Clinical Effectiveness
South East London

Our Healthier South East London
Integrated Care System

NHS

Type 2 Diabetes Mellitus in Adults

A guide for Bexley General Practice

Key messages

1. Lifestyle changes can prevent/reduce need for medication
2. Optimise BP management adjusted for age and co-morbidities
3. Check for complications and do a QRISK2 or 3
4. Optimise HbA1c adjusted for hypoglycaemic risk and frailty
5. Encourage adherence to lifestyle and medication, review at least annually

Always work within your knowledge and competency

October 2022 (review October 2023, or earlier if indicated)

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

T2DM is a risk factor for having worse outcomes from COVID-19.

Primary Care can contribute substantially to reducing diabetes complications, major vascular events and improve survival[9].

- **Preventable:** Management of non-diabetic hyperglycaemia and risk factors can reduce the risk of developing T2DM (and therefore its complications)
- **Under-diagnosed:** T2DM is common and 3,032 people remain undiagnosed in Bexley (prevalence 6% vs 8.3% expected prevalence)[32]
- **Under-treated:** Only 18% of people with diabetes had achieved the Triple Target (HbA1c/BP/statins) by Dec 2021 (historically ~ 41% for Dec 2019 and Dec 2020)

- **Weight management:** may normalise blood sugar control without the use of drugs[4]
- **Tight blood pressure control:** substantially reduces micro- and macrovascular complications and improves survival[5]
- **Cholesterol lowering drugs:** reduce the risk of major vascular events[6]
- **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]

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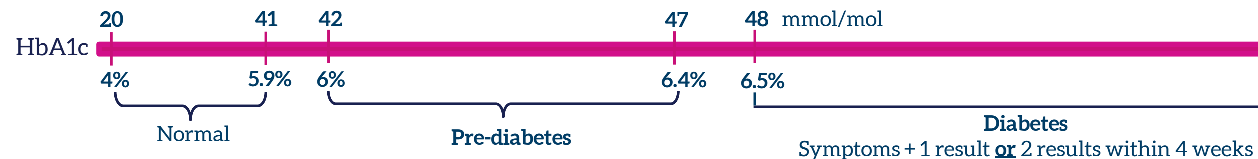
Risk Factors and Diagnosis

Risk factors for T2DM[10]

- Age >25 years and African-Caribbean or Asian
- Age >40 years and Caucasian/White European
- High blood pressure
- BMI >25 especially if 'apple shape'
- History of coronary heart disease or stroke
- Serious mental illness
- Polycystic ovarian syndrome and gestational diabetes
- Family history
- COVID-19 infection may precipitate a diabetes diagnosis[11]

Calculate T2DM risk using a QDiabetes calculator

Diagnosis using HbA1c[12]



Diagnosing diabetes with an HbA1c	If initial result is within diagnostic range for diabetes, follow the above guidance
Cautions regarding HbA1c	Caution using HbA1c in abnormal red blood cell turnover or abnormal Hb type (haemoglobinopathy, severe anaemia, altered red cell life-span e.g. post-splenectomy, recent blood transfusion) [In these conditions, liaise with local lab for an appropriate test e.g. fructosamine assay, and interpretation scale]
DO NOT use HbA1c to diagnose	Type 1 diabetes, T2DM in <30 years, symptoms <2 months, pregnancy, up to 2 months post-partum, end-stage renal disease, acute pancreatic damage, HIV infection, or if taking drugs linked with hyperglycaemia e.g. long-term corticosteroids[12]

Principles of care

	Pre-Diabetes	New diagnosis of Diabetes
Support patient understanding	Support patients/carers to reach an understanding of the diagnosis and implications and what they can do to care for themselves	
Code correctly	Use Ardens pre-diabetes clinical template	Use Ardens/Year of Care diabetes clinical template
Structured education is integral to their care	National Diabetes Prevention Programme (NDPP) - Patients can use Know Your Risk to understand their risk of developing T2DM - If score ≥16 (and no HbA1c in the last 12 months), patients will be signposted to GP for further assessments - If HbA1c result known (≤12 months), patients can still self-refer to the NDPP programme	Emphasise to patient and carers. Refer/encourage self-referral to structure education programme: Diabetes Book and Learn
Additional	Ardens pre-diabetes search	Use Diabetes UK Information Prescriptions to support personal care (can be downloaded into EMIS and Vision)
Reviews	**Offer annual review to people with non-diabetic hyperglycaemia and/or history of gestational diabetes:** HbA1c and Vital 5 (BP, BMI, smoking status, mental health and alcohol intake)	• Agree clear next review date • All patients should in addition have an annual review with the NICE eight care processes (8CPs)

Red flags

- **New T2DM in >60 years old with weight loss?** Refer on 2 week-wait referral for suspected cancer of pancreas[13]
- **HbA1c >85mmol/mol +/- weight loss at diagnosis?** Consider Type 1, ketosis prone, latent autoimmune diabetes in adults (LADA). Seek specialist advice.

