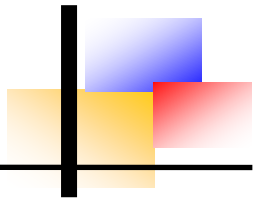
Northwest Coast Adult Diabetes Guidelines 2020-23 v4c



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Author	Professor Kevin Hardy
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Approval by:	Northwest Coast SCN, 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 646497
Superseded	Northwest Coast Adult Diabetes Guidelines V1-2; Pan Mersey Adult Diabetes Guidelines, Mersey Adult Diabetes Guidelines, STHK Adult Diabetes Guidelines (all versions).

Introduction

The aim of this guidance is to provide brief guidance for non-experts.

A tension exists between ease of reference and discussion of the evidence base. Professionals delivering care to people with diabetes should consider these recommendations in conjunction with best practice guidance, notably joint American Diabetes Association (ADA)/European Association for Study of Diabetes (EASD) and NICE.

Important Notes

- At publication this guide is consistent with best practice guidance.
- Pragmatically, some management of Type 1 & Type 2 has been harmonised, but where appropriate T1DM and T2DM are considered separately.
- This document is 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 and 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'.
- If you are not confident that you have the relevant knowledge, skills, experience and resources to manage care to an appropriate standard, 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 guidance underscores the importance of assessing (and discussing with patients) the metabolic effectiveness, safety, individual patient suitability, licencing 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

Topic 1: Diagnosis of Diabetes

Type 1 Diabetes

Diagnosed clinically. Patient typically has thirst, dry mouth & polyuria and one or more: rapid weight loss (e.g. 1-2st in 4-8 wk), ketonaemia/ketonuria, BMI < 25, onset age < 50 yr (median age is 12 years in UK). Do not discount just because age > 50 or BMI > 25.

ACTION - 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
NORMAL = HbA1c	< 42 mmol/mol

DIABETES – glycaemic criteria

*DIABETES = HbA1c ≥ 48mmol/mol x 2 or

DIABETES = RPG ≥ 11.1 mM x 2 or

DIABETES = FPG ≥ 7.0 mM x 2 or

DIABETES = RPG ≥ 11.1 mM and FPG ≥ 7.0

*Preferred. Don't mix test-types. Use BG tests in situations where HbA1c unreliable.

What is left?

IMPAIRED GLUCOSE REGULATION ('IGR' or 'Non-diabetic hyperglycaemia (NDH)')

= FPG 6.0–6.9 mM (incl.) or

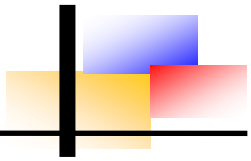
= 2 hr OGTT BG 7.8–11.0 mM (with a FPG < 7.0) or

= HbA1c 42-47mmol/mol.

Important Notes

- Blood glucose strips / meters are **not** adequate for the diagnosis of diabetes.
- HbA1c may be unreliable in certain circumstances e.g. haemolysis.
- Second HbA1c test can be done immediately (even on same sample), you do not need to delay – it's looking for assay variance NOT patient factors. If one HbA1c is ≥ 48 and the other is <48, then they do NOT have diabetes. There is no maximum interval between repeat tests.
- Diagnosis of GESTATIONAL diabetes is different – see Topic 11.

Topic 2: Impaired Glucose Regulation (IGR) or Non-diabetic hyperglycaemia (NDH) & Diabetes Prevention



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. Prevent diabetes & (preferably) restore normal glucose tolerance.
2. Reduce increased cardiovascular risk associated with IGR.
3. Detect future diabetes (should it occur) early.

