

Type 2 Diabetes Mellitus in Adults

A guide for Greenwich General Practice

Key Messages*

1. Lifestyle: if overweight, agree a weight loss goal of 5–10% of body weight¹
2. Blood pressure: target BP $\leq 140/90$ mmHg (QOF)²
3. Cholesterol: statin if QRISK2 or 3 $\geq 10\%$ ³
4. HbA1c: target ≤ 53 mmol/mol ($\leq 7\%$)¹ (NICE)

Consider individualising targets and patient goals especially for those with reduced life expectancy, risk of falls and/or significant co-morbidities

*see page 5 for range of targets across NICE, QOF and co-morbidities

Always work within your knowledge and competency

August 2023 (review October 2023, or earlier if required)

CONTENTS

Diagnosis and risks	3
Care processes	4
Weight management and BP	5
Cholesterol	6
HbA1c management	7,8
Diabetes review	9,10
Sick day rules	10
Preferred medication	11,12,13
Resources	14
References and abbreviations	15

Why T2DM in Greenwich?

- Weight management may normalise blood sugar levels without the use of drugs.⁴
- Tight blood pressure control substantially reduces diabetes complications and improves survival.⁵
- Cholesterol lowering drugs reduce the risk of major vascular events.⁶
- Even modest improvements in glucose control reduce incidence of complications including foot ulcers, amputations and neuropathy.⁷
- Supporting patients to stop smoking reduces their risk of premature death, heart disease and other complications.⁸
- Primary care management of, and screening for, diabetes are key areas where improved quality of care could contribute to NHS cost savings.⁹

Risk factors for T2DM¹⁰

- Age > 40 and Caucasian/White European
- Age > 25 and African - Caribbean or south Asian
- Family history
- High blood pressure
- BMI > 25 especially apple shape
- History of coronary heart disease or stroke
- Serious mental illness
- Polycystic ovarian syndrome and gestational diabetes
- COVID-19 infection may precipitate a diabetes diagnosis¹¹

Calculate T2DM risk using a [QDiabetes calculator](#)

Non-diabetic hyperglycaemia (pre-diabetes)



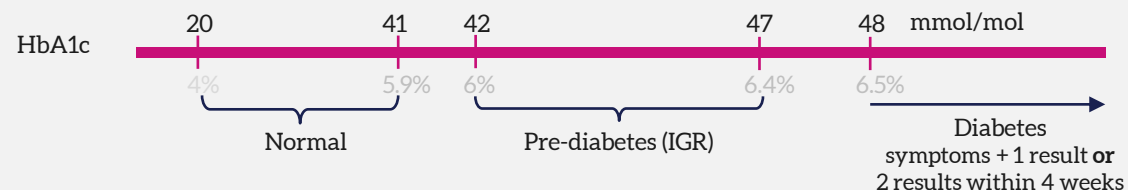
- Use Ardens Pre-Diabetes template to ensure accurate coding
- Offer referral to NDPP or if this is not accepted, offer referral to Live Well (form available on DXS) for support in making changes to activities and diet that can reduce risks. If LIVE WELL Referral is not accepted offer LIVE WELL number.

NHS Diabetes Prevention Programme (NDPP)

Multiple group sessions and coaching of reducing frequency over 9 months, face to face, on-line and telephone, plus digital only option

Annual review: patient with non-diabetic hyperglycaemia and/or history of gestational diabetes. **Include:** HbA1c, Vital5: BP, BMI, smoking status, mental health and alcohol intake

Diagnosis using HbA1c¹²



If initial result is within the diagnostic range, follow the above guidance.

HbA1c should be used with caution with abnormal red blood cell turnover/abnormal haemoglobin type (e.g. haemoglobinopathy, severe anaemia, altered red cell life-span e.g. post-splenectomy, recent blood transfusion). For these cases consider a fructosamine assay

HbA1c should not be used to diagnose Type 1 diabetes, T2DM in <18 years, symptoms <2 months, pregnancy, up to 2 months post-partum, end-stage renal disease, acute pancreatic damage, HIV infection or if taking medication linked with hyperglycaemia, e.g. long-term corticosteroids.¹²

New Diagnosis of T2DM

- Support patients to reach an understanding of the diagnosis and implications and what they can do to care for themselves
- Use EMIS or Ardens CE Greenwich diabetes clinical template to ensure accurate coding and include 8CP plus retinal screening
- Emphasise to patients and carers that structured education is integral to their care and refer or encourage self referral to Structured Education Programme - [Diabetes Book and Learn](#), or advise patients to self refer
- Offer family planning and initial pregnancy advice to women of child-bearing age, as part of essential diabetes care
- Use [Diabetes UK Information Prescriptions to support personal care](#) (can be downloaded into EMIS)
- Agree a clear review date to include NICE 8CP

Considering pregnancy

Refer to Community Diabetes Single Point Referral, Diabetes Pre-conception clinic KCH or GSTT (ERS)

If pregnant

Refer pregnant women with diabetes to QEH: lg.qe-anreferrals@nhs.net

RED FLAGS

New T2DM, >60 years, weight loss - 2WW referral for suspected cancer of pancreas¹³
HbA1c >85mmol/mol +/- weight loss at diagnosis: consider Type 1, ketosis prone, latent autoimmune diabetes in adults (LADA). Seek specialist advice.

T2DM Eight Care Processes (8CP)

Individualise all targets, review dates and monitoring

Ensure all care processes undertaken at least annually

1 Body Mass Index kg/m²¹⁴

Overweight

BMI ≥ 25 Caucasian/ White European groups; BMI ≥ 23 African-Caribbean and South Asian groups

Agree an initial weight loss target of 5-10% of body weight

Page 5

2 Blood Pressure

QOF^{2,15} ≤140/90mmHg excludes those with moderate or severe frailty

NICE¹⁶ ≤140/90mmHg ≥ 80 years ≤ 150/90mmHg

CKD If ACR ≥ 70 mg/mmol, target BP ≤130/80 mmHg

QOF and NICE 5mm Hg lower for home and ambulatory BP monitor readings

Page 5

3 Cholesterol

Primary prevention³:

Offer statin if QRISK2 or 3 ≥ 10% after trial of lifestyle modification

QOF target excludes those with moderate or severe frailty

Page 6

4 HbA1c^{1,17}

It takes 3 months from medication dose change to see HbA1c change.

Check 3 monthly until stable, then 6 monthly. Targets as per NICE:

≤48mmol/mol (6.5%) unless taking a drug that could cause adverse hypoglycaemia, e.g. gliclazide, insulin (N.B. QoF target is ≤58mmol/mol)

≤53mmol/mol (7%) if on a drug that could cause low sugars/hypos

Patients with moderate/severe frailty: QOF target ≤75 mmol/mol (9%)

Individualise target especially for those with reduced life expectancy, risk of falls and/or significant co-morbidities.

Consider using [NICE patient decision aid](#) to support discussions

For guidance on HbA1c targets for women with T2DM who are planning a pregnancy/are pregnant, refer to [NICE guideline on diabetes in pregnancy](#).