Diabetes in women considering pregnancy?

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Refer to St Thomas' Pre-conception counselling clinic via eRS Specialty 'Obstetrics' > Clinic type 'Maternal Medicine'

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Type 2 Diabetes: NICE 8 care processes (8CP)

Individualise all targets, review dates and monitoring

Ensure all care processes undertaken at least annually

1 Body Mass Index[2,14,30]

page 6

Overweight:
- BMI ≥ 23 Asian, African-Caribbean groups
- BMI ≥ 25 Caucasian/White European

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

2 Which BP target?

page 6

NICE[16]	Age <80yrs: ≤140/90mmHg Age ≥80yrs ≤150/90mmHg With CKD/ACR ≥70mg/mmol ≤130/80mmHg
QOF[2,15]	≤140/90mmHg (excludes those with moderate/severe frailty)

QOF[2,15] & NICE[16]: 5mmgHg lower for HPBM or ABPM readings

3 Cholesterol[3]

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- **Primary prevention:** Offer statin if QRISK2 or 3 ≥ 10% (QOF), after addressing modifiable risk factors
- **Secondary prevention** (history of CVD): atorvastatin 40-80mg OD

Women of child-bearing age: need contraception during statin treatment and for 1 month afterwards. Discontinue statins 3 months before trying to conceive
QOF target excludes those with moderate or severe frailty

4 HbA1c[1,17]

page 8,9

- It takes 3 months from medication dose change to impact HbA1c
- **HbA1c reviews:** check 3 monthly until target is reached, then 6 monthly
- **Individualise HbA1c 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.
- **Targets:**

NICE	**≤48mmol/mol** (6.5%)	Unless taking a drug that could cause adverse low sugars/hypos e.g. gliclazide, insulin
	≤53mmol/mol (7%)	If on a drug that **could** cause low sugars/hypos
QOF	**≤58 mmol/mol** (7.5%)	If patient HAS NO moderate/severe frailty
	≤75 mmol/mol (9%)	If patient HAS moderate/severe frailty

5 Smoking

- **ASK ADVISE ACT**
- Ensure you are trained to deliver Very Brief Advice (VBA)
- If ready to quit refer to appropriate local service

6 Renal function 7 Albumin: Creatinine ratio (ACR)[18,19]

- **Measure renal function.** Note no eGFR correction needed for ethnicity. Advise against meat consumptions 12 hrs prior to blood test
- **Measure urine ACR:** ideally early morning urine. If random sample, then confirm any ACR between 3-70mg/mmol with early morning sample. Repeat unnecessary if ACR >70mg/mmol
- ACR ≥3mg/mmol is clinically significant proteinuria
- **Consider CKD:** if eGFR <60ml and/or raised ACR (≥ 3 mg/mmol) for more than 3 months
- If urine ACR ≥3, exclude UTI and start an ACEI/ARB even if normotensive
- Use the OneLondon Diabetic Kidney Disease Risk Stratification to identify those at high risk of diabetic kidney disease progression (patients with eGFR <45)[19]

8 Foot check

Medium risk	Neuropathy/absent pulse?	Contact The SEL Diabetic Foot Navigator For the soonest appointment available, **reinforce to patients that a **sooner** appointment is more important than a 'nearer' appointment
High risk	Neuropathy/absent pulse + plus deformity or skin changes in previous ulcer	
Ulceration, acute Charcot foot, necrosis or infection		As above; or A&E if out of hours
Suspected sepsis		Refer to A&E

Additional

Retinopathy screening	Within 3 months of diagnosis and at least annually[1] Should be called automatically once T2DM coded – check retinopathy screening happening at annual review
Vital 5	Includes also mental health screening and alcohol intake (impact on outcomes)
Vaccinations	COVID-19 vaccine Flu annually and pneumococcal immunisation once[10]

National Diabetes Audit: **8CP and the triple target (TT)** of BP ≤140/80mmHg + HbA1c ≤58 mmol/mol (7.5%) + cholesterol control if QRISK2 or 3 ≥10%[20]

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Identify and address modifiable risk factors → Individualise targets & goals, especially in moderate or severe frailty → Check understanding, adherence and set a review date