Management of IGR (IFG & IGT)

- Local Diabetes Prevention Programmes are available 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). A mix of aerobic and resistive exercise may be optimal for health.
- Modest weight loss prevents or delays the onset (by 3.6 yr) of diabetes in high risk patients. Aim for sustained 5-15% weight loss. Consider enrolment in trials of low calorie diet programmes if available.
- Metformin prevents or delays the onset of diabetes in high risk patients, but it may not as effective as lifestyle measures and has been deemed not cost-effective by some authorities.
- Cardiovascular risk factor modification is important. Consider: smoking cessation, measures to achieve BP control & Atorvastatin therapy if known vascular disease or if 10-yr CVD risk > 10% (using QRISK3 calculator).
- Consider screening in high risk patients: 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)

- NICE recommends frequent (≥ 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) and so-called 'flash monitoring' (Freestyle Libre) has been endorsed by ADA, EASD, DUK and NHSE – 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 hypo risk driving, at work 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.

- Type 1 patient and relevant Type 2 patients with a SMBG reading >15mM who feel unwell, should check for ketones and know what to do if ketones present. Test for blood ketones at lower blood glucose readings if you suspect ketosis in someone treated with an SGLT2 inhibitor. 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. We use the term 'target' to indicate the threshold above which treatment should often be intensified, typically:

T1 Diabetes	HbA1c < 53 mmol/mol
T2 Diabetes (single OHA & no hypo risk)	HbA1c < 48 mmol/mol
T2 Diabetes (max dose single OHA or more)	HbA1c < 53 mmol/mol
T2 Diabetes (special considerations)	HbA1c ≤64-69 mmol/mol

(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. Appropriate vaccination e.g. pneumococcal vaccine and flu vaccine etc for those for whom it is appropriate.

- 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 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 re-education:

Weight Management discuss weight management with overweight patients and consider referral to local Weight Management Programmes if BMI > 28. See NICE Obesity guidance for detailed discussion of weight reducing measures.

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 score (1-7), where 1=patient always knows when they start to go low and 7 means they never know when they start to go low).

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

NICE BP Guidance was updated August 2019 – it details how to undertake the recommendations outlined below – it's complicated.

Diagnosis

- Measure BP as per NICE (it's very detailed). "BP"= clinic BP
- If BP 140/90 to 180/120, offer ambulatory blood pressure monitoring (ABPM) or home blood pressure monitoring (HBPM) to confirm diagnosis of hypertension & perform investigations for target organ damage and formal risk assessment.
- Hypertension = BP ≥ 140/90 **plus** ABPM (daytime average) or HBPM average ≥ 135/85.
- If initial BP > 180/120 & no relevant symptoms or signs, investigate for target organ damage ASAP (and if target organ damage – TREAT). If initial BP > 180/120 plus retinal haemorrhage or papilloedema or new confusion, chest pain, heart failure or acute kidney injury refer to specialist same day.

Treatment

Offer lifestyle (see NICE) interventions to all patients

Stage 1 = BP 140/90 to 159/99 **plus** ABPM/HBPM 135/85 to 149/94
Stage 2 = BP 160/100 to 180/120 **plus** ABPM/HBPM ≥ 150/95
Stage 3 = BP ≥ 180/120

Target organ damage = LVH, CKD, BP↑ retinopathy or ↑ ACR
White coat effect = > 20/10 difference between BP and ABPM or HBPM

Typical targets (use judgement, especially in frail)

	Age < 80	Age ≥ 80	Nephropathy
BP	< 140/90	< 150/90	< 130/80
ABPM / HBPM	< 135/85	< 145/85	< 125/75

	Step 1	Step 2	Step3	Step 4
People with Diabetes	Long-acting ACE or ARB	Add CCB or Thiazide-like diuretic	Add CCB or thiazide-like diuretic (whichever not used in Step 2	Consider specialist advice unless expertise in BP management

Topic 7: Diagnosis and Management of Dyslipidaemia in Diabetes

NICE Lipid Guidance was updated 2014. See also: Summary of national guidance for lipid management .

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 QRISK3) is ≥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 (2º 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.
- If non-fasting Trigs > 4.5 mmol/l, repeat with fasting. Urgent referral if non fasting Trigs >20 mmol/l or fasting Trigs > 10.