Page 7-8

5 Smoking

Ensure you are trained to deliver Very Brief Advice (VBA)

ASK ADVISE ACT [Very Brief Advice Training Module](#)

If ready to quit refer to appropriate local service.

Renal function and albumin creatinine ratio (ACR)¹⁸

ACR ≥ 3mg/mmol is clinically significant

Ideally early morning urine. If random sample **confirm any ACR between 3mg/mmol and 70mg/mmol with a repeat early morning sample. Repeat not needed if initial ACR is 70 or more"** (as per NICE CKD guidelines.)

Nephropathy – start an ACEI/ARB even if normotensive

Consider CKD if low eGFR and raised ACR and use the [One London Diabetic Kidney Disease Risk Stratification](#) to identify those at high risk of diabetic kidney disease progression for patients with eGFR <45ml/min¹⁹ (ethnic correction no longer needed)

6

+

7

8

Foot Check²²

Medium risk – neuropathy or absent pulse > Refer to Podiatry Community Clinic (DXS)

High risk – neuropathy or absent pulse + plus deformity or skin changes in previous ulcer > Urgently Refer to Podiatry Community Clinic (DXS)

Active ulcer/infection/ischaemia > Acute QEH diabetic foot clinic (lg.qeh-acutefootservice@nhs.net or lg.qediabetes@nhs.net) or A&E out of hours

Referral details on Diabetic Foot Pathway for Greenwich²³ (DXS)

Resources:

For clinicians: [Annual foot review pathway](#), [Diabetes UK](#)

[Diabetic foot infection: antimicrobial prescribing](#), NICE



- Retinopathy screening within 3 months of diagnosis and at least annually¹
Patients are called automatically once coded for T2DM, check this is happening at annual review (contact number **0207 188 7188**)
- [Vital 5](#): includes mental health and alcohol intake
- Flu annually and pneumococcal immunisation once¹⁰

Identify and address all modifiable risk factors

Individualise targets and goals, especially for those with moderate or severe frailty

Check understanding and adherence and set a review date

Weight Management^{1,14,24}

ACTIVITY	
For all	Increased physical activity, even in absence of weight loss, brings health benefits
To prevent obesity	45-60 minutes moderate intensity exercise a day
With a history of obesity	60-90 minutes moderate intensity exercise a day to avoid regaining weight

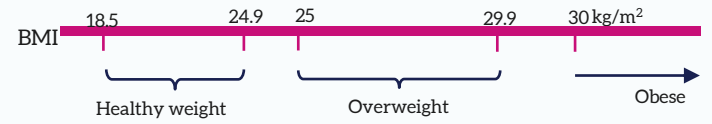
WHEN TO OFFER REFERRAL FOR WEIGHT MANAGEMENT

General advice on healthy weight and lifestyle to all patients with T2DM. Tailor interventions to patients' circumstances and choices. Signpost to local resources.
 Black African, African-Caribbean or South Asian: BMI ≥ 27.5, offer referral to Digital Weight Management Programme

BMI ≥ 30kg/m²
 Offer referral: **Tier 2: Weight Loss with Better** (DXS 'Healthwise Tier 2 referral form')
 Or
 NHS England Digital Weight Management Programme
[NHS England » The NHS Digital Weight Management Programme](#)

BMI ≥ 30kg/m² with T2DM or BMI ≥ 35kg/m²
 Offer referral: 4 Healthy Weight Greenwich (DXS), eRS Dietetics, Weight management, SEL Tier 3 Healthy Weight programme
 Include BP, BMI, HbA1c, lipid profile and creatinine

BMI: weight (kg)/height (m²)



Adults from Black, Asian and other minority ethnic groups with a BMI ≥23 are at increased risk and ≥27.5 are at high risk of developing complications.
 BMI Limitations: can't differentiate between excess fat, muscle or bone
 Waist Circumference: Weight loss is suggested if result >94cm/men and >80cm/women

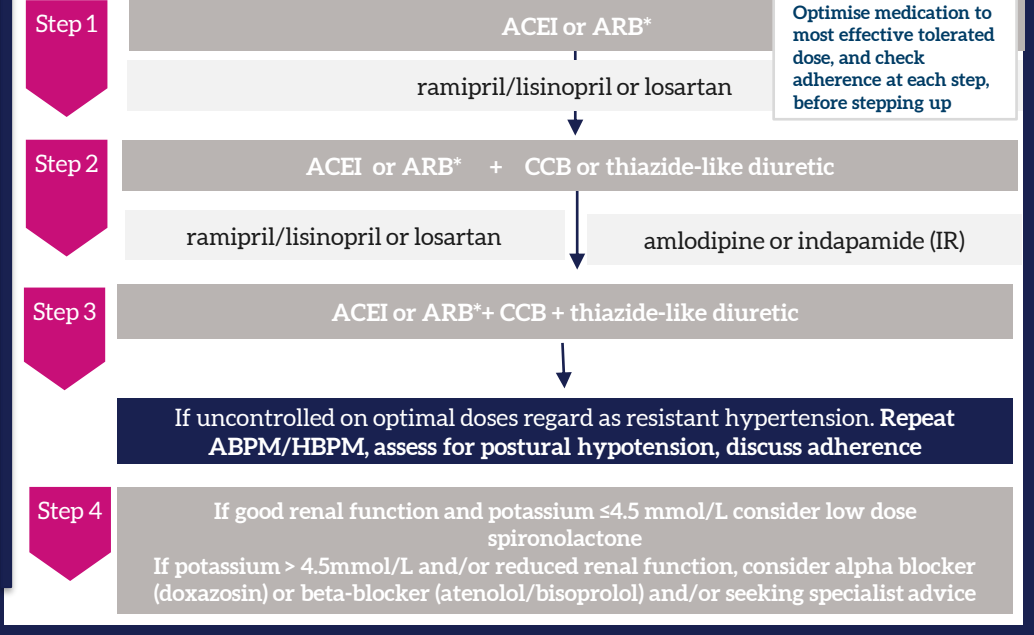
Blood pressure^{1,2,16}

Diagnosis
 See Greenwich Hypertension Guide
[CE-Hypertension-Greenwich-v1.9.pdf](#)
[\(selondonccg.nhs.uk\)](#)

Target
QOF² ¹⁵: ≤140/90mmHg
 (excludes those with moderate or severe frailty)
NICE¹⁶ ≤140/90mmHg. ≥ 80 years ≤ 150/90mmHg
 CKD if ACR ≥ 70 mg/mmol, target BP≤130/80 mm Hg
QOF and NICE 5mm Hg lower for home and ambulatory BP monitor readings

- Measure standing and sitting BP in patients with T2DM. If a significant postural drop (≥20mmHg SBP) – review medication and treat to target on the standing BP
- Confirm diagnosis with ABPM or HBPM
- Home BP readings**
- Corresponding HBPM measures are 5mmHg lower than clinic measures
- Ensure accurate BP machine and advise to record two BP readings every morning and evening for 7 days (see [link](#) for list of recommended BIHS machines)²⁹
- Disregard the first days readings and take an average of all other readings
- Sign post patients to [British Heart Foundation advice](#); send as an Accurx link
- Flory template to help patients record BP available

Consider hypotension if BP <90/60mmHg with symptoms and reduce medication accordingly (may limit up titration of doses).



