Clinical Effectiveness Southwark

QUAY HEALTH SOLUTIONS

ihl improving health

NHS Southwark Clinical Commissioning Group

The Health Foundation

Type 2 Diabetes Mellitus in Adults

A guide for Southwark General Practice

Key Messages

1. Lifestyle: if overweight, agree a weight loss goal of 5–10% of body weight[1]
2. Blood pressure: target BP ≤140/80 (130/80 in established cerebrovascular, eye and kidney disease)[1]
3. Cholesterol: Statin if QRISK2 ≥ 10%[2]
4. HbA1c: target≤ 58mmol/mol (≤7.5%)[1,3]

Always work within your knowledge and competency

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Southwark

Why focus on Type 2 Diabetes (T2DM) in Southwark?

- Even modest improvements in glucose control reduce incidence of complications including foot ulcers, amputations and neuropathy.[4]
- Tight blood pressure control substantially reduces diabetes complications and improves survival.[5]
- Cholesterol lowering drugs reduce the risk of major vascular events.[6]
- Weight management may normalise blood sugar levels without the use of drugs.[7]
- Smoking is a risk factor for T2DM and 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]
- Diabetes was chosen as a priority area by Southwark practices (Protected Learning Time event – October 2017).

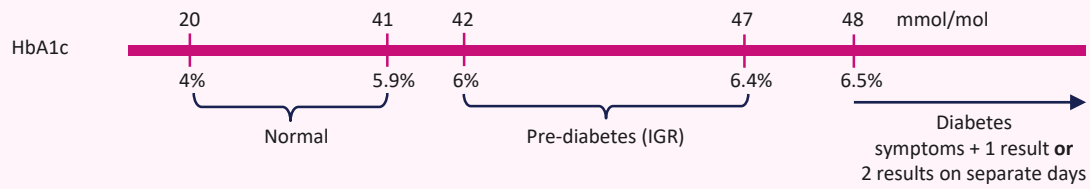
Increasing T2DM prevalence and control will deliver better outcomes for patients and improve practice income

Risk factors for T2DM[10]

- Age over 40 and white
- Age over 25 and black 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

Calculate T2DM risk using a QDiabetes calculator

Diagnosis of T2DM using HbA1c[1,11]



Normal haemoglobin is a requirement to interpret HbA1c results. The diagnosis and monitoring of T2DM using HbA1c is dependent on normal erythropoiesis, no genetic or chemically altered haemoglobins, normal glycation and normal erythrocyte destruction rates. HbA1c is not suitable for diagnosis in rapid onset diabetes including Type 1 and pregnancy.[11]

Management of Pre-Diabetes

- Use CES Pre-Diabetes template to ensure accurate coding
- Refer to structured education:
  - 42-43mmol/mol refer to Walking Away from Diabetes
  - 44-47mmol/mol refer to Diabetes Prevention Programme (DPP)
- Annual review for patients with pre-diabetes and history of gestational diabetes
  - HbA1c
  - BP
  - BMI
  - Brief advice

New Diagnosis: ENSURE THE DIAGNOSIS IS BELIEVED AND UNDERSTOOD

- Use CES T2DM template to ensure accurate coding
- Refer to Structured Education Programme – Diabetes Book and Learn Southwark
- Agree a clear review date

Use Diabetes UK Information Prescriptions to support personal care

Considering pregnancy

- Refer Community Diabetes Single Point Referral, Diabetes Pre-pregnancy Clinic KCH or GSTT

New T2DM, >60 years, weight loss

- 2WW referral for suspected cancer of pancreas[12]

T2DM Eight Care Processes[13]

- **Individualise all targets, review dates and monitoring**
- **Ensure all care processes undertaken at least annually**

1 Body Mass Index kg/m² [1, 14]

- Overweight
  - BMI ≥ 25 White groups
  - BMI ≥ 23 Black African, African Caribbean and Asian groups
- Agree an initial weight loss target of 5–10% of body weight

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2 Blood Pressure[1, 15]

- Target ≤140/80mmHg
- ≤ 130/80mmHg for established cerebrovascular, eye and kidney disease
- ≤ 150/90mmHg if ≥ 80 years

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3 Cholesterol[2]

- Primary prevention:
  - Statin if QRISK2 ≥ 10% after 3 months lifestyle advice

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4 HbA1c[1,3]

Check 3-6 monthly until stable, then 6 monthly

Target:

- ≤48mmol/mol (6.5%) unless on a drug that could cause adverse events
- ≤58mmol/mol (7.5%) if on a drug that could cause adverse events e.g. gliclazide and insulin

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5 & 6 Renal function and albumin creatinine ratio (ACR) [11]

ACR

- Ideally early morning urine.
- If random sample then confirm with early morning sample
  - **Women ACR** ≥ 2.5 mg/mmol = nephropathy
  - **Men ACR** ≥ 3.5 mg/mmol = nephropathy

Nephropathy – start an ACEI/ARB even if normotensive

Consider CKD in patients with raised ACR and low eGFR[16]

7 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.

