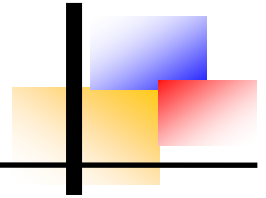
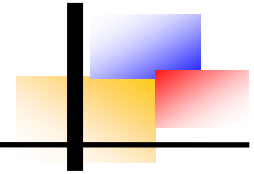


Northwest Coast Adult Diabetes Guidelines 2017-22 v2



Title	Adult Diabetes Management Guidelines 2017-22
Author	Professor Kevin Hardy
Purpose	Diabetes management guidance, primarily for non-specialists
Reference	Northwest Coast Adult Diabetes Guidelines2017-22v2.doc
Publication date	July 2017, updated May 2018
Approval date	June 2017
Revision date	May 2019
Full Review date	May 2022
Contact	Email kevin.hardy@sthk.nhs.uk or call 0151 430 1291
Format	Electronic
Evidence-base	See Introduction and Topics & full NICE guidance.
Refereed by:	Northwest Coast SCN & Pan-Mersey Medicines Management Group, GPs, Diabetologists, Patients & Carers
Approval by:	Northwest Coast SCN, Pan-Mersey Medicines Management, St Helens & Knowsley Teaching Hospitals CEC
Target:	All staff & students involved in the clinical management of people with diabetes in Northwest Coast
For information:	Diabetes UK Northwest
Training needs:	All of those using the document are offered specific (specialist) training relating to use of the document – please contact Prof Hardy’s secretary on 01744 646249
Superseded	Pan Mersey Adult Diabetes Guidelines, Mersey Adult Diabetes Guidelines, STHK Adult Diabetes Guidelines (all versions).

Introduction



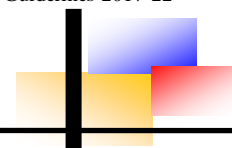
The aim of these recommendations is to provide brief guidance for non-experts on common topics encountered by those caring for people with diabetes.

A tension exists between ease of reference and discussion of the evidence base for a recommendation. Professionals delivering care to people with diabetes should read these recommendations in conjunction with current NICE guidance.

Important Notes

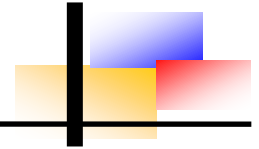
- At publication this guide is consistent with NICE 2015 diabetes guidance.
- Pragmatically, some management of Type 1 & Type 2 has been harmonised, but where appropriate T1DM and T2DM are considered separately in light of 2015 NICE Diabetes Guidelines for [T1DM](#) and [T2DM](#).
- These recommendations are for guidance only. Clinicians should always use their knowledge, experience and expertise to best manage patients' individual needs and preferences.
- Drugs should be prescribed and monitored as per data sheet recommendations, or current best practice unless experience and the patient's best interests dictate otherwise. Insulin must always be administered using an insulin specific syringe or device. Insulin should be prescribed as 'units' never abbreviate to 'u' or 'iu'.
- The 2015 NICE diabetes guidance is more aggressive and more complex than earlier guidance. If you are not confident that you have the relevant knowledge, skills, experience and resources to manage diabetes to this new guidance - Refer the patient to an individual/team with the relevant knowledge, skills, experience and resource. Professional education and training opportunities are available locally and elsewhere.
- You must be familiar with the drugs contained within this guideline to use them. NICE 2015 guidance underscores the importance of assessing (and discussing with patients) the metabolic effectiveness, safety, individual patient suitability, licensing requirements & cost effectiveness of different treatment options. Doctors should also be conscious of GMC prescribing guidance when prescribing treatments for people with diabetes.
- These guidelines cover a wide geographical area, there will inevitably be some local variations in practice and it is beyond the scope of the document to describe them all. Each topic is covered in 1 side of A4.

Contents & List of Topics



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Topic 1: Diagnosis of Diabetes



Type 1 Diabetes

Is diagnosed clinically. Patients typically have one or more: ketosis, rapid weight loss, onset age < 50 yr, BMI < 25, personal or family history of autoimmune disease. Do not discount just because age > 50 or BMI > 25. Do not routinely measure c-peptide or autoantibodies. Refer to a specialist urgently (same day).