*For people of Black African or African – Caribbean origin, use ARB instead of ACEI (as increased risk of angioedema with ACEI)

Drugs to avoid at conception/in pregnancy include:
 ACEI/ARB/thiazide or thiazide-like diuretic (increased risk of congenital abnormalities). Use Labetalol if no CI, nifedipine or methyl dopa. Can also remain on amlodipine – GSTT Obstetric Medicine advice Target BP ≤ 135/85 mmHg
[Refer to Hypertension in Pregnancy clinic \(GSTT\) ASAP](#)

Cholesterol Management^{2,3}

Baseline bloods (non-fasting lipid profile, LFTs, HbA1c, thyroid and renal function)

LFTs check within 3 months of starting statin therapy and at 12 months.

Check lipid profile annually

Target reduction of ≥ 40% reduction in non-HDL cholesterol from baseline

Non-HDL cholesterol = Total cholesterol minus HDL cholesterol

Primary Prevention

Offer daily statin if QRISK2 or 3 ≥ 10% after addressing modifiable risk factors

(see page 7 for clinical condition variations between Qrisk 2 and 3)

Atorvastatin 20mg – (or maximum tolerated dose) [alternative is rosuvastatin 10mg]

If after 3 months not achieved ≥ 40% reduction in non-HDL cholesterol from baseline, consider up titration of statin to a **maximum dose of**

Atorvastatin 80mg [alternative is rosuvastatin 20mg]

If intolerant to higher dose consider adding ezetimibe 10mg daily. If intolerant to statins (start ezetimibe) and refer to lipid clinic.

If still not achieving ≥ 40% reduction in non-HDL cholesterol, refer to lipid clinic

For patients with cardiovascular disease see secondary prevention e.g. stroke, PVD, CHD

Secondary Prevention

For patients with history of CVD, including MI, angina, stroke/TIA, peripheral vascular disease, abdominal aortic aneurysm:

Ensure patient offered daily, high dose, high intensity statin:

Atorvastatin 40-80mg (or maximum tolerated dose) [alternative is rosuvastatin 20mg]

If after 3 months if not achieved ≥ 40% reduction in non-HDL cholesterol from baseline, and on maximum tolerated dose, consider adding ezetimibe 10mg daily

If after 3 months not achieved ≥ 40% reduction in non-HDL cholesterol from baseline- refer lipid clinic

(If no baseline value: consider a target non-HDL cholesterol < 2.5mmol/L or LDL cholesterol < 2mmol/L)

see [SEL Lipid Management 2021](#) for more details including: management of intolerance, shared decision making, familial hypercholesterolaemia, management of triglycerides, referral criteria

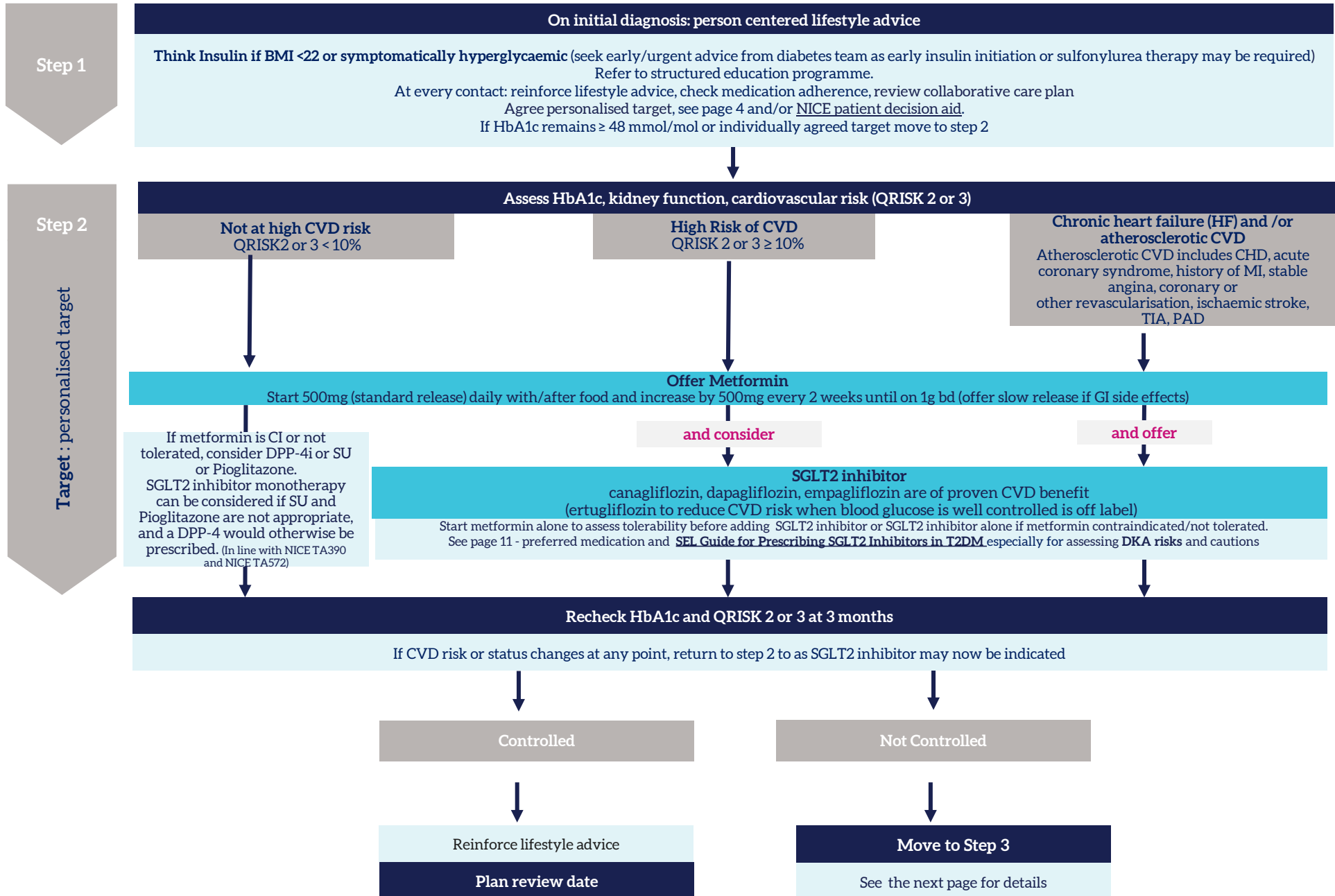
QOF target DM022. The percentage of patients with diabetes aged 40 years and over, with no history of cardiovascular disease and without moderate or severe frailty, who are currently treated with a statin (excluding patients with type 2 diabetes and a CVD risk score of <10% recorded in the preceding 3 years)(maximum achievement 90%)

Need Help?