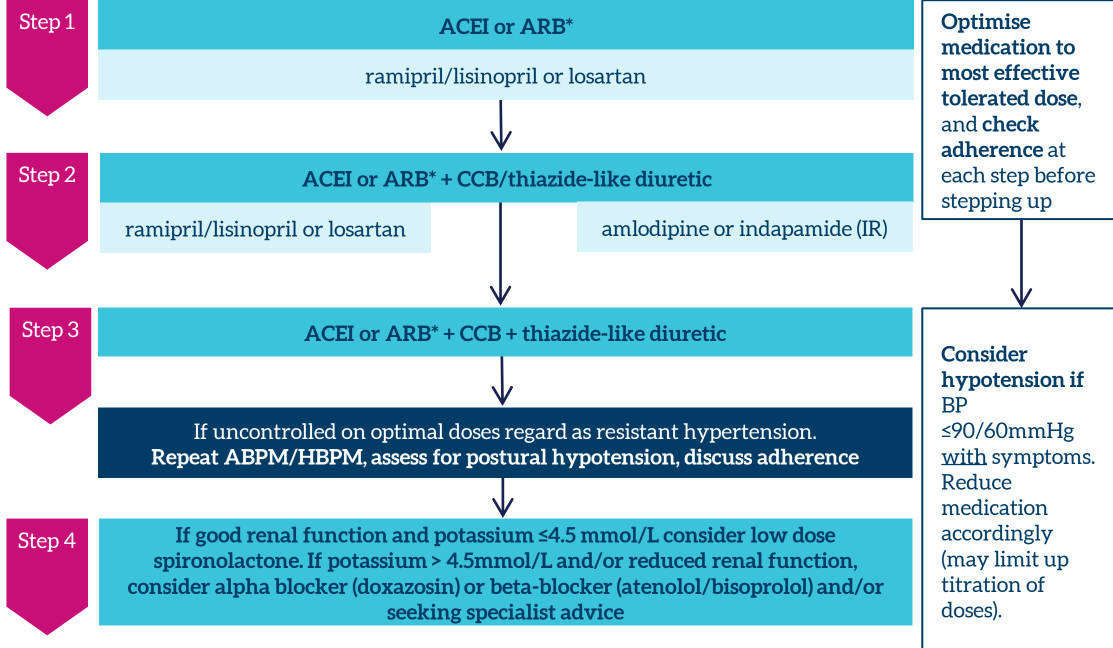
Blood pressure[1,2,15,16]

Diagnosis hypertension in T2DM

Diagnosis	See CESEL Bexley hypertension guide Confirm diagnosis with ABPM or HBPM
Taking a BP in T2DM	• Measure sitting & standing BP in T2DM • If postural drop (≥ 20mmHg SBP), review medications and treat to target on standing BP

Which BP target?

NICE	Age <80yrs ≤140/90mmHg Age ≥80yrs ≤150/90mmHg With CKD/ACR ≥70mg/mmol ≤130/80mmHg
QOF	≤140/90mmHg (excludes those with moderate or severe frailty)
NICE & QOF	5mmg Hg lower for HPBM or ABPM readings



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

*For advice on hypertension management in pregnancy, see CESEL Bexley guide on hypertension page 6

Weight Management[1,14,24]

Physical Activity

Increased physical activity, even without weight loss, brings health benefits

To prevent obesity	45-60 mins moderate intensity exercise/day
With a history of obesity	60-90 mins moderate intensity exercise/day to avoid regaining weight

Weight management referrals in T2DM

- General advice on healthy weight/lifestyle to all
- Tailor interventions to people's circumstance/choices
- Signpost to local and national resources including Bexley council
- Referral forms and further details on DXS – '**Diabetes Info Pack**' and '**Bexley Healthy Weight Pathway**'

BMI > 25	**Encourage the following self-funded Tier 2 options:** • Slimming World • Counterweight Multiple options, please refer to '**Bexley Healthy Weight Pathway**' on DXS
BMI ≥ 30 or **BMI > 27.5 if Black African, African – Caribbean and Asian background**	**Offer Tier 2 referral, options:** • NHS Digital Weight Management Programme **If newly diagnosed T2DM and BMI 30-34.9:** discuss referral with the bariatric surgery team[1]
BMI ≥ 40 or BMI ≥35 with T2DM	**Offer Tier 3 referral:** • SEL Tier 3 Healthy Weight programme, form and criteria on DXS. Refer via e-RS or e-mail gst-tr.tier3@nhs.net • Include BP, BMI, blood tests in last 6 months: HbA1c, lipids, renal
BMI ≥ 35 + Would consider bariatric surgery + Tier 3 completed	**Offer Tier 4 referral:** • Bariatric service (for King's & PRUH refer to SEL Treatment Access Policy for criteria; for GSTT see here). • Include details of completed Tier 3 programme for eligibility

Cholesterol Management [2,3]

Cardiovascular risk

- **Check baseline bloods:** non-fasting lipid profile, LFTs, HbA1c, TFT, U&Es
- Record weight, smoking status, BP
- Calculate QRISK2 or 3 (see page 8)
- Offer education and lifestyle interventions to modify risk
- Use shared decision-making to consider risk vs benefits of drug therapy

Primary Prevention

If QRISK2 or 3* ≥ 10%, or patient has CKD: start **Atorvastatin 20mg OD** (or Rosuvastatin 10mg OD), after addressing modifiable risk factors

- Calculate baseline non-HDL level (total cholesterol minus HDL cholesterol)
- Repeat lipids after 3 months, **aiming for ≥ 40 % reduction in non-HDL level**
- LFTs check: baseline, 3 months, 12 months, then as clinically indicated