Type 2 Diabetes

(mM = mmol/litre)

NORMAL = Fasting plasma glucose (laboratory sample) (FPG) < 6.0 mM or

NORMAL = Random plasma glucose (laboratory sample) (RPG) < 7.8 mM or

NORMAL = 120 minute OGTT glucose (laboratory sample) < 7.8 mM

DIABETES – glycaemic criteria

DIABETES = HbA1c \geq 48mmol/mol with OSMOTIC SYMPTOMS or

DIABETES = RPG \geq 11.1 mM with OSMOTIC SYMPTOMS or

DIABETES = FPG \geq 7.0 mM with OSMOTIC SYMPTOMS or

DIABETES = HbA1c \geq 48mmol/mol x 2 without OSMOTIC SYMPTOMS or

DIABETES = RPG \geq 11.1 mM and FPG \geq 7.0 without OSMOTIC SYMPTOMS or

DIABETES = RPG \geq 11.1 mM (twice) without OSMOTIC SYMPTOMS or

DIABETES = FPG \geq 7.0 mM (twice) without OSMOTIC SYMPTOMS

What is left?

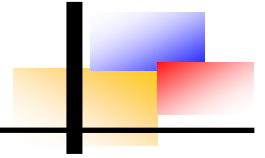
IMPAIRED GLUCOSE REGULATION (IGR or “Pre-Diabetes”)

= FPG 6.0–6.9 mM (incl.) or 2 hr OGTT BG of 7.8–11.0 mM (+FPG < 7.0) or HbA1c 42–47mmol/mol.

Notes / Further Action

- Blood glucose strips / meters are **not** adequate for the diagnosis of diabetes.
- HbA1c may be unreliable in certain circumstances e.g. haemolysis.
- If you do two HbA1c tests to establish a diagnosis of diabetes (i.e. no osmotic symptoms), do them 2 weeks apart and if one is \geq 48 and the other is <48, then they do **NOT** have diabetes.
- OSMOTIC SYMPTOMS (typically include: thirst, polyuria, polydipsia & Wt. loss)
- Diagnosis of GESTATIONAL diabetes is different – see Topic 11.

Topic 2: Impaired Glucose Regulation (IGR) (Pre-Diabetes)



Definition

See Topic 1 for more details.

Impaired fasting glucose (IFG) = FPG 6.0 – 6.9 mM (inclusive) and Impaired glucose tolerance (IGT) = RPG 7.8 – 11.0 mM (inclusive) (with FPG < 7.0 mM.) or HbA1c 42-47mmol/mol are known as **IMPAIRED GLUCOSE REGULATION** (IGR) or **“Pre Diabetes”**.

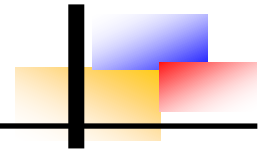
Aims of Management

1. To prevent diabetes & (preferably) restore normal glucose tolerance.
2. To reduce the increased cardiovascular risk associated with IGR.
3. To detect diabetes (should it occur) early.

Management of IGR (IFG & IGT)

- Local Diabetes Prevention Programmes are being rolled out nationally – consider referral to your local programme.
- Regular exercise prevents or delays diabetes onset in high risk patients. Aim for 20-30 or more minutes of daily exercise sufficient to cause breathlessness & sweating (Ideally 150 min per week - can be taken in 10 min blocks).
- Modest weight loss prevents or delays the onset (by 3.6 yr) of diabetes in high risk patients. Aim for sustained 5-10% weight loss. See [NICE Obesity Guideline](#) for discussion of weight management.
- Metformin prevents or delays the onset of diabetes in high risk patients, but it is not as effective as lifestyle measures and has been deemed not cost-effective.
- Cardiovascular risk factor modification is important. Consider: smoking cessation, measures to achieve BP < 140/80 & Atorvastatin therapy if known vascular disease or if 10-yr CVD risk > 10% (using [QRISK2](#) calculator).
- There is weak evidence for screening for diabetes every 1-2 years. Nevertheless, like the American Diabetes Association, DUK & others, we recommend it in high risk patients- those with: BMI > 30 (or waist circumference > target), strong family history of diabetes, high risk ethnic groups, those who have delivered a baby of > 9 lb, hypertensive patients, PCOS patients, those with vascular disease, and if signs of insulin resistance (e.g. acanthosis nigricans) are present.
- The National Screening Committee (NSC) recommends targeted [screening for diabetes in the UK](#).

Topic 3: Monitoring Blood Glucose Control



Note: check for local guidelines on choice of meter/test strips/lancets.

Self-Monitored Blood Glucose (SMBG)

- 2015 NICE guidance recommends frequent ($\geq 4x$ daily & up to 10x daily) SMBG in Type 1 to monitor for extreme hyper- or hypoglycaemia and to aid management in driving, sport, illness, or pregnancy.
- Continuous blood glucose monitoring (CGM) has been endorsed by both American and European Diabetes Associations – see local policies for use.
- Routine SMBG in Type 2 diabetes is **NOT** recommended unless the patient is on insulin, or experiences symptomatic hypoglycaemia, or is on oral medication that may increase risk of hypo during driving or while operating machinery or in pregnancy.
- Aim pre-breakfast 5-7, pre-lunch 4-7, pre-tea 4-7 and 6-10 pre-bed; post-prandial (if checked) 5-9 mM.

