

Prescribing alert: NICE guidance update (to be ratified by SEL IMOC)

Type 2 diabetes in adults: management (NG28) was updated on (15/2/2022). This includes changes to prescribing guidance. The SEL Integrated Medicines Optimisation Committee (SEL IMOC) will update their T2DM guidance for SEL for the summer of 2022. HbA1c management section of the CESEL T2DM guidance (page 6) will be updated to align with SEL IMOC guidance as soon as it is available.

Type 2 diabetes

A guide for Lewisham General Practice

Key messages

1. Lifestyle measures: reduce weight, increase exercise, healthy diet, reduce alcohol, stop smoking
2. Blood pressure (BP): target BP $\leq 140/80$ mmHg (adjust for age and comorbidities)
3. Cholesterol: statin if QRISK2/3 $\geq 10\%$ or history of cardiovascular disease (CVD)
4. Optimise HbA1c: target ≤ 53 mmol/mol ($\leq 7\%$) (adjust depending on hypoglycaemic risk and frailty)
5. Individualise targets and patients' goals

Always work within your knowledge and competency

March 2022 (review due July 2022)

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Why focus on Type 2 diabetes (T2DM) in Lewisham?

T2DM is common and underdiagnosed

Of the 300,000 Lewisham residents, 15,000 are known to have diabetes. However, there are still approximately 8,000 people in Lewisham who don't know they have type 2 diabetes.³

T2DM is preventable and treatable

58% of patients in Lewisham are obese or overweight. Obese adults are **7** times more likely to develop T2DM^{4,6}. Weight management may normalise blood sugar levels without the use of drugs.⁵

Tight blood pressure control substantially reduces diabetes complications and improves survival.⁷

Cholesterol lowering drugs reduce the risk of major vascular events⁸ Even modest improvements in glucose control reduce incidence of complications including foot ulcers, amputations and neuropathy.⁹

Supporting patients to stop smoking reduces their risk of premature death, heart disease and other complications.¹⁰

There is scope to enhance diabetes care in Lewisham

The 2019/2020 National Diabetes Audit data shows that for T2DM management in Lewisham:

- 37.7% patients had all the 3 Treatment Targets (3TTs)
- 58.6% patients received all the 8 care processes

Within the 8 care processes, in Lewisham in 2020/2021 our best performing 8 care processes were:

- Checking smoking status (90.8%)
- HbA1c check (83.1%)

The processes that require the most improvement are:

- Urine albumin measurement (54.1%)
- Foot checks (64.2%)
- BMI checks (71.3%)

Every 7 days across the UK, diabetes contributes to³:

680 strokes
530 heart attacks
2,000 cases of heart failure

NICE recommends that all adults with diabetes should have annual reviews **addressing 9 care processes**¹². The National Diabetes Audit reports on 8 of these processes (excludes eye screening).

NICE guidelines also advise care to be standardised to focus on 3 treatment targets (3TTs).

What are the 3TTs?

1. HbA1c ≤ 58 mmol/mol
2. Blood pressure $\leq 140/80$
3. Statin use for people who require primary/secondary prevention of cardiovascular disease (CVD)

What are the 8 / 9 care processes?

1. Cholesterol management
2. Serum creatinine measurement
3. Smoking status
4. BMI measurement
5. Foot examination
6. Blood pressure measurement
7. HbA1c measurement
8. Urine albumin measurement
9. Eye screening

Risk Factors for NDH/T2DM^{12,13}

- Age >40 and white family origin
- Age >25 and black/south Asian family origin
- Family history of diabetes
- High blood pressure
- Body mass index (BMI) >25
- History of coronary heart disease/ stroke
- Serious mental illness
- Polycystic ovarian syndrome
- Gestational diabetes
- Medications e.g. long term corticosteroids
- Smoking

Calculate T2DM risk using a [ODiabetes](#)

Signs and Symptoms of T2DM¹²

- No symptoms
- Excessive thirst/urination
- Weight loss (more common in T1DM)
- Recurrent infections (e.g. recurrent thrush, non-healing ulcers)
- Tiredness
- Blurred vision
- Acanthosis nigricans

Non diabetic hyperglycaemia (NDH)

Also known as pre-diabetes, refers to raised blood glucose, but not in the diabetic range. Patients with NDH are at increased risk of developing T2DM and CVD.

Diagnosing using HbA1c¹¹

Do NOT use HbA1c for diagnosis in the following groups: patients <18 yrs, diabetes symptoms for <2 months, pregnant patients, or 2 months post-partum, HIV infection, patients who are acutely ill, patients on medication which may cause hyperglycaemia, patients with acute pancreatic damage.

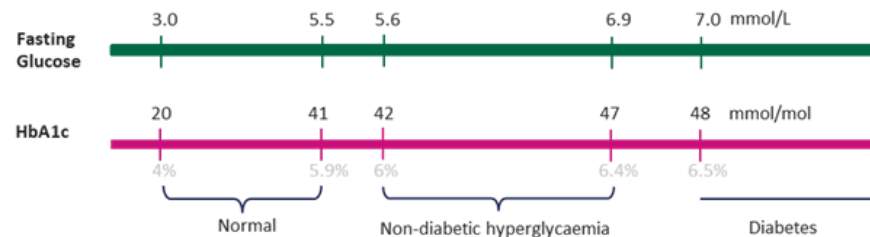
Interpret HbA1c with caution in those with: haemoglobinopathies, severe anaemia, altered red cell lifespan (e.g. post splenectomy) or recent blood transfusion

For all these groups use blood glucose tests instead of HbA1C

Red flags at diagnosis (atypical presentations)¹⁴

- **HbA1c >85mmol/mol +/- weight loss at diagnosis:** consider T1DM, ketosis-prone T2DM, latent autoimmune diabetes in adults (LADA) or other diabetes types and seek specialist advice.
- **New T2DM, weight loss, >60yrs:** 2 week wait referral upper GI or refer for direct access CT scan for suspected pancreatic cancer

Blood result interpretations¹¹



Repeat HbA1c in 3-5 years or sooner if symptomatic

Repeat HbA1c as soon as possible

Code on EMIS as '**Non diabetic hyperglycaemia**' and use corresponding Ardens template

If repeat test is normal (<41mmol/mol) → monitor regularly for development of diabetes (use clinical judgement). **Transient hyperglycaemia can occur in acute infections, trauma, circulatory stress¹².**

If repeat test is in NDH range see boxes on the left.
If repeat test is still in diabetic range → code on EMIS as '**Type 2 diabetes mellitus**' and use corresponding Ardens template.