8 Foot Check

Medium risk – neuropathy or absent pulse ➢Refer Podiatry Community Clinic

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

Active ulcer/infection/ischaemia > KCH/GSTT diabetic foot clinic or A&E out of hours

Referral details on Diabetic Foot Pathway for Southwark and Lambeth[DXS]

And remember

- Flu annually and pneumococcal immunisation once[10]
- Retinopathy screening within 3 months of diagnosis and at least annually[1.] Patients called automatically once coded for T2DM

Clinical Effectiveness Southwark

Identify and address all modifiable risk factors → **Individualise targets and goals e.g. frail, elderly, end of life care** → **Check understanding and adherence and set a review date**

Weight Management in T2DM[1,19,20,21]

Exercise

All	At least 30 minutes of moderate or greater physical activity on 5 or more days a week
To prevent obesity	45-60 minutes moderate intensity exercise a day
With a history of obesity	60-90 minutes to avoid regaining weight

Southwark activities

Southwark Sport and Leisure

Southwark Wellbeing Hub Directory for community resources

Exercise on Referral

Health Improvement Hub – access via NHS Health Checks

Weight Management in T2DM

BMI kg/m^2	Offer All: • Tier 1 – Universal services • Diet and exercise advice
≥ 28	• Offer orlistat as part of an overall weight management plan
30-34.9 (Asian 27.5)	• Weight Management Tier 2 – Lifestyle intervention • Consider assessment for bariatric surgery
35-39.9	• Weight Management Tier 2 – Lifestyle intervention • Tier 4 – Offer assessment for bariatric surgery
>40 (Asian > 37.5)	• Weight Management Tier 3 – Specialist weight management • Tier 4 – Offer assessment for bariatric surgery

- Southwark Weight Management Programme
- Primary Care Navigators can signpost patients to local resources
- Adult Community Dietetics for 1:1 input

Blood pressure management in T2DM[1,15,22]

Treat Stage 1 Hypertension in T2DM

BP ≥ 140/90mmHg + ABPM/Home monitoring average ≥ 135/85mm/Hg

Patients of Afro-Caribbean origin should start at Step 2

Pregnant or chance of becoming pregnant? – avoid ACEI and use CCB first line[15]

Monitor every 1-2 months until target is reached and then every 4-6 months

Step 1

A: ACEI 1st Line (ARB if intolerant)

ramipril/lisinopril/enalapril

Step 2

A+C or D: ACEI (ARB if intolerant) + CCB or thiazide-type diuretic

amlodopine | indapamide

Step 3

A+C+D: ACEI (ARB if intolerant) + CCB + thiazide-type diuretic

Step 4

Add an alpha-blocker, beta-blocker or a potassium sparing diuretic (the last with caution if on an ACEI or ARB)

Alpha-blocker (doxazosin) or beta-blocker (atenolol/bisoprolol)
Consider seeking specialist advice

KEY: **A** = ACEI/ARB | **B** = β-Blocker | **C** = CCB | **D** = diuretic (thiazide type)

HBPM: Home BP monitoring

- Ensure patient is using an accurate BP machine and advise to record two BP readings every morning and evening every day for 7 days
- In the practice, disregard the first days readings and take an average of all other readings

Identify and address all modifiable risk factors → **Individualise targets and goals e.g. frail, elderly, end of life care** → **Check understanding and adherence and set a review date**

Cholesterol Management in T2DM [2,23]

Primary Prevention
If QRISK2 ≥ 10% after 3/12 lifestyle advice
Atorvastatin 20mg

Secondary Prevention
Atorvastatin 80mg

Or maximum tolerated dose if not able to tolerate advised dosage

- Baseline lipid profile, TFT, LFT (ALT or AST). Do not start if hypothyroid or AST/ALT> 3 x upper limit of normal
- LFT (ALT or AST) at 3 and 12 months – not again unless indicated
- History of unexplained muscle pain with or without statins: check CK, do not use statin if CK persistently > 5x upper limit of normal
- Check lipid profile annually to check efficacy and adherence

Also refer to South London Guidance on Lipid Management and Prescribing Statins

- QOF and PMS target = cholesterol ≤ 5 mmol/mol
- Lower than 100% target is recognition that not all those with T2DM meet criteria for statin treatment

HbA1c management in T2DM[13]

Step 1 3 months
Person centred lifestyle advice
- If HbA1c ≥ 48mmol/mol (6.5%) go to Step 2