Self-Monitored Blood Ketones

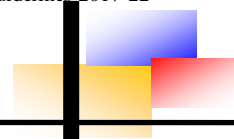
- Type 1 (and some Type 2) patients should be supplied with and instructed in use of blood ketone testing strips.
- We recommend that any Type 1 patient and relevant Type 2 patients with a SMBG reading ≥ 16 mM, check for ketones and know what to do if ketones present. GPs should seek specialist advice if unsure what to do.

Glycated Haemoglobin (HbA1c)

- At present HbA1c remains the gold standard for monitoring blood glucose control, reflecting the previous 2-3 months. Perform 3-6 monthly. HbA1c underestimates glycaemia in reduced red cell survival (e.g. pregnancy or haemolysis) – consider other assessments in this context.
- We strongly recommend **individualised** HbA1c targets agreed with patients as suggested by NICE. NICE describes ‘targets’ and levels at which treatment is changed. We use the term ‘target’ to indicate the threshold above which treatment should typically be intensified, typically:

T1 Diabetes HbA1c < 48 mmol/mol
 (we think this target is too tight for most people with T1DM & use <58)
T2 Diabetes (single OHA & no hypo risk) HbA1c < 48 mmol/mol
T2 Diabetes (max dose single OHA or more) HbA1c < 58 mmol/mol
T2 Diabetes (special considerations) Higher individualised target
 (N.B. we underscore the need to relax targets in frail or elderly)

Topic 4: Annual Review in people with Diabetes



What to do

- General Diabetes review & formal assessment of need for re-education is a national (DH) requirement from 2006.
- Surveillance for complications:
 - Accredited digital retinopathy screening
 - Accredited foot screening
 - Blood pressure assessment (see Topic 6 for targets)
 - Cardiovascular risk assessment (see Topics 6-8)
- Blood & urine tests:
 - HbA1c (see Topic 3)
 - Serum creatinine & eGFR
 - Non-fasting lipids (see Topic 7)
 - Urine for Albumin:creatinine ratio (ACR) (Topic 12)
 - Tests related to therapy (e.g. LFTs)
 - Annual TSH measurement in T1DM

Actions

As well as general diabetes and lifestyle review, 'flu vaccination and appropriate re-education, consider:

Weight Management we discuss weight management with all overweight patients and consider pharmacological support in anyone with BMI > 28. See [NICE Obesity guidance](#) for detailed discussion of weight reducing measures and consider local Weight Management Programmes.

HbA1c: review with patient lifestyle changes and medications (including insulin). Refer to hospital specialist team if recurrent, problematic or severe hypoglycaemia, or for insulin initiation if expertise and resources for starting insulin and on-going support (including robust governance arrangements) are not assured in primary care, or if sub-optimal control despite primary care interventions, or if patient prefers.

Awareness & Management of Hypoglycaemia should be assessed at each annual review in T1DM (use Gold or Clarke score for measurement of awareness).

eGFR: if reduced, review medications – are they implicated or cautioned or contraindicated? Consider referral to Specialist Diabetes (Nephropathy) Clinic if eGFR < 45 (CKD 3B) or deteriorating at > 2 ml/min/year in presence of raised ACR.

Urine ACR: consider referral for specialist assessment if ACR raised. Refer all patients with ACR ≥ 30 (overt nephropathy), where discharge will be dictated by complexity of treatment & co-morbidities & risk of CKD progression.

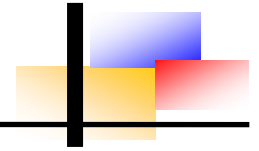
Non-fasting lipids: see Topic 6.

Hypertension: see Topic 7.

Microalbuminuria or Nephropathy: see Topic 12

Retinopathy or visual problems: consider referral to ophthalmologist if recommended by accredited optometrist- (Liverpool & Mersey Retinal Screening Programmes refer directly to ophthalmologist).

Topic 5: Diabetes and Driving



****N.B. People with diabetes must inform their motor insurance company**

DVLA guidance about diabetes and driving is reviewed every 6 months. We therefore strongly recommend that you consult the website for the latest advice.

