BNSSG lipid guidelines on the diagnosis and management of lipid disorders

Developed in partnership between:

NHS Bristol, North Somerset and South Gloucestershire Integrated Care Board

NHS North Bristol NHS Trust

NHS University Hospitals Bristol and Weston NHS Foundation Trust

Healthier Together
Improving health and care in Bristol, North Somerset and South Gloucestershire

Version 2 : Summer 2025. Review : Summer 2028

Contents

This guideline acts a repository of all the relevant guidelines for the diagnosis and management of lipid disorders locally within the Bristol, North Somerset, South Gloucestershire Integrated Care Board (BNSSG ICB).
Guidelines have been collated from national management pathways available publicly online and local pathways created by local lipid specialists in collaboration with relevant specialities. *Patients reviewing this guideline should be mindful that local clinicians are able to use these guidelines at their discretion and in light of factors individual to you.*
Each box below is a hyperlink to the relevant guideline

NHS England AAC Statin intolerance management pathway

NHS England AAC Lipid management pathway

Hypertriglyceridaemia and HTG induced pancreatitis

Additional information on lipid diagnosis and management:

BNSSG Lipid clinic referral pathway

Lipoprotein (a) measurement and management guideline

BNSSG Common secondary prevention treatment algorithm

Non statin/ezetimibe lipid therapy

Contents page

NHS England Accelerated Access Pathway

These are the national agreed guidelines for the management of lipids across primary and secondary prevention, including the use of injectable medications

Author: Dr Rani Khatib & Dr Dermot Neely on behalf of the AAC Clinical Subgroup. March 2024. Review date: March 2026.
https://www.england.nhs.uk/aac/wp-content/uploads/sites/50/2020/04/lipid-management-pathway-v7.pdf

NHS Bristol, North Somerset and South Gloucestershire Integrated Care Board
NHS North Bristol NHS Trust
NHS University Hospitals Bristol and Weston NHS Foundation Trust
Healthier Together Improving health and care in Bristol, North Somerset and South Gloucestershire

Summary of National Guidance for Lipid Management for Primary and Secondary Prevention of CVD

Contents page

ACCELERATED ACCESS COLLABORATIVE

NHS

INITIAL CONSIDERATIONS:

- Measure non-fasting ***full lipid profile*** (total cholesterol, HDL-C, non-HDL-C, triglycerides) and HbA1c as part of an initial baseline assessment.
- Consider secondary causes of hyperlipidaemia and manage as needed.
- Ensure appropriate baseline and follow up tests as detailed on page 2. Measure BMI.
- Identify and exclude people with contraindications/drug interactions
- If non-fasting triglyceride above 4.5mmol/L see page 2.

PRIMARY PREVENTION

Offer lifestyle changes and consider statin therapy for adults who do not have established CVD but fall into the categories below. Use QRISK risk assessment tool where appropriate (see page 2, *'Primary Prevention Risk Assessment'*)

- Age ≤84 & QRISK ≥10% over next 10 years
- Type 2 diabetes & QRISK ≥10% over next 10 years
- Type 1 diabetes, if they have one or more of the following:
  - Over 40 years
  - Had diabetes for >10 years
  - Have established nephropathy
  - Have other CVD risk factors
- CKD eGFR < 60 mL/min/1.73m² and/or albuminuria
- Age ≥85 years if appropriate consider co-morbidities, frailty & life expectancy

Discuss the benefits of lifestyle changes and identify and address all modifiable risk factors - smoking, diet, obesity, alcohol intake, physical activity, blood pressure and HbA1c.

Offer people the opportunity to have their risk of CVD assessed again after they have tried to change their lifestyle (where applicable)

Consider additional risk factors, if present, together with QRISK score (treated for HIV, severe mental illness, taking medicines that cause dyslipidaemia, systemic inflammatory disorder (e.g. SLE), impaired fasting glycaemia, recent change in risk factors)

PRIMARY PREVENTION

If lifestyle modification is ineffective or inappropriate, discuss the risks and benefits of statins, and offer treatment based on an informed shared-decision.

Atorvastatin 20mg daily

- Measure full lipid profile again after 2-3 months (non-fasting).
- High intensity statin treatment should achieve reduction of non-HDL-C > 40% from baseline. If not achieved after 2-3 months;
  - Discuss treatment adherence, timing of dose, diet and lifestyle
  - If at higher risk (based on comorbidities, risk score or clinical judgement – see page 2 *'Additional Risk Factors'*) consider increasing the dose every 2-3 months up to a maximum dose of atorvastatin 80mg daily.
  - For how to increase in people with CKD see *'Special Patient Populations'* (page 2).
- If patients on a high-intensity statin have side effects, offer a lower dose or an alternative statin (see page 2 *'Extent of lipid lowering with available therapies'*)
- If maximum tolerated dose of statin does not achieve non-HDL-C reduction > 40% of baseline value after 2-3 months consider adding Ezetimibe 10mg daily (NICE TA385)
- If statin treatment is contraindicated or not tolerated;
  - See AAC Statin Intolerance Algorithm for advice regarding adverse effects (click here)
  - Ezetimibe 10mg monotherapy may be considered. Assess response after 2-3 months.
  - Ezetimibe 10mg/bempedoic acid 180 mg combination may be considered when ezetimibe alone does not control non-HDL-C/LDL-C well enough (NICE TA694).

If non-HDL-C reduction remains < 40% of baseline despite maximal tolerated lipid lowering therapy (including people with intolerances and contraindications) consider referral to specialist lipid management clinic according to local arrangements

SEVERE HYPERLIPIDAEMIA

If TC>7.5mmol/L and/or LDL-C >4.9mmol/L and/or non-HDL-C >5.9mmol/L, a personal and/or family history of confirmed CHD (<60 years) and with no secondary causes: suspect familial hypercholesterolaemia (possible heterozygous FH)

Do not use QRISK risk assessment tool

DIAGNOSIS AND REFERRAL

Take fasting blood for repeat lipid profile to measure LDL-C.

Use the **Simon Broome** or **Dutch Lipid Clinic Network** (DLCN) criteria to make a **clinical diagnosis of FH**.

Use clinical findings, a full lipid profile and family history to judge the likelihood of a familial lipid disorder, rather than using strict lipid cut-off values alone.