Offer structured diabetes education from DXS: **Diabetes Prevention Programme (Healthier You)** 13 sessions over 12+ months online and telephone
Provide [patient information](#)

Support patients to reach an understanding of the diagnosis, implications and what they can do to take care for themselves (use Ardens template). Use [Diabetes UK Information prescription](#) to support personal care.

Annual review: HbA1c and the Vital 5: BP, BMI, smoking status, mental health and alcohol

Refer to structured educational programme - **Diabetes Book and Learn** on DXS or [self-referral](#).

Advice on driving with diabetes - page 14.

Identify and address all modifiable risk factors

Individualise targets and goals

Check understanding of condition and adherence to treatment; set a review date

1. HbA1c: Check 3 monthly until stable, then 6 monthly

It takes 3 months from medication dose change to see HbA1c change	HbA1c Targets ^{12,15}
	≤48mmol/mol (6.5%) unless taking a drug that could cause adverse low sugars/hypoglycaemia e.g. gliclazide, insulin
	≤53mmol/mol (7%) if on a single drug that could cause hypoglycaemia
QOF target ≤75mmol/mol (9%) in patients with moderate/severe frailty:	

2. Blood Pressure

- **QOF**¹⁶ ≤140/80mmHg (excludes those with moderate or severe frailty)
- **NICE**¹⁷: ≤140/90mmHg under 80years; ≤150/90mmHg over 80 years
- **NICE Chronic Kidney disease (CKD)**¹⁷: ≤130/80mmHg if CKD

3. Cholesterol

- **Primary prevention**: Atorvastatin 20mg OD if QRISK2/3 ≥10% after addressing modifiable risk factors (QOF target excludes those with moderate or severe frailty)
- **Secondary prevention** (e.g. prior CVD/Stroke/TIA): Atorvastatin 40-80mg OD
- **Women of childbearing age need contraception during statin treatment. Statins should be discontinued for 3 months before attempting to conceive**
- More information on page 8 or [SEL ICS lipid management guidance](#)¹⁸

4. Renal function and 5. Albumin creatinine ratio (ACR)

- Measure serum eGFR and urine albumin:creatinine ratio (urine ACR)
- Consider chronic kidney disease (CKD) if eGFR <60 ml/min and/or urine ACR ≥3 for more than 3 months
- Confirm any raised random urine ACR with early morning sample (due to risk of false positive with random ACR).
- If urine ACR ≥3, exclude UTI and **start an ACEI/ARB even if normotensive**
- If eGFR <45ml/min use the [One London Diabetic Kidney Disease pathway](#)¹ to identify those at high risk of diabetic kidney disease progression

6. Foot Check

How to do a foot check: : [Annual foot review pathway, Diabetes UK](#)¹⁹

- **Medium risk** - neuropathy or absent pulse → Refer foot protection team
- **High risk** - neuropathy or absent pulse + deformity/skin changes/previous ulcer → Urgent referral to foot protection team
- **Active ulcer/infection/ischaemia** → Same day referral to foot protection team or A&E if suspected sepsis
- Referral details page 14

NICE guidance: [Diabetic foot infection: antimicrobial prescribing](#)²⁰

7. Smoking

- Deliver 'Very Brief Advice: ASK ADVISE ACT' ([training module](#))²¹
- If patient is ready to quit → advise self-referral to [Stop Smoking London](#): helpline (0300 123 1044) or [Smokefree Lewisham](#)

8. BMI¹²

- Measure weight and height to calculate BMI
- Overweight: BMI ≥25 (BAME patients may be at risk with BMI ≥23)
- Obese: BMI ≥30
- Agree an initial weight loss target of 5-10% of body weight, maximum 1kg/week
- Referral to weight management (DXS) or [diabetes book and learn](#)
- Physical activity reduces the risk of T2DM by 40%²²