<https://www.gov.uk/diabetes-driving>

Essentially:

Insulin-treated patients must inform the DVLA, must monitor blood glucose and take appropriate action, must recognise warning symptoms of hypoglycaemia and must meet required visual standards. In addition, they must not have any other conditions (e.g. neuropathy leading to loss of joint position sense) that would compromise safe driving – see website.

Temporary Insulin Treatment

E.g. gestational diabetes & post-myocardial infarction. Patients may retain licence but should stop driving if experiencing disabling hypoglycaemia. Notify DVLA again if treatment continues for more than 3 months – see website.

Diet & Tablets

Patients will be able to retain “Till 70 licence” unless develop relevant disabilities e.g. diabetic eye problems affecting visual acuity or visual field or if insulin required. In the absence of complications, diet and tablet-treated patients need not routinely inform the DVLA – see website.

GLP-1 Analogs & Gliptins combined with Sulphonylurea

– see website.

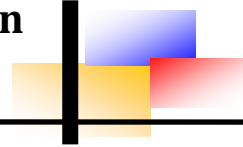
Group 2 Entitlement (LGV & PCV) & Other special licences

– see website.

Diabetic Complications, (including Hypoglycaemia)

– see website.

Topic 6: Diagnosis and Management of Hypertension in Diabetes



Diagnosis

- If clinic BP $\geq 180/110$, consider starting antihypertensive drug treatment immediately. If papilloedema or retinal haemorrhage [accelerated] or labile/postural BP \downarrow (20mmHg SBP fall), or headache, palpitations, pallor, sweating [phaeochromocytoma], refer same day for specialist care.
- If clinic BP $\geq 150/90$ (but $<180/110$), repeat within 1 month; if $> 140/90$ (or 130/80 if kidney, eye or cerebrovascular disease), repeat within 2 months.
- Consider specialist referral if features suggest secondary hypertension.
- Use ABPM or HBPM for monitoring patients with 'white coat BP \uparrow '.

Treatment

Offer lifestyle interventions to all patients

Offer drug treatment if BP above target threshold despite lifestyle Interventions.

First: Long-acting generic ACE-inhibitor remains first-line treatment in diabetes (generic ARB if ACE-intolerant).

Second: Add long-acting generic calcium channel blocker or thiazide-like diuretic.

Third: Add thiazide-like diuretic or long-acting calcium channel blocker (whichever one not used in 'second').

Fourth: Add alpha-blocker, beta-blocker or potassium sparing diuretic (caution with latter and ACE-inhibitor or ARB).

Exception 1: Start with a long-acting generic ACE-inhibitor PLUS calcium channel blocker or thiazide-like diuretic in people of African-Caribbean family origin.

Exception 2: After informed discussion, start with calcium channel blocker in women where there is the possibility of pregnancy.

Target
Clinic BP

T1 < 135/85

&

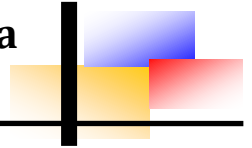
T2 < 140/80

Note: use tighter target in T1DM if albuminuria or ≥ 2 feature of metabolic syndrome; or in T2DM if patient has renal damage or eye damage or cerebrovascular disease.

Tighter target is:

< 130/80

Topic 7: Diagnosis and Management of Dyslipidaemia in Diabetes



[NICE Lipid Guidance](#) was updated 2014.

Assessment for Treatment

- Use a systematic strategy to identify people who are likely to be at high risk (i.e. opportunistic screening in primary care is not adequate).
- For primary prevention, prioritise people for full formal risk assessment if their 10-year risk of CVD (using [QRISK2](#)) is $\geq 10\%$ (up to Age 84 yr).
- Do not use risk tools if eGFR < 60 ml/min/1.73m² or Type 1 diabetes or known vascular disease (2^o prevention), or in in familial hypercholesterolaemia.
- Before treatment for primary prevention or secondary prevention take at least 1 non-fasting lipid sample for full lipid profile.
- Urgent referral if Trigs > 20 mmol/l (rpt fasting if 10-20, then refer if > 10).

Primary Prevention

- Offer ATORVASTATIN 20 mg od. if QRISK2 10 yr risk is $\geq 10\%$.
- Offer ATORVASTATIN 20 mg od. if eGFR < 60 .
- Offer ATORVASTATIN 20 mg od. in Type 1 diabetes if Age > 40 , or diabetes duration > 10 years, or nephropathy, or other CVD risk factors.
- Consider ATORVASTATIN 20 mg od. if age > 85 years.

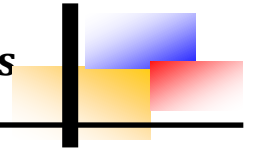
Secondary Prevention

- Offer ATORVASTATIN 80 mg od.