Primary Prevention in the following groups (listed):

- Offer ATORVASTATIN 20 mg od. if QRISK3 10 yr risk is ≥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 as dictated by their specific condition and circumstances.

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 and by some community teams.

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

Use a short-acting analog (e.g. Apidra, Lispro or Novorapid) 15 minutes before breakfast, lunch & evening meal, together with a longer-acting insulin (e.g. Toujeo, Abasalgar, Lantus or Tresiba). Use acquisition cost to guide choice (but note there may not be complete dose-equivalence). Exceptionally, human insulin, e.g. Humulin S or Actrapid may be useful.

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).

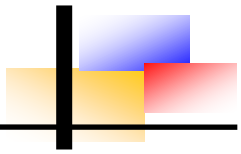
Insulin in Pregnancy & Preconception

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



This guideline has always been based on the format of one page per topic and has attempted to summarise in simple bullet format contemporary guidelines.

This topic, however, has become so complex in recent years that if we're to tailor therapy to individual patients (as we must), we need to be conscious of significant information about the agents and complex treatment algorithms.

It is simply not possible to produce anything that is superior to the current Joint American and European guidance – American Diabetes Association (ADA)/European Association for Study of Diabetes (EASD)so the 3 tables from that guidance are included below.

In summary:

- In the absence of contraindications, in combination with appropriate lifestyle measures, start with METFORMIN.
- Subsequently, if HbA1c remains above target and additional treatment is indicated, to determine optimal treatment, be guided by:
    - Presence or absence of arteriosclerotic CVD (ASCVD)
    - Presence or absence of kidney disease
    - Presence or absence of heart failure
    - The individual's priorities re hypoglycaemia and weight gain
    - Drug cautions & contraindications and their relevance for that individual.
- If in doubt (and it is complicated), we welcome telephone or email enquiries for advice and guidance (as do most specialist diabetes services).

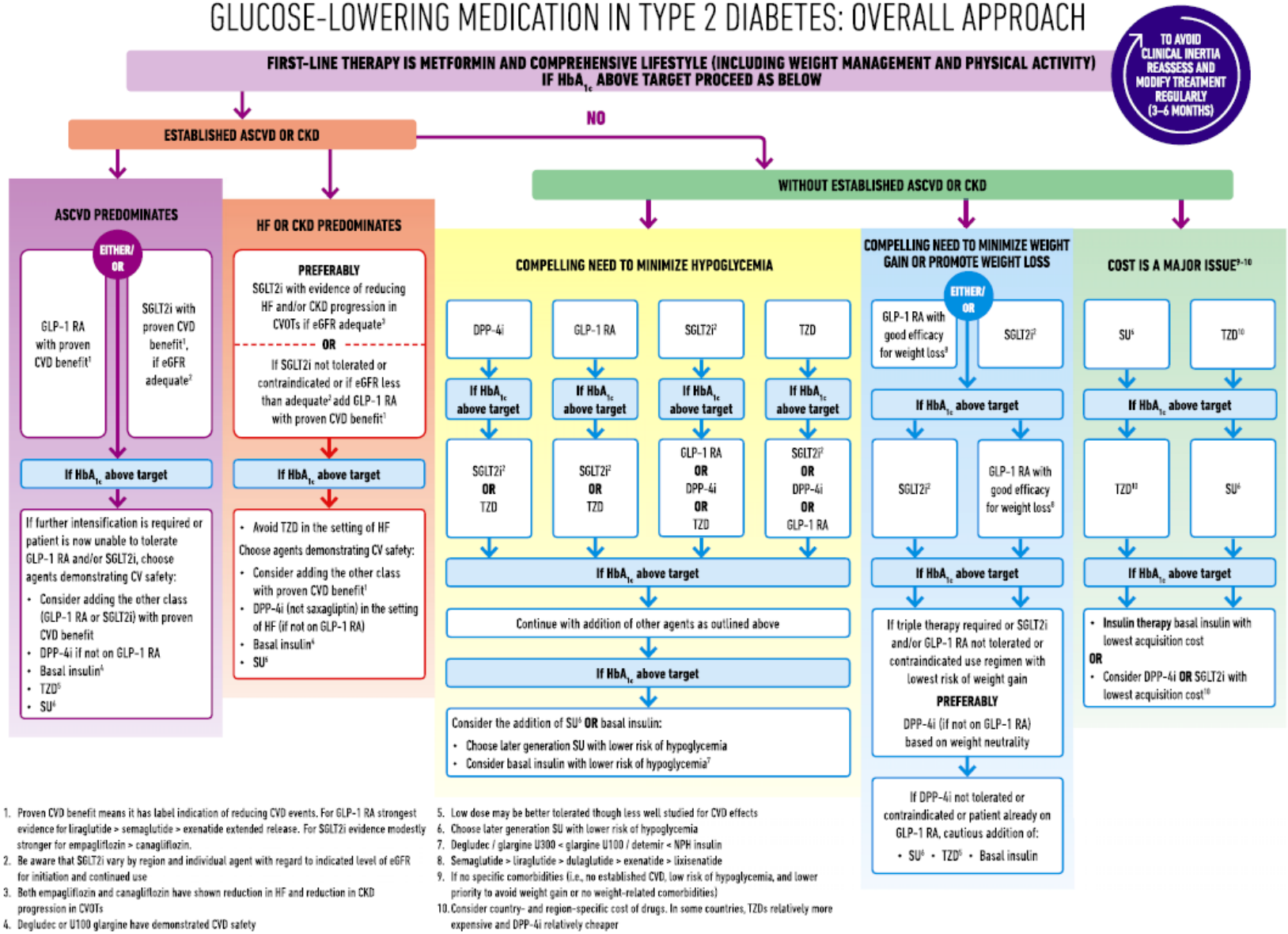
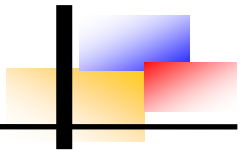