9. Retinal Screening¹²

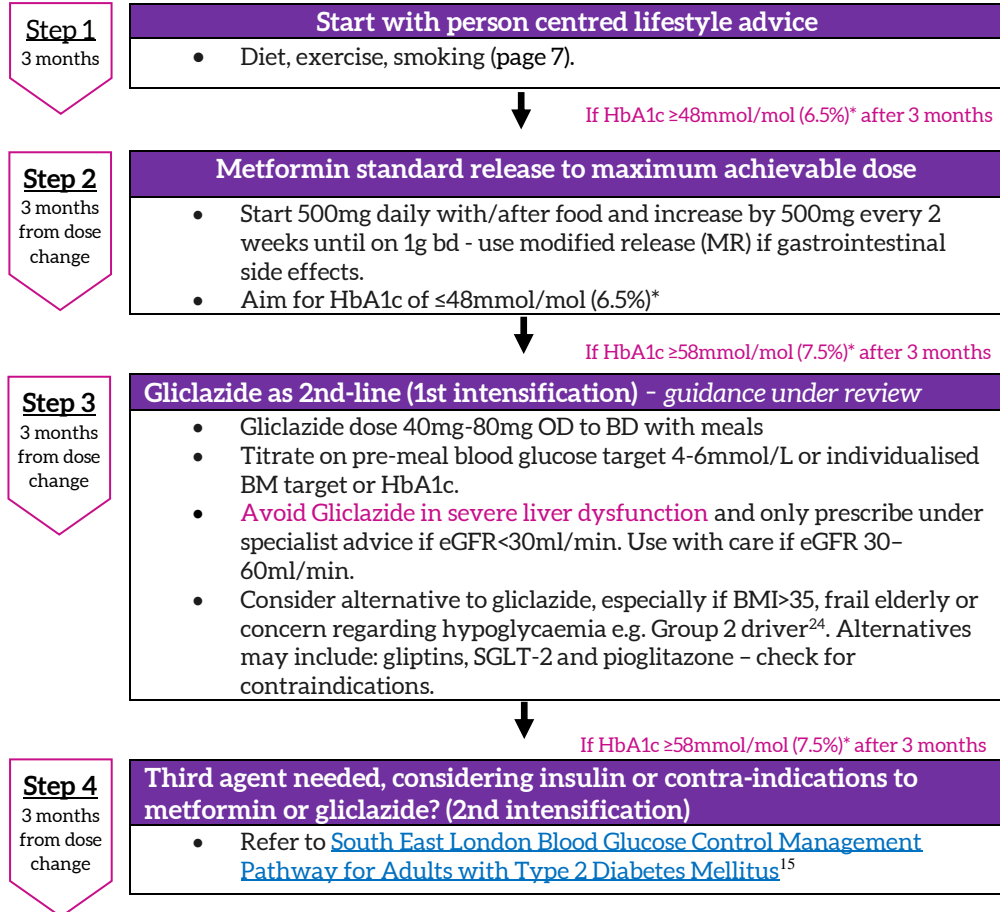
- Retinal screening within 3 months of diagnosis and at least annually
- Patients are called automatically once coded for T2DM, check this is happening at annual review.
- SEL retinal screening [contact details](#)

Additional Care

- Check mental health and alcohol intake ([unit calculator](#))
- **Immunisations/ Vaccines**²³: Annual flu, pneumococcal (once) and COVID-19 (as per national/local guidance)

HbA1c Management

HbA1c management in confirmed T2DM¹² (See page 12 for more detail)



*Individualise targets and goals. Patients with moderate or severe frailty the QOF target is ≤75 mmol/mol (9%). Guidance aligns with [South East London Blood Glucose Control Management Pathway for Adults with Type 2 Diabetes Mellitus](#)¹⁵

HbA1c targets

Criteria	On maximum achievable dose of metformin	On medication with risk of hypoglycaemia, e.g. sulfonylurea	Moderate or severe frailty
HbA1c target*	≤ 48mmol/mol (6.5%)	≤ 53mmol/mol (7%)	≤75 mmol/mol (9%)

Additional Considerations

If a patient is not achieving their HbA1c target with the steps above:

- Reinforce lifestyle advice, including diet.
- Check adherence with antidiabetic drug treatment.

If patient achieves a lower HbA1c than their target without hypoglycaemic effects

- Encourage them to maintain it
- Consider alternative reasons for low HbA1c, including deteriorating renal function and sudden weight loss.
- Review medication

Remission in adults with T2DM

This is reached when a patient with T2DM has an HbA1c which remains <48mmol/mol for at least 6 months **in the absence of glucose-lowering medications**. This is often achieved by intensive lifestyle interventions or bariatric surgery. Patients will still need to attend their yearly screening and diabetic reviews. Click [here](#) for more information.

When to refer to secondary care (page 14 → more referral information)

If the patient is on insulin, has poor glycaemic control, very high blood glucose and/or is very symptomatic, seek specialist advice to consider a regime for rapid reduction of blood glucose. Also consider referrals for patients with comorbidities e.g. CKD + diabetes or vascular disease + diabetes.

UHL - Integrated diabetes (DXS)

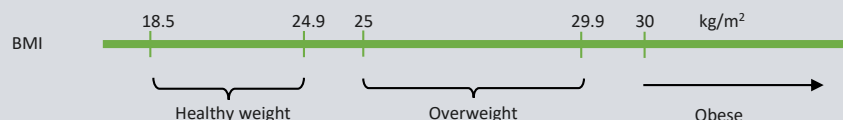
KCH - Diabetes Medicine referrals on eRS

GSTT - Diabetes Medicine referrals on eRS

Body Mass Index (BMI)

[BMI Calculator](#)³²: The BMI is a way to measure whether a person's body weight is healthy and can be a useful tool to gauge body fat.

BMI: weight (kg)/height (m)²



Adults from Black, Asian and other minority ethnic groups with a BMI ≥ 23 are at increased risk and those ≥ 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 >94 cm/men and >80 cm/women

Weight Management Referrals

Consider starting drug treatment if BMI ≥ 28 and other risk factors such T2DM, hypertension, or hypercholesterolaemia.

Consider referral at lower BMI for patients from BAME backgrounds.

Local weight management resources page 14.

BMI ≥ 30 kg/m²

Offer referral: [NHS Digital Weight Management Programme](#) (patient must have access to online technology), self-referral to other Tier 2 service e.g. Weight Watchers, Slimming World, [Lewisham Be Active Pass](#), Social prescribing (Elemental) or [self-referral](#)

BMI ≥ 35 kg/m²

Offer referral: [Tier 3 SEL healthy weight programme](#) (12-month intensive course)
Up to date BP, BMI, HbA1c, lipid profile and creatinine required

Would consider surgery + BMI ≥ 35 kg/m²

Offer referral: Tier 4 Bariatric Service Kings and GSTT eRS - GI and Liver. Must include details of completed Tier 3 programme for eligibility.
Newly diagnosed: discuss referral to bariatric surgery team patients with BMI 30-34.9

Exercise advice^{12,15}

For all	150 mins of moderate-intensity activity a week. Start small and build up gradually. Every minute counts!
If overweight	45-60 minutes moderate intensity exercise a day
To avoid weight gain if history of obesity	60-90 minutes moderate intensity exercise a day to avoid regaining weight

Dietary advice²⁶

Patient advice: I have type 2 diabetes - what can I eat? (Diabetes UK)

[Mediterranean diets](#) are known to be healthy for people with diabetes and can help control blood sugar levels

- Eat plenty of vegetables
- Have sufficient fibre in your diet
- Eat fish, especially oily fish (mackerel, salmon, sardines) regularly

Reduce:

- sugary food and drinks
- energy dense foods such as crisps, cakes, biscuits, and pastries
- alcohol
- salty, processed foods (have less than 6g/1 heaped teaspoon of salt per day)

Evidence suggests that a [supervised very low calorie diet plan](#) (VLCD) can be beneficial.

Smoking and Diabetes^{10,33}

- Smoking is an independent risk factor for diabetes. Smoking-related risk of diabetes increases with the number of cigarettes smoked. Smoking is estimated to account for 360,000 cases of diabetes in the UK.
- Smoking adds to the risk of developing complications in diabetes e.g. kidney and heart disease, stroke and risk of premature death.
- Women who smoke during pregnancy are at increased risk of developing gestational diabetes and increase the risk of their children developing diabetes later in life.

All patients who smoke should be offered advice on smoking cessation

Self-referral to [Stop Smoking London](#) or [Smokefree Lewisham](#) and online support.

- Provides support through a 4-week quit attempt.
- Patient buys nicotine replacement therapy (NRT) or vapes over-the-counter or GP can prescribe NRT

Blood Pressure (BP)		Cholesterol	
Blood pressure targets in diabetes		Cardiovascular risk assessment and management	
QOF ¹⁶	≤140/80mmHg (excludes those with moderate or severe frailty)	<ul style="list-style-type: none"> Management of cardiovascular risk factors is essential to prevent complications such as coronary heart disease, stroke, and peripheral artery disease. Calculate the risk of a patient developing CVD over the next 10 years by using QRisk2/QRISK3 score (except in CKD/albuminuria or lipid disorders) Request bloods (lipid + renal profile, LFT, TFT, HbA1c), weight, smoking status, BP. For all patients, consider education and lifestyle interventions to modify CVD risk and use shared-decision making to consider risk vs benefit of therapy. 	
NICE ¹⁷	if under 80 years ≤140/90mmHg,	Primary prevention of cardiovascular disease If QRisk2/3 ≥10% or CKD present (and no history of CVD): <ul style="list-style-type: none"> Start atorvastatin 20mg OD/ rosuvastatin 10mg OD Calculate baseline non-HDL level (total cholesterol minus HDL cholesterol) and repeat at 3 months to calculate reduction 	
	if over 80 years ≤ 150/90mmHg		
	CKD: if ACR ≥ 70 mg/mmol, target BP ≤130/80	Non-HDL decreased ≥40% from baseline	
Blood Pressure Measurements		Non-HDL not decreased ≥40% from baseline	
Measure standing and sitting BP in patients with T2DM. If a significant postural drop (≥20mmHg systolic BP) – review medication and treat to target on the standing BP. Confirm diagnosis with ambulatory or home BP monitoring (ABPM/HBPM). For more information please see the Lewisham Hypertension Guide		Review annually	<ul style="list-style-type: none"> Check adherence, dose timing, adverse effects & diet/lifestyle interventions. Consider up-titration to maximum dose of statin (atorvastatin 80mg OD/ rosuvastatin 20mg OD). If intolerant of high dose statin, consider adding ezetimibe 10mg OD. Refer to lipid clinic (page 14) if intolerant of statins (start ezetimibe 10mg) or still not achieving ≥40% reduction.
BP Treatment		Secondary prevention of cardiovascular disease	
Step 1	ACEI or ARB* ramipril/lisinopril or losartan	If history of CVD (including MI, angina, stroke/TIA, peripheral vascular disease, abdominal aortic aneurysm): start atorvastatin 40-80mg OD/rosuvastatin 20mg OD . Calculate baseline non-HDL level (total cholesterol minus HDL cholesterol) and at 3 months.	
Step 2	ACEI or ARB* + CCB or thiazide-like diuretic ramipril/lisinopril or losartan amlodipine or indapamide IR (immediate release)	Non-HDL decreased ≥40% from baseline	
Step 3	ACEI or ARB* + CCB + thiazide-like diuretic If uncontrolled on optimal doses regard as resistant hypertension. Repeat ABPM/HBPM, assess for postural hypotension, discuss adherence	Review annually	<ul style="list-style-type: none"> Check adherence, dose timing, adverse effects & diet/lifestyle interventions. Ensure on maximum tolerated statin dose and consider adding ezetimibe 10mg OD and review in 3 months Refer to Lipid Clinic (page 14) if non-HDL is still not reduced by ≥40% from baseline (SEL Lipid Management Pathway)
Step 4	If good renal function and potassium ≤4.5 mmol/L <u>consider low dose spironolactone</u> . If potassium > 4.5mmol/L and/or reduced renal function, <u>consider alpha blocker (doxazosin) or beta-blocker (atenolol/ bisoprolol) and/or seeking specialist advice</u>	Non-HDL not decreased ≥40% from baseline	
Key Messages			
Before stepping up treatment: optimise medication to most effective tolerated dose, and check adherence			
*For people of Black African/ Caribbean family origin, use ARB instead of ACEI (as increased risk of angioedema with ACEI)			
In pregnancy: <ul style="list-style-type: none"> Stop any ACEI/ARB/thiazide or thiazide-like diuretic. Use labetalol if no contraindications (e.g. asthma) or nifedipine or methyldopa (can remain on amlodipine²⁷) Target BP ≤135/85 mmHg. Offer aspirin 75-150mg OD from week 12 of pregnancy Refer to secondary care team at booking hospital 			

Diabetic Foot checks			Renal Monitoring									
<ul style="list-style-type: none"> Diabetic foot disease is a significant cause of disability and amputation. Annual foot checks assess for tissue damage, neuropathy & circulatory problems Diabetic foot problems include: limb ischaemia, ulcers, calluses, infections, deformities, neuropathy, Charcot foot, gangrene How to do a foot check : Written¹⁹Video.²⁸ See page 14 for how to refer. 			<p>Diabetes is the commonest cause of chronic kidney disease (CKD) and end-stage renal disease (ESRD). Microalbuminuria is usually the first sign of diabetic kidney disease.</p> <p>Diagnosing CKD</p> <ul style="list-style-type: none"> NICE no longer recommend adjusting eGFR for ethnicity as this may lead to underdiagnosis of CKD. Request urine ACR- early morning sample to prevent false positive. If raised rule out UTI. Measure serum creatinine to calculate eGFR (no meat for 12h before the test). Diagnose and treat CKD if: <ul style="list-style-type: none"> persistent* reduction in kidney function (eGFR<60 ml/min) and/or persistent* microalbuminuria (urine ACR ≥3mg/mmol). <p>*For three months or more (repeat initial test after 3-month interval). Stage CKD as per NICE Guidance and use appropriate 'chronic kidney disease' code on EMIS.</p>									
Risk level	Definition	Action	Managing diabetic kidney disease									
Low	Intact foot - normal sensation and pulses, no foot deformity and no history ulceration/amputation	<ul style="list-style-type: none"> Annual screening at GP Referral via practice or self-referral to Lewisham Podiatry Service for any other concerns 	<ul style="list-style-type: none"> Optimise blood glucose control BP target: systolic 120-129 mmHg and diastolic <80 mmHg. Start ACEI/ARB even if normotensive (ramipril or losartan) or up-titrate existing dose to achieve the maximum tolerated dose. Do not co-prescribe ACEI & ARB. If not on a statin, offer atorvastatin 20mg once a day, irrespective of lipid profile. Provide patient education: Diabetes UK -Diabetic nephropathy (kidney disease) <p>When to refer: eGFR<30ml/min, sustained decrease in eGFR of 15ml/min or 25% decrease, ACR≥30mg/ml with haematuria, ACR>70mg/ml despite optimal diabetes management, poorly controlled hypertension with co-existing CKD 3-5, known or suspected rare/genetic cause of CKD, suspected renal artery stenosis.</p>									
Moderate	Peripheral neuropathy (i.e. abnormal sensation), peripheral arterial disease (PAD) (i.e. absent foot pulses), deformity/lesions	<ul style="list-style-type: none"> Refer to foot protection team Diabetes foot checks and surveillance every 6 months Regular podiatry and general foot care (callus removal, nail care and regular foot care review as per NICE guidelines) 	<p>Retinal Screening (SEL retinal screening)</p> <ul style="list-style-type: none"> Patients are automatically invited within 3 months of diagnosis and annually thereafter (check this is happening at annual review). Patients may be excluded from screening if they are unable to sit upright and use a chin rest or able to follow instructions. Patients can choose to opt out. <p>Types of Diabetic Retinopathy (Can be coded using the Ardens Diabetes template)</p> <table border="1"> <tr> <td>Background retinopathy</td> <td>Microaneurysms, which may leak. Vision not affected. No treatment.</td> </tr> <tr> <td>Pre-proliferative retinopathy</td> <td>Severe widespread changes in the retina with bleeding. Require more frequent screening. Vision may be affected.</td> </tr> <tr> <td>Proliferative diabetic retinopathy</td> <td>New vessel formation and scar tissue have formed on the retina which can cause significant bleeding and retinal detachment. High risk of visual impairment/loss. Laser treatment, eye injections or surgery may be offered.</td> </tr> <tr> <td>Diabetic maculopathy</td> <td>Vessels in the centre of the retina (macula) have become leaky or blocked. Central vision loss may occur. Laser or eye injection treatments may be offered.</td> </tr> </table>		Background retinopathy	Microaneurysms, which may leak. Vision not affected. No treatment.	Pre-proliferative retinopathy	Severe widespread changes in the retina with bleeding. Require more frequent screening. Vision may be affected.	Proliferative diabetic retinopathy	New vessel formation and scar tissue have formed on the retina which can cause significant bleeding and retinal detachment. High risk of visual impairment/loss. Laser treatment, eye injections or surgery may be offered.	Diabetic maculopathy	Vessels in the centre of the retina (macula) have become leaky or blocked. Central vision loss may occur. Laser or eye injection treatments may be offered.
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High	Previous foot ulceration, history of Charcot foot, previous amputation, neuropathy and lower limb PAD together, neuropathy + callus/deformity, lower limb PAD + callus/deformity, patients who are on dialysis, blind, or unable to self-care	<ul style="list-style-type: none"> Refer to foot protection team Diabetes foot checks and surveillance every 2-3 months Regular podiatry and general foot care (callus removal, nail care and regular foot care review as per NICE guidelines) 										
Active	Current active foot tissue damage: any foot ulceration, acute Charcot foot, any foot infection	<ul style="list-style-type: none"> Same day referral to foot protection team or immediate to A&E if the patient has suspected sepsis or requires surgical intervention 										

Common diabetic complications

Persistently high blood glucose leads to several complications and reduced life expectancy

Macrovascular complications (affect larger blood vessels in the body):

- Atherosclerotic cardiovascular disease and peripheral arterial disease
- Myocardial infarction
- Stroke
- Heart failure

Microvascular complications (affect small blood vessels in the body):

- Diabetic kidney disease (nephropathy) (page 9)
- Retinopathy (page 9)
- Autonomic neuropathy e.g. [erectile dysfunction](#)
- Peripheral neuropathy see [BNE](#) for management advice

Foot disease:

- Ulcers, osteomyelitis, deep tissue infection, Charcot arthropathy, lower limb ischaemia and amputation (page 9)

Psychosocial

- Anxiety, depression, decreased quality of life

Metabolic

- Diabetic ketoacidosis (DKA) and Hyperosmolar hyperglycaemic state – see below
- Hypercholesterolaemia – (page 8)

Hypoglycaemia²⁹ – See [TREND guidance](#) or [NHS advice](#)

In T2DM patients may become hypoglycaemic if on insulin and/or a sulphonylurea

Symptoms of hypoglycaemia: sweating, shaking, confusion, drowsiness

Risk factors: increased physical activity, alcohol, frailty, inadequate glucose monitoring, food malabsorption e.g. gastroenteritis, fasting e.g. [during Ramadan](#)

If the patient can self-treat:

- take 15-20g of quick-acting carbohydrate (e.g. 200mls of sugary drink/ 5-6 dextrose tablets/3-4 heaped teaspoons of sugar dissolved in water)
- if blood glucose is still <4mmol/l after 15min then repeat the above step up to 3 times. If still no improvement seek urgent medical advice
- if the person feels better then advise them to eat a small starchy snack (banana, slice of bread or 2 plain biscuits) and take usual medication
- monitor blood glucose regularly for the next 24-48 hours

If the patient is unconscious or not able to monitor their response → seek urgent medical assistance.

Sick day rules^{30,36}

SADMANS rules: medications that should be temporarily stopped during dehydrating illness. [Patient leaflet with sick day rules advice.](#)

- **S**ulphonylureas (names ending in 'ide' e.g. gliclazide)
- **A**CE inhibitors (names ending in 'pril' e.g. ramipril)
- **D**iuretics (e.g. furosemide, indapamide)
- **M**etformin
- **A**RBs (names ending in 'sartan' e.g. losartan)
- **N**SAIDs (e.g. ibuprofen)
- **S**GLT2 inhibitors (names ending in 'flozin' e.g. empagliflozin)

Advice for patients: when unwell during illness e.g. gastroenteritis, pneumonia, COVID

- Increase glucose monitoring to at least 4 times a day
- Maintain fluid and carbohydrate intake. Sugary fluids if glucose low and sugar-free fluids if glucose high
- NEVER stop insulin: adjust dose of insulin and gliclazide according to glucose readings

Hyperglycaemia^{34,35}

Refer to A&E:

If suspected hyperglycaemic hyperosmolar state (HHS)

- Symptoms include: polyuria, polydipsia, nausea, confusion (please note ketosis does not normally occur)

If suspected DKA

- Symptoms include: polydipsia and polyuria, abdominal pain, nausea, vomiting, shortness of breath, tiredness, confusion, tachycardia and dehydration, high blood/urinary ketones

If haemodynamically unstable/urine ketones ≥3+

Refer to Ambulatory Care (in hours) or A+E (out of hours):

If BM high and urine ketones <3 and patient is haemodynamically stable

Refer to Lewisham community diabetes team for urgent review:

If BM high and no urine ketones

Preconception planning for patients with diabetes

Preconception planning for diabetic patients → reduces the risk of adverse maternal and fetal outcomes.

If a person living with diabetes wishes to conceive:

- ✓ **To use contraception until they have good blood glucose control. Aim for HbA1c <48mmol (<6.5%).**
- ✓ Also check TFTs and U&Es
- ✓ Refer to a Preconception Diabetic clinic (see below in referrals box)
- ✓ Start folic acid 5mg OD
- ✓ Start regular home glucose monitoring. Measure on waking and before and after meals (aim for blood glucose 4-7 before meals, 5-8 after meals)
- ✓ Review medication for contraindications in pregnancy and stop where possible e.g. ACEI, ARB and statin. Seek specialist advice if necessary
- ✓ Management of hypertension in pre-conception and pregnancy (page 8)

Pregnant and diabetic

If the patient has not already been assessed by a preconception diabetic clinic then refer for an urgent assessment to the diabetes antenatal clinic at the patient's booking hospital (see below) and start folic acid 5mg OD and review medications to ensure safe in pregnancy.

Gestational diabetes (GDM)

GDM is diabetes that develops during pregnancy and usually resolves after delivery. It is diagnosed through a 75g oral glucose tolerance test (OGTT) as HbA1c may underestimate hyperglycaemia. Screening for GDM occurs for at-risk patients at the antenatal booking appointment and patients are managed in the Antenatal Diabetes Clinic.

Patients with GDM should be:

- ✓ **Coded on EMIS as 'Gestational diabetes' (use Ardens template)**
- ✓ Offered lifestyle advice: weight control, diet and exercise
- ✓ Referred to NHS Diabetes Prevention programme if eligible HbA1c 42-47
- ✓ HbA1c in primary care 13 weeks postnatal AND when the patient wishes to conceive again
- ✓ Offered an annual diabetes screen as they are at increased risk of developing T2DM

Referrals

Urgent telephone advice: Consultant connect - Diabetes and Endocrinology. GSTT blood glucose diabetes nurse helpline (voicemail service only) 020 7188 1993

Non-urgent advice: eRS 'Advice and Guidance' - Diabetes and Endocrinology

Specialist clinics refer via eRS by searching the following:

Preconception in diabetic patient → Diabetic medicine - preconception (GSTT), Diabetic medicine - pre-conception diabetes care (KCH)

Pregnant patients with pre-existing diabetes / early onset GDM should be booked by the midwife under the care of the diabetes midwife. Contacts: LGT Maternity Care Referral form, GSTT diabetic midwife (diabetesmidwiferyteam@gstt.nhs.uk), KCH Diabetes Pregnancy Clinic, tel: 020 3299 1739

Diabetic patient who is pregnant and not under midwife yet → GSTT rapid access diabetic clinic gst-tr.diabetesandendocrine@nhs.net

T2DM: preferred medication^{12,17,18}

	Class	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)
HbA1c Control	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"> Ensure eGFR >45ml/min, or review dose. Contraindicated if corrected eGFR <30ml/min. Routine renal function at least annually, 6 monthly for those at risk of renal impairment. Consider slow-release preparation if standard preparation causes gastrointestinal side effects Take with meals to reduce gastrointestinal side effects Remember sick day rules (page 10) Manufacturer advises patients and carers should be informed to seek
	<p>Latest NICE CKD guidance (August 2021) does not recommend adjusting the estimation of glomerular filtration rate (GFR) in people of African-Caribbean or African family</p>				
	Sulfonylurea	Gliclazide	40-80mg 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 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) Consider alternative if BMI >35 Care with frail elderly, housebound and certain occupations e.g., working heavy machinery
Blood Pressure Control	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)	
	ARB	Losartan	50mg OD (25mg OD if >75yrs old)	50-100mg OD	
		Candesartan	8mg OD	8mg-32mg OD	

T2DM: preferred medication^{12,17,18}

Function	Class	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)
Blood Pressure Control	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 Contraindications (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	<p>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.</p>
	Aldosterone receptor antagonist (K ⁺ sparing diuretic)	Spironolactone	25mg OD	25mg OD	<p>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.</p>
	α-B Alpha Blocker	Doxazosin (IR)	1mg OD	2-16mg OD (or BD dosing when >8mg/day)	<p>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</p>
	B-B Beta Blocker	Atenolol	25mg OD	25-50mg OD	<p>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</p>
	Bisoprolol	5-10mg OD	5-20mg OD		
Cholesterol/ Lipid Control	Statin	Atorvastatin (alternative is rosuvastatin)	20mg OD	20-80mg OD	<p>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</p>

Referrals and patient resources

Referrals	
<p>Urgent telephone advice:</p> <ul style="list-style-type: none"> Consultant connect – Diabetes and Endocrinology, Ambulatory Care UHL (07880026233) Lewisham community diabetes nurses - 0203 192 6540. GSTT blood glucose diabetes nurse helpline (voicemail service) 020 7188 1993 <p>Non urgent 'Advice & Guidance':</p> <ul style="list-style-type: none"> eRS 'Advice and Guidance' – Diabetes and Endocrinology <p>Diabetic Clinics Lewisham</p> <ul style="list-style-type: none"> Integrated diabetes team referral form (DXS). Use this form to refer to Consultants, Community nurses, diabetic renal clinic, insulin conversion, diabetes related dietetic issues, poor glycaemic control, pre-conception advice <p>Diabetic Clinics Guys & St Thomas Hospital (search Diabetic medicine on eRS)</p> <ul style="list-style-type: none"> Diabetic medicine clinic Lipids & cardiovascular risk adult (for diabetic patients with obesity or lipid disorders) Diabetes with complications Renal impairment and diabetes Diabetic medicine Rapid access clinic – email gsttr.diabetesandendocrine@nhs.net <p>Diabetic Clinics Kings College Hospital (search Diabetic medicine on eRS)</p> <ul style="list-style-type: none"> Diabetes general Diabetes with complications including Renal <p>Lipid Clinics</p> <ul style="list-style-type: none"> GSTT Prof Wierzbicki/Prof Crook via eRS or email gst-tr.diabetesandendocrine@nhs.net LGT Prof Crook via Choose & Book or tlh-tr.LewishamReferrals@nhs.net KCH Dr Rao via eRS or Tel: 02032994181 or email: Laura.Gonzalez@nhs.net 	<p>Diabetes Specialist Dietician</p> <ul style="list-style-type: none"> T2DM new to insulin, change in insulin regime, GLP start, suboptimal glucose control, VLCD programme for T2DM/NDH patients. Email tlh-tr.lewishamDietetics@nhs.net using generic referral form. <p>Foot protection teams</p> <ul style="list-style-type: none"> Lewisham Foot Health service (Foot Protection team) email lg.foothealthservice@nhs.net or call: 020 304 9870. Referrals accepted from all healthcare professional for patients with new active foot ulceration/infection and for patients with active ingrowing toenails. Attach photos if possible and use this Referral form Acute Foot Service & multidisciplinary diabetic foot team (MDFT) LGT- email Lh.acutefootservices@nhs.net or call: 020 3192 6602. Referrals accepted from all healthcare professional for patients with suspected acute Charcot foot and for patients already known to their service with current active foot ulceration/infection Lewisham Community Foot Health Clinics at Downham health & leisure centre, Lee health centre, Sydenham Green health centre, South Lewisham health centre and Waldron centre. Use this Referral form. Foot health home visits – email lg.fhslewishamhospital@nhs.net or call 020 3049 1860 / 020 3049 1870 GSTT – Diabetic foot clinic gst-tr.diabetesandendocrine@nhs.net KCH/PRUH - Multidisciplinary diabetic foot team 01689 865 202 kch-tr.pruhdiabeticfootclinic@nhs.net <p>Patient Education</p> <p>Diabetes Book & Learn courses are available on DXS, by email (diabetes.booking@nhs.net) or self-referral: DESMOND, X-PERT, Live Well Course, Low Carb Programme</p>
Patient resources	
<ul style="list-style-type: none"> Social prescribing – refer on Elemental or self-referral Diabetes UK Diabetes information in different languages - Diabetes UK Diabetes information in different languages - Know Diabetes NHS Video library guide to using a glucometer What to do when you are ill – patient information leaflet How to manage T2DM if you become unwell with COVID – London Clinical Network Guidance Lewisham clinical waste disposal service (sharps bins) – clinician to refer 	<ul style="list-style-type: none"> Patient leaflet with sick day rules advice Diabetes and Exercise Driving when you have diabetes Diabetes UK / Trend: Safe driving and the DVLA Health and Care videos on Diabetes Health and Care Video Library - Diabetes (healthandcarevideos.uk) Healthier You: NHS Diabetes Prevention Programme: structured education for patients with non diabetic hyperglycaemia (HbA1c 42-47) Diabetes and foot health

Diabetes management at practice level

	Tasks	Tools
1. Maintaining the diabetic register (prevalence improvement)	Unknown HbA1c: identify patients who are due an HbA1c on EMIS (e.g. history of GDM, NDH, high BMI)	EMIS searches e.g. QOF/Ardens
	Uncoded diabetes: identify patients with an HbA1c >48 who do not have a 'Type 2 diabetes mellitus code' (Then follow 'How to diagnose T2DM' algorithm on page 4)	
	How to get HbA1c readings	<ul style="list-style-type: none"> • During consultations • NHS health checks • AccuRx blood test reminder • Secondary care resources: Cerner HbA1c report, Portal Cerner, clinic letters
2. Call/Recall	Prioritise high risk patients (poorly controlled HbA1c, BAME, frailty, history of CVD or foot ulcers)	<ul style="list-style-type: none"> • UCLP Searches in Ardens
	Pre-patient review Arrange bloods (HbA1c, lipids and U&Es) and early morning urine ACR. Consider additional tests dependent on medication and co-morbidities Arrange BP measurement and pulse check (in practice/machine at home) Arrange weight and height (in practice/machine at home) Book appointment for annual review	<ul style="list-style-type: none"> • EMIS searches e.g. Ardens • AccuRx/ AccuRx Florey • eConsult • MJog • Patient letters • Telephone call
3. Diabetic review	<ul style="list-style-type: none"> • History: patient concerns, expectations, and questions • Review investigations: urine ACR, renal function, HbA1c (trend), cholesterol • Review BMI and BP trend • Re-calculate QRISK2/3 for primary prevention of cardiovascular disease • Discuss risk-reduction and offer lifestyle advice: BMI, smoking, alcohol, diet, activity • Screen for: mental health conditions and erectile dysfunction • Medication review <ul style="list-style-type: none"> ○ concerns, side-effects, compliance, adherence. ○ ensure renal function, HbA1c, cholesterol and BP satisfactory and adjust medications if needed. ○ signpost to community pharmacy for New Medicines Service • Foot check examination and advice on foot care • Refer to secondary care: if needs insulin, complex patient, poorly controlled T2DM etc • Eye check: check patient is attending annual eye screening • Immunisations/ Vaccines: annual flu, pneumococcal (once), COVID-19 (as per national/local guidance) • Driving: follow DVLA guidance • Agree on goals and next review date • Signpost to community resources if needed – see page 9 	<p>In practice consultations</p> <ul style="list-style-type: none"> • F2F or remote consultation using Ardens diabetes template • Structured medication review with pharmacist <p>Out of practice consultations</p> <ul style="list-style-type: none"> • Home visiting team • GP extended access (GPEA) • Secondary care <p>Remote consultations Remote diabetes monitoring using 'Doctaly Assist' through One Health Lewisham GP Federation</p>
4. Follow-up	Review BP monthly until in target HbA1c every 3 months until at target then 6 monthly	Prioritise patients using UCLP searches in Ardens
5. GDM review	HbA1c in primary care 13 weeks postnatal then annual HbA1c	Use EMIS searches e.g. Ardens

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Abbreviations

Abbreviations

ABPM – ambulatory blood pressure monitoring
 ACEI – angiotensin-converting enzyme inhibitor
 ACR – albumin creatinine ratio
 ARB – angiotensin II receptor blocker
 AccurX – secure healthcare communication tool that allows interactions between a GP surgery and its patients
 Ardens – clinical decision support tool embedded in EMIS that provides templates for long term conditions management
 BD – twice daily dosing
 BMI – body mass index
 BP – blood pressure
 CCB – calcium channel blocker
 CI – contraindications
 CKD – chronic kidney disease
 CVD – cardiovascular disease
 DXS – digital health solutions system for EMIS web
 ECG – electrocardiogram (12-lead)
 eConsult – digital triage and remote consultation solution
 eGFR – estimated glomerular filtration rate
 eRS – electronic referral system

Abbreviations

FBC – full blood count
 GDM – gestational diabetes mellitus
 GI – gastrointestinal
 GSTT – Guy's and St Thomas' NHS Trust
 GPEA – GP extended access
 HbA1c – haemoglobin A1c
 HBPM – home blood pressure monitoring
 HDL – high density lipoprotein
 IR – immediate release
 KCH – Kings College Hospital NHS Trust
 LADA – latent autoimmune diabetes in adults
 LGT – Lewisham and Greenwich NHS Trust
 MI – myocardial infarction
 MR – modified release
 NDH – non diabetic hyperglycaemia
 NSAIDs – non-steroidal anti-inflammatory drug
 PAD – peripheral arterial disease
 Pod – this is a touchscreen computer connected to a BP monitor that patients can use without clinical supervision
 QOF – quality and outcomes framework (contract)

Abbreviations

SELAPC – South East London Area Prescribing Committee
 T1DM – type 1 diabetes mellitus
 T2DM – type 2 diabetes mellitus
 TIA – transient ischaemic attack
 TFT – thyroid function blood test
 UCLP – University College London Partners
 UHL – University hospital Lewisham
 VLCD – very low-calorie diet

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