Monitoring

- Monitor for adverse effects and interactions as usual.
- Repeat non-fasting lipid profile after 3 months & if non-HDL cholesterol has not fallen by $> 40\%$, discuss adherence & dose timing, diet & lifestyle and increased dose for those on less than ATORVASTATIN 80 mg od.
- Do not routinely offer: fibrates, or nicotinic acid, or bile acid sequestrants, or Omega 3 compounds or combination treatment.

Topic 8: Aspirin & Antiplatelet Therapy in Diabetes



Secondary Prevention of Vascular Disease

Use of antiplatelet therapy in known pre-existing vascular disease is associated with improved outcomes (whether or not they have diabetes). In the absence of contraindications, after 'acute' therapy, patients should receive antiplatelet therapy:

Diabetes + myocardial infarction – typically ASPIRIN

Diabetes + angina – typically ASPIRIN

Diabetes + stroke (cerebral infarct) or TIA – typically CLOPIDOGREL

Diabetes + peripheral arterial disease – typically CLOPIDOGREL

Combination anti-thrombotic agents may also be indicated e.g. Aspirin with Clopidogrel or other antiplatelet agents in ACS & AMI.

Primary Prevention of Vascular Disease

Do **NOT** routinely prescribe ASPIRIN (or other antiplatelet agents) for the primary prevention of vascular disease in diabetes (NICE 2015).

Topic 9: Insulins and Oral hypoglycaemic Agents in Type 1 Diabetes



In Type 1 diabetes, we typically use basal-bolus treatment; twice daily mixtures are NOT routinely recommended ([NICE 2015](#)) (though some patients prefer two rather than four injections).

[Continuous Subcutaneous Insulin Infusion \(“pump” therapy\)](#) may be suitable for some type 1 patients and is offered at local hospitals.

Insulin initiation is typically undertaken by a hospital team – structured education and intensive post-insulin-start support for patients is a critical element of insulin initiation. If this cannot be assured in primary care, refer to the hospital team.

N.B. Safer insulin guidance recommends prescribing insulin by brand (i.e. non-generic) names and delivery device should be specified. Do NOT use abbreviations ‘u’ or ‘iu’.

Basal Bolus Regimen

We recommend a short-acting analog (e.g. Apidra 15 minutes before breakfast, lunch & evening meal, together with a longer-acting insulin e.g. twice daily Levemir for basal therapy (although this means 5 injections per day and few diabetologists use BD Levemir) or a once-daily intermediate-to-long acting insulin, such as Toujeo, Abasagar, Lantus or Tresiba - use acquisition cost to guide choice (but note there may not be complete dose-equivalence).

Insulin + Oral Hypoglycaemic Agents

In the absence of contraindications, consider addition of METFORMIN to insulin in T1DM if body mass index (BMI) > 25 (23 in Asians).

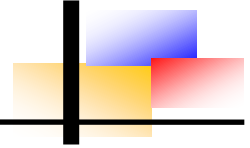
Insulin in Pregnancy & Preconception

See Topic 11.

Insulin Dose Adjustment in Adults

Patients are taught to self-adjust. Increments and decrements must be individualised.

Topic 10: Insulins, Oral hypoglycaemic Agents (OHAs) or GLP-1 Mimetics in Type 2 Diabetes



NICE: base choices on effectiveness (metabolic response), safety, individual factors/preferences, licensed indications and if all else is equal on acquisition cost.

If at any phase of treatment an adult with T2DM is symptomatically hyperglycaemic consider insulin or sulphonylurea and review treatment once blood glucose control has been achieved (we would underscore the need for subsequent review & revision).

Initial Drug Treatment

Start with plain Metformin, up-titrate slowly (several weeks) to minimise GI side effects. If patient can't tolerate plain Metformin, consider MR/SR. If metformin-intolerant or is contraindicated, in the absence of contraindications, use Sulphonylurea, Pioglitazone, SGLT2 inhibitor or Gliptin. You must discuss with patients to inform their drug choice.

First Intensification

Since the NICE 2015, important cardiovascular (CV) outcome trials have been published that change management after Metformin monotherapy. In established CV disease, there is strong evidence of better CV outcomes with SGLT2 inhibitors and Liraglutide.

- (a) If the person has established cardiovascular disease and maximum dose Metformin monotherapy is inadequate and their BMI ≥ 30 , in the absence of contraindications, consider adding a Sulphonylurea such as Gliclazide AND Liraglutide.
- (b) If the person has established cardiovascular disease and maximum dose Metformin monotherapy is inadequate and their BMI < 30 , in the absence of contraindications, consider adding an SGLT2 inhibitor, such as Empagliflozin.
- (c) In the absence of established cardiovascular disease, in the absence of contraindications, consider adding Gliclazide, Pioglitazone, an SGLT2 inhibitor or a Gliptin. You must discuss these factors with patients to inform their drug choice.