Step 2 3 months
Metformin standard release
- Start 500mg daily with/after food and increase by 500mg every 2 weeks until on 1g bd
- Aim for HbA1c of ≤ 48mmol/mol (6.5%)
- If HbA1c ≥ 58mmol/mol (7.5%) go to step 3

Step 3 3 months
Gliclazide
- 40mg-80mg once to twice daily with meals
- Titrate on pre-meal blood glucose target 4-6mmol/l or HbA1c
- Consider alternative if BMI>35, frail elderly or concern re hypoglycaemia e.g. Group 2 driver[24]
- If HbA1c ≥ 58mmol/mol (7.5%) go to step 4

First intensification

Step 4 3 months
- Contra-indications to metformin or gliclazide or
- 3rd agent needed or considering insulin ?

- Please refer to South East London Blood Glucose Control Management Pathway for Adults with Type 2 Diabetes Mellitus

Second intensification

Need Help?

Community Hypertension and Lipid Clinic: DXS referral or email for advice
gst-tr.KHPCommunityCVD@nhs.net

Need Help?

Community Diabetes Clinic Single Point Referral or arrange a Virtual Clinic
GST-TR.southwark-diabetes@nhs.net

T2DM: Preferred Medication[1,2,3,15,21,22,23]

	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)
Biguanide	Metformin Corrected eGFR refers to an eGFR that is corrected for ethnicity. For black people of African or Caribbean family origin only, multiple their eGFR by 1.21[11]	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	• Ensure corrected eGFR >45ml/min, or review dose. Contraindicated if corrected eGFR <30ml/min, check renal function at least annually • Consider slow release preparation up to TDS if standard preparation not tolerated • Take with meals to reduce gastrointestinal side effects • Has a 'legacy' effect of reduced complications from T2DM • Remember sick day rules ☛ p.10 • Manufacturer advises patients and carers should be informed to seek urgent medical advice if symptoms of lactic acidosis e.g. dyspnoea, cramps, abdominal pain
Sulfonylureas	Gliclazide	40mg – 80mg daily	160mg-320 mg daily, doses over 160mg divided. Titrate every 2 weeks according to pre-meal blood glucose – target 4-6mmol/l or against 3 monthly HbA1c.	• Inform patients of risk of adverse events/hypoglycaemia, particularly if renal impairment • Use with care in those with mild to moderate renal impairment (eGFR 30-60ml/min), only prescribe under specialist advice in severe impairment (eGFR <30ml/min) • Self monitor according to DVLA guidance and consider alternative if Group 2 driver (large lorries and buses)[24] • Consider alternative if BMI >35 • Care with frail elderly, housebound and certain occupations e.g. working heavy machinery
Lipase inhibitor	Orlistat In T2DM consider Orlistat where BMI ≥ 28kg/m^2	120mg up to three times a day		• Take before, during or up to one hour after each meal • Aim for a target weight loss of at least 5% of body weight after 12 weeks. Note; weight loss may be slower in T2DM and so less strict targets may be considered on a case by case basis. • Omit the dose if a meal is missed or does not contain fat • May impair absorption of fat soluble vitamins e.g. Vitamin D, and drugs if taken concurrently • SPC: discontinue after 12 weeks if patients have been unable to lose at least 5 % of the body weight as measured at the start of therapy.
ACEI	1st line Ramipril	2.5mg OD (1.25mg OD in frail/elderly patients)	1.25-10mg OD	• Check base line renal profile (Na/K/Cr/eGFR). Hyperkalaemia may occur, therefore close monitoring of potassium is required • Recheck renal profile within 2/52 of initiation or dose increase and then at least annually. • Titrate ACEI/ARB up at 4 weekly intervals to achieve optimal BP • 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 adding in 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
	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	
	Candesartan	8mg OD	8mg-32mg OD	

T2DM: Preferred Medication[1,2,3,15,21,22,23]