*For more notes on QRISK2 or 3 use and when not to use, see page 8

Reduction	Action	
≥ 40 % reduction	Review annually	
< 40% reduction	1. Consider **up-titration of statin** to maximum dose Atorvastatin 80mg (or Rosuvastatin 20mg**)	If still not achieving target after further 3 months, refer to lipid clinic.
	2. If intolerant to higher dose, consider **adding ezetimibe 10mg OD** to maximal tolerated statin dose	
	3. If intolerant to **any statin, start ezetimibe 10mg OD** and consider **referral to the GSTT community CVD clinic** (via DXS)	

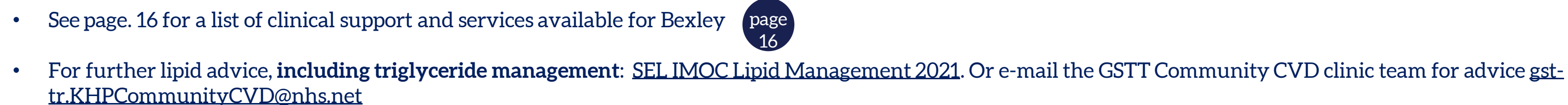
Secondary Prevention

History of CVD, (MI, angina, stroke/TIA, peripheral vascular disease, abdominal aortic aneurysm): Offer high-dose, high-intensity statin: Atorvastatin 40-80mg OD or maximum tolerated dose (or Rosuvastatin 20mg** OD)

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

Reduction	Action	
≥ 40 % reduction	Review annually	
< 40% reduction	Ensure on max tolerated statin dose and consider **adding ezetimibe 10mg**	If still not achieving target after further 3 months, refer to lipid clinic.

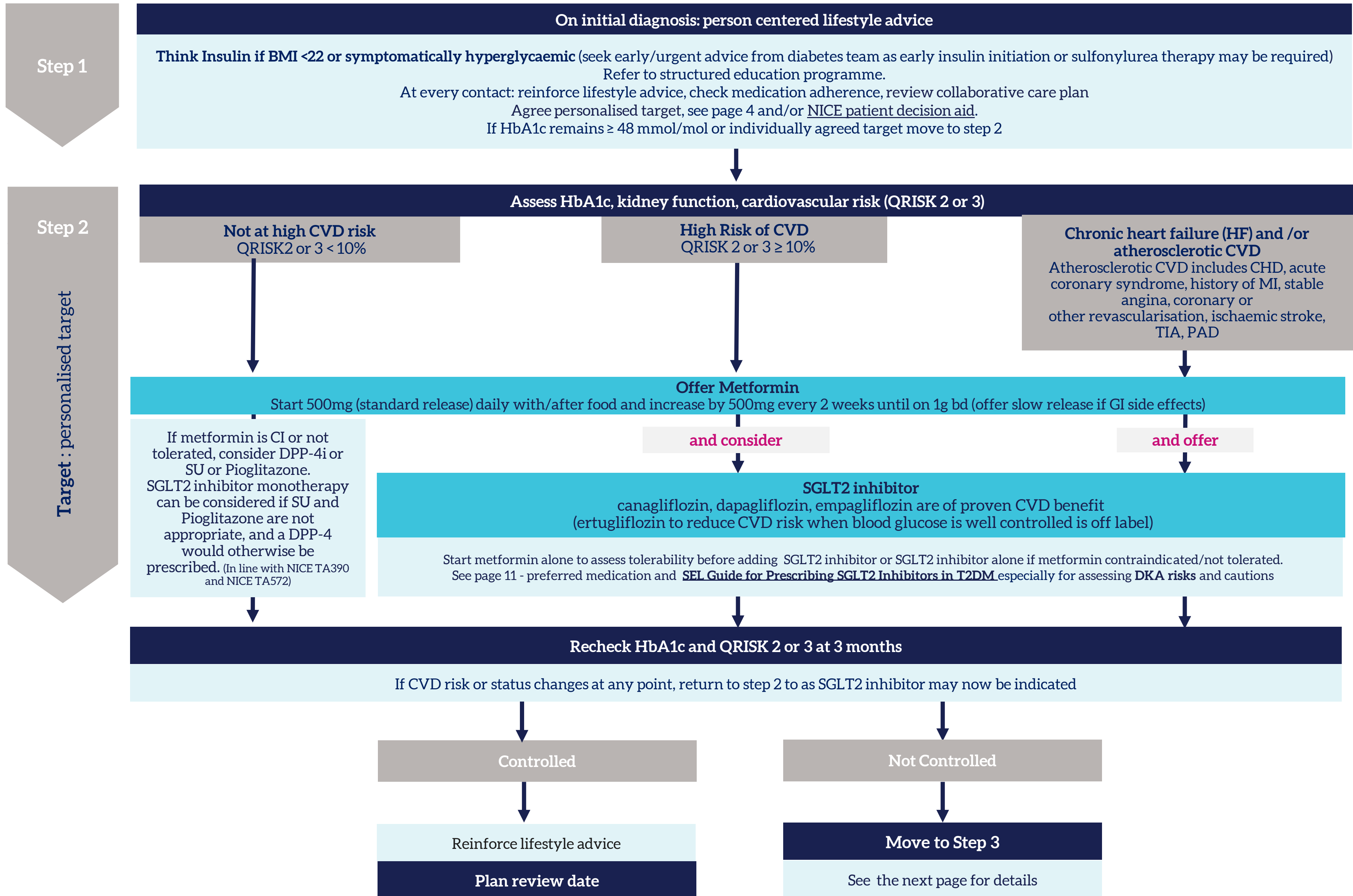
Need more help?