Second Intensification

If maximum dose dual oral therapy is inadequate, in the absence of contraindications, add a third oral hypoglycaemic from a Gliptin, Pioglitazone, Sulphonylurea or SGLT2 inhibitor or move to an insulin-based regimen. You must discuss these factors with patients to inform their drug choice. If BMI > 35 (≥ 30 if Asian or insulin has occupational implications or weight loss would benefit other significant obesity-related co-morbidities) consider GLP agonist as alternative to insulin-based regimen.

If maximum dose triple oral therapy is inadequate or inappropriate, and BMI is ≥ 35 (≥ 30 if Asian or insulin has occupational implications or weight loss would benefit other significant obesity-related co-morbidities), then consider Metformin+Sulphonylurea+GLP agonist (only continue if $\geq 3\%$ Wt. loss and HbA1c falls by ≥ 11 mmol/mol by 6 months).

Insulin-based Treatment

NICE: when starting insulin, patients must get structured education employing active dose titration and support from an appropriately trained & experienced healthcare professional.

There are multiple therapeutic insulin regimens which are beyond the scope of this guideline – we recommend specialist referral for insulin selection, education & initiation.

Note: BNF suggests a maximum metformin daily dose of 2g, but SPC suggests a maximum daily dose of 3g – the median dose in the largest outcome study (UKPDS) was 2.55g.

Topic 11: Contraception, Conception and Pregnancy

Contraception

Most modern forms of contraception are typically acceptable in diabetes; some gestagens carry increased venous thromboembolic risk – combined oral contraceptive pills using lowest practicable dose of oestrogen and lower risk gestagens are preferable.

Conception

Diabetes is associated with substantially increased risks to mother and baby, including greatly increased risk of congenital malformations. Near-normal glycaemic control at or near conception is likely to be necessary to reduce these increased risks.

Women with diabetes contemplating pregnancy should be referred to the specialist team for pre-conception management.

Pregnancy & Labour

People with pre-existing diabetes and gestational diabetes should usually be seen by the specialist team, as early in pregnancy as possible. Typically, pregnancy and labour are jointly managed by diabetes specialists and obstetricians. Note: Metformin or Glibenclamide may be used in some patients (specialist use only).

Gestational Diabetes

Numerous different criteria made this confusing in the past. [NICE NG3 2015](#) recommends the WHO guidelines for diagnosis of diabetes in pregnancy:

Fasting	≥ 5.6 mM
Post-prandial (e.g. 2 hr OGTT)	≥ 7.8 mM

Targets for Glycaemic Control during Pregnancy

Target HbA1c for pre-conception and pregnancy is ≤ 48 mmol/mol. Targets for SBGM set by patient and diabetes specialist. Typically, pre-meal BMs 3.5-5.3 mM and 1-hr post-prandial BMs <7.8 mM or 2-hr post-prandial BMs < 6.4mM. Keep BM > 4.0 if insulin treatment.

Aspirin Therapy

Aspirin 75mg daily in T1DM and T2DM from 12 weeks gestation.

Folic Acid

Current national guidelines recommend FOLIC ACID 5mg daily for women with diabetes from 3 months pre-conception to 12 weeks gestation.

Topic 12: Diabetic Microalbuminuria and Nephropathy

Untreated, diabetic proteinuria is associated with high risk of progression to renal failure and very high risk of cardiovascular morbidity and premature mortality.

Albumin to creatinine ratio (ACR) on 'first pass' early morning MSSU sample sent to the hospital laboratory is the method of choice for detecting and quantifying proteinuria. If 1 ACR is raised, repeat twice more within 3-4 months.

Consider alternative diagnosis if no retinopathy, blood pressure particularly high, sudden onset proteinuria, significant haematuria or systemic ill health.