Community Hypertension and Lipid Clinic: DXS referral or email for advice gst-tr.KHPCcommunityCVD@nhs.net see [SEL Lipid Management 2021](#) for criteria

Community Diabetes Clinic Single Point Referral or Advice and Guidance (ERS)

T2DM Glycaemic Control Management: Overview^{1,17,18}



T2DM Glycaemic Control Management: Overview^{1,17,18}

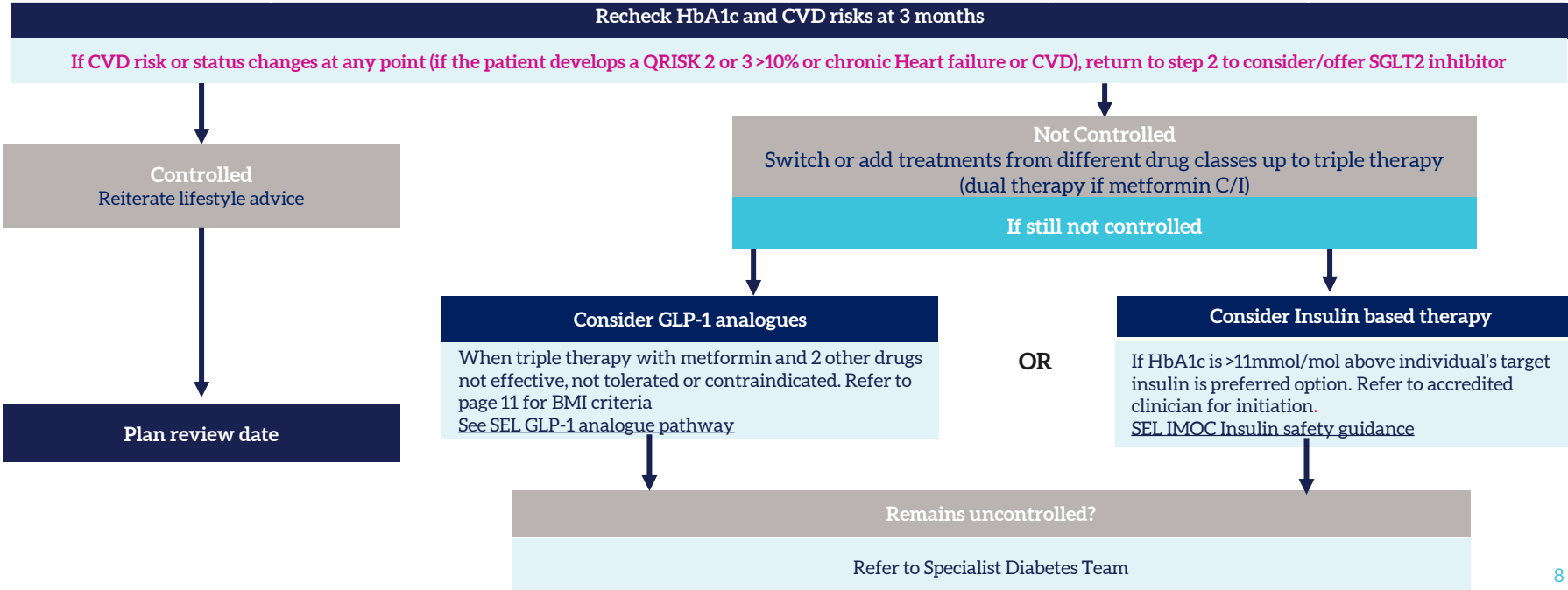
Step 3

1st intensification
Target : personalised target

Add therapy					
Informed by clinical judgment and patient preferences					
	Metformin	SGLT2 inhibitor (flozins)	Sulfonylureas (SU)	DDP-4 inhibitor - (gliptins)	Pioglitazone (Pio)
			Gliclazide is preferred SU in SEL	1 st line sitagliptin linagliptin in severe renal impairment	
Hypoglycaemia risk Hypoglycaemia risk may increase if antidiabetic drugs are used with insulin and/or sulfonylurea therapy. Consider reducing dose of sulfonylurea or insulin if clinically indicated.	low	low	moderate: higher risk in older and frail patients	low	low
Weight effect	none	loss	gain	none	gain
Side Effects/Notes For doses, more cautions and side effects see page 11, sick day rules page 10, BNF and/or EMC	GI disturbance Caution in renal impairment	GU infections, hypotension, dehydration, DKA Caution in renal impairment. See SEL Guide for Prescribing SGLT2 inhibitors in T2DM	Hypoglycaemia: caution in elderly, frail and certain occupations e.g. operating heavy machinery. See SEL Self Monitoring and DVLA guidance	Pancreatitis Caution in renal impairment	Oedema, Heart Failure, Fractures, ↑ Bladder Ca risk
Which SGLT2 inhibitor? See SEL Guide for Prescribing SGLT2 Inhibitors in T2DM	Dual therapy SGLT2 inhibitor + Metformin If S/U is contraindicated or not tolerated or person is at significant risk of hypoglycaemia or its consequences canagliflozin, dapagliflozin, empagliflozin are of proven CVD benefit (ertugliflozin to reduce CVD risk when blood glucose is well controlled is off label)		Triple therapy SGLT2 inhibitor + metformin+ SU Canagliflozin, empagliflozin or dapagliflozin	Triple therapy metformin+ DDP-4inhibitor + Ertugliflozin only if not controlled on dual therapy (metformin + DDP-4i) and SU AND Pio not appropriate	Triple therapy SGLT2 inhibitor+ metformin + Pioglitazone Canagliflozin, empagliflozin

Step 4

2nd Intensification
Target : personalised target



T2DM REVIEW (at least once a year)

	Tasks/Activity	Who?	Where?	Tools/Support
Review planning	Call/recall planning: Use CE Greenwich searches to help decide who to prioritise for review	Admin colleague with clinician support: GP/nurse/pharmacist		Ardens CE Greenwich and UCLP searches available on your EMIS system, ask CE leads for advice
Pre-patient review	Contact patient for: <ol style="list-style-type: none"> Bloods: renal function, FBC, lipids, HbA1c & urine ACR BP measurement: in practice or home monitoring Weight and height: home measurements especially for remote reviews 	HCA/GP Nurse/pharmacist	Remote or F2F	Accurx and E-consult have diabetes review for pre-review information gathering text/contact patient to encourage to complete ahead of review.
Patient review	<ul style="list-style-type: none"> Ask the patient their concerns, expectations, and questions Review trend for BMI and BP Review investigations: urine ACR, renal function, HbA1c, cholesterol Re-calculate QRISK2 or 3 for primary prevention Discuss risk-reduction + life-style: in context of QRISK2 or 3, Vital5 and COVID risk Medication review: any concerns with a focus on side-effects and adherence. Signpost to community pharmacy by adding note to prescription when starting a new medication for support under New Medicines Service. Ensure renal function, HbA1c, cholesterol and BP satisfactory and adjust medications if needed. Re-calculate QRISK2 or 3 for primary prevention. If >10% discuss option of adding or substituting an SGLT2i. If you are adding an SGLT2i to drug treatment which may cause hypo's e.g. SU's, consider reducing the dose of any drug that may contribute to hypos, especially if HbA1c is already at the agreed individual target. On initiation educate on symptoms of hypoglycaemia and follow up with a 3monthly HbA1c Foot check examination and advice on foot care - share link via Accurx Diabetes UK advice on Footcare Eye check: Check patient is receiving annual eye check ups Driving: Use Driver and Vehicle Licensing Agency (DVLA)'s Assessing fitness to drive: a guide for medical professionals to guide into account self-monitoring of blood glucose levels for adults with type 2 diabetes²⁵. 	GP/GP Nurse/pharmacist	Remote or F2F	Use clinical templates or Ardens Diabetes template (ensures correct coding, annual review, medication review & Vital5) Sign post to Diabetes Book and Learn for structured education
	<ul style="list-style-type: none"> Goal setting Self management Referral/signposting to community resources (see page 11) 	GP/GP nurse/pharmacist or social prescribing link worker & Patient		Self-management resources - send links via AccuRx. Diabetes UK Information Prescriptions to support personal care
	<ul style="list-style-type: none"> Follow-up plans: agreed with patient e.g. review BP monthly until it is at target, HbA1c every 3 months until at target and then 6 monthly 	GP/GP Nurse/pharmacist		

QRISK 2 or 3

Currently a QRISK2 'calculator' is integrated into EMIS, however a link to a more inclusive CV risk score QRISK3 can be found [here](#).
For several conditions QRISK2 will underestimate people's risk e.g. severe mental illness and rheumatological conditions.

QRISK 2/3 are CVD risk estimate calculators only, and therefore clinical judgment must be used. For example, people considered high risk of CVD should already be on/offered lipid management treatment (such as those with type 1 diabetes, CKD 3-5, existing CVD/previous Stroke/TIA, familial hypercholesterolaemia and people aged >85 yr).

DIABETES REVIEW

Dietary advice [Diabetes UK](#)

- Eat plenty of vegetables
- Have sufficient fibre in your diet
- Eat fish, especially oily fish (mackerel, salmon, sardines) regularly
- Cut down on:
 - sugary food and drinks
 - energy dense foods such as crisps, cakes, biscuits and pastries
 - alcohol
 - salty, processed foods

Consider doing the [CDEP Nutrition](#) learning module to increase your knowledge of diet and T2DM.

Goal setting

Support your patients to make SMART goals e.g.

Specific: 'I want to lose weight'

Measurable: 'I'll aim to lose 2kg'

Achievable: 'I attend a Book and Learn course to help me'

Realistic: 'I'll ask my family to help too'

Timed: 'I will do this over the next 6 months'

[Watch this short patient video](#) on achieving goals

Personalised Care

'A one-size-fits-all health and care system simply cannot meet the increasing complexity of people's needs and expectations. Personalised care is based on 'what matters' to people and their individual strengths and needs.' [NHS England](#)

Consider learning through the [Personalised Care Institute](#), or encouraging patients to work with a Social Prescribing Link Worker (SPLW) to help take control of their T2DM management.

SICK DAY RULES ^{26,27}

- As part of the management plan, blood glucose monitoring should be increased when unwell to prevent diabetic ketoacidosis or hypoglycaemia
- Maintain fluid and carbohydrate intake. Sugary fluids if glucose low and sugar-free fluids if glucose high
- NEVER stop insulin: change dose of insulin and gliclazide according to glucose readings

SADMANS rules

Consider stopping these classes of drugs temporarily during dehydrating illness, and restarting once able to eat and drink regularly for 24-48hrs

S	SGLT2 inhibitors	M	Metformin
A	ACE inhibitors	A	ARBs
D	Diuretics	N	NSAIDs
		S	Sulfonylureas (*If eating and drinking normally and blood sugars are high sulfonylureas should be continued)

Patients should seek medical advice if they:

- have no access to glucose monitoring and experience symptoms of high glucose – e.g. thirst, polyuria, fatigue
- are unable to maintain hydration or take carbohydrates due to vomiting
- have persistently high or low glucose despite altering medication doses
- other concerns

If changing medication doses remember to change them back when better i.e. eating and drinking normally for 2 days.

[Patient Information Leaflet: Type 2 Diabetes: What to do when you are ill \(TREND\)](#)

[London Clinical Network Guidance Sick day rules: how to manage Type 2 diabetes if you become unwell with coronavirus and what to do with your medication](#)

[NHS Video library guide to using glucometer](#)

(send links via Accurx)

	Drug	Starting dose	Daily Range	Notes (these are not extensive, please refer to the latest BNF and/or SPC for further information especially titration increments/cautions/contra-indications)
Biguanide	Metformin	500mg OD	Metformin standard release Start 500mg daily with/after food and increase by 500mg every 2 weeks until on 1g BD or maximum tolerated dose	<ul style="list-style-type: none"> Maximum dose standard release: 2-2.5g daily (3g in 3 divided doses in exceptional circumstances) Maximum dose for M/R: 2g once daily with evening meal. Routine renal function at least annually, 6 monthly for those at risk of renal impairment. Review dose if eGFR is <45ml/min (also review at 60ml/min if on >2g daily). Stop/avoid if eGFR <30ml/min. Consider slow-release preparation if standard preparation causes gastrointestinal side effects. Take with meals to reduce gastrointestinal side effects Remember sick day rules ▀ p10 Manufacturer advises patients and carers should be informed to seek urgent medical advice if symptoms of lactic acidosis e.g. dyspnoea, cramps, abdominal pain Long term use can reduce B12 absorption - if suspicion of B12 deficiency, monitor B12 serum levels
				<p>Latest NICE CKD guidance (August 2021) does not recommend adjusting the estimation of glomerular filtration rate (GFR) in people of Black African or African-Caribbean family background</p>
Sulfonylureas	Gliclazide is SEL preferred sulfonylurea	40mg – 80mg daily	160mg-320 mg daily, doses over 160mg divided. Titrate every 2 weeks according to pre-meal blood glucose – 4-6mmol/L or individualised target or against 3 monthly HbA1c.	<ul style="list-style-type: none"> Inform patients of risk of adverse events/hypoglycaemia, particularly if renal impairment Advise patients on how to manage hypoglycaemia Self monitor according to SEL SMBG guidance and DVLA guidance and consider alternative if Group 2 driver (large lorries and buses) Consider alternative if BMI >35 Caution in use in elderly, housebound, frail and in certain occupations e.g. operating heavy machinery Kidneys: gliclazide – use in caution with eGFR 30-60mL/min due to increased risk of hypoglycaemia. Avoid if eGFR<30mL/min Liver: AVOID in severe hepatic impairment due to increased risk of hypoglycaemia
GLP-1 analogues	Liraglutide, Dulaglutide, Semaglutide	See SEL information sheet	See SEL information sheet	<ul style="list-style-type: none"> If triple therapy with metformin and 2 other oral drugs is not effective, not tolerated or contraindicated, consider triple therapy by switching one drug for a GLP-1 analogue: only prescribe in those who <ul style="list-style-type: none"> have a BMI of ≥ 35 kg/m² - (lower in certain ethnic groups) and specific psychological or other medical problems associated with obesity OR have a BMI <35 kg/m² and – for whom insulin therapy would have significant occupational implications or – weight loss would benefit other significant obesity related comorbidities.
DDP-4 inhibitors (gliptins)	Sitagliptin 1 st line	100mg once daily	Sitagliptin eGFR 30-44 reduce dose to 50mg OD eGFR <30: 25mg OD	<ul style="list-style-type: none"> Increased risk of pancreatitis: Dipeptidylpeptidase-4 inhibitors: risk of acute pancreatitis Patient on dual or triple therapy of DDP4 inhibitors with a SU or dual therapy with insulin may be at risk of dose related hypoglycaemia, therefore dose reduction of SU or insulin may be needed NB Alogliptin and Saxagliptin are not on SEL formulary. Any initiation should weigh risk of heart failure in patients.
		Linagliptin in severe renal impairment	5mg once daily	
Pioglitazone	Pioglitazone	15-30mg once daily	Adjust according to response up to 45mg daily	<ul style="list-style-type: none"> Safety & efficacy should be reviewed every 3-6 months in continued therapy. Contraindicated in people with heart failure history, uninvestigated macroscopic haematuria, DKA, hepatic impairment or current/history of bladder cancer Caution: risk factors for heart failure or for those at increased risk of bone fractures, risk factors for bladder cancer, concomitant use with insulin, elderly. Patient on dual or triple therapy of pioglitazone with an SU or dual therapy with insulin may be at risk of dose related hypoglycaemia, therefore dose reduction of SU or insulin may be needed.