Figure 2—Glucose-lowering medication in type 2 diabetes: overall approach. CV, cardiovascular; DPP-4i, dipeptidyl peptidase 4 inhibitor; GLP-1 RA, glucagon-like peptide 1 receptor agonist; SGLT2i, SGLT2 inhibitor; SU, sulfonylurea.

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.

Prescribe Aspirin 150mg daily in T1DM and T2DM from 12 to 36 weeks gestation.

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

Add diagnosis to primary care system and invite for annual review.

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 & 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 < 130/80 (125/75 for ABPM or HBPM & higher target in frail elderly) (usually needs 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 < 53 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:

-consider referral to appropriate specialist

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 also JBDS 2016 guidance.

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**	**Insulin[4] 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 ≥ 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).

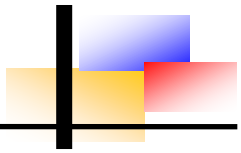
Sulphonylurea-induced hypoglycaemia may require prolonged treatment and supervision – refer urgently for hospital admission.

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: Consider for referral to Consultant-led Adult Specialist Diabetes Services



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

Diabetes & pregnancy (T1DM or T2DM)
Diabetes in pregnancy (GDM)
Diabetes & planning pregnancy
Young people (18-25 yr) with diabetes (at least initially during transition to adult care)
Newly diagnosed T1DM
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 primary care 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