- See page. 16 for a list of clinical support and services available for Bexley page 16
- For further lipid advice, **including triglyceride management**: SEL IMOC Lipid Management 2021. Or e-mail the GSTT Community CVD clinic team for advice gst-tr.KHPCommunityCVD@nhs.net

**For rosuvastatin 40mg, specialist supervision is recommended when this dose is initiated

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

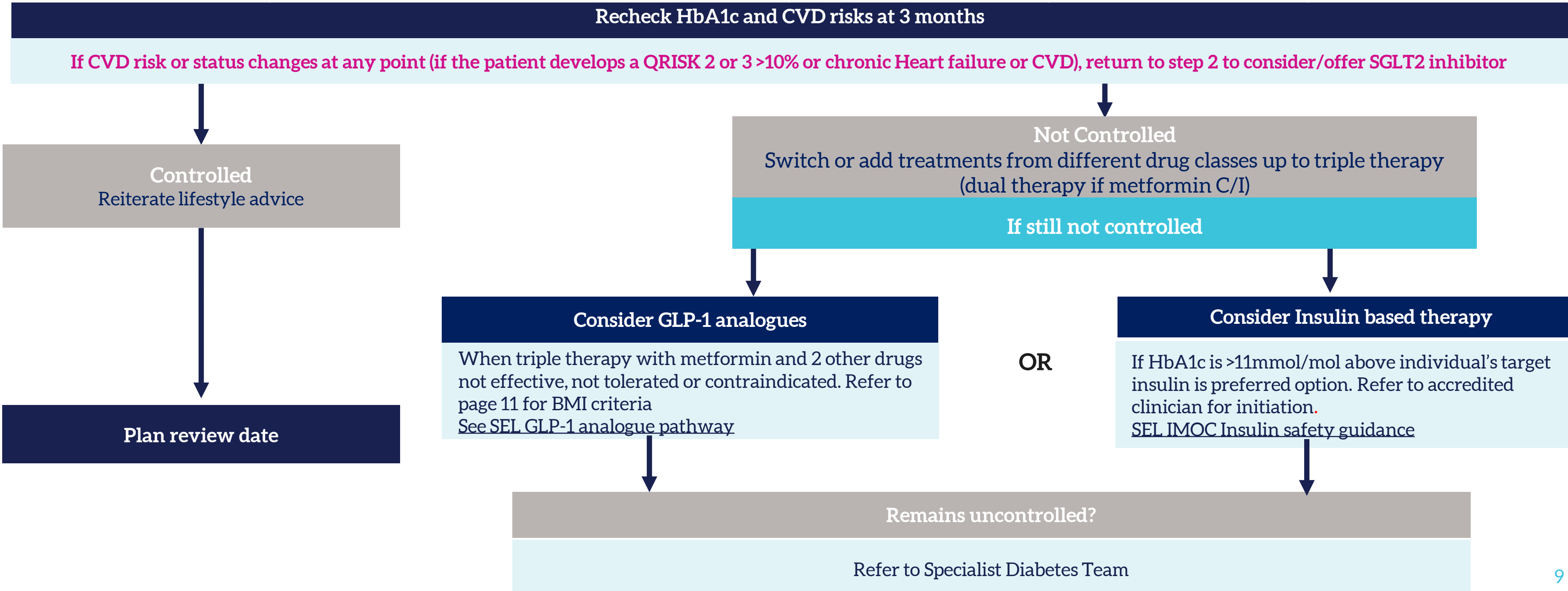
	Metformin	**SGLT2 inhibitor** (flozins)	**Sulfonylureas** (SU)	**DDP-4 inhibitor –** (gliptins)	**Pioglitazone (Pio)**
			Gliclazide is preferred SU in SEL	1st line sitagliptin linagliptin in severe renal impairment	
Hypoglycaemia risk Hypoglycaemia risk may increase if antidiabetic drugs are used with 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 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

Recheck HbA1c and CVD risks at 3 months

If CVD risk or status changes at any point (if the patient develops a QRISK 2 or 3 >10% or chronic Heart failure or CVD), return to step 2 to consider/offer SGLT2 inhibitor

Step 4

2nd Intensification
Target : personalised target



Pre-conception, Pregnancy[26]