Refer to Lipid Clinic for further assessment if **clinical diagnosis of FH** or if TC>9.0mmol/L and/or LDL-C >6.5mmol/L and/or non-HDL-C >7.5mmol/L or Fasting triglycerides > 10mmol/L (regardless of family history) (page 2)

TREATMENT TARGETS IN FH

If clinical diagnosis of FH and/or other risk factors present follow the recommended treatment management pathway for primary or secondary prevention as for non-FH, ***BUT***

Aim to achieve at least a 50% reduction of LDL-C (or non-fasting non-HDL-C) from baseline.

Consider specialist referral for further treatment and/or consideration of PCSK9i therapy IF

- they are assessed to be at very high risk of a coronary event**
- OR therapy is not tolerated
- OR LDL-C remains >5mmol/L (primary prevention)
- OR LDL-C remains >3.5mmol/L (secondary prevention)

despite maximal tolerated statin and ezetimibe therapy.

**defined as any of the following:

- Established coronary heart disease
- Two or more other CVD risk factors

SECONDARY PREVENTION

Offer statin therapy to adults with CVD, this includes CHD, angina, Acute Coronary Syndrome (MI or unstable angina), revascularisation, stroke or TIA, or symptomatic peripheral arterial disease. Do not delay statin treatment if a person has acute coronary syndrome. Take a lipid sample on admission (within 24 hours).

Identify and address all modifiable risk factors - smoking, diet, obesity, alcohol intake, physical activity, blood pressure and HbA1c.

SECONDARY PREVENTION

Do not delay statin treatment in secondary prevention while managing modifiable risk factors. Prescribe a high intensity statin:

Atorvastatin 80mg daily

Use a lower dose of atorvastatin if there is a potential drug interaction, high risk of or experiencing adverse effects, or patient preference.

Offer atorvastatin 20mg if CKD (people with GFR< 60 mL/min/1.73m²).

- Measure full lipid profile again after 2-3 months (non-fasting).
- Aim for an LDL-C of ≤ 2.0 mmol/L, or non-HDL-C of ≤ 2.6 mmol/L
- LDL and non-HDL-C levels should be reduced as much as possible. Personalise targets based on clinical judgement and an informed discussion with patient. ***See Titration Thresholds / Targets* (page 2)**
- If high intensity statin treatment does not achieve expected reduction (see table on page 2) after 2 to 3 months
  - Discuss treatment adherence, timing of dose, diet and lifestyle measures
  - If started on less than atorvastatin 80mg and the person is judged to be at higher risk (based on co-morbidities or clinical judgment), consider increasing to 80mg atorvastatin or maximally tolerated dose. For how to increase in people with CKD see *'Special Patient Populations'* (page 2).
- If patients on a high-intensity statin have side effects, offer a lower dose or an alternative statin (see page 2 *'Extent of lipid lowering with available therapies'*)

Escalating lipid lowering treatment

If maximum tolerated dose of statin does not control non-HDL-C/LDL-C well enough after 2-3 months confirm statin adherence, then consider the following escalation of treatment options based on shared decision making with the patient.

- Ensure an informed discussion between the clinician and the person about the risks and benefits of additional lipid-lowering treatments.
- Take into account the person's preferences, the presence of any comorbidities, whether they are on multiple medications, whether they have frailty and their life expectancy.
- Do not routinely de-escalate lipid lowering therapies when levels are lower than NICE target, except if clinically indicated or based on the person's needs or preferences

If recommended statin treatment is contraindicated or not tolerated - follow AAC Statin Intolerance Algorithm for advice regarding adverse effects (click here).

If statin intolerance is confirmed, consider:

- **Ezetimibe 10mg** monotherapy. Assess response after 3 months (TA385)
- **Ezetimibe 10mg/bempedoic acid 180 mg** combination when ezetimibe alone does not control non-HDL-C sufficiently. (NICE TA694)

If non HDL-C remains > 2.6mmol/L despite other lipid lowering therapies consider Injectable therapies - arrange a fasting blood test and assess eligibility criteria (TA393/394, TA733)

Ezetimibe 10mg daily (NICE TA385). Reassess after three months. If non-HDL-C remains > 2.6mmol/L; consider **injectable therapies** arrange a fasting blood test and assess eligibility

Injectable therapies**

If non-HDL-C > 2.6mmol/L; Arrange fasting blood test to measure LDL-C to assess eligibility:

- **Inclisiran** - if fasting LDL-C ≥ 2.6mmol/L despite maximum tolerated lipid lowering therapy (TA733)

OR

- **PCSK9i** - see overleaf for LDL-C thresholds. (TA393/4)

If eligibility criteria not met, consider **ezetimibe 10mg daily** (if not previously considered)

** Inclisiran and PCSK9i should not be prescribed concurrently

Additional CV risk reduction considerations - check fasting triglycerides levels and consider icosapent ethyl. See triglycerides section overleaf.

Consider ezetimibe in addition to the maximum tolerated intensity and dose of statin to reduce CVD risk further, even if the lipid target for secondary prevention of CVD is met. (NG238)

MANAGEMENT

This guidance applies to new patients and may also be taken into consideration for those already on statins at their annual review. If 40% reduction of non-HDL-C, or target levels are not achieved, offer high intensity statins. Discuss with people who are stable on a low- or medium-intensity statin the likely benefits and potential risk of side effects if changed to a high-intensity statin when they have a medication review and agree with the person whether a change is needed.

Ezetimibe, alirocumab, evolocumab or inclisiran can be added when patients' LDL-C levels are not lowered enough with the maximally tolerated dose of statins. If statins are contraindicated or not tolerated and ezetimibe alone does not control LDL-C well enough, bempedoic acid with ezetimibe is an option. Do not offer a fibrate, nicotinic acid, bile acid binder or omega-3 fatty acids alone or in combination with statin, for the prevention of CVD (check NICE NG238 and TA805 for exceptions).

PRIMARY PREVENTION RISK ASSESSMENT

Use QRISK3 version of the calculator (or QRISK2 if not available).

- Do not use this risk assessment tool for people with established CVD or those who are already at high risk of developing CVD because of FH or other inherited disorders of lipid metabolism.
- Do not use a risk assessment tool to assess CVD risk in people with type 1 diabetes, or eGFR < 60 mL/min/1.73 m² and/or albuminuria (as already at high risk of developing CVD).
- Consider people aged ≥ 85 at increased risk of CVD because of age alone particularly people who smoke or have raised BP.
- If QRISK <10% over next 10 years, do not rule out treatment if there is an informed preference for taking a statin or a concern that risk may be underestimated.
- Consider a lifetime risk tool (e.g. QRISK3-lifetime) to inform discussions on CVD risk and to motivate lifestyle changes, particularly for people with a 10-year score < 10%, and people < 40 who have CVD risk factors.

Additional Risk Factors

Note, standard CVD risk scores including QRISK may underestimate risk in people who have additional risk because of underlying medical conditions or treatments. These include, but not limited to the following group of people;

- obesity increases CVD risk (NICE CG189)
- treated for HIV
- severe mental illness
- taking medicines that can cause dyslipidaemia such as antipsychotic medication, corticosteroids or immunosuppressant drugs
- already taking medicines to treat CVD risk factors
- autoimmune disorders such as SLE, and other systemic inflammatory disorders
- non-diabetic hyperglycaemia
- significant hypertriglyceridaemia (fasting triglycerides 4.5-9.9mmol/L)
- recent risk factor changes e.g. quit smoking, BP or lipid treatment

Consider socio-economic status as an additional factor contributing to CVD risk (if not already in the risk calculator).

SPECIAL PATIENT POPULATIONS

Type 1 Diabetes

While NICE recommends offering statins to patients with Type 1 diabetes as detailed in the algorithm, it also states to consider statins in those aged 18 to 40 with type 1 diabetes, including those who have had diabetes for ≤ 10 years

Chronic Kidney Disease

Offer atorvastatin 20mg for the primary or secondary prevention of CVD to people with CKD (eGFR less than 60 mL/min/1.73m² and/or albuminuria)

Increase the dose if target is not achieved and eGFR is 30 mL/min/1.73m² or more.

Agree the use of higher doses with a renal specialist if eGFR is less than 30 mL/min/1.73m²

Statins in Pregnancy and Lactation

Statins should be stopped 3 months before attempting to conceive and not be restarted until breastfeeding is finished. Stop statins if pregnancy is a possibility.

ABBREVIATIONS

ALT: alanine aminotransferase
AST: aspartate aminotransferase
CHD: coronary heart disease
CKD: chronic kidney disease
CVD: cardiovascular disease
FH: familial hypercholesterolaemia
JBS: Joint British Societies
LDL-C: low density lipoprotein cholesterol
non-HDL-C: non-high density lipoprotein cholesterol
PCSK9i: proprotein convertase subtilisin kexin 9 monoclonal antibody inhibitor
QOF: Quality and Outcomes Framework
SLE: systemic lupus erythematosus
SPC: summary of product characteristics
TC: total cholesterol

EXTENT OF LIPID LOWERING WITH AVAILABLE THERAPIES

Approximate reduction in LDL-C					
Statin dose mg/day	5	10	20	40	80
Fluvastatin			21%	27%	33%
Pravastatin		20%	24%	29%	
Simvastatin		27%	32%	37%	42%
Atorvastatin		37%	43%	49%	55%
Rosuvastatin	38%	43%	48%	53%	
Atorvastatin + Ezetimibe 10mg		52%	54%	57%	61%

Low intensity statins will produce an LDL-C reduction of 20-30%

Medium intensity statins will produce an LDL-C reduction of 31-40%

High intensity statins will produce an LDL-C reduction above 40%

Simvastatin 80mg is not recommended due to risk of muscle toxicity

- **Rosuvastatin** may be used as an alternative to atorvastatin if compatible with other drug therapy. Some people may need a lower starting dose (see BNF).
- Low/medium intensity statins should only be used if intolerance or drug interactions.
- **Ezetimibe** when combined with any statin is likely to give greater reduction in non-HDL-C or LDL-C than doubling the dose of the statin.
- **PCSK9i** (NICE TA393, TA394) alone or in combination with statins or ezetimibe produce an additional LDL-C reduction of approximately 50% (range 25-70%).
- **Bempedoic acid** when combined with ezetimibe (TA694) produces an additional LDL-C reduction of approximately 28% (range 22-33%).
- **Inclisiran** (TA733) alone or in combination with statins or ezetimibe produces an additional LDL-C reduction of approximately 50% (range 48-52%) but no clinical outcome evidence is currently available.

MONITORING

Baseline Measurements

In addition to full lipid profile, measure renal, thyroid and liver profiles (including albumin) and HbA1c to exclude secondary causes and co-morbidities.
Measure baseline liver transaminase (ALT or AST) before starting a statin.
Measure CK if unexplained muscle pain before starting a statin.
CK should not be measured routinely especially if a patient is asymptomatic.

	Primary Prevention		Secondary prevention	
	Lipid Profile	ALT or AST	Lipid Profile	ALT or AST
Baseline	✔	✔	✔	✔
2-3 months	✔	✔	✔	✔
6-9months	If targets are not met, and up-titration is agreed, repeat full lipid profile and ALT or AST within 2-3 months of each up-titration of statin dose or addition of ezetimibe as required			
12 months	✔	✔	✔	✔
Yearly	✔*		✔*	

Provide annual medication reviews for people taking statins to discuss effectiveness of therapy, medicines adherence, lifestyle modification and address CVD risk factors.

***Offer in secondary prevention, and consider in primary prevention an annual non-fasting full lipid profile** to inform the discussion around effectiveness of lipid lowering therapy and any medicines non-adherence.*

Monitoring

Repeat full lipid profile is non-fasting.
Do not stop statins because of an increase in blood glucose level or HbA1c
Advise that the risk of muscle pain, tenderness or weakness associated with statins is small and the rate of severe muscle adverse effects (rhabdomyolysis) is extremely low.

Liver Transaminases

Measure liver transaminase within 3 months of starting treatment and then within 2-3 months of every additional up titration and then again at 12 months, but not again unless clinically indicated.

If ALT or AST are greater than 3 times the upper limit of normal then do not initiate a statin or discontinue statin therapy already prescribed and repeat the LFTs in a month.

If ALT or AST are elevated but are less than 3 times the upper limit of normal then:

- Do not routinely exclude from statin treatment
- Continue the statin and repeat in a month.
- If they remain elevated but are less than 3 times the upper limit of normal then continue statin and repeat again in 6 months.

TITRATION THRESHOLD / TARGETS

	NICE titration threshold / QOF	JBS3**
Primary prevention	Escalate lipid lowering therapy if non-HDL-C reduction from baseline ≤ 40%	non-HDL-C <2.5mmol/L (LDL-C <1.8mmol/L)
Secondary Prevention	Aim for an LDL-C of ≤ 2.0 mmol/L, or non-HDL-C of ≤ 2.6 mmol/L at least*	
FH	Optimise lipid lowering therapy to achieve at least 50% reduction in LDL-C (or non-HDL-C.)	

*Consider ezetimibe to reduce CVD risk further, even if the NICE lipid target for secondary prevention of CVD is met.

**LDL-C and non-HDL-C levels should be reduced as much as possible in people with CVD. Consider a personalised target, as clinically indicated, e.g. JBS3 consensus recommendation

Non-HDL-C = TC minus HDL-C **LDL-C** = non-HDL-C minus (Fasting triglycerides*/2.2)

* valid only when fasting triglycerides are less than 4.5 mmol/L

SPECIALIST SERVICES

Scope of specialist service available locally may include; lipid clinic, PCSK9i clinic (offering initiation and subsequent follow up), FH genetic diagnosis and cascade testing, lipoprotein apheresis service. NICE eligibility criteria for PCSK9i and fasting LDL-C thresholds are summarised below.

NICE TA393 Alirocumab NICE TA394 Evolocumab	Without CVD	With CVD	
		High risk [1]	Very high risk [2]
Primary non-FH or mixed dyslipidaemia	Not recommended	LDL C > 4.0 mmoL/L	LDL C > 3.5 mmoL/L
Primary heterozygous-FH	LDL C > 5.0 mmoL/L	LDL C > 3.5 mmoL/L	

[1] History of any of the following: ACS; coronary or other arterial revascularisation procedures; CHD, ischaemic stroke; PAD. [2] Recurrent CV events or CV events in more than 1 vascular bed (that is, polyvascular disease).

Bempedoic acid/ezetimibe and inclisiran are available in primary care and do not require initiation by specialist services.' PCSK9i may be available for prescribing in primary care: see local initiation pathways.

TRIGLYCERIDES

Triglyceride concentration	Action
Greater than 20mmol/L	**Refer to lipid clinic for urgent specialist review** if not a result of excess alcohol or poor glycaemic control. At risk of acute pancreatitis.
10 - 20mmol/L	Repeat the TG measurement with a fasting test (after an interval of 5 days, but within 2 weeks) and review for potential secondary causes of hyperlipidaemia. Seek specialist advice if the TG concentration remains > 10mmol/litre. At risk of acute pancreatitis
4.5 - 9.9mmol/L	If non-fasting triglycerides are greater than 4.5mmol/L, repeat with a fasting TG measurement Be aware that the CVD risk may be underestimated by risk assessment tools, optimise the management of other CVD risk factors present and seek specialist advice if non-HDL-C concentration is > 7.5 mmol/litre.

Icosapent ethyl (TA805)

- Check fasting triglycerides levels.
- Manage secondary causes of hypertriglyceridaemia.
- Consider icosapent ethyl (TA805) if patient has established cardiovascular disease (secondary prevention) **and**
  - on statins and fasting TG ≥ 1.7mmol/L and LDL-C* between 1.04‡ and ≤2.6mmol/L
- See table above and refer as appropriate.

* LDL-C cannot be calculated using Friedewald's formula if TG >4.5. Discuss with your lab. Consider using an alternative equation (eg Sampson, doi: 10.1001/jamacardio.2020.0013) or beta-quantification.

‡ labs don't report calculated LDL-C beyond one decimal point

STATIN INTOLERANCE

Statin intolerance is defined as the presence of clinically significant adverse effects from statin therapy that are considered to represent an unacceptable risk to the patient or that may result in adherence to therapy being compromised.

For people who are intolerant of the recommended statin treatment see the NHSE AAC statin intolerance algorithm, available on the NHSE AAC page (Click here)

Authors: Dr Rani Khatib & Dr Dermot Neely on behalf of the AAC Clinical Subgroup.
Updated by NHSE Cholesterol Expert Advisory Group.
March 2024. Review date: March 2026.

"This summary accurately reflects NICE guidance and JBS3 recommendations", NICE March 2024

References

JBS3. 2014. www.jbs3risk.com/pages/6.htm
Kirsten *et al.* 2005. Hospital Pharmacy 40(8):687-692
Navarese *et al.* 2015. Annals of internal medicine 163(1):40-51
Soon Jun Hong *et al.* 2018. Clinical therapeutics 40(2): 226-241.e4

NICE 2016. TA385 www.nice.org.uk/guidance/ta385
NICE 2016. TA393 www.nice.org.uk/guidance/TA393
NICE 2016. TA394 www.nice.org.uk/guidance/TA394

NICE 2008. CG71 www.nice.org.uk/guidance/cg71
NICE 2021. TA694 www.nice.org.uk/guidance/TA694
NICE 2021. TA733 www.nice.org.uk/guidance/TA733

NICE 2022. TA805 www.nice.org.uk/guidance/ta805
NICE 2023. NG238 www.nice.org.uk/guidance/ng238
NICE 2023. CG189 www.nice.org.uk/guidance/cg189

Contents page

National statin intolerance management pathway

This NHS England agreed pathway outlines the management of statin intolerance to be implemented across primary or secondary care

Author: Dr Rani Khatib & Dr Dermot Neely on behalf of the AAC Clinical Subgroup.

NHS Bristol, North Somerset and South Gloucestershire Integrated Care Board
NHS North Bristol NHS Trust
NHS University Hospitals Bristol and Weston NHS Foundation Trust
Healthier Together Improving health and care in Bristol, North Somerset and South Gloucestershire

Statin Intolerance Pathway

ACCELERATED ACCESS COLLABORATIVE

NHS

Person at high CVD risk reports potential intolerance to recommended high intensity statin treatment

This resource relates to NICE guidance: CG181, CG71, TA385, TA393/394, TA694, TA733, QS100

New onset or worsening of muscle symptoms since starting statins? (pain, tenderness or weakness)

- No → Consider other potential side effects for statins
  - Be aware of **Statin Reluctance** and **Nocebo Effect**
  - See '***Person Centred Care***' box at page 2
- YES

Symptoms typical for Statin Related Muscle toxicity (SRM)*?

- No → Muscular symptoms not related to statins → Non SRM: Consider other causes e.g. PMR, Vit D deficiency. Check bone profile, Vit D, CRP.
- YES

*Symmetrical pain and/or weakness in large proximal muscle groups, worsened by exercise

Measure Creatine Kinase (CK)
Assess severity of symptoms
+/- repeat baseline assessment**

**Consider other causes if new onset of muscle symptoms of >2 weeks duration in a person previously tolerant of statin therapy for > 3months

- **Tolerable symptoms**
  No clinical concern
  CK < 4x ULN
  → Improvement within 2 weeks
  Resolved within 6 weeks
  Patient happy to continue
  → No → **Stop statin for 4-6 weeks**
  Document time to symptom onset and time to resolution
- **Intolerable symptoms**
  and/or clinical concern ***and/or*** CK > 4x and < 10x ULN
  → **Stop statin for 4-6 weeks**
  Document time to symptom onset and time to resolution
- CK > 10x and < 50x ULN → **Renal function** stable/normal eGFR
  - Yes → **Stop statin for 4-6 weeks**
    Document time to symptom onset and time to resolution
  - No → Stop statin and consider **Rhabdomyolysis**
- CK > 50x ULN → Stop statin and consider **Rhabdomyolysis**

Has CK normalised?

- No → Consider **Statin induced necrotizing autoimmune myopathy** (SINAM) → **Seek specialist advice and consider** PCSK9i (NICE TA 393, 394)
- YES

Have symptoms resolved?

- No → Non-SRM. **Consider other causes**
- YES

Has the patient been **symptom free for at least 2 weeks?**

- No → Wait for 2 weeks before **rechallenge**
- YES

Reassess and **restart** with lower dose / alternative statin (see page 2 - '***Statin-based Approaches***')
Offer low or moderate dose of a higher intensity statin (Atorvastatin 10 or 20 mg OD, or Rosuvastatin 5 or 10mg OD)

- **No recurrence of muscle symptoms**
  Titrate at 8 weeks intervals to achieve appropriate targets
  → **Symptoms tolerable**
  Treatment effective, goals achieved
  Patient happy to continue
- Recurrence of muscle symptoms
  Short time to onset
  Symptoms intolerable
  → **Consider further options**
  For example commence ezetimibe, or ezetimibe with bempedoic acid or inclisiran or PCSK9i as required, depending on eligibility (TA694, TA733, TA 393, TA394)
  see page 2 - '***Statin-based Approaches***'
  → No → **Symptoms tolerable**
  Treatment effective, goals achieved
  Patient happy to continue
  → **If not effective** → **Seek specialist advice and consider** PCSK9i (NICE TA 393, 394)

Urgently seek specialist advice and inpatient **assessment**

Abbreviations

CK = Creatine Kinase
CRP = C-Reactive protein
eGFR = Estimated glomerular filtration rate
PMR = Polymyalgia rheumatica
SINAM = Statin induced necrotizing autoimmune myopathy
SRM = Statin related muscle toxicity
ULN = Upper Limit of Normal Range
Vit D = Vitamin D

Contents page

Introduction

- Statins are the cornerstone for prevention and treatment of cardiovascular (CV) disease with a substantial evidence of reduction of morbidity and mortality. Refer to Lipid Management Pathway and related NICE guidelines (CG181, CG71) for guidance on initiation, titration and monitoring of statin therapy.
- In clinical trials, statins were found to be largely well tolerated (often with a similar adverse effect (AE) profile to placebo), however this is not reflected in clinical practice where up to 75% of people started on a statin will discontinue treatment within 2 years.
- Stopping statin therapy is associated with an increased risk of major CV events and there is growing concern that clinicians are labelling patients as '**statin intolerant**' too quickly. Indeed statin discontinuation is significantly associated with negative media coverage.

Definition of Statin Intolerance

- Intolerance to initial statin therapy is defined by NICE as the presence of clinically significant adverse effects that represent an unacceptable risk to the patient or that may reduce compliance with therapy.
- Other definition: any adverse event (AEs) considered unacceptable by the patient, and/or some laboratory abnormalities, both attributed to statin treatment and leading to its discontinuation.

Statin-associated muscle symptoms (SAMS)

- SAMS are one of the principal reasons for statin non-adherence and/or discontinuation. However, not all such symptoms should lead to a label of 'statin intolerance' as they may not be truly statin related muscle toxicity (SRM) as demonstrated by resolution on de-challenge and recurrence with re-challenge.

Non-Statin related musculoskeletal symptoms (Non SRM)

- If patients report symptoms that are not typical of SRM (e.g. asymmetric distribution, failure to resolve with de-challenge despite normal CK) consider other musculoskeletal disorders, metabolic, degenerative or inflammatory e.g. Vitamin D deficiency, polymyalgia rheumatica. Check Bone profile, Vit D, CRP.

Considerations when starting a statin to reduce risk of SRM

- Check baseline thyroid, liver and renal function, any potential drug interactions, and avoid the highest doses in at risk groups (See "Risk Factors" below).
- Ask the person if they have had persistent generalised unexplained muscle pain, whether associated or not with previous lipid-lowering therapy. If they have, measure CK. If CK levels are > 4x ULN do not start statin - investigation required.
  Do not measure CK if person is asymptomatic.
- Warn patients about AEs, specifically muscle symptoms. Advise people who are being treated with a statin to seek medical advice if they develop muscle symptoms (pain, tenderness or weakness). If this occurs, measure CK (see page 1).

Risk factors for SRM and statin intolerance

Endogenous factors

- Female gender
- Advanced age (> 75 yrs)
- Frailty (reduced lean body mass)
- History of muscle disorder or high CK
- Impaired renal or hepatic function
- Personal or family history of intolerance to lipid-lowering therapies.
- Hypothyroidism

Exogenous Factors

- Excessive alcohol intake
- High intensity exercise
- Dehydration
- Drug interactions with statins (including herbal medicines)
- Vitamin D deficiency

Classification of statin related muscle toxicity (SRM)

Alfirevic A. et. al. Clin Pharm Ther. 2014; 96:470-476

SRM	Phenotype	Incidence	Definition
SRM 0	CK elevation <4x ULN	1.5-26%	No muscle symptoms
SRM 1	Myalgia, tolerable	190/100,000 Patient-years; 0.3-33%	Muscle symptoms without CK elevation
SRM 2	Myalgia, intolerable	0.2-2/1,000	Muscle symptoms, CK <4x ULN, complete resolution on dechallenge
SRM 3	Myopathy	5/100,000 Patient-years	CK elevation >4x ULN <10x ULN ± muscle symptoms, complete resolution on dechallenge
SRM 4	Severe myopathy	0.11%	CK elevation >10x ULN <50x ULN, muscle symptoms, complete resolution on dechallenge
SRM 5	Rhabdomyolysis	0.1-8.4/100,000	CK elevation >10x ULN with evidence of renal impairment + muscle symptoms or CK >50x ULN
SRM 6	Autoimmune-mediated necrotizing myositis (SINAM)	~2/million per year	Detection of HMGCR antibodies, HMGCR expression in muscle biopsy showing autoimmune myositis, incomplete resolution on dechallenge

HMGCR = 3-hydroxy-3-methylglutaryl coenzyme A reductase ULN = upper limit of normal

- SRM is a spectrum from myalgia to severe myopathy
- SRM 0 - does not preclude statin therapy, consider reducing starting dose
- SRM 1-3 manage according to pathway
- When SRM4 is suspected, without evidence of impaired renal function, discontinue statin therapy immediately and refer for outpatient assessment. Assess and treat possible contributory factors and re-assess the need for a statin. Intensify lifestyle modifications and consider alternative lipid lowering regimens.
- If rhabdomyolysis (SRM5) is suspected, immediately stop statins, urgently refer to inpatient assessment and management including intravenous rehydration as required to preserve renal function. Do not wait for measurement of urinary myoglobin. Post recovery, manage as for SRM4.
- Statin induced necrotizing autoimmune myositis (SINAM) (SRM6) should be suspected in patients with progressive muscle weakness and ongoing CK elevation despite statin withdrawal. Requires immunosuppressive treatment and avoidance of re-exposure to statins. Re-assess the need for lipid lowering therapy - may be eligible for treatment with PCSK9 inhibitor (NICE TA 393, 394).

Person-centred approach to address statin intolerance

Initial Consultation

- Be aware of "nocebo effect"[1] and "statin reluctance"[2]
- Reinforce healthy lifestyle habits (e.g. exercise, reducing weight)
- Listen to the concerns of each patient.
- Explain LDL-C targets and strategies to lower LDL-C/non-HDL-C
- Discuss options to reduce LDL-C/ non-HDL-C with pros and cons
- Explain the benefits of statins
- Evaluate and identify any risk factors and address (e.g. drug interactions)
- Work with patients to identify and agree best options and next steps

Follow up

- Follow up on agreed plan and address any issues/concern.
- Advise patients to contact you if they experience muscle symptoms
- Ongoing patient education and regular review helps addressing concerns around medicine safety and underline the importance of adherence.

(1) **Nocebo effect** is negative expectations of the patient regarding a treatment leading to reporting more negative effects even if they are prescribed a placebo.

(2) **Statin reluctance** is an attitudinal state of aversion to taking statins (often without prior exposure).

Statin-based approaches to manage muscle symptoms

- Adopt person-centred approach as described above.
- Therapy with a lower dose statin is preferred to no statin
- Apply a repetitive "De-Challenge" - "Re-Challenge" approach to establish if symptoms are caused by a statin(s) and the best statin regimen for each patient.
- Switch to a different statin or re-challenge with the same statin using a lower dose or frequency (intermittent dosages)
- Patients who do not tolerate statins on a daily basis, alternate day or twice-weekly dosing is a good option.
- Rosuvastatin and atorvastatin have longer half-lives, permitting their use on a non-daily regime.
- Adding ezetimibe to a lower dose statin may be better tolerated with robust reduction of LDL-C / non-HDL-C.
- Once a new regime is tolerated, dose / frequency can be up-titrated slowly to achieve LDL-C / non-HDL-C goals with minimal or no muscle complaints.

It is important to note that cardiovascular benefits have not been proven for all the above approaches but any reduction of LDL-C / non-HDL-C is beneficial.

LDL-C lowering options for patients with genuine statin intolerance

- Refer to the AAC Lipid Management Algorithm. (click here)
- Consider ezetimibe, (NICE TA 385) therapy as per algorithm
- Consider ezetimibe combined with bempedoic acid (NICE TA 694) as per algorithm
- Consider inclisiran if eligible for treatment according to NICE TA 733
- Consider PCSK9i if eligible for treatment according to NICE TA 393, 394

Non-muscle related statin side effects

May vary between different statins. In clinical trials some side effects often associated with statins are not statistically different from placebo.

Most commonly reported: gastrointestinal disturbance and asymptomatic increases in hepatic transaminases (ALT or AST). May affect up to 1 in 10 statin users.

Rarer side effects include: Hepatotoxicity, new onset Type 2 Diabetes (benefits outweigh risk, do not stop statin), Renal insufficiency, proteinuria, Neurocognitive and neurological impairments (no apparent link from RCTs), Intracranial haemorrhage (conflicting evidence, benefit outweigh possible harm), Interstitial lung disease, Pancreatitis, Skin disorders including alopecia, Lupus-like reaction, Sleep disturbance, headache, dizziness, fatigue, depression, sexual dysfunction.

Management: If symptoms appear statin related, consider de-challenge and re-challenge or change to a different statin (e.g. hydrophilic instead of lipophilic).

Liver enzyme abnormalities - minor increases in liver enzymes (<2x ULN) may be seen within the first three months of statin therapy; temporary discontinuation and further assessment is warranted if levels exceed 3x ULN. Several studies have confirmed that the cardiovascular benefits of statin treatment in high-risk populations outweigh the rare adverse effects, such as rhabdomyolysis.

Authors: Dr Rani Khatib & Dr Dermot Neely on behalf of the AAC Clinical Subgroup. Jan 2022. Review date: Jan 2023.
Pathway endorsed by NICE Dec 2021. Please refer to the Lipid Management Pathway and Full List of References (click here).

Contents page

Contents page

Hypertriglyceridaemia management pathway

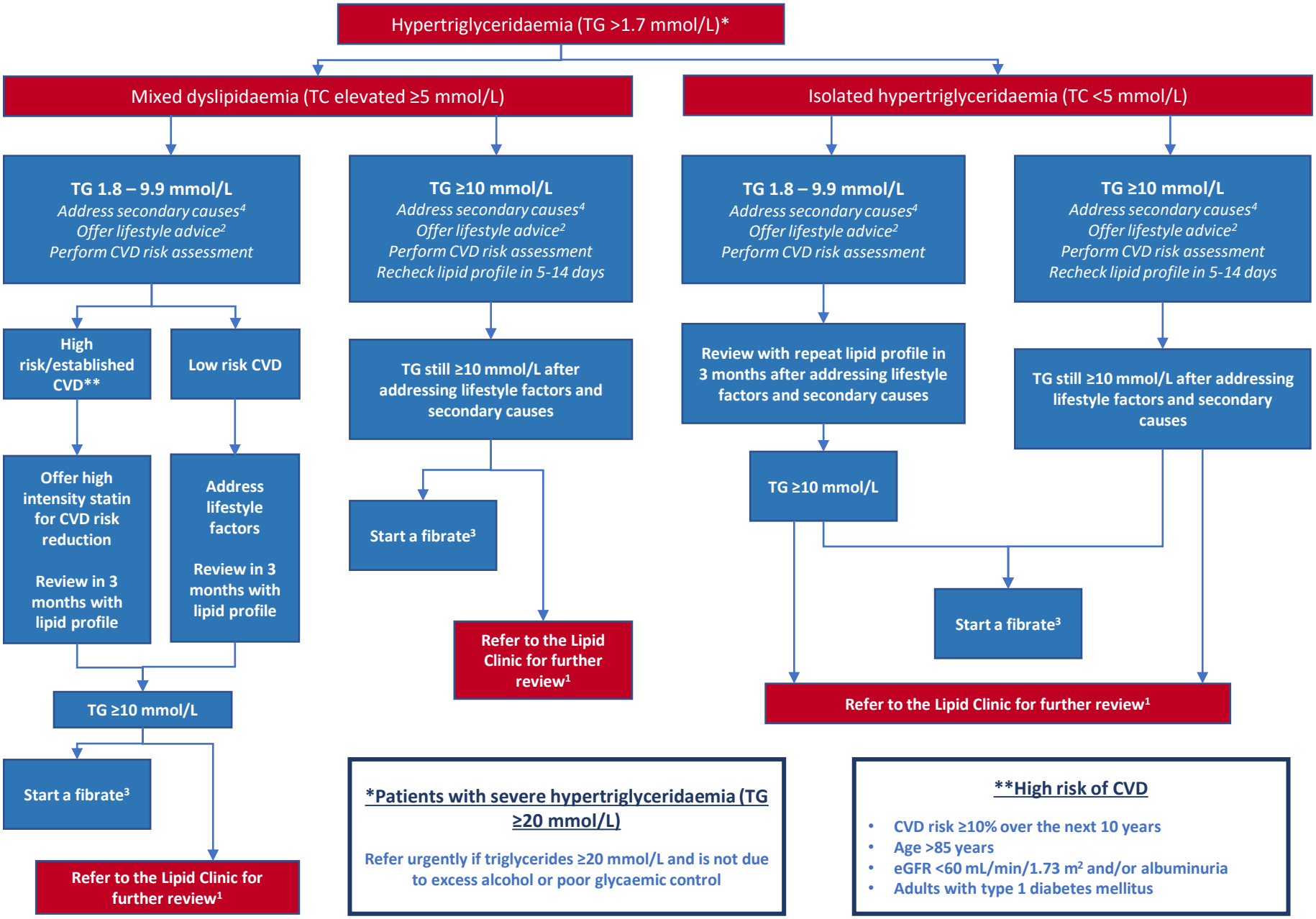
This local pathway outlines the management of hypertriglyceridaemia and hypertriglyceridaemia induced pancreatitis within the BNSSG ICB applicable in primary and secondary care

Author: Dr Kofi Antwi, Dr Naveen Setty. Version 2, June 2025. Review date: June 2028

NHS Bristol, North Somerset and South Gloucestershire Integrated Care Board
NHS North Bristol NHS Trust
NHS University Hospitals Bristol and Weston NHS Foundation Trust
Healthier Together Improving health and care in Bristol, North Somerset and South Gloucestershire

Management of Hypertriglyceridaemia in primary care/outpatient setting

Contents page



***Patients with severe hypertriglyceridaemia (TG ≥20 mmol/L)**

Refer urgently if triglycerides ≥20 mmol/L and is not due to excess alcohol or poor glycaemic control

****High risk of CVD**

- CVD risk ≥10% over the next 10 years
- Age >85 years
- eGFR <60 mL/min/1.73 m^2 and/or albuminuria
- Adults with type 1 diabetes mellitus

Management of hypertriglyceridaemia (contd.)

Contents page

1. Lipid clinic referral criteria

Patients with severe hypertriglyceridaemia (Trigs >20 mmol/L or more than one result >10 mmol/L). Refer urgently if triglycerides >20 mmol/L that is not due to excess alcohol or poor glycaemic control.

Before referral

- Consider advice and guidance request or telephone discussion with Lipid Clinic for advice
- Advice & Guidance request via e-RS
- For urgent advice telephone Dr Eloise Willis, Dr Andrew Day, Dr Paul Downie via UHB Clinical Biochemistry (Lipid Clinic) Secretary on 0117 3427708 or Dr Wycliffe Mbagaya WAHT secretary on 01934 881006

2. Lifestyle advice

Lifestyle modifications to reduce triglyceride levels are similar to those recommended for individuals at high risk of cardiovascular disease1 (full lifestyle advice published in NICE CG181)

- Restrict consumption of high glycaemic index/load foods as well as refined sugars, fruit juices, and high fructose drinks
- Increase consumption of oily fish (pregnant women should limit oily fish consumption to no more than 2 portions per week and to avoid marlin, shark and swordfish)
- Physical activity (at least 150 minutes of moderate intensity aerobic activity or 75 minutes of vigorous intensity aerobic activity)
- Weight management for those who are who are overweight or obese
- Avoid binge drinking and limit alcohol intake to national recommended limits
- Smoking cessation (primarily for CV protection)

3. Fibrate therapy

Start micronized Fenofibrate at 160 milligrams once daily in patients presenting with severe hypertriglyceridaemia unless there is a specific contraindication against their use.

- For patients with renal impairment (eGFR 30-59 mL/min), the maximum recommended dose is 67 milligrams once daily.
- Fibrates should not be used in those with severe renal impairment (eGFR less than 30 mL/min) or those with known gallstone disease.

Check serum creatinine at baseline, within 3 months of initiation of treatment and at least annually thereafter (more frequently if clinical indicated).