Definitions

NORMAL = ACR < 3.0 mg/mmol in men

NORMAL = ACR < 3.0 mg/mmol in women

MICROALBUMINURIA = 2 x ACRs 3.0 – 30 men & women

NEPHROPATHY = 2 x ACR > 30

Management

See [NICE](#) (RAAS = renin-angiotensin-aldosterone system blockade e.g. ACE- or ARB)

In the absence of contraindications, there are 6 key (individualised) interventions:

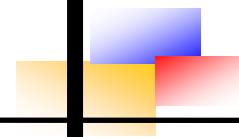
1. BP control to < **130/80** mmHg (usually multiple drugs) (see Topic 6)
2. RAAS blockade: Generic long-acting ACE-inhibitor e.g. Ramipril (if ACE-intolerant, use ARB).
3. Statin therapy (see Topic 7).
4. Aspirin 75 mg o.d therapy (only if known vascular disease).
5. Good glycaemic control, typically HbA1c < 58 mmol/mol (see Topics 9&10)
6. Smoking cessation

N.B. RAAS blockade should be used even if the BP is 'normal'.
Statins should be used even if the cholesterol is 'normal' (see Topic 7).
Patients with reduced eGFR often need additional measures:

- we recommend referral to Hospital Diabetes Team
- patients likely to need complex intervention are typically shared with a nephrologist (we have pre-defined arrangements with local nephrologists and we will sort referral for 'shared care').

Note: All medications should be reviewed and monitored very carefully in CKD and AKI, particularly when the eGFR falls below certain thresholds: 60, 45 and 30.

Topic 13: Diabetes & Endoscopy or Radiology



Diabetic patients needing endoscopic or radiological investigations may have to fast, modify their diet or receive intravenous contrast media.

For information see [NHS Diabetes](#) 2011, Management of Diabetes in Adults undergoing Surgery and Elective Procedures, Appendix 9, P62.

Summary of Common Situations and Actions for diabetes medications

	MF alone	MF+any other glucose lowering agent(s)	SU or Pioglit or gliptin or SGLT2 or combination	Insulin⁴ or GLP or both
SMBG	No	Pt. should monitor BMs closely & seek help if problems if taking SU or Insulin or SGLT2 or GLP		
IV Contrast?	Stop MF	Stop MF Review SGLT2 Continue others	Review SGLT2 Continue others	Continue
Bowel Prep.?	Continue meds	Continue meds Use "Build Up" or other substitute for CHO as required.	Continue meds Use "Build Up" or other substitute for CHO as required.	Continue meds Use "Build Up" or other substitute for CHO as required.
Overnight fast?	No problem	Hypo risk Use "Lucozade" or other substitute for CHO as required.	Hypo risk Use "Lucozade" or other substitute for CHO as required.	Hypo risk Use "Lucozade" or other substitute for CHO as required.

Notes

1. MF=Metformin, SU=sulphonylurea, Pioglit=Pioglitazone, SGLT2=sodium glucose co-transporter 2 inhibitor, GLP=glucagon-like peptide 1 mimetic; BM=self monitored capillary blood glucose, Hypo=hypoglycaemic episode, CHO=carbohydrate.
2. Metformin should be stopped 48hr before intravenous contrast and not restarted until post-procedure serum creatinine confirmed normal.
3. SGLT2 inhibitors may cause volume depletion.
4. Emergency endoscopies etc should be performed with patient on GKI (see relevant inpatient guidelines) regardless of T1DM or T2DM.
5. May need dose adjustment – if in doubt phone DNS for advice.

Topic 14: Diabetic Neuropathies & Foot Care



Note: Diabetes foot care is the subject of specific NWCSCN guidance and so has not been included in this version of these guidelines. Contact laura.hand2@nhs.net for details.

There are many different forms of neuropathy in diabetes only a few are discussed.

Chronic Sensorimotor Neuropathy

Common: usually symmetrical numbness, skin changes and variable motor weakness in feet; predisposes to foot ulceration. No specific treatment. Aim for good glycaemic control & education re footcare (Community Foot Screening Programme) together with appropriate footwear to try to prevent foot ulceration.

Diabetic Painful Neuropathy (DPN)

After diagnosis of neuropathic pain & together with management of underlying condition (see [NICE guideline on neuropathic pain in adults](#)):

- Offer a choice of Amitriptyline, Duloxetine, Gabapentin or Pregabalin as initial treatment for neuropathic pain. Use good prescribing principles as with all drugs. Review early and adjust dosage. Some local guidelines specify an order in which the drugs should ideally be used.
- If initial treatment is not effective at the maximum tolerated dose, offer one of the remaining 3 drugs and consider switching again if the second or third drugs tried are also not tolerated or effective.
- Consider Tramadol only if acute rescue therapy is needed.
- Consider Capsaicin cream (0.075% Axsain) for people with localised neuropathic pain who wish to avoid or who cannot tolerate oral treatments.