	Drug	Starting dose	Daily Range	Notes (these are not extensive, please refer to the latest BNF and/or SPC for further information especially titration increments/cautions/contra-indications)
<p>SGLT2 inhibitors (flozins)</p> <p>See SEL guide for prescribing SGLT2 inhibitors and hepatic impairment dosing</p> <p>Note glycaemic benefit will be limited for all SGLT2 inhibitor below eGFR of 45ml/min as the glucose lowering efficacy of SGLT2 inhibitor therapy is dependent on renal function. Further glycaemic control may be required</p>	Canagliflozin	100mg once daily	<p>Increase to 300mg daily if tolerated and required for glycaemic control.</p> <p>eGFR 45-59: max 100mg once daily eGFR <45: Not recommend for glycaemic control in T2DM</p>	<p>Use with CAUTION in the following circumstances</p> <ul style="list-style-type: none"> - Body mass index <25kg/m² (<23kg/m² in South Asian people) - Person adhering to a ketogenic/low calorie/low carbohydrate diet/intermittent fasting - Recent weight loss - Potential for pregnancy - People at risk of hypotension/hypovolaemia (e.g. elderly) - People diagnosed with or at risk of frailty - Cognitive impairment or use of medicine compliance aids (may imply inadequate understanding required to follow sick day rules and take action to prevent and identify DKA) - On high dose diuretics for heart failure (may need dose adjustment, contact heart failure team for advice) - On long term or recurrent courses of steroids (either IV or oral) - Raised haematocrit - Severe hepatic impairment - Recurrent urinary tract or genital tract infections - Long duration of diabetes (generally over 10 years since diagnosis) - Person with very high HbA1c (HbA1c >86mmol/mol) - Person considered at high risk of acute effects of hyperglycaemia e.g. dehydration due to non-adherence to medication - Past history of active foot disease/foot ulceration - Existing diabetes foot ulcers - Previous lower limb amputation - History of peripheral arterial disease (PAD) - Taking sulfonyleureas and/or insulin - increased risk of hypoglycaemia if started on SGLT2 inhibitors if eGFR>45 ml/min - Recurrent problematic hypoglycaemia - Those with risk factors for DKA e.g. low reserve of insulin secreting cells, conditions that restrict food intake or can lead to severe dehydration, a sudden reduction in insulin or increased requirement for insulin due to illness, surgery. <p>AVOID in the following circumstances</p> <ul style="list-style-type: none"> - Age <18 years - Pregnant, breastfeeding, planning pregnancy, female in their child-bearing years and sexually active without contraception - Person with excess alcohol consumption or intravenous drug user - Hypersensitivity to active substance or excipients - Acutely unwell person (acute medical illness including COVID19, surgery or planned medical procedure) - Active foot disease or acute ischaemic limb event - Inpatient with vascular event who is not stable - Eating disorder - eGFR lower than allowed in the up-to date licensing of the medication being considered (see SPC) - Multiple pre-disposing risks for Fournier's gangrene - Clinical features of significant insulin deficiency e.g. weight loss, symptoms of hyperglycaemia - Organ transplant (unlicensed - discuss with diabetes team) - T1DM or suspected or possible T1DM - Current/past history of DKA including ketone prone T2DM - Any diagnosis or suspicion of latent autoimmune diabetes (LADA), other genetic causes of diabetes, known pancreatic disease or injury - Rapid progression to insulin (within 1 year of diagnosis) - Recent major surgery <p>Discuss risks and benefits, side effects and sick day rules</p> <p>Side effects include: Increased risk of urinary tract and genital tract infections, polyuria and polydipsia, thirst, postural dizziness, hypotension, dehydration, hypoglycaemia with insulin or SU. Uncommon but serious: DKA, Fournier's gangrene, lower limb amputation, fracture risk</p> <p>Ensure adequate understanding of:</p> <ul style="list-style-type: none"> - Routine, preventative foot care. - Importance of keeping hydrated and drinking plenty of sugar free fluids. If restricting fluid due to other conditions e.g. heart failure, please contact heart failure team for advice and guidance (unless advised to restrict fluids by healthcare professional due to kidney or heart problems or some other reason) - Minimising risk of DKA by not starting a very low carbohydrate diet or ketogenic diet without discussing with healthcare professional first - Management and prevention of hypoglycaemia
	Dapagliflozin	10mg once daily	eGFR <45: Not recommend for glycaemic control in T2DM	
	Empagliflozin (Initiation not recommended in adults >85yrs)	10mg once daily	<p>eGFR ≥ 60: Increase to 25mg if tolerated and required eGFR 45-59: Initiate with 10mg for those with T2DM and established CVD. For those already taking empagliflozin, continue with 10mg only eGFR 30-44: For insufficiently controlled T2DM: Initiate or continue with 10mg for those with T2DM and established CVD only. Further glycaemic control may be required eGFR <30: Not recommend for glycaemic control in T2DM For decompensated HFrEF - See SEL guide for prescribing SGLT2 inhibitors</p>	
	Ertugliflozin (ertugliflozin to reduce CVD risk when blood glucose is well controlled is off label)	5mg once in the morning	<p>Increase to 15mg once daily if tolerated and required for glycaemic control</p> <p>eGFR 45-59: do not initiate, continue 5mg or 15mg for those already taking eGFR <45: Not recommended for glycaemic control in T2DM</p>	

	Drug	Starting dose	Daily Range	Notes (these are not extensive, please refer to the latest BNF for further information especially titration increments/cautions/contra-indications)
ACEI	1st line Ramipril	2.5mg OD (1.25mg OD in frail/elderly patients)	2.5mg-10mg OD	<ul style="list-style-type: none"> For people of Black African or African-Caribbean family origin, use ARB instead of ACEI (as increased risk of angioedema with ACEI) Check base line U&Es and renal profile (Na/K/Cr/eGFR). Hyperkalaemia may occur, therefore close monitoring of serum potassium is required Re-check renal profile within 2 weeks of initiation or dose increase and then at least annually. Titrate ACEI/ARB up at 2-4 weekly intervals to achieve optimal BP control Initiation/dose titration: if Cr increases by >20% (or eGFR falls by >15%) stop ACEI and seek specialist advice. ACEI dose should only be increased if serum creatinine increases by <20% (or eGFR falls by <15%) after each dose titration and potassium <5.5mmol ACEI/ARB dose should be optimised before the addition of a second agent Side effects: symptomatic hypotension can occur on first dosing – suggest take at night. Dry cough with ACEI, consider switch to ARB Caution: Do not combine ACEI and ARB to treat hypertension For diabetic nephropathy ARB of choice: losartan and irbesartan
	2nd line Lisinopril	10mg OD	10-80mg OD (maintenance dose 20mg for hypertension)	
ARBs	Losartan	50mg OD (25mg OD if >75yrs old)	50-100mg OD	<ul style="list-style-type: none"> ACEI/ARB dose should be optimised before the addition of a second agent Side effects: symptomatic hypotension can occur on first dosing – suggest take at night. Dry cough with ACEI, consider switch to ARB Caution: Do not combine ACEI and ARB to treat hypertension For diabetic nephropathy ARB of choice: losartan and irbesartan
	Candesartan	8mg OD	8mg-32mg OD	
CCBs	Amlodipine	5mg OD	5-10mg OD	<ul style="list-style-type: none"> Increase after 2-4 weeks to maximum dose of 10mg OD. Caution: Interacts with simvastatin – consider switching to atorvastatin. If amlodipine causes ankle oedema consider using a thiazide-like diuretic instead CI: unstable angina, aortic stenosis, severe hypotension Side effects include flushing and headaches at initiation; swollen ankles especially at higher doses
Thiazide-like diuretics	Indapamide (IR)	2.5mg OD	2.5mg OD	<ul style="list-style-type: none"> Check baseline renal profile, then after 2 weeks, then at least annually. If K < 3.5mmol/L or eGFR <25ml/min, stop indapamide and seek specialist advice.
Aldosterone receptor antagonist (K ⁺ sparing diuretic)	Spirololactone	25mg OD	25mg OD	<ul style="list-style-type: none"> Step 4: Spirololactone is the preferred diuretic at step 4 (NICE), but is an unlicensed indication in resistant hypertension (BNF) Consider only if potassium ≤4.5mmol/L (caution in reduced eGFR <30ml/min, as increased risk of hyperkalaemia). Monitor Na/K/renal function within 1 month and repeat 6 monthly thereafter If K>4.5mmol/L should be stopped.
α-B	Doxazosin (IR)	1mg OD	2-16mg OD (or BD dosing when >8mg/day)	<ul style="list-style-type: none"> Consider at Step 4 if potassium ≥ 4.5mmol/L. Initial dose of 1mg usually increased after 1-2 weeks to 2mg OD At doses above 8mg/day, consider split dosing from OD to BD to reduce BP variation Caution: Initial dose as may cause postural hypotension, avoid in elderly as orthostatic hypotension risk
β-B	Atenolol	25mg OD	25-50mg OD	<ul style="list-style-type: none"> Consider at Step 4 if potassium ≥ 4.5mmol/L. Particular caution in T2DM – symptoms of hypoglycaemia may be masked. Beta blockers may be considered in younger people and in those with an intolerance/CI to ACEI/ARBs, women of childbearing potential, co-existent anxiety/tachycardia/heart failure. CI: asthma, 2nd/3rd degree AV block, severe PAD Caution: beta blockers can cause bradycardia if combined with certain CCBs e.g. Verapamil/Diltiazem
	Bisoprolol	5-10mg OD	5-20mg OD	
Statin (See page 6)	Atorvastatin (alternative is rosuvastatin)	20mg OD	20-80mg OD	<ul style="list-style-type: none"> Seek specialist advice if eGFR <30ml/min, liver disease, untreated hypothyroidism, heavy drinker CI in pregnancy, breast feeding, avoid or address contraceptive needs women of childbearing age. Advise to stop 3 months before conception. Multiple drug interactions, check BNF for advice, avoid grapefruit juice Advise patient to visit GP if they experience unexplained muscle pains Refer to SEL IMOC Guidelines on Lipid Management

Educational Resources

<https://pitstopdiabetes.co.uk/> comprehensive, competence based learning.

Free for all Greenwich clinicians (email: Kirsty.ayton@nhs.net)

www.cdep.org.uk

Diabetes in Healthcare Diabetes UK free on line learning for health professionals

RCGP Diabetes Hub

Personalised Care Institute

Primary Care Diabetes Society

Patient Resources

Live Well Greenwich – Diabetes Community resources for patient support

Diabetes Book and Learn: NHS south London Diabetes Education Booking Service.

Diabetes UK - Local Groups - Greenwich Nepalese local group (diabetesukgroup.org) support and information for Greenwich Nepalese group with diabetes and their carers.

HEAL-D – Healthy Eating & Active Lifestyles for Diabetes in African & Caribbean communities (DXS)

Diabetes UK website

Health and Care patient information videos on range of diabetes topics

HEAL-D | Lifestyle for diabetes in African & Caribbean communities

Greenwich clinical support

Full range of diabetes services in Greenwich available on DXS

3TT Service: Support in the managing the poorest controlled diabetes in Greenwich, with a HbA1c >75. Email DSN: greenwichhealth.diabetes@nhs.net

Podiatry: Refer via Email: oxl-tr.podiatry@nhs.net. Tel 020 8320 3550

Greenwich Intermediate Diabetes service (via Oxleas)- Support GH/Practices to help patients meet 3TT in those with HbA1C >75. Offer home visits and insulin/GLP 1 initiation. Email: samathacunningham@nhs.net or Siobhan.linane@nhs.net

Urgent telephone advice- Consultant connect: (your practice will have been given its own specific telephone number)

Non-urgent ‘Advice & Guidance’- via ERS

T2DM and COVID-19

See SEL resources

Quality Improvement Resource

Quality Improvement Toolkit for Diabetes Care | QI Ready Learning Network (rcgp.org.uk)

Acknowledgements

CESEL guides are developed by SEL primary care clinicians and are localised to include borough specific pathways and resources. The guides go through a formal approval process including SEL Medicines Optimisation Committee (SEL MOC) for medicines content, CESEL Steering Group with representation from SELCCG and PCNs, and borough based Medicines Management Teams (MMT).