	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)
CCBs	Amlodopine	5mg OD	5-10mg OD	• Increase after 2-4 weeks to maximum dose of 10mg OD. • Caution: Interacts with simvastatin –consider switching to atorvastatin. • If amlodopine causes ankle oedema consider alterntaive CCB e.g. lacidipine (not nifedipine) • CI: Unstable angina, aortic stenosis
Thiazide diuretics	Indapamide (IR)	2.5mg OD	2.5mg OD	• Check baseline renal profile, then after 2/52, then at least annually. If K < 3.5mmol/L or eGFR <25ml/min stop indapamide and seek specialist advice.
	Chlortalidone	12.5mg OD	12.5-50mg OD Step 4 = 50mg OD	• Check baseline renal profile, then after 2/52, then at least annually. If K < 3.5mmol/L or eGFR <25ml/min stop chlortalidone and seek specialist advice. • Note: BNF states 25mg OD starting dose, whilst NICE suggests 12.5mg starting dose. • An alternative to indapamide, but tablets need to be halved/quartered for appropriate dosing. Morning dosing. • Step 4 – offer only if spironolactone not suitable. Step 4 dose is 50mg OD, but only if potassium >4.5mmol/L.
Aldosterone receptor antagonist (K-sparing diuretic)	Spironolactone	25mg OD	25-50mg Step 4 dose = 50mg	• Spironolactone is the preferred diuretic at Step 4. Consider only if potassium ≤ 4.5mmnol/L (caution in reduced eGFR<60ml/min as increased risk of hyperkalaemia) • High dose at step 4 = 50mg OD but only potassium is ≤ 4.5mmol/L. Monitor Na/K/Renal function within one month and repeat as required thereafter.
α-B	Doxazosin (IR)	1mg OD	2-16mg OD (or BD dosing when >8mg/day)	• Consider at Step 4. 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 with initial dose as may cause postural hypotension
β-B	Atenolol	25mg OD	25-50mg OD	• Particular caution in T2DM – symptoms of hypoglycaemia may be masked. Consider at Step 4 • Beta blockers maybe considered in younger people and in those with an intolerance/CI to ACEI/ARBs, women of childbearing age, co-existent anxiety/tachycardia/heart failure. • CI include asthma, 2nd/3rd degree AV block, severe PAD • Caution – beta blockers can cause bradycardia if combined with certain CCBs e.g. Verapamil/Diltiazem • Caution: increased risk of diabetes when beta-blocker is prescribed with a thiazide diuretic.
	Bisoprolol	5-10mg OD	5-20mg OD	
Statin	Atorvastatin	20mg OD	20-80mg OD	• 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, limit or avoid grapefruit juice • Advise patient to visit GP if they experience unexplained muscle pains • Refer to SELAPC Guidelines on Lipid Management[23]

Educational Resources

Cambridge Diabetes Education Programme, comprehensive, competence based learning.
Free for all Southwark clinicians www.cdep.org.uk
REGISTRATION KEY CODE: SOUCCGCDEP

RCGP Essential Knowledge Update: Type 2 Diabetes in Adults: Management
Free to all clinicians, brief update of NICE guidance

Quality Improvement Resource

RCGP Quality Improvement Toolkit for Diabetes Care

Sick Day Rules

DAMN Drugs[25]
Consider stopping Diuretics, ACEI/ARB, Metformin, NSAID during acute inter-current illness to reduce risk of kidney injury.

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Abbreviations

2WW – Two week wait referral

α-B – Alpha blocker

A&E – Accident and Emergency

ABPM – Ambulatory blood pressure monitoring

ACEI– Angiotensin converting enzyme inhibitor

ACR – Albumin-creatinine ratio

ALT – Alanine aminotransferase

ARB – Angiotensin receptor blocker

AST – Aspartate aminotransferase

β-B – Beta blocker

BD – Twice daily (dosing)

BMI – Body mass index

BP – Blood Pressure

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CCB – Calcium channel blocker

CK – Creatinine Kinase

CKD – Chronic Kidney Disease

Cr – Creatinine

CVD – Cardiovascular disease

DASH – Dietary approaches to stop hypertension

DESMOND – Diabetes Education and Self-Management for Ongoing and Diagnosed

DPP – Diabetes Prevention Programme

DVLA – Driver and Vehicle Licensing Agency

DXS – Point-of-care tool for EMIS Web

ECG – Electrocardiogram

eGFR – Estimated glomerular filtration rate

ERS – Electronic Referral System

FBC – Full blood count

GSTT – Guy's and St. Thomas' Hospital

IGR – Impaired Glucose Regulation

IR – Immediate release

K – Potassium

KCH – King's College Hospital

HbA1c – Haemoglobin A1c %

HBPM– Home blood pressure monitoring

IGR – Impaired glucose regulation

IHD – Ischaemic Heart Disease

LFT – Liver function tests

NDA – National Diabetes Audit

NSAID – Non steroidal anti-inflammatory

OD – Once daily (dosing)

PAD – Peripheral Arterial Disease

PCOS – Polycystic Ovarian Syndrome

PHM – Population health management (contract)

PMS – Primary medical services (contract)

QOF – Quality and outcomes framework (contract)

QRISK2 – a prediction algorithm for CVD. EMIS currently using QRISK2 (although QRISK3 released in 2017)

RCGP – Royal College of General Practitioners

Renal profile – this includes serum sodium/potassium/creatinine/eGFR

SELAPC – South East London Area Prescribing Committee

SPC – **summary of product characteristics**

T2DM – Type 2 Diabetes Mellitus

TIA – Transient ischaemic attack

TFT – Thyroid function blood tests

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