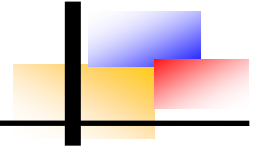
Consider referring the patient to a specialist pain service or condition-specific service at any stage, including initial presentation and at the regular clinical reviews, if:

- They have severe pain, or
- Pain significantly limits their daily activities and participation, or
- Their underlying health condition has deteriorated

Autonomic Diabetic Neuropathy

Postural hypotension, recurrent vomiting, recurrent severe diarrhoea, nocturnal diarrhoea, urinary retention, unexplained bladder emptying and gustatory sweating may result from diabetic autonomic neuropathy, typically in longstanding diabetes. Always ask & if suspected, referral to the Hospital Specialist Diabetes Team for assessment and management is recommended.

Topic 15: Management of Hypoglycaemia



Hypoglycaemia typically manifests as hunger, sweating, tremor, headache (and/or a host of other symptoms), with or without confusion and reduced conscious level in association with a blood sugar, typically < 4.0 mM. Some patients suffer seizures during hypoglycaemia and some develop (reversible) hemiparesis.

Hypoglycaemia awareness and management should be assessed as part of annual review in T1DM (NICE 2015 – see Topic 4).

Oral Treatment

In cases of mild hypoglycaemia, Glucose (e.g. 4-5 dextrosol, 5 jelly babies or a standard mug (200ml) of **original** (non-sport) Lucozade or 200 ml full sugar Coke is the best treatment for hypo, but 150 ml of fresh orange juice, or sugary (3 sugars) tea are ok.

A rapidly absorbable sugary solution is available (GLUCOGEL). This may be used in semiconscious patients (who can still protect airway) if parenteral treatment and emergency help is not available (not in unconscious patients).

If short-acting carbohydrate (as above) is used then it should be followed up by more complex carbohydrate (such as a sandwich) to prevent further hypoglycaemia.

Strive for a BM \geq 8.0 mM before discharging the patient from clinical supervision.

If Patient can't take Carbohydrate by mouth

If the patient is unable to take oral carbohydrate then:

1 mg of glucagon may be given IM or IV while awaiting an ambulance (999). Glucagon may cause headache and vomiting (especially in young – consider 0.5 mg in teenagers).

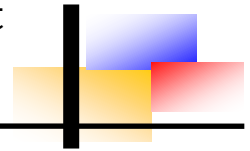
Sulphonylurea-induced hypoglycaemia may require prolonged treatment and supervision – refer urgently for hospital admission.

Subsequent Management

Severe hypoglycaemia is often recurrent – after one episode people are particularly susceptible to further episodes over the next few days or more. After an episode of severe hypoglycaemia, patients should be advised to run their sugars higher (say 8-15 mM) for a week or so and should avoid driving or other situations where hypo would put them or others at risk

→ referral to the Hospital Specialist Diabetes Team is recommended.

Topic 16: Patients you should consider for referral to Hospital or Community Adult Specialist Diabetes Services



NOTE: Precise criteria vary slightly from area to area within Northwest Coast.

Any patient where knowledge, skills, experience, or resources prevent adequate management in primary or community care

Diabetes & pregnancy (T1DM or T2DM)

Diabetes in pregnancy (GDM)

Diabetes & planning pregnancy

Young people (18-25 yr) with diabetes

Newly diagnosed T1DM

People with Diabetes needing DAFNE-like education (i.e. all Type 1, 6-12 months after diagnosis)

Patients admitted to hospital & found to have problematic diabetes

Patients with severe, unexplained or recurrent hypo

Patients with hypo unawareness

Patients wishing to be considered for Insulin Pump Therapy

Patients where differentiation between T1DM & T2DM is in doubt

Maturity onset diabetes of the Young (MODY)

Problematic painful neuropathy

Autonomic neuropathy

Neuropathic or neuroischaemic foot ulceration

Diabetes + ACR > 30 (unless specific expertise in Diabetic Nephropathy Mx)

Diabetes + eGFR < 45 (CKD Stage 3B) where ACR is raised (see above)

Persistent poorly controlled diabetes despite basic treatment

Complex cardiovascular or cerebrovascular disease patients with diabetes

New or suspected Charcot

Diabetes & sight-threatening retinopathy

Complex patients under consideration for Pioglitazone treatment

Patients for consideration for GLP Mimetic treatment

Patients for consideration for Insulin treatment

Topic 17: End of Life Care & Diabetes

Detailed guidance on End of Life Diabetes Care, including for example managing diabetes with steroid treatment and managing hypoglycaemia is beyond the scope of this guideline, but is available from [Diabetes UK](http://Diabetes.UK).

Glucose targets: Symptomatic control is the priority, typically 6-15.

Preventative treatments: Review: Aspirin, Clopidogrel, Antihypertensives & Reno-protective drugs, Ferrous compounds, Vit D analogs and Statins.....

Glucose Treatment:

