3, max threshold 90%).
DM17. The percentage of patients with diabetes who last measured total cholesterol in the previous 15 months is 5mmol/l or less (points 6, max threshold 70%).

**Use of Low Dose Aspirin in Type 2 Diabetes**

Anti-platelet therapy in the form of low dose aspirin (75mg daily) should no longer be considered for primary prevention. Recent evidence suggests that there is an increased risk of gastro-intestinal bleeding which outweighs the presumed benefits of primary prevention.

Treatment is recommended for
- Patients with known cardiovascular disease (review ECG for evidence of asymptomatic IHD) OR cerebrovascular disease OR peripheral vascular disease.
- Clopidogrel should only be used *instead* of aspirin in those with clear intolerance, and concomitant use of PPI should be reviewed, but may be combined with aspirin in the context of acute cardiac events or procedures
- There is little evidence for enteric coated aspirin reducing the incidence of G-I bleeding
Algorithm for Management of Blood Lipids in Type 2 Diabetes

**Targets Total cholesterol <4.0 and LDL cholesterol <2mmol/l, Triglyceride <2.3 mmol/l in patients at high premature cardiovascular risk for their age**

Assess risk factors annually with full non-fasting lipid profile including total cholesterol, HDL-C and triglycerides

Any patient with Type 2 diabetes is considered to be at high risk unless he/she:

- Is not overweight, tailoring this with an assessment of body-weight associated risk according to ethnicity
- Is normo-tensive for age and sex (at least < 140/80 in absence of antihypertensive therapy)
- Has no microalbuminuria
- Is a non-smoker
- Does not have a high risk lipid profile
- Has no history of cardiovascular disease and no family history of cardiovascular disease

### Flowchart

- **Age < 40 and poor risk factor profile**
  - Offer generic simvastatin 40mg daily after discussing pregnancy / contraception
  - Review lifestyle factors and lipid profile 1 – 3 months after starting therapy

- **Age ≥40 and low risk factor profile but UKPDS risk engine >20%/10 years**
  - Treat to target
  - Total cholesterol <4mmol/l (assuming HDL-C ≤ 1.4mmol/l)
  - OR LDL-C <2.0 mmol/l

- **Age < 40 and normal high risk factor profile for someone with Type 2 DM**
  - Review lifestyle factors and glycaemic control
  - If TG >4.5mmol/l despite best possible HbA1C & statin
    - Consider fibrate
  - If lifestyle and drug measures ineffective
    - Consider trial of omega-3 fish oils

- **High serum TG**
  - Review lifestyle factors and glycaemic control
  - If TG 2.3–4.5 mmol/l despite statin and high CV risk
    - Consider adding fibrate to statin

- **Target not achieved despite therapy**
  - Review lifestyle factors and glycaemic control
    - then consider
    - change to atorvastatin 40mg daily

- **Target still not achieved despite therapy**
  - Review lifestyle factors and glycaemic control
    - then consider
    - Intensifying therapy
    - OR
    - Use of ezetimibe in combination with statin

Consideration of high intensity statin should take into account co-morbidities, wishes of patient and risk/benefit assessment. Myopathy occurs in <1% of patients but is dose related and may progress to rhabdomyolysis, a cause of renal failure and death. If myopathy is diagnosed or suspected and creatine kinase is >5 times the upper level of normal, the statin should be stopped. Asymptomatic elevations of liver enzymes occur in about 1-2% of patients. Caution is needed with heavy alcohol consumption. Drug interactions may increase the plasma levels of statins. Combination with fibrates increases myopathy risk. Liver function tests (LFTs) should be monitored prior to therapy after 3-6 months, 12 months but not again unless clinically indicated. Treatment should be stopped if serum transaminases rise to and persist at 3 times the upper limit of normal. Hypothyroidism should be adequately managed before statin therapy commenced. Evidence base for newer agents is limited compared to simvastatin or atorvastatin in diabetes. Ezetimibe is currently licensed for primary hypercholesterolaemia.
5. Annual Review

NSF / NICE
- All patients with Type 2 diabetes should receive regular surveillance for the long-term complications of diabetes.
- All patients with Type 2 diabetes who develop long-term complications of diabetes should receive timely, appropriate and effective investigation and treatment to reduce their risk of disability and premature death.
- Annual review for people with diabetes is key to the detection and monitoring of complications.
- Annual review should include a review of glycaemic control, review of cardiovascular risk factors, complication screening, and follow up of results through action plans agreed with the patient and / or carer.
- Annual review should include preventative measures such as influenza or pneumococcal vaccination.
- Annual review offers the opportunity for Pre-pregnancy counselling and review of contraception (Appendix 11)

Diabetes Registers

An up-to-date diabetes register is essential to facilitate call/ recall systems for all people with a clinical diagnosis of diabetes. A system for following up non-attendees should be in place to:
- Improve attendance.
- Reduce the likelihood of patients with Type 2 diabetes presenting with complications at a later stage.

Quality Outcomes Framework (GMS2)

DM32. The practice can produce a register of all patients aged 17 years and over with diabetes mellitus, which specifies the type of diabetes where a diagnosis has been confirmed (points 6).

Regional Insulin Safety and Knowledge (RISK) Project

The National Insulin Passport and Information Support Booklet

Recommendations for issuing the patient insulin passport and booklet

Purpose of the passport and information
- To improve patient safety by empowering patients as they take an active role in their treatment with insulin
- Target audience – adults over the age of 18 requiring insulin as a therapy for their diabetes

Key principles
- To acknowledge the **important role** a person plays in conveying accurate information about the insulin products they use
- To **empower patients** to be the link with all people they come into contact with about their healthcare
- The **responsibility of the patient** should be acknowledged in:-
  - ensuring the passport is updated when the insulin is changed or new insulin started
  - presenting the passport to any healthcare professional who may be involved in reviewing, prescribing, administering or dispensing their insulin
- The passport and supporting information should be **issued during a face to face** consultation and should be linked to the safety aspects of insulin as a treatment
- It is the **responsibility of the healthcare professional** to ensure that the patient is appropriately informed about the purpose of the passport and information and to check their understanding of it.
- Patients need to be encouraged to **carry the passport at all times**
- The person completing the passport needs to ensure that **all information is up to date and accurate**
- A **record should be made** in the patient’s medical record, using read codes, when the passport and information booklet are issued
The recommended read codes are:

<table>
<thead>
<tr>
<th>Read Code</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>8CE01</td>
<td>Insulin alert patient information booklet given</td>
</tr>
<tr>
<td>8IF...</td>
<td>Professional judgment not to engage patient with insulin alert requirements</td>
</tr>
<tr>
<td>671F0</td>
<td>Insulin alert patient information booklet information discussed</td>
</tr>
<tr>
<td>8CE02</td>
<td>Insulin passport given</td>
</tr>
<tr>
<td>8BAi</td>
<td>Insulin passport completed</td>
</tr>
<tr>
<td>8BAj</td>
<td>Informed dissent not to carry insulin passport</td>
</tr>
</tbody>
</table>

For SystmOne, the read codes are:

<table>
<thead>
<tr>
<th>Read Code</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>XaYQX</td>
<td>Insulin alert patient information booklet given</td>
</tr>
<tr>
<td>XaYRc</td>
<td>Professional judgment not to engage patient with insulin alert requirements</td>
</tr>
<tr>
<td>XaYQd</td>
<td>Insulin alert patient information booklet information discussed</td>
</tr>
<tr>
<td>XaYQZ</td>
<td>Insulin passport given</td>
</tr>
<tr>
<td>XaYQh</td>
<td>Insulin passport completed</td>
</tr>
<tr>
<td>XaYQi</td>
<td>Informed dissent not to carry insulin passport</td>
</tr>
</tbody>
</table>

It is recommended that a record of the status of the passport is included in the diabetes template as part of the minimum data set, using the above read codes. This needs to include an option to record that the patient has made an informed decision not to accept the passport or information.

**Annual Review Checklist**

The Annual Review components may be undertaken in a variety of locations depending on local arrangements. Complication screening may be done within practice, at hospital appointments or within One Stop Screening Shop. Review of the results of complication screening, discussion of the implications and agreeing a management plan form the major part of the Annual review.
<table>
<thead>
<tr>
<th><strong>Weight management</strong></th>
<th>BMI. Agree individual target &amp; treatment plan. Consider dietetic referral and/or anti-obesity drugs or bariatric surgery.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lifestyle review</strong></td>
<td>Smoking. If appropriate offer NRT. Diet including alcohol. Consider dietetic referral. Physical activity. Agree target. Consider Exercise on prescription, Cardiac Rehabilitation programmes. Contraception review and pre-pregnancy planning if appropriate, including review of therapies (Appendix 10) Driving – DVLA aware, hypoglycaemic awareness. Patients with recurring hypoglycaemia or reduced awareness may need to discontinue driving unless and until awareness improves or frequency of episodes is reduced. Employment issues.</td>
</tr>
<tr>
<td><strong>Glycaemic control</strong></td>
<td>Self – monitoring results and HbA1c. Hypoglycaemia frequency and management. Sick day rules. Agree target HbA1c. Therapy review. Issue &amp; check understanding of insulin passport or if already has one, check accuracy of information therein.</td>
</tr>
<tr>
<td><strong>Blood Pressure control</strong></td>
<td>Sitting and standing. Consider ambulatory recording. Agree target BP according to risk stratification (ACR, CVD percentage risk &amp; cholesterol). Therapy review.</td>
</tr>
<tr>
<td><strong>Complication screening</strong></td>
<td>Enquire about problems with vision. Review referral to and results from Retinal Screening programme. Optometrist. Enquire about symptoms of neuropathy including postural hypotension, numbness/tingling/pain in feet, erectile dysfunction. Enquire about claudication or rest pain. Foot inspection for callous, blisters, ulcers. Palpation of foot pulses. 10g monofilament screen. Consider Podiatry referral. Enquire about chest pains, shortness of breath, ankle swelling. ECG at least 3 yearly if over 50, otherwise as clinically indicated. Consider echocardiogram if heart failure.</td>
</tr>
<tr>
<td><strong>Renal function</strong></td>
<td>Urea and electrolytes, creatinine. Urinalysis for protein, haematuria, nitrate. Urine for microscopy if nitrate positive. Early morning urine for microalbuminuria and ACR if no proteinuria. ACR may be raised due to pre-existing ischaemic heart disease or peripheral vascular disease: review ECG &amp; BP target.</td>
</tr>
<tr>
<td><strong>Liver function</strong></td>
<td>Liver function tests.</td>
</tr>
<tr>
<td><strong>Lipid profile</strong></td>
<td>Cholesterol, HDL cholesterol, triglycerides. Review therapy.</td>
</tr>
<tr>
<td><strong>Immunisation</strong></td>
<td>Influenza yearly, pneumococcal 10 yearly</td>
</tr>
<tr>
<td><strong>Depression screen</strong></td>
<td>Standardised questionnaire Consider referral for counselling / psychological support</td>
</tr>
</tbody>
</table>
In addition to its necessity for individual monitoring, annual review data will be collated for the purpose of clinical audit and service evaluation. NICE, nGMS QOF, DiabetesE.
6. Complications Screening

Diabetic Retinopathy

Diabetic retinopathy is the most common specific complication of diabetes and is a leading cause of blindness. Twenty years from the onset of diabetes more than 60% of those with Type 2 diabetes will have some retinopathy.

The aim of programmes for diabetic retinopathy should be to:
- Reduce the incidence of diabetic eye disease and blindness through better screening (early detection) and improved access to effective treatment.
- Improve support for people with visual handicap / blindness caused by diabetes.

North of Tees Retinal Screening Programme

All patients with T2DM need regular retinal screening and there is a National Diabetic Eye Screening Programme. The North Tees, Hartlepool and Easington PCTs joint Diabetic Eye Screening Programme for all patients with diabetes over the age of 12, has been operational since December 2005. Newly registered patients are referred by GP practices direct to the Programme Administration team, who also monitor the call/recall of patients – GPs are notified if patients do not attend appointments or fail to respond to their invite for screening and will also be notified if a patient decline the option of screening.

All images are graded by fully accredited team of graders with direct referral from the programme to the Ophthalmology Departments in James Cook University Hospital or Sunderland Eye Infirmary as appropriate. Patients with cataracts or other ocular problems may have ungradeable photographs; they will be offered slit lamp examination by the Optometrist team. Patients with limited mobility who are able to co-operate with digital screening will be offered transport to their nearest screening centre. If patients are truly housebound and unable to attend the hospital eye services for treatment if they should require it will be removed from the screening service but only with the authorization of the Consultant Ophthalmologist and the patients GP.