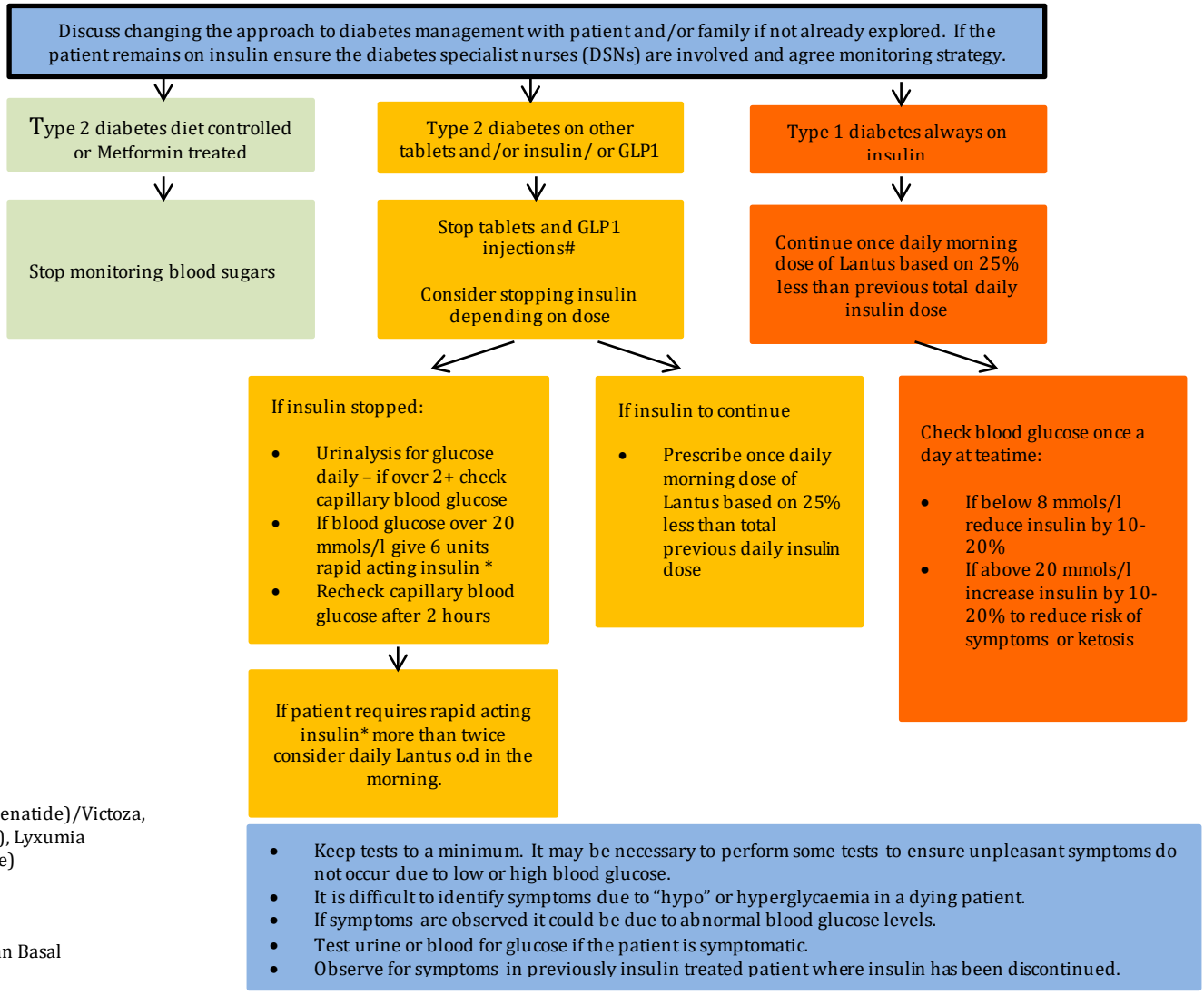
Topic 17: End of Life Care & Diabetes

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.

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:



Key

Byetta (Exenatide)/Victoza, (Liraglutide), Lyxumia (Lixisenatide)

*e.g. Apidra

^e.g. Insuman Basal

- Keep tests to a minimum. It may be necessary to perform some tests to ensure unpleasant symptoms do not occur due to low or high blood glucose.
- It is difficult to identify symptoms due to "hypo" or hyperglycaemia in a dying patient.
- If symptoms are observed it could be due to abnormal blood glucose levels.
- Test urine or blood for glucose if the patient is symptomatic.
- Observe for symptoms in previously insulin treated patient where insulin has been discontinued.