CESEL would like to thank all our colleagues who participated and fed-back during the consultation process including colleagues from the Public Health Greenwich, Greenwich Health, Greenwich Medicines Optimisation Team and Oxleas Community team, IMOC and colleagues from King’s Health Partners.

References

1. Type 2 Diabetes in adults: Management. NICE Guideline (NG28) Dec 2015, updated June 2022
2. Quality and Outcomes Framework guidance for 2023/24. <https://www.england.nhs.uk/wp-content/uploads/2023/03/PRN00289-quality-and-outcomes-framework-guidance-for-2023-24.pdf>
3. SELICS Lipid Management: Medicines Optimisation Pathways September 2021
4. Primary care-led weight management for remission of type 2 diabetes (DiRECT): an open-label, cluster-randomised trial. Lean et al., Lancet 2017.
5. Cost effectiveness analysis of improved blood pressure control in hypertensive patients with type 2 diabetes: UKPDS 40 BMJ 1998
6. Efficacy of cholesterol-lowering therapy in 18,686 people with diabetes in 14 randomised trials of statins: a meta-analysis. Cholesterol Treatment Trials Collaborators, The Lancet 2008.
7. Estimating the impact of better management of glycaemic control in adults with Type 1 and Type 2 diabetes on the number of clinical complications and the associated financial benefit. Baxter et al, Diabetic Medicine 2016.
8. Action on smoking and health (ASH), Fact sheet number 20.
9. The Cost of Diabetes Report. Diabetes UK 2014
10. Diabetes UK website
11. The Global Registry of New-Onset, COVID-19-Related Diabetes e-dendrite.com
12. Consensus Approach to the Diagnosis of Type 2 Diabetes. London Diabetes Clinical Network September 2018
13. Suspected cancer: recognition and referral NICE (NG12) June 2015
14. Obesity: identification, assessment and management. NICE guideline (CG189) Nov 2014
15. Quality and outcomes framework guidance fir 2021/22
16. Hypertension in adults: diagnosis and management. NICE guideline (CG136) Aug 2019
17. South East London Type 2 Diabetes Mellitus Glycaemic Control Management Pathway for Adults September 2022
18. South East London: Guide for prescribing Sodium Glucose Co-transporter 2 (SGLT2) inhibitors in HbA1c Management in Adults with Type 2 Diabetes Mellitus (T2DM) September 2022
19. Chronic kidney disease in adults: assessment and management. NICE guideline (NG203) August 2021
20. OneLondon Diabetic Kidney Disease Risk Stratification Pathway Winter 2020/21
21. National Diabetes Audit – Care Processes and Treatment Targets
22. Chronic Kidney Disease in adults: assessment and management, NICE Clinical Guideline (CG182) July 2014, updated Jan 2015.
23. Diabetic foot problems: prevention and management NICE guideline (NG19) August 2015, updated January 2016
24. Diabetic patient foot pathway for Southwark and Lambeth August 2016
25. Healthy weight programme, Guy's and St Thomas' NHS Foundation Trust
26. DVLA Assessing fitness to drive: a guide for medical professionals.
27. Trend. Type 2 Diabetes: What to do when you are ill October 2018
28. London Clinical Network Guidance Sick day rules: how to manage Type 2 diabetes if you become unwell with coronavirus and what to do with your medication Updated April 2020
29. British National Formulary, last updated Aug 2022
30. <https://bhsoc.org/bp-monitors/for-home-use/>

Abbreviations

2WW – Two week wait referral	GI – Gastro-intestinal
α-B – Alpha blocker	IGR – Impaired Glucose Regulation
A&E – Accident and Emergency	IR – Immediate release
ABPM – Ambulatory blood pressure monitoring	K – Potassium
ACEI – Angiotensin converting enzyme inhibitor	KCH – King's College Hospital
ACR – Albumin-creatinine ratio	HbA1c – Haemoglobin A1c %
ALT – Alanine aminotransferase	HBPM – Home blood pressure monitoring
APL – Active Patient Link tools	HDL – High-density lipoprotein
ARB – Angiotensin receptor blocker	IGR – Impaired glucose regulation
AST – Aspartate aminotransferase	IHD – Ischaemic Heart Disease
BAME – Black, Asian and Minority Ethnic	LFT – Liver function tests
β-B – Beta blocker	LADA – Latent autoimmune diabetes in adults
BD – Twice daily (dosing)	LDL – Low-density lipoprotein
BM- Blood monitoring	MI – Myocardial infarction
BMI – Body mass index	NDA – National Diabetes Audit
BNF – British National Formulary	NICE – The National Institute for Health and Care Excellence
BP – Blood Pressure	NSAID – Non steroidal anti-inflammatory
CDEP – Cambridge diabetes Education Programme	OD – Once daily (dosing)
CES – Clinical Effectiveness Southwark	PAD – Peripheral Arterial Disease
CCB – Calcium channel blocker	PCOS – Polycystic Ovarian Syndrome
CI – contra-indication	PHM – Population health management (contract)
CK – Creatinine Kinase	PLT – Protected Learning Time
CKD – Chronic Kidney Disease	PMS – Primary medical services (contract)
Cr – Creatinine	QOF – Quality and outcomes framework (contract)
CVD – Cardiovascular disease	QRISK2 – a prediction algorithm for CVD. EMIS currently using QRISK2 (although QRISK3 released in 2017)
DASH – Dietary approaches to stop hypertension	RCGP – Royal College of General Practitioners
DESMOND – Diabetes Education and Self-Management for Ongoing and Diagnosed	Renal profile – this includes serum sodium/potassium/creatinine/eGFR
DPP – Diabetes Prevention Programme	SELAPC – South East London Area Prescribing Committee
DPP-4i – Dipeptidylpeptidase-4 inhibitor	SEL – South East London
DVLA – Driver and Vehicle Licensing Agency	SBP – Systolic blood pressure
DXS – Point-of-care tool for EMIS Web	SPC – Summary of product characteristics
ECG – Electrocardiogram	SGLT2i – Sodium Glucose Co-transporter 2 (SGLT2) inhibitors
eGFR – Estimated glomerular filtration rate	SPLW – Social Prescribing Link Worker
ERS – Electronic Referral System	T2DM – Type 2 Diabetes Mellitus
F2F – Face to face	TIA – Transient ischaemic attack
FBC – Full blood count	TFT – Thyroid function blood tests
GLP-1 – Glucagon-like peptide -1	
GSST – Guy's and St. Thomas' Hospital	

Making the right thing to do the easy thing to do.