Patients should continue to have regular eye appointments with their optometrist of choice whilst simultaneously attending regular retinal screening.

During pregnancy:

Retinal photography should be performed every 3 months and 3 months post natal as recommended by the National Eye Screening Programme.

Additional fundoscopy may be undertaken within the Combined Obstetric Diabetes Clinics depending on the presenting HbA1C.

Additional Screening Services

Hartlepool One Stop Shop offers blood pressure and foot screening with phlebotomy for annual review screening blood tests at the Retinal Screening appointment. Easington & Stockton patients are offered foot screening.

Quality Outcomes Framework (GMS2)

DM21. The percentage of patients with diabetes who have a record of retinal screening in the previous 15 months (points 5, max threshold 90%)
Renal Disease in Type 2 Diabetes

Progressive renal damage is a serious, potentially fatal complication of Type 2 diabetes. Microalbuminuria is a strong independent predictor for cardiovascular disease. Diabetic nephropathy is potentially preventable with good glycaemic and blood pressure control. In diabetes 50% of glomeruli can be sclerosed and useless with a normal serum creatinine.

The aim of programmes for diabetic nephropathy should be to:
- Reduce the rate of progression from microalbuminuria to diabetic nephropathy with ACE inhibitors.
- Reduce the rate of deterioration in renal function in patients with diabetic nephropathy with BP control.
- Reduce the risk of cardiovascular disease in patients with diabetic nephropathy.

Assessment of urine albumin

Urine microalbumin concentration and Albumin Creatinine Ratio should be assessed in patients without proteinuria. Testing for microalbuminuria should ideally be done on an early morning urine sample. Patients should be asked to collect the first urine passed on rising after at least 6 hours bed rest. Nocturia does not interfere with the sample collection but night working, concurrent infection, menstruation and sexual intercourse will impact on the results. Samples should be collected in a plain urine container without preservative (white top not red top). An abnormal result should be rechecked twice on non-successive days.

2/3 abnormal results constitutes high risk for CVD, and should inform choice of targets and treatment for hypertension and lipid management as well as prompting the need for an ECG review.

Microalbuminuria
- Albumin:Creatinine Ratio (ACR) ≥2.5mg/mmol (men) ≥3.5mg/mmol (women) on lab testing.
- Albumin concentration ≥20mg/l on laboratory testing or using microalbumin testing strips.

Proteinuria
- Albumin:Creatinine ratio ≥30 mg/mmol.
- Albumin concentration ≥200mg/l.

Assessment of renal function using serum creatinine and eGFR

Serum creatinine (µmol/l) underestimates the decline in glomerular filtration rate (ml/min) and serum creatinine can be normal in the presence of moderate chronic kidney disease. eGFR is a more sensitive indicator of renal function.

eGFR
- Modification of Diet in Renal Disease equation (serum creatinine, age, sex, ethnic origin).
- eGFR(ml/min) = 175 [serum creatinine(µmol/l) x 0.011312] - 1.154 x [age]-0.203 multiplied by 0.742 if female multiplied by 1.212 if black.
- Not useful in acute renal failure; in oedematous states; in amputees; in pregnancy; in muscle wasting or malnourished states, which includes insulin deficient states or in children.

Quality Outcomes Framework (GMS2)

DM13. The percentage of patients with diabetes who have had microalbuminuria testing in the previous 15 months (points 3, max threshold 90%).

DM22. The percentage of patients with diabetes who have a record of estimate glomerular filtration rate (eGFR) or serum creatinine testing in the previous 15 months (points 1, max threshold 90%).

DM15. The percentage of patients with diabetes with a diagnosis of proteinuria or microalbuminuria who are treated with ACE inhibitors (or A2 antagonists) (points 3, max threshold 85%).
Foot Screening in People with Type 2 Diabetes

Ulceration, amputation and neuropathic pain are the principal lower limb complications of diabetes. They are associated with significant physical and psychological morbidity for people with diabetes, and result in a substantial cost to the NHS. The aim of programmes for diabetic foot care should be to:

- Reduce the risk of lower limb complications by provision of foot care education, early detection of complications through screening, provision of podiatry if necessary and provision of appropriate footwear.
- Reduce the rate amputation in patients who develop foot ulceration through prompt intervention.

Northern Regional Diabetes Interest Group Risk Category Guidelines
(refer to neurovascular protocols from Podiatry if further information needed)

<table>
<thead>
<tr>
<th>LOW RISK</th>
<th>INCREASED RISK</th>
<th>HIGH RISK</th>
<th>VERY HIGH RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ 10/10 monofilament score</td>
<td>➢ &lt; 10 monofilament score</td>
<td>➢ &lt; 10 monofilament score</td>
<td>➢ Current foot ulcer</td>
</tr>
<tr>
<td>➢ &lt; 15v neurothesiometer score</td>
<td>➢ 16-24v neurothesiometer score</td>
<td>➢ &gt; 25 neurothesiometer score</td>
<td>➢ Gangrene or history of gangrene</td>
</tr>
<tr>
<td>➢ Tuning fork sensation present</td>
<td>➢ Absent tuning form sensation</td>
<td>➢ Absent tuning fork sensation</td>
<td>➢ Amputation</td>
</tr>
<tr>
<td>➢ All foot pulses easily palpated</td>
<td>➢ Pulses difficult to palpate, or one absent to palpation</td>
<td>➢ One or more pulses absent to palpation</td>
<td>➢ Severe foot deformity (including charcot)</td>
</tr>
<tr>
<td>➢ No tissue abnormality</td>
<td>➢ Tissue abnormality</td>
<td>➢ Tissue abnormality</td>
<td>➢ Rest pain</td>
</tr>
<tr>
<td>➢ Pulses clear triphasic or biphasic on Doppler examination</td>
<td>➢ Pulses damped biphasic or monophasic on Doppler</td>
<td>➢ Pulses severely damped, or absent on Doppler</td>
<td>➢ Claudication under 50 yards</td>
</tr>
<tr>
<td>➢ No pathological corns / callus</td>
<td>➢ Pathological corns / callus</td>
<td>➢ Rest pain</td>
<td>➢ Marked neuropathy +</td>
</tr>
<tr>
<td>➢ No foot deformity</td>
<td>➢ Foot deformity present</td>
<td>➢ Severe foot deformity (including charcot)</td>
<td>➢ Bounding pulses+</td>
</tr>
<tr>
<td>➢ No previous foot ulcer / amputation</td>
<td>➢ No previous foot ulcer / amputation</td>
<td>➢ History of foot ulcers / amputation</td>
<td>➢ Prominent dorsal veins</td>
</tr>
<tr>
<td>➢ No previous lower limb angioplasty or bypass surgery</td>
<td>➢ No previous lower limb angioplasty or bypass surgery</td>
<td>➢ Previous lower limb angioplasty or bypass surgery</td>
<td>(charcot risk)</td>
</tr>
<tr>
<td>➢ No immunosuppressant therapy or conditions</td>
<td>➢ No immunosuppressant therapy or conditions</td>
<td>➢ Immunosuppressant therapy conditions</td>
<td></td>
</tr>
<tr>
<td>➢ No sight or self care problems</td>
<td>➢ Sight or self care problems</td>
<td>➢ Claudication 50 – 100 yards</td>
<td></td>
</tr>
</tbody>
</table>

A Regional foot network is now developing specific regional monitoring & referral criteria.

Quality Outcomes Framework (GMS2)
DM9. The percentage of patients with diabetes with a record of the presence or absence of peripheral pulses in the previous 15 months (points 3, max threshold 90%).
DM10. The percentage of patients with diabetes with a record of neuropathy testing in the previous 15 months (points 3, max threshold 90%).
7. Monitoring

Practice Monitoring

Systematic reviews of people with Type 2 diabetes can help to detect complications at an early stage, to highlight problems of diabetes control and to identify people who are at risk of coronary heart disease and kidney failure.

The evidence in support of the ideal frequency of such reviews is not conclusive, and local policy should inform such recommendations.

Suggested Protocols

Twice a year for patients with good metabolic control and stable CV risk factors. Three or more times a year for other patients.

Patient discussion
- General health and well being including plans for pregnancy.
- Glycaemic control.
- Self-monitoring results.
- Symptoms of hyper-/ hypoglycaemia.
- Therapy review including contraception.
- Knowledge of diabetes and self management skills.
- Specific enquiries about lifestyle i.e. tobacco/ alcohol consumption, level of physical activity.
- Examinations should include:
  - Body Mass Index, BP, Inspection of insulin injections sites
  - Investigations should include
  - HbA1c, Urinalysis for protein

Self Monitoring

Self-monitoring is important to all those with Type 2 diabetes, whether they are controlled by diet alone, oral therapy or insulin, but it should not be considered as a stand alone intervention. Approaches should be individualised and agreed in consultation with the person with diabetes. Clearly if patients are not going to act upon results either by adjusting therapy or seeking further advice the usefulness of self monitoring must be re-evaluated.

Patients with Type 2 diabetes should be educated on
- Importance of self-monitoring - either home glucose monitoring or urine testing.
- Interpreting the results of self-monitoring and tests of long term glycaemic control.

Home capillary blood glucose monitoring may be particularly useful under certain circumstances:
- Preconception period and pregnancy
- If there has been an elevation in the HbA1c level
- If there is an increase in the frequency or severity of episodes of hyperglycaemia or hypoglycaemia
- If there has been a change in, or adjustment of, treatment
- If the person with Type 2 diabetes experiences a change in lifestyle that affects the amount of exercise taken, or their eating habits (e.g. weight reduction programme).
- Any period of illness or infection
- Increases in frequency or duration of driving
- Increases in frequency or duration of travelling, especially long haul flights.
## Northern Region Diabetes Specialist Nurse Recommendations for Self Glucose Monitoring

<table>
<thead>
<tr>
<th>TREATMENT PATHWAY</th>
<th>HbA₁°C FREQUENCY</th>
<th>MONITORING</th>
<th>FREQUENCY OF MONITORING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy eating &amp; exercise</td>
<td>3-6 monthly if self monitoring</td>
<td>No self-monitoring or urine testing only</td>
<td>2 days a week</td>
</tr>
<tr>
<td></td>
<td>3 monthly if not self-monitoring</td>
<td></td>
<td>One fasting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>One 2hrs after main meal</td>
</tr>
<tr>
<td>Metformin +/- Glitazones</td>
<td>3–6 monthly</td>
<td>Urine testing</td>
<td>2 days a week</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>One fasting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>One 2hrs after main meal</td>
</tr>
<tr>
<td>Sulphonylureas +/- other oral hypoglycaemic agents including gliptins</td>
<td>3–6 monthly</td>
<td>Blood</td>
<td>2 days a week</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>One fasting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>One 2hrs after main meal</td>
</tr>
<tr>
<td>Addition of insulin. Initially or after a change of regimen</td>
<td>3–6 monthly</td>
<td>Blood</td>
<td>2-4 daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fasting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Before lunch</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 hrs after main meal or before supper</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DVLA minimum 2 per day</td>
</tr>
<tr>
<td>Patients on novel therapies including exenatide or complex regimen of oral agents plus insulin</td>
<td>3–6 monthly</td>
<td>Mode of testing and frequency should be agreed with the patient and re-assessed according to results, usefulness and further changes in therapy</td>
<td></td>
</tr>
</tbody>
</table>

See more detailed guidelines on Self Monitoring of Blood Glucose in Appendix 15
8. Complications Management

Diabetic Retinopathy

Eye care and screening test for all people with diabetes
- Maintain good blood pressure control and good blood glucose levels.
- Refer to Retinal Screening Service for assessment and planned review.
- Refer for specialist opinion if cataracts are interfering with vision or the retina is obscured
- Classify eye care as:
  - Routine care (annual review if no retinopathy).
  - Early review (every 3 to 6 months if lesions have occurred / worsened, scattered exudates, hypertension or renal disease).
  - Referral required (to specialist ophthalmologist).
- Introduce ACE inhibitor or AIIA if retinopathy confirmed and not planning pregnancy.

Referral timings to ophthalmology specialist
- Immediately: within a day (e.g. sudden loss of vision or evidence of retinal detachment).
- Urgently: within 1 week recommended (new vessel formation, preretinal and / or vitreous haemorrhage, rubeosis iridis).
- Soon: within 4 week recommended (drop in visual acuity, hard exudates, macular oedema, retinal findings, retinopathy present).

Diabetic Renal Disease

Renal care for all people with diabetes
- Maintain good blood pressure control and good blood glucose levels.
- Measure serum creatinine and eGFR at least annually or as guided by eGFR.
- Measure albumin creatinine ratio or albumin concentration annually.
- If microalbuminuria or proteinuria is present, repeat twice more within one month.
- Classify albumin excretion annually as:
  - Lower risk (absence of microalbuminuria or proteinuria) or
  - Higher risk (2 out of 3 positive tests).

<table>
<thead>
<tr>
<th>Monitoring frequency as dictated by eGFR</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal</strong></td>
<td></td>
<td>Annual check</td>
</tr>
<tr>
<td><strong>Mild impairment</strong></td>
<td>60 – 89 ml/min</td>
<td>Annual check</td>
</tr>
<tr>
<td><strong>Moderate impairment</strong></td>
<td>30 – 59 ml/min</td>
<td>6 monthly check</td>
</tr>
<tr>
<td></td>
<td>Consider referral to specialist care if progressing or other concern eg BP</td>
<td></td>
</tr>
<tr>
<td><strong>Severe impairment</strong></td>
<td>15 – 29 ml/min</td>
<td>3 monthly check</td>
</tr>
<tr>
<td></td>
<td>Referral to specialist care</td>
<td></td>
</tr>
<tr>
<td><strong>Established</strong></td>
<td>&lt; 15 ml/min</td>
<td>3 monthly check</td>
</tr>
<tr>
<td></td>
<td>Referral to specialist care</td>
<td></td>
</tr>
</tbody>
</table>
Management of patients with high risk albumin excretion or eGFR <60 or serum creatinine >150

- Optimise blood pressure control
  - ACEI / AIIA greater effect on ACR and vascular protective effects.
  - All anti-hypertensive agents are useful if BP lowered.
- Address other risk factors
  - Weight management.
  - Smoking cessation.
  - Lipid management.
  - Low dose aspirin.
- Tighten blood glucose control.
- Screening for cardiovascular disease
  - check ECG for silent or unrecognised ischaemia.
- Referral to specialist diabetes care recommended once serum creatinine consistently >150mmol/l.
- Referral to specialist diabetes care recommended if eGFR <30.
- Referral to specialist diabetes care recommended for persistent proteinuria or elevated ACR in the absence of significant cardiovascular disease.

Diabetic Foot Care

Assessment of foot risk factors for all people with diabetes (see grading system overleaf)

- Examine feet as part of annual review to detect risk factors for ulceration.
- Test foot sensation using a 10g monofilament.
- Palpate foot pulses.
- Inspect foot shape and footwear.
- Arrange recall and annual review of complications and their risk factors.

Management of all people with diabetes

- Arrange recall and annual review.
- Ensure tight blood glucose control.
- Agree management plan including foot care education.
- Advise on appropriate footwear.

Management of the at risk foot

- Inspect feet 3-6 monthly.

Management of the high risk foot

- Arrange frequent review (1-3 monthly) from specialised podiatry team.
- Evaluate provision of frequent skin and nail care.
- Review education / footwear / vascular status.

Management of the ulcerated foot

- Urgently arrange foot ulcer care from a specialist team.
- Ensure investigation and treatment of vascular insufficiency.
- Ensure local wound management, appropriate dressings and debridement as indicated.
- Ensure effective means of distributing foot pressures, including specialist footwear / casts.
- Ensure systemic antibiotic therapy for cellulitis or bone infection.

Please see Appendix 12 for Antibiotic Treatment of Foot Complications
Based on Northern Region Podiatry Diabetes SIG documents
Managing neuropathic pain

Diabetic neuropathy can be difficult to manage and may not respond well to straightforward simple analgesia. It may though co-exist with osteo-arthritis and a trial of paracetamol can be helpful with those symptoms. Improving glycaemic control can help with symptom control and should be addressed. If on ‘statins a myositic component should be considered. Other contributory factors should be considered such as B₁₂ deficiency especially in patients on high dose or longterm Metformin. Symptoms may be worse at night so drugs with sedative side-effects may be doubly useful. Depressive symptoms are common and may need to be addressed with psychological support and / or pharmacological management. Patients are likely to need a combination of strategies.

First line
Offer oral duloxetine at 60mg/day
Topical Capsaicin cream is useful for some patients but should not be used in ulcerated limbs

Second line
If duloxetine is ineffective or not tolerated amitriptyline or nortriptyline (unlicensed use) can be used or failing that Gabapentin can be offered. Gabapentin will need gradual dose titration. Pregabalin is unlikely to be effective if no response is found with Gabapentin and is more expensive. Discontinue after two months if no response. Combination therapy of duloxetine or amitriptyline with gabapentin can be used if monotherapy at the maximum tolerated dose does not control symptoms.

Third line
Opiates may need to be used if pain is severe and the Specialist Pain Team may be needed.

Autonomic Neuropathy

Autonomic neuropathy can be difficult to manage and can present with hypotension, GI symptoms, sweating or loss of hypoglycaemic awareness. Management consists of relief of symptoms where possible, eg; use of drugs affecting gastric motility or constipation, and safety measures, particularly in terms of postural symptoms and hypoglycaemia avoidance. The presence of autonomic neuropathy is a risk factor for silent or atypical myocardial ischaemia so cardiovascular disease assessment and disease prevention strategies should be reviewed.

Erectile dysfunction
Men with erectile dysfunction in the context of diabetes should be assessed for other neuro-vascular complications or psycho-social issues. Anti-hypertensive or cardiac medications may well contribute to the problem which should be discussed with patients. Patients with diabetes are entitled to phosphodiesterase type-5 inhibitors (sildenafil, tadalafil, vardenafil) on prescription but may require higher doses to obtain an adequate response. Caution is required in patients on co-existing vaso-dilator medication and contra-indications include co-prescribing with oral nitrates. Patients with eGFR below 30ml/min should be given low starting dosage. If patients do not respond to, or cannot have, phosphodiesterase type-5 inhibitors consider referral to Urology team for assessment and advice after discussion with patient and, preferably, their partner.
9. Referral to Specialist Services

There are no fixed rules for referral to the specialist team. The following suggestions are a guide and individual practitioners may wish to refer for various reasons including patient concerns, drug reactions limiting therapeutic options or variations in the competencies/capacities of practice teams. Referral to the specialist team does not necessarily mean referral for consultant review – referrals may be directed to other members of the multi-professional team as appropriate to shorten the patient journey. Patients may be referred via Choose and Book or direct to the Specialist Teams in UHNT or UHH. NTHFT are piloting a diabetes email helpline for non-urgent advice. (diabetesadvice.nth@nhs.net) Advice on appropriate referral routes is included in Choose and Book criteria. See Appendix 14 for Secondary Care Teams contact details.

Referral to a specialist diabetes team is recommended for these people with Type 2 diabetes:

**Same day referral to Diabetes Team (telephone, fax)**
Any patient with new or pre-existing diabetes who has ketonuria and weight loss.
All women with pre-existing diabetes who become pregnant, as soon as conception is confirmed.
Any woman who develops gestational diabetes or gestational impaired glucose tolerance.
People who develop infected, necrotic or gangrenous foot ulceration.
People who develop a suspected Charcot foot.

**Priority referrals to Diabetes Team (telephone, fax, letter)**
People under 25 years old with no ketonuria but confirmed diabetes.
Women who are contemplating pregnancy.
People who develop severely at risk feet.
People who develop persistent proteinuria or elevated ACR without significant cardiovascular disease.
People who develop renal impairment should generally be referred to Diabetes not directly to Nephrology

- Serum creatinine >150 OR eGFR < 60 and deteriorating OR eGFR < 30 ml/min/1.73m²
- Rapid decline in renal function (eGFR or creatinine)
- Absence of other evidence of microvascular disease e.g. no retinopathy on screening

**Routine referral to Diabetes Team or request for advice (telephone, fax, letter or email diabetesadvice.nth@nhs.net)**
People in whom insulin transfer is being considered or is necessary.
People in whom novel therapies are being considered.
People who develop recurrent hypoglycaemia or poor glycaemic control.
Hypertension requiring multiple therapies.
Dyslipidaemia with poor response to, or intolerance of, ‘statin therapy.
Painful peripheral or troublesome autonomic neuropathy, mononeuropathy or amyotrophy
Morbid obesity with poor control or complications.

See Appendix 9 for referral form for the North Tees DSN service.

**Referral to Other Specialist teams**

**Same day referral to other specialist team (telephone, fax)**
**Ophthalmology**
People who have a sudden loss of vision, pre-retinal or vitreous haemorrhage or retinal detachment.

**Vascular Surgeons**
People who develop acute (not chronic) vascular insufficiency with cold, pale, pulseless extremity.

**Priority referrals to other specialist team (telephone, fax, letter)**

**Nephrology**
Serum creatinine >150 μmol/l or eGFR < 30 ml/min with features of other renal disease eg haematuria without infection.

**Ophthalmology**
People who develop sight threatening retinopathy.

**Cardiology Rapid Access Chest Pain Clinic**
People who develop new onset angina (within previous 4 weeks).
People who develop significant worsening of existing angina (over the previous 12 weeks).

**Routine referral to other specialist team or request for advice (telephone, fax, letter)**

**Urology**
Erectile dysfunction- patients should be referred to for specialist counselling and treatment.
10. Appendices

Appendix 1

Oral 75g Glucose Tolerance Test

Potential scenarios where OGTT can be used:

1) Pregnancy
2) Symptomatic &/or high risk patients with HbA₁c 40 – 48 mmol/mol or IFG
3) Where HbA₁c cannot be used as a diagnostic test (see Annex from WHO report on page 11)

Patients should be advised to continue their normal diet until the evening before the test. Dietary changes made beforehand can influence the result. Concurrent illness or steroid therapy will influence the result.

Patient should have nothing to eat from 10pm the evening before but can have water to drink after 10pm. The patient should not eat during the test but may have water to drink. The patient should not exercise or smoke during the test.

Fasting level
Check capillary glucose and take blood sample for laboratory plasma glucose. If the capillary glucose is above 10mmol/l, the requesting physician should be consulted before proceeding with the test.

Glucose load
75g glucose is given in the form of Lucozade (410 mls of 73kcal/100mls formula). Degassing Lucozade may make it easier for patients to drink quickly.

2 hour level
Blood sample for plasma glucose is taken again 2 hours after the lucozade is given.

1999 WHO Criteria for interpretation of 75g OGTT

Normal glucose tolerance
Fasting glucose ≤ 6.0 mmol/l
OGTT 2 hour glucose < 7.8 mmol/l

Abnormal glucose tolerance
Impaired fasting glucose
Fasting glucose 6.1 – 6.9 mmol/l
or
Impaired glucose tolerance
OGTT 2 hour glucose 7.8 – 11.0 mmol/l

Diabetes
Fasting glucose ≥ 7.0 mmol/l
OGTT 2 hour value ≥ 11.1 mmol/l

Impaired fasting glucose and impaired glucose tolerance are not benign conditions. They are associated with increased risk of large vessel disease and with increased risk of progression towards overt diabetes. These patients should be monitored long term for the development of diabetes and should have appropriate management of cardiovascular risk factors. Lifestyle changes can slow the progression to diabetes.
Appendix 2

DESMOND Education Referral Form

Date:
Dr's Name: Tel No:
Surgery Address:

Patient's Name: DOB:
Patient's Telephone number:
Address:

Date of Diagnosis:
Treatment for Diabetes:

BIO Medical Data:
Blood Pressure: HbA1c:
Cholesterol:
HDL:

Smoking Status: Non □ Passive □ Smoker □

Please do not send incomplete forms (Including HBA1C) as they will be returned.
Send form to: DESMOND Co-ordinator, Floor 1 South Wing, University Hospital of North Tees, Hardwick Road Stockton-on-Tees TS19 8PE
Appendix 3

Guidelines for Referral to the Department of Nutrition and Dietetics North Tees and Hartlepool NHS Trust

Service Provision
North Tees & Hartlepool NHS Trust, North Tees PCT, Hartlepool PCT and Co. Durham PCT (Easington area).

Acute services
UHNT - In-Patient dietetic referral
UHH - In-Patient dietetic referral

Community services
UHNT - Hospital Dietetic Out-Patient clinics.
Community Clinics in G.P Surgeries (North Tees area).
UHH - Hospital Dietetic Out-Patient clinics.
Easington area, Co Durham PCH - PCH and GP Surgery Clinics.
Easington & Hartlepool Weight Management Programme.

Referral Criteria

- **Newly Diagnosed T1 DM**
  Confirmation of diagnosis by appropriate medical practitioner in line with the diagnostic criteria established for the Trust’s guidelines.
  Diagnosis recorded in medical notes whether paper or computer generated.

- **Newly diagnosed T2 DM**
  Most patients* should be provided with basic dietary information on diagnosis (handheld record in North Tees and Hartlepool) and referred to the DESMOND programme where they will receive further dietary education. At the end of the programme they will have the opportunity to self-refer to the dietetic service for individual dietary support.

  If a patient does not agree to be referred to DESMOND or is unable to attend the programme a referral to the Dietitian should be completed.

  * The dietary education provided by DESMOND is not appropriate for all patients. Please see box below:

Where one or more of the following is relevant to your patient please refer to Dietetics for individual dietary assessment and support.

- Chronic Kidney Disease - **particularly where serum potassium and/ or phosphate elevated**
- Low BMI (<18.5 kg / m²)
- Significant unintentional weight loss
- Palliative care

DESMOND may still be useful to these patients and will be offered following individual dietetic assessment where appropriate.
Existing T1 or T2 Diabetes requiring support or education about diet

If one or more of the following is noted during diabetes review, please consider referral to Dietetic department

- Elevated blood lipids
- Changes in diabetes treatment – for example new oral anti-diabetic agent, insulin mimetic or commencing insulin
- Erratic blood glucose (problems with hypoglycaemia /hyperglycaemia/ increase in or high HbA1c)
- Large lifestyle changes influencing diet and diabetes management
  (change in work pattern, giving up smoking, bereavement, change in household e.g. living alone having lived with partner / family, retirement)
- Significant unintentional weight loss, low BMI or poor appetite
- Coeliac Disease

Please state reason for review / annual review on your referral

Please note that specific needs from the above list are not necessary for a dietitian referral – ‘Patient requested referral’ is acceptable

Referral Process for Diabetes Dietitian
Referrals are accepted in either electronic or paper format using a dietetic referral form (see appendix) or by a letter detailing the relevant background information and reason for referral.

Community and Hospital Outpatient Diabetes Dietitian clinics

Outpatients at UHH and UHNT
Referrals are sent to the Dietetic Service based at University Hospitals of North Tees or University Hospital Hartlepool dependant on locality:

Dept. of Clinical Nutrition and Dietetics, University Hospital Hartlepool, Holdforth Rd., Hartlepool TS24 9AH, or Fax to 01429 522377. nth-tr.dieteticsdept-uhh@nhs.net

Dept. of Clinical Nutrition and Dietetics, University Hospital Of North Tees, Hardwick, Stockton. TS19 8PE or Fax: 01642 383172 nth-tr.dieteticsdept-uhnt@nhs.net

GP surgery clinics Dietetic clinics held in G.P. Surgeries in North Tees and Easington have individual arrangements. Please note there are no GP Dietetic clinics in Hartlepool.

Weight Management Referrals (Hartlepool and Easington)
Via Dietetic Referral form (see Appendix) addressed F.A.O. Community Nutritionist, UHH Dietetic Dept.
**Easington area, Co Durham PCT diabetes referrals**
Fax fully completed Dietetic Referral form (see Appendix) to Diabetes Dietitian (Easington) on 01429 522377, or send to Dept. of Clinical Nutrition and Dietetics Dept., UHH, Holdforth Rd, Hartlepool. TS24 9AH

Dietetic clinics in GP surgeries have individual arrangements. Fax referrals to Diabetes Dietitian (Easington) on 01429 522377, or send to Dept. of Clinical Nutrition and Dietetics Dept., UHH, Holdforth Rd, Hartlepool. TS24 9AH.

**UHNT and UHH Acute (In-patient) diabetes Referrals.**
Request for Diet Therapy conveyed to the Dietician/Dietetic Dept. using the Dietetic Referral form (see Appendix) or by telephone, providing patient details, reason for referral, estimated discharge date and name of referrer

If initial contact is made verbally or by telephone the request should be supported by a completed Dietetic Referral Information form (photocopy is acceptable).

**Please provide the following referral Information for outpatients:**
- Patient identifying number, name and contact details
- Diagnosis and reason for referral
- Relevant biochemistry; HbA1c, cholesterol (HDL, LDL and total), triglyceride, Cholesterol/HDL risk ratio.
- Blood Pressure status
- Current medications
- Name and contact details of referrer

**Aims of Diet therapy**
To influence the risk factors which affect co-morbidity
1. to promote euglycaemia
2. to provide the foundation for establishing Healthy Eating habits.
3. to promote weight control based on healthy eating habits.
4. to influence improved lipid profiles
5. to provide education to enable control and minimise risks associated with hypo and hyperglycaemia and thereby facilitate self-management.
6. to promote physical activity/healthy lifestyle changes.
7. to incorporate the dietary/nutritional guidelines recommended by
8. Nice, National Obesity Forum, Diabetes UK etc, to provide appropriate information to support the acquisition of
9. knowledge, behavioural skills and self-responsibility to support self-management.

**First line dietary Information**
First line dietary information is provided in the handheld record (North Tees and Hartlepool), this should be available on diagnosis with diabetes and at review where an update is required. Patients in Easington should be given introductory advice from their Practice Nurse.
**Referral Criteria for the Community Diabetes Dietician for Easington locality**

**Patients for referral to the Community Diabetes Dietician**

All newly diagnosed people with diabetes.

(They will have been given initial dietary advice from Practice Nurses, using the first line dietary advice sheet “Healthy Eating for Type 2 Diabetes”).

**At annual review**

HbA1C < **53** offer referral to the dietician (everyone can be offered an annual review of diet)

HBA1C > **53** suggest referral to the dietician.

Total cholesterol >5.0mmol/l refer to dietician.

BMI 25-30 offer referral to the dietician.

BMI >30 suggest referral to the dietician.

**The following situations require referral to the dietician**

- Changes in treatment
- Hypertension
- Large lifestyle changes
- Poor appetite- needing nutritional support.
- Coeliac Disease
- Renal problems

Referrals must be made by completing a referral form (see appendix).

This can be faxed to fax no. 01429 522377 or posted to the Community Diabetes Dietetic Service, University Hospital of Hartlepool, Holdforth Rd, Hartlepool, TS24 9AH.

Please give full information (blood glucose/Hba1c, total, HDL, LDL cholesterol, triglyceride, BP, weight, urine alb:creat, urea, sodium, potassium, albumin, previous medical history, diagnoses, medication).
Dietetic Referral Form

Patient details

Patient’s preferred name: ........................................... Patient’s contact number: ...........................................
Patient’s email: .................................................................................................................................

☐ Married  ☐ Partner  ☐ Single  ☐ Divorced  ☐ Widowed

Religion: .................................................................................. Ethnicity: .................................................................

Communication issues: ☐ Yes ☐ No If yes, please detail: .................................................................

Relative/carer details

Relative contact name: ........................................... Relationship to patient: ...............................................
Relative contact telephone number: ........................................................................................................

Other agencies / key worker / professionals involved: .................................................................

...............................................................................................................................

Patient’s GP: ........................................... GP contact number: ......................................................
Surgery name and address: ........................................... GP fax number: ......................................................

...............................................................................................................................

Hospital: ........................................... Ward: .................................................................
Consultant: .................................................................

Referral details

☐ Routine  ☐ Urgent  ☐ New  ☐ Review

Reason for referral/diet requested: ........................................................................................................

............................................................................................................................

At referral: Weight: .................... Height: .................... BMI: ....................

Relevant medical history/further relevant information:

...............................................................................................................................

...............................................................................................................................

Diagnosis: ........................................... Date: .................................................................
Relevant blood results Relevant medication

...............................................................................................................................

...............................................................................................................................

Relevant social Information .................................................................

...............................................................................................................................

Person referring:

Signature: ........................................................................ Date: .................... Time: ....................
Print name (BLOCK CAPITALS): ........................................... Designation: .............................................
Contact address: ................................................................. Telephone number: .............................................

For office use only

Date referral received: .................................................................
Date of 1st appointment: .................................................................
Time of 1st appointment: .................................................................

Booking Office Stamp

Please complete all sections and send to: Department of Nutrition and Dietetics

University Hospital of North Tees
Hardwick, Stockton. TS19 8PE
Fax: 01642 383172 nth-tr.dieteticsdept-uhnt@nhs.net

University Hospital of Hartlepool
Holdforth Road, Hartlepool. TS24 9AH
email: nth-tr.dieteticsdept-uhhi@nhs.net Fax: 01429 522377

Type 2 Diabetes Guidelines for the DECENT Network

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Appendix 5

Healthy Eating in Type 2 Diabetes

What is diabetes?

People with diabetes are less able or unable to control the amount of glucose (sugar) in their blood. As a result glucose can no longer be used as energy, leading to high levels in the blood. We get glucose from either sweet or starchy foods that we eat. Diet plays a vital role in controlling your blood glucose levels. People with diabetes need to eat a healthy diet, high in fibre and low in sugar and fat. Eating a healthy diet is recommended for everyone.

How can I help myself?

You should:

• eat regular meals. **Do not miss meals.**
• eat some **starchy carbohydrate** food at every meal
• eat meals high in fibre, for example, beans, peas, lentils, oats, vegetables and fruit
• eat less **sugar** and sugary foods
• reduce your fat intake
• try to get to a healthy weight for you and stay there
• don’t use too much salt and don’t add extra salt to food
• use fewer tinned, packet and processed foods as these often contain quite high levels of salt and hidden sugars
• limit your alcohol intake and never drink on an empty stomach
• **not** buy special diabetic products. These are expensive and offer no special benefits.

What should I eat?

Having diabetes doesn’t mean you have to eat a ‘special’ diet. You should eat a healthy varied diet. The whole family can enjoy the same meals. A healthy balanced diet is made up of foods from each of the following groups:

**Carbohydrates (starchy and sugary foods)**

**Starchy foods:** for example, potatoes, bread, breakfast cereals, pasta, rice, crackers, plain biscuits, crumpets, pikelets, pancakes, pitta bread, bread buns, teacakes, muffins, scones, tapioca, sago, couscous, noodles.

These are changed by digestion in your stomach into sugar and used as energy. Starchy foods are digested more slowly than sugary foods. They should be eaten at every meal. It is best to chose wholemeal and wholegrain types.

**Sugars:** for example, sugar, honey, sweets, chocolate, cakes, biscuits, ordinary fizzy drinks. Sugary foods are quickly absorbed in your stomach and should be limited as they will send your
blood sugar level up more quickly. If you have an occasional small cake or pudding, only have it at the end of a meal, not on an empty stomach. Choose sweeteners and diet or low sugar drinks.

**Fruit and vegetables**

These contain vitamins, which we need to help our bodies grow and work properly. Try and have 5 portions of fruit and/or vegetables a day.

1 portion of fruit and vegetables =  
1 apple  
1 orange  
2 plums  
2 satsumas  
2 tablespoons of boiled carrots  
1 small glass pure fruit juice

**Dairy products**

Milk, yoghurt and cheese are excellent sources of calcium for strong bones and also provide protein. Try and have 2 or 3 portions of dairy products every day.

1 portion of dairy products =  
200ml (\(\frac{1}{3}\) pint) of milk  
1 small 125-150ml tub of low fat, low sugar yoghurt  
30g (1oz) cheese (best to choose the lower fat types)

**Protein**

Protein is needed for your body to grow and repair itself. Try and have some protein foods twice a day. Protein foods include: meat, poultry, fish, eggs or beans. Remember cheese is also a source of protein.

**Other foods**

It is healthier to grill, steam or bake rather than fry foods. Crisps and chips should not be eaten too often as they are fried potatoes and contain a lot of fat and salt. Do not use crisps to replace a meal. Spreads and oils should be used thinly.

**Fibre**

Fibre is important in helping our digestive system to work well and can slow the breakdown of starch to sugar. Try to include some fibre in your diet every day. Fibre is found in plant foods: for example, fruit, vegetables, wholemeal cereals, wholemeal bread, wholemeal pitta, beans, lentils, dahl, oats and jacket potatoes (eaten with the skin).

**Exercise**
Exercise is important to keep you fit and feeling well. It helps control your weight and improves control of your diabetes.

**Sample menu**

Examples of healthy, balanced meals:

**Breakfast**
Fruit, or a small glass of pure, fresh, unsweetened or no added sugar fruit juice, bowl of porridge or cereal (Weetabix, Branflakes, Shreddies, Cornflakes)
1 - 2 slices toast

**Mid-morning snack**
1 - 2 plain biscuits or fruit, if needed

**Light meal**
Lean meat, chicken, fish, oily fish, eggs, cheese or beans
Salad vegetables
2 slices of bread, plain or toasted
Low fat, low sugar yoghurt / fromage frais, milk pudding, fresh / frozen fruit / tinned fruit in juice

**Mid-afternoon snack**
1 - 2 plain biscuits or fruit, if needed

**Cooked meal**
Lean meat, chicken, fish, oily fish, eggs, cheese or beans.
Vegetables, cooked or stir-fried or salad
Boiled or jacket potatoes, rice, spaghetti, wholemeal pasta or noodles
Low fat, low sugar yoghurt / fromage frais, milk pudding, fresh / frozen fruit / tinned fruit in juice

**Bedtime snack**
1 - 2 plain biscuits or crackers, small sandwich, scone, teacake, crumpet or cereal and milk

**Best choices throughout the day**
You should choose:

- skinned or semi skimmed milk, up to 570ml (1 pint) each day
- tea, coffee (with sweeteners - no sugar), water, reduced sugar squash, diet soft drinks
- wholemeal and wholegrain starchy foods
- fats containing olive or rapeseed oils.

**Remember**

As long as you are careful there is no reason to miss out on special occasions. Try to eat at regular times, and try to eat roughly the same amount of starch at each meal and snack.
If you would like any further information please contact your GP or practice nurse.

If you are receiving care from the dietitians you can contact them at either:

**University Hospital of North Tees**

Telephone: 01642 624768 Monday – Friday, 9.00am – 5.00pm  
Non-urgent messages can be left on the answering machine

**University Hospital of Hartlepool**

Telephone: 01429 522529 Monday – Friday, 9.00am – 5.00pm  
Non-urgent messages can be left on the answering machine

**Further Information is available from:**

DESMOND courses  
Ask your Practice Nurse about the local education courses for patients with diabetes

Diabetes UK Telephone: 0207 424 1000  
[www.diabetes.org.uk](http://www.diabetes.org.uk)

NHS Direct 24 hour helpline 0845 4647  
[www.nhsdirect.nhs.uk](http://www.nhsdirect.nhs.uk)

**References**


NICE Guidelines for the Management of Type 2 Diabetes 2008
## Shared care guidelines

### Drug
- **Exenatide (Byetta)** 5 microgram and 10 microgram disposable pens

### Specialty
- Diabetes and Endocrinology

### Indication
- Management of Type 2 Diabetes

### Overview
- Second or third line agent for the management of Type 2 diabetes in patients with raised BMI (>35 in Caucasians) in whom insulin is not the preferred therapy

| Hospital specialist’s responsibilities | GP’s responsibilities | Adverse events | Other information | Contact details |

#### Hospital specialist’s responsibilities

- **Initial investigations**: HbA1C, Lipid profile, waist circumference, BMI
- **Initial regimen**: 5 microgram BD titrating to 10 microgram BD if tolerated
- **Clinical monitoring**: Fortnightly for 6 weeks then 6 weeks later then routine follow-up thereafter
- **Safety monitoring**: Clinical follow up as above with review of side effects, patients advised to report any severe abdominal pain

#### GP’s responsibilities

- **Initial investigations**: HbA1C, Lipid profile, waist circumference, BMI
- **Initial regimen**: 5 microgram BD titrating to 10 microgram BD if tolerated
- **Clinical monitoring**: Fortnightly for 6 weeks then 6 weeks later then routine follow-up thereafter
- **Safety monitoring**: Clinical follow up as above with review of side effects, patients advised to report any severe abdominal pain

#### Initial investigations

- HbA1C, Lipid profile, waist circumference, BMI

#### Initial regimen

- 5 microgram BD titrating to 10 microgram BD if tolerated

#### Clinical monitoring

- Fortnightly for 6 weeks then 6 weeks later then routine follow-up thereafter

#### Safety monitoring

- Clinical follow up as above with review of side effects, patients advised to report any severe abdominal pain
- Biochemical and weight monitoring as per clinic intervals

#### Prescribing arrangements

- Initial 5 microgram pen provided from hospital Pharmacy followed by 10 microgram pen if tolerated with view to discharge when stable

#### Documentation

- Exenatide monitoring proforma used by initiating team (as per D+T submission) plus clinic letter to GP

### Maintenance prescription

- **5 – 10 micrograms BD**
- **Clinical monitoring**: As per usual diabetes care plan
- **Safety monitoring**: Patients to report any abdominal pain as above
- **Duration of treatment**: Discontinued in event of deteriorating HbA1C and/or failure to demonstrate initial target weight loss as advised by initiating team
- **Documentation**: As per usual diabetes care plan

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain /during initiation phase</td>
<td>Timing and dose to be reviewed by initiating team</td>
</tr>
<tr>
<td>Suspected acute pancreatitis</td>
<td>Patient to be referred urgently to hospital for in-patient assessment including serum amylase measurement. Drug to be discontinued and specialist team consulted regarding further management</td>
</tr>
<tr>
<td>Hypoglycaemia in combination with sulphonylurea</td>
<td>Dose of sulphonylurea to be reviewed and reduced if necessary</td>
</tr>
</tbody>
</table>

### Other information

- Contra-indications include Type 1 diabetes, pregnancy or pre-pregnancy planning, any familial pancreatitis or past medical history of pancreatitis or factors pre-disposing to pancreatitis such as alcohol excess / gallstone disease or previous surgery resulting in reduced gastric size of intestinal length

### Contact details

- **Name**: Dr Jean MacLeod and Dr Sue Jones
- **GMC Nos**: 3095616 and 3489598
- **Address**: Department of Medicine, North Tees and Hartlepool NHS Foundation Trust
- **Telephone No**: 01642 624335 or 01429 522261 (secretaries)
### Shared care guidelines

**Liraglutide (Victoza) disposable pens containing 18mg (0.6, 1.2 or 1.8 mg doses)**

### Drug Specialty
- **Diabetes and Endocrinology**

### Indication
- **Management of Type 2 Diabetes**

**Overview**

Second or third line agent for the management of Type 2 diabetes when control of blood glucose remains or becomes inadequate (HbA1c ≥58mmol/mol), and the person has: BMI ≥35 kg/m2 if European descent (with appropriate reduction for other ethnic groups) and specific psychological or medical problems associated with high body weight, or a BMI < 35 kg/m2, and therapy with insulin would have significant occupational implications or weight loss would benefit other significant obesity-related comorbidities.

### Hospital specialist's responsibilities

**Initial investigations:**
- HbA1C, Renal and liver function, BMI, blood pressure

**Initial regimen:**
- 0.6 mg daily titrating to 1.2mg after at least one week

**Clinical monitoring:**
- Frequency: As per usual diabetes care plan (no additional monitoring recommended but may need additional home glucose monitoring depending on concurrent treatment eg sulphonylurea)

**Safety monitoring:**
- Frequency: Clinical follow up as above with review of side effects, patients advised to report any severe gastrointestinal upset, abdominal pain or thyroid swelling

**Prescribing arrangements:**
- 2 pens provided from hospital Pharmacy to cover first full month’s treatment including increment

**Documentation:**
- Change of medication form and clinic letter to GP

**Maintenance prescription:**
- 1.2mg daily (1.8mg dose not currently NICE recommended)

**Clinical monitoring:**
- As per usual diabetes care plan but may need additional home glucose monitoring depending on concurrent treatment eg sulphonylurea

**Safety monitoring:**
- Patients to report any side effects especially abdominal pain, thyroid swelling

**Duration of treatment:**
- Discontinue dual therapy if no beneficial metabolic response has been shown (defined as a reduction of at least 1 percentage point in HbA1c at 6 months). Discontinue triple therapy if no beneficial metabolic response has been shown (defined as a reduction of at least 11mmol/mol in HbA1c and a weight loss of at least 3% of initial body weight at 6 months).

### GP’s responsibilities

**Adverse events**

| Gastrointestinal upset in first month | Timing and dose to be reviewed by initiating team |
| Suspected acute pancreatitis | Patient to be referred urgently to hospital for in-patient assessment including serum amylase measurement; Drug to be discontinued and specialist team consulted regarding further management |
| Hypoglycaemia if used with sulphonylurea | Dose of sulphonylurea to be reviewed and reduced if necessary |
| Development of goitre or thyroid mass | Patient to be referred to Specialist team for re-assessment |

**Contra-indications include**
- Type 1 diabetes; pregnancy; any familial pancreatitis or past medical history of pancreatitis; history of thyroid malignancy; eGFR below 60ml/min; inflammatory bowel disease; gastroparesis; significant hepatic impairment

### Contact details

Name: Drs Jean MacLeod, Nick Roper and So Pye, University Hospital of North Tees - Tel No: 01642 624335 or 624572. Name: Drs Sony Anthony and Sue Jones, University Hospital of...
Appendix 7

Skills for Health List of Diabetes Competencies (all areas)

Review and monitor a patient’s nutritional wellbeing
Identify symptoms of diabetes in a child or young person and refer them for further assessment
Assess a child/young person with symptoms of diabetes and make a diagnosis
Inform a child or young person and their family of a diagnosis of Type 1 diabetes
Inform a child or young person and their family of a diagnosis of Type 2 diabetes or impaired glucose tolerance
Provide therapy to meet the immediate healthcare needs of the child or young person newly diagnosed with Type 1 diabetes, and their family
Support a child or young person with Type 1 diabetes, and their family, in the early stages after diagnosis
Provide information and support to a child or young person recently diagnosed with Type 1 diabetes, and their family, to enable them to establish safe and healthy dietary aims
Support a child or young person with Type 1 diabetes, and their family, in the first year after diagnosis
Enable a child or young person with Type 1 diabetes, and their family, to develop their knowledge and skills about diet and diabetes
Gather and evaluate information to establish the healthcare needs of children and young people with diabetes
Agree individualised care plans with children and young people to manage diabetes
Implement and monitor individualised care plans to meet the needs of children and young people with diabetes
Ensure the safety of a child or young person with diabetes in school
Support a child or young person and their family using insulin therapy to manage their diabetes
Enable a child or young person with diabetes to begin to take oral medication to improve their health
Monitor and support a child or young person with diabetes using oral medication to improve their health
Provide care and support to meet the immediate needs of the child or young person newly diagnosed with Type 2 diabetes, and their family
Provide advice and support to enable a child or young person recently diagnosed with Type 2 diabetes, and their family, to manage their diabetes by diet and physical activity
Provide ongoing advice and support about food and physical activity to a child or young person with Type 2 diabetes, and their family, to enable them to manage challenges to their health
Assess the need for a child or young person with Type 2 diabetes to start insulin therapy
Enable a child or young person with Type 2 diabetes to start insulin therapy
Undertake advanced examination and risk assessment of the feet of an individual with diabetes
Implement specialist foot treatment for an individual with diabetes
Provide wound care to treat an ulcerated foot of an individual with diabetes
Provide advice and information to men with diabetes about erectile dysfunction
Assess a man with diabetes for erectile dysfunction
Provide treatment for erectile dysfunction in a man with diabetes
Provide information and advice to enable an individual with diabetes to minimise the risks of hypoglycaemia
Arrange appointments for individuals with diabetes
Assess the suitability of insulin pump therapy for an individual with Type 1 diabetes
Provide preliminary education about insulin pump therapy for an individual with Type 1 diabetes
Provide dietary education for an individual with Type 1 diabetes who is contemplating insulin pump therapy
Enable an individual with Type 1 diabetes to administer insulin by pump
Provide ongoing support to an individual administering insulin by pump
Provide ongoing dietary education for an individual with Type 1 diabetes administering insulin by pump
Provide advice and information on planning pregnancy to all women with diabetes of childbearing age
Agree care plans to help women with diabetes prepare for a safe and healthy pregnancy
Support and review care plans to help women with diabetes prepare for a safe and healthy pregnancy
Agree continuing care plans for women with diabetes who are pregnant
Agree new care plans for women with diabetes who are pregnant
Support and review care plans for women with diabetes who are pregnant
Agree and support care plans to help women manage their diabetes during labour and immediately following delivery
Agree and implement care plans for women with diabetes after they have given birth
Identify symptoms of gestational diabetes and refer a woman for further assessment
Assess a woman for gestational diabetes and make a diagnosis
Inform a woman of a diagnosis of gestational diabetes
Agree care plans with women who have gestational diabetes
Support and advise women with gestational diabetes after they have given birth
Assess a woman for gestational diabetes and make a diagnosis
Inform a woman of a diagnosis of gestational diabetes
Agree care plans with women who have gestational diabetes
Provide psychological and emotional support to a child/young person with diabetes and their family to enable them to manage their diabetes
Provide psychological and emotional support to help a young person with diabetes develop self management skills
Enable a young person with diabetes develop self management skills
Help a young person manage their diabetes during adolescence
Help a young person prepare to manage the transfer from childrens to adults healthcare services
Help a young person adapt to adults’ healthcare services
Identify symptoms of diabetes and refer individuals for further assessment
Inform individuals of a diagnosis of Type 1 diabetes
Provide therapy to meet the immediate healthcare needs of individuals newly diagnosed with Type 1 diabetes
Support an individual with Type 1 diabetes in the early stages after diagnosis
Help an individual using insulin therapy to manage their diabetes understand the effects of food, drink, physical activity and medication on their health and well-being
Assist individuals with diabetes to help and support each other
Assess and advise individuals with suspected diabetes
Assess and investigate individuals with suspected diabetes
Develop a diagnosis of diabetes
Inform individuals of a diagnosis of Type 2 diabetes or impaired glucose tolerance
Assess the healthcare needs of individuals with diabetes and agree care plans
Work in partnership with individuals to sustain care plans to manage their diabetes
Examine the feet of an individual with diabetes and advise on care
Assess the feet of individuals with diabetes and provide advice on maintaining healthy feet and managing foot problems
Help an individual understand the effects of food, drink and exercise on their diabetes
Help individuals with diabetes to change their behaviour to reduce the risk of complications and improve their quality of life
Develop, agree and review a dietary plan for an individual with diabetes
Enable individuals with diabetes to monitor their blood glucose levels
Help an individual with diabetes to improve blood glucose control
Help individuals with diabetes reduce cardiovascular risk
Enable an individual with Type 2 diabetes to start insulin therapy
Help individuals with Type 2 diabetes to continue insulin therapy
Identify hypoglycaemic emergencies and help others manage them
Assist individuals with diabetes to manage their condition when they have been admitted to a hospital ward for other health needs
Monitor and support a care plan for an individual with diabetes admitted to a general ward
Review and evaluate the progress of a care plan for an individual with diabetes admitted to a general ward and prepare for discharge
Work with individuals and others to minimise the effects of specific health conditions
Appendix 8

CHOOSING THE RIGHT INSULIN REGIMEN
Guide for Practice Nurses

Regimen
There is no one ‘Right’ choice, and one regimen is not necessarily forever. If it is unsuitable it should be changed.

Who Decides?
Your role is to explain the options and present all the pros and cons. The final decision must be made by the person themselves.

To carry out your role, you will need to understand:
- How insulin works
- Why insulin is needed and the principles of normal insulin production
- The types of insulin available and common insulin regimens
- The benefits and disadvantages of various delivery devices

Common Insulin Regimens
Traditionally, people with Type 2 diabetes transferring to insulin therapy would stop taking their oral hypoglycaemic medication. However, there are many advantages to combining insulin with oral agents and this is now much more common. The advantages include:

- Lower risk of weight gain and lower risk of hypoglycaemia
- A simpler treatment regimen
- Better glycaemic control while insulin is being introduced and the dosage adjusted

Here are some examples of combination treatments and when they can be used:
- Once-daily intermediate-acting insulin at bedtime plus sulphonylurea or Metformin can be effective for people who are resistant due to obesity. It is particularly appropriate where the person’s blood glucose is high overnight and in the morning, but comes down once they start their daily activities.

Insulins: Insulatard Humulin I

- Twice daily pre-mixed insulin plus Metformin can be effective for people with significant hyperglycaemia after meals.

Insulins: Human Mixtard 30 timed 20-30 mins Novomix 30 timed with Humulin M3 before meals Humalog Mix 25 meals

- Long acting peakless insulin (taken whenever is convenient, provided it is taken at the same time each day) plus OHAs can be used where the person has high blood glucose during the day and at night, and ‘would otherwise need twice-daily basal insulin injections in combination with oral anti-diabetic drugs’. Long-acting basal insulin can be used with OHAs ‘For those whose lifestyle is significantly restricted by recurrent symptomatic hypoglycaemic episodes’ (NICE). Finally, it is useful for people who are reluctant to consider insulin therapy, as there is only one daily injection involved. This needs to be weighed against the flexibility to deal with increases in blood glucose levels at meal times and to adjust according to activity.

Insulins: Glargine Detemir
Appendix 9

Referral Form for Diabetes Specialist Nursing Service

| Name: .................................................................................. | D.O.B: ........................................... |
| Address: ................................................................................ | NHS Number: ........................................... |
| Tel No: .................................................................................. | GP: .................................................. |

<table>
<thead>
<tr>
<th>Urgent</th>
<th>Non Urgent</th>
<th>(please circle)</th>
</tr>
</thead>
</table>

**Treatment**

- Diet Only
- Diet and Medication
  - Medication: ...........................................................................
  - .................................................................
- Diet and Insulin:
  - Insulin: ..........................................................................
  - .................................................................
- Which Insulin Regime:
  - Once Daily: .......................................................... Units
  - Twice Daily: am................../pm Units
  - Four Times Daily:................/............../............. Units

<table>
<thead>
<tr>
<th>HbA1c..............mmol/mol</th>
<th>BMI ...........................................</th>
</tr>
</thead>
</table>

**Reason for Referral** – PLEASE DO NOT USE THIS FORM IF THE PATIENT REQUIRES BYETTA/VICTOZA. A LETTER OF REFERRAL WOULD NEED TO BE SENT TO DIABETES CONSULTANT LED CLINIC

- ..........................................................................................
- ..........................................................................................
- ..........................................................................................

**Any Other Illness / Medication / Relevant History**

- ..........................................................................................
- ..........................................................................................
- ..........................................................................................

Referred By: .......................................................... Date: ......................

Please fax to Diabetes Specialist Nursing Team, University Hospital of North Tees on 01642 624091

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Information for GPs and the Primary Care Team

Pregnancy in Women with Type 1 and Type 2 Diabetes

Women with diabetes have high risk pregnancies compared to the general maternity population with Type 2 diabetes carrying the same risks as Type 1 diabetes. Pre-conception care and good blood glucose control before and during pregnancy can decrease these risks.

All women with diabetes of child bearing age should receive the following information

- The risks associated with pregnancy in terms of fetal loss, growth and abnormalities
- Good blood glucose control before and during pregnancy offers the best chance of decreasing the risks
  - \( \text{HbA}_{1C} \) should be <48 mmol/mol
  - Home blood glucose tests should be between 3.5 and 5.9 mmol/l fasting and not higher than 7.8 mmol/l post-prandially
- Effective and reliable contraception is important to avoid unplanned pregnancy
  - Combined OCP, IUCD, progesterone injections, implants and patches are safe to use
- Women should contact their diabetes team if they are considering pregnancy

Women who wish to become pregnant

- Check \( \text{HbA}_{1C} \)
- Refer to Preconception Combined Clinic for advice
- Review medication
  - Discontinue ACE inhibitor
  - Substitute Methyl dopa for treatment of hypertension
  - Discontinue statin
  - Continue contraception until the woman has been seen by the Diabetes care team
- Women on oral hypoglycaemics will be switched to insulin by the Diabetes care team
- Monitor blood glucose more frequently as advised by the Diabetes care team
- Prescribe Folic acid 5mg to continue to 12 weeks’ gestation
- Give smoking cessation advice
- Explain the benefits of breast-feeding

Women who are already pregnant

- Steps as above
- Urgent faxed or telephoned referral to Diabetes Specialist Team at local hospital for Combined Medical / Obstetric care

Women who have had their baby

- Commence effective contraception as soon as possible
- Review medication
- Women treated with insulin during pregnancy will continue with it while breast-feeding
- ACE inhibitors and statins should be avoided while breast-feeding but restart when weaned to re-introduce cardio-protection
Appendix 11

Antibiotic treatment of foot complications in people with diabetes

The following suggestions are based on local specialist clinical experience and opinion from national experts. There is limited clinical trial evidence to inform these recommendations but they refer to national guidance where available. They have been developed and will be reviewed with the local microbiology unit.

Any patient with such infections should be assessed by and may need to remain under the care of the multi-professional diabetes specialist team with surgical consultation as required

Diagnosis of infection

- a clinical diagnosis should be made, based on the findings in the foot and the changes in these findings with time and / or therapy.
- markers of inflammation, e.g. CRP, may be useful in conjunction with full blood count findings.
- the use of superficial swabs to diagnose infection and / or guide treatment is discouraged as it is difficult to differentiate between colonising and pathological organisms resulting in such swabs being of no clinical value. Deep tissues swabs can be useful and should be sent after appropriate podiatric or surgical debridement of the wound.

Other considerations

- Patients with known MRSA colonisation should be discussed with microbiology
- Patients with large or small vessel disease, peripheral neuropathy, poor glycaemic control or other factors contributing to poor healing, such as concomitant steroid use or poor nutrition, can deteriorate rapidly
- Patients need review of these factors included in their overall management plan for diabetic foot problems
- XRay evidence of osteomyelitis may take some weeks to develop
- Charcot foot may masquerade as, or co-exist with, infection

Suggested antibiotic regimes

History of allergy and recent antibiotic exposure should be taken into account for individual patients and patients should know how to access emergency advice if the foot worsens despite antibiotic therapy. Low doses may not be effective but renal and liver function should be considered when prescribing. Concommitant drug therapy may need adjustment.

Soft tissue infections (cellulitis):

- **1st line** Flucloxacillin in combination with Metronidazole (in penicillin allergy substitute clarithromycin for Flucloxacillin)
- **If not responding to first line therapy consider other factors as above and need for specialist advice**
- **2nd line** Clindamycin with Ciprofloxacin

Suspected / proven osteomyelitis

Deep tissue swap or biopsy for culture should be obtained wherever possible to guide therapy. Blood cultures can be useful and MRSA screening should be done. If osteo-myelitis is suspected from clinical appearances treatment should commence rather than await specialist review.

Blind treatment

- **1st line** Flucloxacillin in combination with Ciprofloxacin (In penicillin allergy substitute Clindamycin for flucloxacillin)
- Add Metronidazole if there are clinical concerns regarding possible anaerobic infection eg deep collection
- **2nd line** Discuss with Microbiology and modify regime depending on culture results
- Consider MRSA osteomyelitis if patient not improving

Duration of treatment

- 2 weeks for soft tissue infections, modified as per clinical response
- 6 / 12 weeks for osteomyelitis, modified as per clinical response
- Serial inflammatory markers may be useful in aiding this decision

Intravenous therapy

In patients who are systemically unwell intravenous antibiotics should be considered and blood cultures are mandatory. In systemically well patients the intravenous route offers no specific advantages provided a patient is able to swallow and absorb the above regimes. Consultant review is required for consideration of the Out-patient Cellulitis

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Pathway in patients with diabetes. Decisions regarding choice of antibiotics and the route of administration used finally rest with the clinician.

Appendix 12
DVLA requirements and advice for the monitoring of blood glucose in people with diabetes

Summary of DVLA advice
*Adapted from table on pages 29 and 30 of ‘At a glance guide’ December 2011 © Driver and Vehicle Licensing Agency Swansea SA6 7JL

<table>
<thead>
<tr>
<th>Diabetes mellitus</th>
<th>Group 1 entitlement (cars and motorcycles)*</th>
<th>Group 2 entitlement (lorries and buses)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSULIN-TREATED</td>
<td>• Must have awareness of hypoglycaemia.</td>
<td>May apply for any Group 2 licence. Must satisfy the following criteria:</td>
</tr>
<tr>
<td></td>
<td>• Must not have had more than one episode of hypoglycaemia requiring the assistance of another person in the preceding twelve months.</td>
<td>• No episode of hypoglycaemia requiring the assistance of another person has occurred in the preceding 12 months.</td>
</tr>
<tr>
<td></td>
<td>• <strong>There must be appropriate blood glucose monitoring.</strong></td>
<td>• Has full awareness of hypoglycaemia.</td>
</tr>
<tr>
<td></td>
<td>• Must not be regarded as a likely source of danger to the public while driving.</td>
<td>• <strong>Regularly monitors blood glucose at least twice daily and at times relevant to driving using a glucose meter with a memory function</strong> to measure and record blood glucose levels. At the annual examination by an independent Consultant Diabetologist, 3 months of blood glucose readings must be available.</td>
</tr>
<tr>
<td></td>
<td>• The visual standards for acuity and visual field must be met</td>
<td>• Must demonstrate an understanding of the risks of hypoglycaemia.</td>
</tr>
<tr>
<td></td>
<td>Impaired awareness of hypoglycaemia has been defined by the Secretary of State’s Honorary Medical Advisory Panel on Driving and Diabetes as ‘an inability to detect the onset of hypoglycaemia because of a total absence of warning symptoms’.</td>
<td>There are no other debarring complications of diabetes such as a visual field defect.</td>
</tr>
<tr>
<td></td>
<td>If meets the medical standard a 1, 2 or 3 year licence will be issued.</td>
<td>If meets the medical standards a 1 year licence will be issued.</td>
</tr>
<tr>
<td>TEMPORARY INSULIN TREATMENT e.g. gestational</td>
<td>Provided they are under medical supervision and have</td>
<td>As above</td>
</tr>
<tr>
<td>MANAGED BY TABLETS WHICH CARRY A RISK OF INDUCING HYPOGLYCAEMIA. THIS INCLUDES SULFONYLUREAS AND GLINIDES</td>
<td>Must not have had more than one episode of hypoglycaemia requiring the assistance of another person within the preceding 12 months. It may be appropriate to monitor blood glucose regularly and at times relevant to driving to enable the detection of hypoglycaemia. Must be under regular medical review. If the above requirements and all of those set out in the attached information on INF188/2 are met, DVLA does not require notification. This information leaflet 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.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>MANAGED BY TABLETS OTHER THAN THOSE ABOVE OR BY NON-INSULIN INJECTABLE MEDICATION</td>
<td>If all the requirements set out in the attached information on INF188/2 are met, and they are under regular medical review, DVLA does not require notification. This information leaflet 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. 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. Drivers are advised to monitor their blood glucose regularly and at times relevant to driving. They must be under regular medical review.</td>
<td></td>
</tr>
<tr>
<td>MANAGED BY DIET ALONE</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. 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></td>
</tr>
</tbody>
</table>

**Impaired awareness of**

| If confirmed, driving must stop. | See *insulin treated* section |
## Type 2 Diabetes Guidelines for the DECENT Network

### Hypoglycaemia

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving may resume provided reports show awareness of hypoglycaemia has been regained, confirmed by consultant/GP report.</td>
<td>above. Refusal or revocation.</td>
</tr>
</tbody>
</table>

### Licence Groups

**Group 1** includes motorcars and motorcycles.

**Group 2** includes large lorries (category C) and buses (category D). The medical standards for Group 2 drivers are very much higher than those for Group 1 because of the size and weight of the vehicle. This also reflects the higher risk caused by the length of time the driver may spend at the wheel in the course of his/her occupation.

All drivers who obtained entitlement to Group 1, category B (motor car) before 1 January 1997 have additional entitlement to category **C1 and D1**. C1 is a medium size lorry of weight between 3.5 and 7.5 tonne. D1 is a minibus of between 9 and 16 seats, not for hire or reward.

Holders of C1 and D1 entitlement retain the entitlement until their licence expires or it is medically revoked. On subsequent renewal the higher medical standards applicable to Group 2 will apply.

Under certain circumstances volunteer drivers can drive a minibus of up to 16 seats without having to obtain category D1 entitlement. Individuals should consult DVLA for a detailed fact sheet.

### Questions

**What are the DVLA blood glucose monitoring requirements for people with insulin-treated diabetes driving buses or lorries?**

From November 2011, people with insulin-treated diabetes have been able to apply for a group 2 vehicle driving licence to drive lorries and buses (see [MeReC Rapid Review No. 4593](#)). In the interest of road safety, strict medical criteria apply, including a requirement to show adequate control of the condition by regular blood glucose monitoring.

The requirement is that people in this category should **regularly monitor their blood glucose at least twice daily and at times relevant to driving using a glucose meter with a memory function to measure and record blood glucose levels**. At the annual examination by an independent Consultant Diabetologist, three months of blood glucose readings must be available. Three months of readings must also be available before people in this category can submit their application.

In the letter (DIABINF: A guide to insulin treated diabetes and driving, see below) sent by the DVLA to all insulin-treated diabetic drivers (whether they have a group 1 or group 2 vehicle driving licence), drivers with insulin-treated diabetes are **advised** to take the following precautions:

- You must **always** carry your glucose meter and blood glucose strips with you. You must check your blood glucose before driving and every two hours whilst you are driving.
- In each case if your blood glucose is **5.0mmol/l or less**, **take a snack**. If it is less than **4.0mmol/l or you feel hypoglycaemic, do not drive**.
- If hypoglycaemia develops while driving, stop the vehicle as soon as possible.
- You must switch off the engine, remove the keys from the ignition and move from the driver’s seat.
- You must not start driving until 45 minutes after blood glucose has returned to normal. It takes up to 45 minutes for the brain to recover fully.
- Always keep an emergency supply of fast-acting carbohydrate such as glucose tablets or sweets within easy reach in the vehicle.
- You should carry personal identification to show 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.

You must take regular meals, snacks and rest periods on long journeys. Always avoid alcohol.

NICE guidance advises that SMBG should be available to patients with type 2 diabetes who are treated with insulin, and should be available to ensure safety during activities, including driving.

For group 2 drivers with diabetes who are receiving temporary insulin treatment, e.g. for gestational diabetes, post-myocardial infarction, or participants in oral/inhaled insulin trials, the same requirements around blood glucose monitoring, as outlined above for insulin-treated people, apply.

What are the DVLA blood glucose monitoring requirements for people with insulin-treated diabetes driving cars or motorcycles?

There is no requirement for people with insulin-treated diabetes who hold a group 1 vehicle driving licence to drive cars or motorcycles to monitor their blood glucose with a meter with a memory function, as for group 2 drivers. However, there is a requirement that there must be appropriate blood glucose monitoring.

No definition of appropriate monitoring is given by the DVLA, but in the letter (DIABINF: A guide to insulin treated diabetes and driving, see below) sent by the DVLA to all insulin-treated diabetic drivers (whether they have a group 1 or group 2 vehicle driving licence), drivers with insulin-treated diabetes are advised to take several precautions, including the following:

• You must always carry your glucose meter and blood glucose strips with you. You must check your blood glucose before driving and every two hours whilst you are driving.
• In each case if your blood glucose is 5.0mmol/l or less, take a snack. If it is less than 4.0mmol/l or you feel hypoglycaemic, do not drive.

In the draft minutes from Secretary of State for Transport’s Honorary Medical Advisory Panel Meeting from October 2011, the following additional information was given:

• The Panel clarified the advice given to a driver with insulin-treated diabetes regarding the frequency of blood glucose monitoring in relation to driving. If driving multiple short journeys, such as a delivery driver, it would be appropriate to measure blood glucose before the first journey and then every two hours. It is not necessary to test before each individual journey.

NICE guidance advises that SMBG should be available to patients with type 2 diabetes who are treated with insulin, and should be available to ensure safety during activities, including driving.

Group 1 drivers with diabetes who are receiving temporary insulin treatment, e.g. for gestational diabetes, post-myocardial infarction or participants in oral/inhaled insulin trials, need not notify the DVLA provided they are under medical supervision and have not been advised by their doctor that they are at risk of disabling hypoglycaemia. However, if these people are experiencing disabling hypoglycaemia, the DVLA should be notified. The DVLA should also be notified if treatment continues for more than three months or for more than three months after delivery for gestational diabetes. In correspondence, the DVLA have stated that there is also a requirement for group 1 drivers with diabetes who are receiving temporary insulin treatment to carry out appropriate blood glucose monitoring.

What are the DVLA blood glucose monitoring requirements for people with non-insulin treated diabetes driving buses or lorries?

For group 2 drivers with diabetes who are managed by tablets which carry a risk of inducing hypoglycaemia i.e. sulfonylureas and glinides, there is a requirement that they regularly monitor their blood glucose at least twice daily and at times relevant to driving. The DVLA state that evidence will be required to demonstrate adequate control of the condition by regular blood glucose monitoring (at least twice daily and at times relevant to driving). There is no requirement to use a glucose meter with a memory function to measure and record blood glucose levels, as there is for insulin-treated group 2 drivers, although the DVLA have stated in correspondence that this would be advised. The evidence of adequate control would normally take the form of a report from the driver’s doctor.
For group 2 drivers with diabetes who are managed by other tablets (e.g. metformin or gliptins) or by non-insulin injectables (exenatide or liraglutide), there is no requirement to monitor blood glucose. However, there is advice from the DVLA to monitor blood glucose regularly and at times relevant to driving.

**NICE guidance** advises that SMBG should be available to those on oral glucose-lowering medications to provide information on hypoglycaemia, and should be available to ensure safety during activities, including driving. The NHS diabetes document, *SMBG in non-insulin treated diabetes*, recommends that SMBG with appropriate structured education should be available to people receiving sulfonylurea treatment to identify hypoglycaemic episodes. They also state that SMBG can provide clinically useful information on driving for people treated with sulfonylureas.

**What are the DVLA blood glucose monitoring requirements for people with non-insulin treated diabetes driving cars or motorcycles?**

For group 1 drivers with diabetes who are managed by tablets which carry a risk of inducing hypoglycaemia i.e. sulfonylureas and glinides, the DVLA have stated in correspondence that there is a **requirement for appropriate blood glucose monitoring**. For example, if the driver is advised by their doctor to monitor blood glucose, this would be a requirement. The DVLA state in the ‘At a glance guide’, that it **may be appropriate to monitor blood glucose regularly and at times relevant to driving** to enable the detection of hypoglycaemia.

In the draft minutes from Secretary of State for Transport’s Honorary Medical Advisory Panel Meeting from October 2011, the following additional information was given:

- The Panel considered a letter from a NHS prescribing advisor regarding Group 1 drivers on sulfonylureas and glinides and the requirement for blood glucose monitoring. The Panel noted that hypoglycaemia is most commonly observed soon after commencing treatment with sulfonylureas when, although at low dosage, the sensitivity to these drugs is high. In addition, the annual prevalence of severe hypoglycaemia in patients taking sulfonylureas who had good glycaemic control was 53mmol/mol (7%) in the report from the UK Hypoglycaemia Study Group. The Panel advised that the frequency of blood glucose testing should depend on the clinical context.

For group 1 drivers with diabetes who are managed by other tablets (e.g. metformin or gliptins) or by non-insulin injectables (exenatide or liraglutide), there is no **requirement or advice** to monitor blood glucose from the DVLA, although the DVLA have stated in correspondence that drivers should take advice from their doctor in this regard.

**NICE guidance** advises that SMBG should be available to those on oral glucose-lowering medications to provide information on hypoglycaemia, and should be available to ensure safety during activities, including driving. The NHS diabetes document, *SMBG in non-insulin treated diabetes*, recommends that SMBG with appropriate structured education should be available to people receiving sulfonylurea treatment to identify hypoglycaemic episodes. They also state that SMBG can provide clinically useful information on driving for people treated with sulfonylureas.

**What are the DVLA requirements around episodes of hypoglycaemia?**

For group 2 drivers with diabetes who are managed by insulin or tablets which carry a risk of inducing hypoglycaemia i.e. sulfonylureas and glinides, **no episode** of hypoglycaemia requiring the assistance of another person must have occurred in the preceding 12 months.

For group 1 drivers with diabetes who are managed by insulin or tablets which carry a risk of inducing hypoglycaemia i.e. sulfonylureas and glinides, **not more than one episode** of hypoglycaemia requiring the assistance of another person must have occurred within the preceding 12 months.

In the draft minutes from Secretary of State for Transport’s Honorary Medical Advisory Panel Meetings from October 2011, the following additional information was given:

- The Panel accepted that the new annex does not distinguish between episodes of severe hypoglycaemia occurring either when awake or asleep and noted the media interest in this issue.
- The Panel emphasised that severe hypoglycaemia is defined in the EU Annex as: “the assistance of another person is needed”. This means that if help was proffered (for example by a relative or associate) but had not actually been essential to treat an episode of hypoglycaemia, it would not be classified as “severe”.

*Type 2 Diabetes Guidelines for the DECENT Network*
What do the DVLA say about police, ambulance and health service vehicle drivers?**

Responsibility for determining the standards, including medical requirements, to be applied to police, ambulance and health service vehicle drivers, over and above the driver licensing requirements, rests with the individual Police Force, with the NHS Trust, Primary Care Trust or Health Service body in each area. 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.

What do the DVLA say about taxi drivers?**

The House of Commons Transport Select Committee on Taxis and Private Hire Vehicles recommended in February 1995 that taxi licence applicants should pass a medical examination before such a licence could be granted.

Responsibility for determining the standards, including medical requirements, to be applied to taxi drivers, over and above the driver licensing requirements, rests with the Transport for London in the Metropolitan area and the Local Authority in all others areas. Current best practice advice is contained in the booklet *Fitness to Drive*: A Guide for Health Professionals published on behalf of the Department by The Royal Society of Medicine Press Limited in 2006. This recommended that the Group 2 medical standards applied by DVLA in relation to bus and lorry drivers, should also be applied by local authorities to taxi drivers.

**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 the knowledge of their specific circumstances.
A Guide to Insulin Treated Diabetes and Driving

Drivers who have any form of diabetes treated with any insulin preparation must inform DVLA
(Caveat: See Temporary Insulin Treatment)

HYPOGLYCAEMIA
Hypoglycaemia (also known as a hype) is the medical term for a low blood glucose (sugar) level.
Severe hypoglycaemia means the assistance of another person is required.
The risk of hypoglycaemia is the main danger to safe driving and this risk increases the longer you are on insulin treatment. This may endanger your own life as well as that of other road users. Many of the accidents caused by hypoglycaemia are because drivers carry on driving even though they get warning symptoms of hypoglycaemia. If you get warning symptoms of hypoglycaemia whilst driving, you must always stop as soon as safely possible – do not ignore the warning symptoms.

EARLY SYMPTOMS OF HYPOGLYCAEMIA INCLUDE:
Sweating, shakiness or trembling, feeling hungry, fast pulse or palpitations, anxiety, tingling lips.
If you don’t treat this it may result in more severe symptoms such as:
Slurred speech, difficulty concentrating, confusion, disorderly or irrational behaviour, which may be mistaken for drunkeness.
If left untreated this may lead to unconsciousness.

DRIVERS WITH INSULIN TREATED DIABETES ARE ADVISED TO TAKE THE FOLLOWING PRECAUTIONS.
- You must always carry your glucose meter and blood glucose strips with you. You must check your blood glucose before driving and every two hours whilst you are driving.
- In each case if your blood glucose is 5.0mmol/l or less, take a snack. If it is less than 4.0mmol/l or you feel hypoglycaemic, do not drive.
- If hypoglycaemia develops while driving, stop the vehicle as soon as possible.
- You must switch off the engine, remove the keys from the ignition and move from the driver’s seat.
- You must not start driving until 45 minutes after blood glucose has returned to normal. It takes up to 45 minutes for the brain to recover fully.
- Always keep an emergency supply of fast-acting carbohydrate such as glucose tablets or sweets within easy reach in the vehicle.
- You should carry personal identification to show 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.
- You must take regular meals, snacks and rest periods on long journeys. Always avoid alcohol.

EYESIGHT
All drivers are required by law to read, in good daylight (with glasses or corrective lenses if necessary), a car number plate from a distance of 20 metres.

LIMB PROBLEMS
Limb problems/amputations are unlikely to prevent driving. They may be overcome by driving certain types of vehicles e.g. automatics or one with hand controls.

YOU MUST INFORM DVLA IF:
- You suffer more than one episode of severe hypoglycaemia (needing the assistance of another person) within the last 12 months. You must also tell us if you or your medical team feels you are at high risk of developing hypoglycaemia.
- You develop impaired awareness of hypoglycaemia. (difficulty in recognising the warning symptoms of low blood sugar)
- You suffer severe hypoglycaemia while driving.
- An existing medical condition gets worse or you develop any other condition that may affect you driving safely.

CONTACT US
Web site: http://www.dvla.gov.uk/motoring
Tel: 0300 790 6806 (8.00am to 5.30pm. Mon – Fri) & (8.00 am to 1pm. Saturday)
Write: Drivers’ Medical Group, DVLA, Swansea SA99 1TU
E-mail: efitc@dvla.gsi.gov.uk
For further informations on diabetes visit www.diabetes.org.uk

Rev: Dec 11
Information for drivers with
Diabetes treated by non-insulin medication, 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.

Hypoglycaemia (low blood sugar)
Hypoglycaemia (also known as a hypo) is the medical term for a low blood glucose (sugar) level.

Severe hypoglycaemia means the assistance of another person is required
The risk of hypoglycaemia is the main danger 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 carry on driving even though they get warning symptoms of hypoglycaemia. If you get warning symptoms of hypoglycaemia while driving you must stop as soon as safely possible – do not ignore the warning symptoms.

EARLY SYMPTOMS OF HYPOGLYCAEMIA INCLUDE:
Sweating, shakiness or trembling, feeling hungry, fast pulse or palpitations, anxiety, tingling lips.

If you don’t treat this it may result in more severe symptoms such as:
Slurred speech, difficulty concentrating, confusion, disorderly or irrational behaviour, which may be mistaken for drunkeness.
If left untreated this may lead to unconsciousness.

What you need to tell us about
By law, you must tell us if any of the following applies:

- You suffer more than one episode of severe hypoglycaemia within the last 12 months. You must also tell us if you or your medical team feel you are at high risk of developing severe hypoglycaemia. For Group 2 drivers (bus/lorry), one episode of severe hypoglycaemia must be reported immediately.
- You develop impaired awareness of hypoglycaemia. (Difficulty in recognising the warning symptoms of low blood sugar).
- You suffer severe hypoglycaemia while driving.
- You need treatment with insulin.
- You need laser treatment or Anti-VEGF 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 daylight at 20 metres (65 feet).
- 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 shown on your driving licence.
- an existing medical condition gets worse or you develop any other condition that may affect your driving safely.

In the interests of road safety, you must be sure that you can safely control a 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 Medical Questionnaire about diabetes (DIAB1). You can download this from www.direct.gov.uk/driverhealth

Phone us on: 0300 790 6806
Write to: Driver’s Medical Group, DVLA Swansea SA99 1TU
E-mail: etld@dvla.gsi.gov.uk

Useful addresses
Diabetes UK Cymru, Argyle House, Castlebridge, Cowbridge, Road East, Cardiff CF11 9AB
Diabetes UK Scotland, Savoy House, 140 Sauchichall Street, Glasgow G2 3DH
Diabetic UK Central Office, Maecled House, 10 Parkway, London NW1 7AA
Diabetes UK website http://www.diabetes.org.uk

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Appendix 13

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APPENDIX 14

<table>
<thead>
<tr>
<th>CONTRIBUTORS TO DEVELOPMENT OF DECENT NETWORK TYPE 2 DIABETES GUIDELINES</th>
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<tbody>
<tr>
<td>Dr Jean MacLeod</td>
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<tr>
<td>Dr Sue Jones</td>
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<td>Dr Sony Anthony</td>
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<td>Dr Paul Peter</td>
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<td>Dr Simon Acey</td>
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<td>Hazel Bell</td>
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<td>Gail Dryden</td>
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<td>Carol Hardy</td>
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<tr>
<td>Chris Robinson</td>
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Secondary Care Contact Details

Consultant Team for North Tees and Hartlepool NHS Foundation Trust

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</tbody>
</table>
Type 1 diabetes mellitus

Glycaemic control may be more variable with increased risk of hypoglycaemia and frequent blood glucose testing may be required.

Test four times a day. May require additional testing during:
- Illness
- Lifestyle changes
- Pre-conception & pregnancy
- Impaired awareness of or increased frequency of hypoglycaemic episodes
- Exercise
- Driving
- Intensive regimes
- Insulin pump therapy

Teach patients on insulin how to adjust therapy in line with results of home blood glucose monitoring.

Results should be recorded with time and date to provide a cumulative record for day-to-day changes to therapy.

Type 2 diabetes mellitus

Glycaemic control usually less erratic / variable than for patients with type 1 diabetes mellitus.

Blood glucose testing will vary according to treatment regimen and target level of glycaemic control.

Test at night if unrecognised hypoglycaemic episodes are suspected.

Diet and exercise

Metformin, glitazones, incretins mimetics (Monotherapy or in combination)

Sulphonylureas, insulin secretagogues, incretin mimetics in combination with sulphonylureas

Basal insulin plus oral medication

Twice daily pre-mixed insulin

HbA1c is the outcome measure.
No routine blood glucose monitoring required.
Only test blood glucose during:
- Illness
- Therapy changes
- If corticosteroids are co-prescribed (test at midday, before evening meal and two hours after evening meal)

Pre-conception care and Pregnancy Advice women who need intensification of hypoglycaemic therapy to increase the frequency of self-monitoring to include fasting and a mixture of pre and post prandial levels.

Fasting glucose should be tested once a day before breakfast to titrate basal insulin plus once per day at different times to identify periods of hypo and hyperglycaemia.

Fasting glucose within target range, blood glucose monitoring could be reduced to two to three days per week, times as for sulphonylureas.

DVLA Advice for People using insulin:
- 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.

DVLA Advice for People using insulin:
- 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.
Guidance Notes

1. **NICE Guidance states:**
Self-monitoring of plasma glucose should be offered to people with Type 2 diabetes only as an integral part of self-management education. **Purpose, interpretation and action required should be agreed in advance.**

It should be recognised that frequent blood testing by all patients may be wasteful and not based on evidence & can impair quality of life.

Unnecessarily frequent blood testing can lead to anxiety and is a waste of limited NHS resources; whilst inappropriately infrequent testing may lead to a worsening of control. Long term management is best monitored by HbA1c results.

2. **HbA1c**
This measurement may be a more meaningful determinant of long term glucose control. Patients should be involved in decisions about their HbA1c target level, which should usually be 48-58mmol/mol highly intensive management to levels of less than 48mmol/mol should be avoided. Modifying other cardiovascular risk factors (such as smoking status, blood pressure, lipids) is just as important, if not more important, than blood glucose control. 3, 4

3. **Guidance** quantities of **Testing Strips, Needles and Lancets** to be prescribed:

<table>
<thead>
<tr>
<th>Patients with Type 1 diabetes</th>
<th>Testing Strips packs of 50</th>
<th>Lancets (packs of 100)</th>
<th>Needles (packs of 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-3 packs every month</td>
<td>1 pack every month</td>
<td>1-2 packs every month</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Patients with Type 2 diabetes using insulin</th>
<th>Testing Strips packs of 50</th>
<th>Lancets (packs of 100)</th>
<th>Needles (packs of 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 packs every month</td>
<td>1 pack every two months</td>
<td>1 every 2 months</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Patients with Type 2 diabetes using tablets (If they require to monitor blood glucose)</th>
<th>Testing Strips packs of 50</th>
<th>Lancets (packs of 100)</th>
<th>Needles (packs of 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pack every four to six months</td>
<td>1 pack every eight to twelve months</td>
<td>0</td>
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</table>

- These are average quantities as a guide; clinical judgement should be used in assessing individual requirements.
- Special situations like pregnancy, hypoglycaemic awareness or pump therapy will require more frequent testing.
- Expiry dates, should also be taken into account.
- It may be appropriate to review the need for testing strips at each diabetic review.
- **Consider prescribing as an acute therapy at clinic review rather than a repeat prescription.**
- Finger prick devices and lancets are generally meter specific.

4. **Blood Glucose Meters** Patient should be encouraged to help reduce waste by using up test strips before ordering more or changing meters. Stockton and Hartlepool have a recommended list of meters for use in the localities.

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4. WeMeReC. Type 2 diabetes; important aspects of care. WeMeReC Bulletin Oct 2005: 1-6

Reproduced with thanks to Wrexham LHB and Darlington and Durham PCT Adopted by South of Tees PCTs April 09/reviewed August 2011 --review date August 2013
Being forthright about insulin safety

4 Rights
don’t make a wrong

- Right insulin
- Right dose
- Right time
- Right device

Can you read this fax for me? Is that insulin dose 20 units or 70?

So I give 25 of the Humalog Mix? What’s that other number for?

They gave me the wrong pen so I just used a pencil to push the plunger and stuck the needle on the cartridge.....

I keep going low- can’t understand it. But it’s since I got my new insulin. It’s cloudy, not like my old one.

- I take it at dinner time.
- So about 7 then?
- No pet. We always have our dinner at 12 o’clock.

Once a day always means morning.....

Write it right

Generic name or type, then trade name for double check.
Is it clear or cloudy for another check.
Written number and figures for units so no confusion.
Time the dose is taken, ie. breakfast, lunch, evening meal and bed time.
Delivery device.

Aspart, (Novorapid), clear, ten 10 units with lunch, via Flexpen
30/70 mix, Humulin M3, cloudy, fourteen 14 units with breakfast and evening meal, Luxura pen

Regional Insulin Safety and Knowledge Project

On the phone?
Spell it out this way and make it clear.