Pre-conception care: women with known diabetes, wishing to conceive

- Refer to pre-conception counselling clinic GSTT/KCH (eRS: search 'Obstetrics', clinic type 'Maternal Medicine'), or QEH* (lg.sidcupdiabetes@nhs.net), DVH* (dgn-tr.dvhdiabetescentre@nhs.net). *Can also refer using the DART form (DXS).
- **Start folic acid 5mg once a day**, at least 3 months before trying to conceive
- Check **HbA1c,TFTs, U&Es**
- Aim for HbA1c **≤6.5%** or **48mmol/mol**, if HbA1c very high **>10%** or **86mmol/mol**, advise to wait before trying for baby, as risk of serious problems, offer contraception until good glucose control)[26]
- **Start regular home glucose monitoring** (blood glucose machines available from the hospital antenatal teams). Blood glucose should be 5-7 mmol/l pre-breakfast ('fasting' level), 4-7mmol/l before meals at other times of the day.
- **Review medications and stop those contraindicated in pregnancy**
  - e.g. ACEi, ARB and statin - see Bexley CESEL Hypertension Guide (page 6) for further information, seek specialist advice if necessary
  - See Best Use of Medicines in Pregnancy 'BUMPS' for information on drugs to avoid in pregnancy
- **Reinforce life-style modifications**

Known diabetes and pregnant?

- Should be under a **Consultant Obstetrician/Obstetric Physician at site of booking** (e.g. LGT, DVH, GSTT) if pregnant with diabetes, or complex and/or multiple co-morbidities including renal disease.
- Ensure on **folic acid, has home-glucose monitor, review medication, reinforce life-style** (see above)
- Fasting glucose should be 5-7 mmol/l and 1-hour post-meal if on metformin/insulin < 7.8 mmol/l

Gestational diabetes mellitus (GDM)[26]

GDM = diabetes developed during pregnancy. It usually resolves after delivery, but is associated with adverse maternal and foetal outcomes

- **Screening for GDM:** occurs for at-risk patients at antenatal booking appointments; patients should be under consultant care throughout
- **If previous GDM and now pregnant:** need an early OGTT at 16 weeks gestation (via midwives)
- **Past history of GDM = increased risk of developing T2DM, therefore should be offered:**
  - **Lifestyle advice:** weight control, diet and exercise
  - **Fasting glucose 6-13 weeks post-partum to exclude diabetes** (for practical reasons this might take place at the 6-week post-natal check)
  - **After 13 weeks offer fasting glucose** if not done earlier, or an **HbA1c** if former not possible
  - HbA1c when patient wishes **to conceive again**
  - **Annual HbA1c** to screen for T2DM
  - **Offer National Diabetes Prevention Programme** (refer via DXS) or self-referral, after completing Diabetes UK risk-score: Diabetes UK risk

Sick-day rules[27,28]

For anyone with diabetes

- If available increase glucose monitoring to at least 4 times a day when unwell
- 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

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

SADMANS rules

Consider stopping these classes of drugs temporarily during dehydrating illness

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)

- **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**

Notes on QRISK2 or 3

- A QRISK2 'calculator' is integrated into EMIS, however a more inclusive CV risk score, QRISK3, can be found here.
- **QRISK2 is not applicable in people at high-risk of CVD:** Type 1DM, CKD 3-5, those with pre-existing CVD/previous stroke/TIA, as they should be on lipid modification treatment.
- **QRISK2 will underestimate some people's risk** e.g. severe mental illness, CKD and rheumatological conditions, which **QRISK3 DOES include.**
- **The calculated CV risk is an estimate. Clinical judgement is required to adjust for factors that the risk calculator does not take into account.**

Type 2 Diabetes Review (at least once a year)

Advice for patients		
Dietary advice Diabetes UK	1. Eat plenty of vegetables 2. Have sufficient fibre in your diet 3. Be mindful about carbohydrates: the type and the amount 4. Eat fish, especially oily fish (mackerel, salmon, sardines) regularly 5. 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
Sick day rules	See page 10	

Resources for patients	
Support Groups	**Diabetes UK Bexley Group** https://www.diabetesukbexley.com/contact-us
General diabetes information	**Diabetes UK** Patient information leaflets in different languages
Structured diabetes education	**NHS South London Diabetes Book & Learn** https://diabetesbooking.co.uk/
Self-management education and support for African and Caribbean Communities	Healthy Eating and Active Lifestyles for Diabetes (HEAL-D) is a culturally-tailored diabetes self-management education and support programme for African and Caribbean communities. HEAL-D | Lifestyle for diabetes in African & Caribbean communities
Structure pre-diabetes education	**National Diabetes Prevention Programme**: patients with pre-diabetes can **self-register**
Support during Ramadan	**Ramadan and diabetes**
Healthy lifestyle	**Dash diet** for lowering blood pressure **Local Walking For Health group** https://www.walkingforhealth.org.uk/walkfinder and **Local activity finders: getactive** and **gomammoth** NHS Better Health **free tools and support** to kickstart your health (weight, smoking, activity, alcohol) **Bexley Stop Smoking**

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Type 2 Diabetes Review (at least once a year)

	Tasks/Activity	Who?	Where?	Tools/Support
Review planning	**Call/recall planning:** Use Ardens searches to help decide who to prioritise for review Follow the Year of Care model [31]	Admin colleague with clinician support: GP/nurse/pharmacist		Ardens or UCLP searches available on your EMIS system, ask CE Bexley for support
Pre-patient review	**Contact patient for:** 1. **Bloods:** U&Es, FBC, lipids, HbA1c & urine ACR 2. **BP measurement:** in practice, ABPM, or HBPM 3. **Weight and height:** home measurements (for remote reviews)	HCA/GP Nurse/pharmacist	Remote or F2F	AccuRx have diabetes review templates for pre-review information gathering - text/contact patient to encourage completion pre-review.
Patient review	1. **Ask the patient their concerns, expectations, and questions** 2. **Review trend for BMI and BP** 3. **Review investigations:** urine ACR, renal function, HbA1c, cholesterol 4. **Re-calculate QRISK2 or 3** for primary prevention 5. **Discuss risk-reduction + life-style**: in context of QRISK2 or 3, Vital 5 and COVID risk 6. **Review mental health:** consider PHQ-9 and GAD 7. Any signs of diabetes distress? 7. **Medication review**: Any concerns? Focus on side-effects and adherence. Signpost to community pharmacy for New Medicines Service. Ensure renal function, HbA1c, cholesterol and BP satisfactory and adjust medications if needed. 8. **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 9. **Foot check examination and advice on foot care**: share link via AccuRx Diabetes UK advice on Footcare 10. **Eye check:** Check patient is receiving annual eye check ups 11. **Driving:** Use Driver and Vehicle Licensing Agency (DVLA)'s Assessing fitness to drive: a guide for medical professionals for information relating to diabetes[25]	GP/GP Nurse/pharmacist	Remote or F2F	Use Ardens T2DM clinical template (ensures correct coding, annual review, medication review & Vital 5) Sign post to Diabetes Book and Learn for structured education Consider IAPT – MIND in Bexley mental health support for long-term health conditions. (Self referral or via DXS)
	• **Goal setting** • **Self management** • **Referral/signposting to community resources**	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
	• **Follow-up plans:** agree 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		

T2DM: Preferred Medication[1,3,16,17,18, 29]

	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 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	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	• 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
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.	• 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	• 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
				  • have a BMI of ≥35 kg/m^2 - (lower in certain ethnic groups) and specific psychological or other medical problems associated with obesity **OR**
				  • have a BMI <35 kg/m^2 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 1st line	100mg once daily	Sitagliptin eGFR 30-44 reduce dose to 50mg OD eGFR <30: 25mg OD	• 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	• 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.

T2DM: Preferred Medication[1,3,16,17,18, 29]

	Drug	Starting dose	Daily Range
SGLT2 inhibitors (flozins) See SEL guide for prescribing SGLT2 inhibitors and hepatic impairment dosing 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	Canagliflozin	100mg once daily	Increase to 300mg daily if tolerated and required for glycaemic control. eGFR 45-59: max 100mg once daily eGFR <45: Not recommend for glycaemic control in T2DM
	Dapagliflozin	10mg once daily	eGFR <45: Not recommend for glycaemic control in T2DM
	Empagliflozin (Initiation not recommended in adults >85yrs)	10mg once daily	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**
	Ertugliflozin (ertugliflozin to reduce CVD risk when blood glucose is well controlled is off label)	5mg once in the morning	Increase to 15mg once daily if tolerated and required for glycaemic control eGFR 45-59: do not initiate, continue 5mg or 15mg for those already taking eGFR <45: Not recommended for glycaemic control in T2DM

Notes (these are not extensive, please refer to the latest BNF and/or SPC for further information especially titration increments/cautions/contra-indications)

Use with CAUTION in the following circumstances

- 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 sulfonylureas 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.

AVOID in the following circumstances

- 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

Discuss risks and benefits, side effects and sick day rules

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

Ensure adequate understanding of:

- 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

T2DM: Preferred Medication[1,3,16,28]

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	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	• 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	
	Candesartan	8mg OD	8mg-32mg OD	
CCBs	Amlodipine	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 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	• 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)	Spironolactone	25mg OD	25mg OD	• Step 4: Spironolactone 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)	• 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	• 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	• 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

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Bexley clinical support and services

- **Bexley Care Community Diabetes Specialists Nurses** – DXS Bexley Care 'Single Point of Contact Referral form' under 'Diabetic Pathway', email address oxl-tr.diabetes@nhs.net
- **General advice – non-urgent -** Consultant Connect, Advice and Guidance using 'Diabetes Non-Emergency' on e-RS.
- **General Diabetic Medicine** – Triage service at QMH, OP clinics at QEH, DVH, Lewisham Hospital, King's/Denmark Hill, Diabetes with complications (GSTT)
- **BHNC Phlebotomy Plus** – annual review for housebound patients including phlebotomy service. Referral form on DXS 'Phlebotomy Plus Referral form', send via e-RS.
- **Podiatry and foot** (routine and urgent*) – Oxleas (*different forms) or use DART form, both on DXS.
- **Community Hypertension and Lipid Clinic**: DXS referral or email for advice gst-tr.KHPCommunityCVD@nhs.net
- **Erectile dysfunction**– intermediate service at Bexley Group Practice (24 Station Road, Belvedere). Referral via DXS 'Erectile Dysfunction Clinic Referral form' email to bex.erectiledysfunction@nhs.net
- Specialist clinics:
    - **Pre-conception counselling.** GSTT/KCH - on eRs specialty '**Obstetrics**'. Clinic type '**Maternal medicine'.** For QEH* (lg.sidcupdiabetes@nhs.net), DVH* (dgn-tr.dvhdiabetescentre@nhs.net), refer by email with patient details or use the DART form (on DXS).
    - **Women with diabetes who become pregnant should be under a Consultant Obstetrician/Obstetric Physician at site of booking** (e.g. LGT, DVH, GSTT) (also if pregnant with complex and/or multiple co-morbidities including renal disease)
    - **Renal Diabetes** – Renal impairment & diabetes (GSTT)

Additional professional resources

- **'Summary of Diabetes Pathways in Bexley**' and **'Bexley Healthy Weight Pathway'** - on DXS
- **Diabetes foot care pathway** for SEL, Dartford & Gravesham – on DXS
- **Cambridge Diabetes Education Programme**: comprehensive, competence-based learning. https://www.cdep.org.uk/
- Diabetes in Healthcare Diabetes UK free online learning for health professionals
- RCGP Diabetes Hub
- Personalised Care Institute
- Primary Care Diabetes Society
- PITstop for Diabetes training – email admin@pitstopdiabetes.co.uk to enquire about free courses for Bexley
- TrendDiabetes

Structured education

- **NHS South London Diabetes Book & Learn** https://diabetesbooking.co.uk/
- **National Diabetes Prevention Programme (NDDP)** https://preventing-diabetes.co.uk/south-east-london/

Acknowledgements

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Access this and other guides online at: Clinical Effectiveness South East London (CESEL)

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Abbreviations

2WW – Two-week-wait referral
8CP – 8 Care Processes
α-B – Alpha blocker
A&E – Accident and Emergency
ABPM – Ambulatory blood pressure monitoring
ACE-i– Angiotensin converting enzyme inhibitor
ACR – Albumin-creatinine ratio
ALT – Alanine aminotransferase
APL – Active patient link tools
ARB – Angiotensin receptor blocker
AST – Aspartate aminotransferase
BAME – Black, Asian and Minority Ethnic
β-B – Beta blocker
BD – Twice daily (dosing)
BM- Blood monitoring
BMI – Body mass index
BNF - British National Formulary
BP – Blood Pressure
CDEP – Cambridge diabetes Education Programme
CES – Clinical Effectiveness Southwark
CCB – Calcium channel blocker
CI – Contra-indication
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
DPP-4i – Dipeptidylpeptidase-4 inhibitor
DVLA – Driver and Vehicle Licensing Agency
DXS – Point-of-care tool
ECG – Electrocardiogram
eGFR – Estimated glomerular filtration rate
ERS – Electronic Referral System
F2F – Face-to-face
FBC – Full blood count
GSTT – Guy's and St. Thomas' Hospital Trust
GLP-1 – Glucagon-like peptide -1
GI – Gastro-intestinal
IGR – Impaired Glucose Regulation
IR – Immediate release
K – Potassium
KCH – King's College Hospital
HbA1c – Haemoglobin A1c %
HBPM– Home blood pressure monitoring
HDL – High-density lipoprotein
IGR – Impaired glucose regulation
IHD – Ischaemic Heart Disease
LFT – Liver function tests
LADA – Latent autoimmune diabetes in adults
LDL – Low-density lipoprotein
MI – Myocardial infarction
NDA – National Diabetes Audit
NDDP – National Diabetes Prevention Programme
NICE – The National Institute for Health and Care Excellence
NSAID – Non steroidal anti-inflammatory drug
OD – Once daily (dosing)
OGTT – Oral glucose tolerance testing
PAD – Peripheral arterial disease
PCOS – Polycystic ovarian syndrome
PHM – Population health management (contract)
PLT – Protected learning time
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 – includes serum sodium, potassium, creatinine, eGFR
SELAPC – South East London Area Prescribing Committee
SEL – South East London
SBP – Systolic blood pressure
SPC – Summary of product characteristics
SGLT2i - Sodium Glucose Co-transporter 2 (SGLT2) inhibitors
SPLW – Social Prescribing Link Worker
T2DM – Type 2 Diabetes Mellitus
TIA – Transient ischaemic attack
TFT – Thyroid function tests
TT – Triple target

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October 2022 (review October 2023, or earlier if indicated)