- Hold treatment if creatinine levels >1.5x ULN.
- Consider dose reduction if renal function declines in line with the BNF.

Monitor liver transaminase levels every 3 months during the first 12 months of treatment and periodically thereafter.

- Discontinue therapy if AST or ALT levels increase to more than 3x ULN.
- If symptoms indicative of hepatitis occur (e.g. jaundice, pruritus), and diagnosis is confirmed by laboratory testing, fenofibrate therapy should be discontinued.

Baseline CK should only be checked in those who may already be taking a medicine that will increase the risk of myopathy when used concomitantly with fibrate, such as statin therapy.

- Routine CK monitoring for asymptomatic individuals is not recommended.
- Monitor CK for patients with muscle weakness/pain to assess severity of muscle damage and aid the decision to continue treatment.

4. Secondary causes of Hypertriglycerideaemia

- Obesity, often in association with hypercholesterolaemia
- Poorly controlled diabetes mellitus
- Nephrotic syndrome, often in association with hypercholesterolemia, and renal failure
- Hypothyroidism, often in association with hypercholesterolemia
- Pregnancy
- Drug including;
  - Oral oestrogen replacement
  - Tamoxifen
  - Beta blockers
  - Immunosuppressive medications, such as glucocorticoids and cyclosporin
  - HIV antiretroviral regimens
  - Oral retinoids (e.g. isotretinoin)

Investigations into causes of Hypertriglycerideaemia

- Urine ACR for nephrotic syndrome
- Full lipid profile (total cholesterol, HDL, non-HDL and triglycerides)
- Fasting glucose or HbA1c
- Renal function (U&Es)
- Thyroid function tests (TFTs)
- Liver function (LFTs)

Management of Hypertriglyceridemia in acute/inpatient care setting

Contents page

Severe hypertriglyceridaemia [HTG] (TG ≥ 11 mmol/L)

Exclude acute pancreatitis

If present, perform initial management and assess severity of acute pancreatitis. Discuss severe cases with ICU. **Note: Propofol should not be used in patients with HTG**

Identify secondary causes of hypertriglyceridaemia

Beta HCG in ALL females of childbearing age
Stop offending drugs if possible
Check glucose/HbA1c, LFTs, U&Es, TSH

Diet restriction and oral therapy

Reduce fat intake to 10-15% of total calorie intake
Start Fenofibrate if no contraindications

Acute pancreatitis in patient with confirmed FCS

Insulin infusion unlikely to be beneficial

Discuss with the Clinical Biochemistry team.
See contacts page

Start plasma exchange as first line therapy

If plasma exchange is not readily accessible, start insulin infusion at 0.05 units/kg/hr

Acute pancreatitis in patient without confirmed FCS

Insulin infusion likely to be beneficial and first line

Patient without acute pancreatitis

Treat any secondary causes

Correct hyperglycaemia, hypothyroidism and stop offending drugs if possible
Repeat triglycerides levels after treatment and if remains ≥ 11 mmol/L, consider insulin infusion

Start insulin infusion as first line therapy

Start fixed rate insulin infusion at 0.05 units/kg/hr (0.1 units/kg/hr in patients with severe acute pancreatitis)
Increase the fixed rate insulin infusion to 0.1 units/kg/hr if triglycerides do not start resolving after 24 hours
Patients with acute hyperglycaemia/on subcutaneous insulin will require a higher insulin rate
Use standard fixed rate insulin infusion (UHBW Intravenous Insulin Prescription Chart, page 1)

Ongoing monitoring

Monitor capillary blood glucose (CBG) hourly
Commence 10% dextrose 50-100 mL/hr if CBG is less than 14 mmol/L (Target CBG 6-10mmol/L, 4-12mmol/L is acceptable)
Monitor triglycerides and electrolytes twice daily whilst on insulin infusion
Patients with HTG pancreatitis (HTGP) not responding to 48 hours of conservative treatment +/- insulin infusion should be considered for plasma exchange

Recovery (TG < 5 mmol/L)

Post recovery management

Continue fibrates to prevent recurrent acute pancreatitis episodes
Recommend low fat diet and refer to the dietician
Medications known to precipitate or cause hypertriglyceridaemia should be reviewed and stopped if possible
Patients should be strongly counselled to avoid excessive alcohol consumption
All patients presenting with HTGP should be referred to the Lipid Clinic at Bristol Royal Infirmary for review
All patients presenting with diabetes and HTGP should be referred to the Diabetes team for inpatient review or outpatient follow up

FCS Definition

- Genetic disorder of HTG arising from Biallelic/Homozygous variants in causative genes (e.g. Lipoprotein Lipase [LPL]).
- Presents commonly in childhood, but can in adulthood, with recurrent pancreatitis and HTG >10mmol/L without secondary causes
- MCS (Multifactorial Chylomicronaemia syndrome) is similar, but individuals are heterozygous for HTG causative gene variants
- See here for FCS screening score

Contents page

BNSSG Lipid clinic referral pathway

The referral criteria for lipid clinic services across the greater BNSSG ICB catchment area

Author: Dr Eloise Willis, Dr Andrew Day. Version 2, May 2025. Review date: May 2027

NHS Bristol, North Somerset and South Gloucestershire Integrated Care Board
NHS North Bristol NHS Trust
NHS University Hospitals Bristol and Weston NHS Foundation Trust
Healthier Together
Improving health and care in Bristol, North Somerset and South Gloucestershire

Criteria for referral to lipid clinic

Contents page

Familial hypercholesterolaemia

Patient meeting the Simon Broome criteria with secondary causes excluded (unless any historic results taken at a time when the patient was ***NOT*** on lipid lowering therapy are **clearly not in keeping with FH**). This exclusion does not apply to family members of patients with a genetic diagnosis of definite FH.

Statin intolerance

If the national intolerance pathway has already been followed. Please see the statin intolerance pathway

Hypertriglyceridaemia

Follow the hypertriglyceridaemia management, including optimisation of secondary causes. Refer if triglycerides remain ≥10 mmol/L.

Patients not reaching treatment targets

Follow the national lipid management and secondary prevention pathways first and refer if treatment targets are not met.

Elevated lipoprotein (a)

Consider referral if Lp(a) >400 nmol/L. Otherwise follow the local Lp(a) guideline

Department contact details for known lipid patients

Bristol Royal Infirmary
Consultants: Dr Paul Downie
Dr Andrew Day
Dr Eloise Willis
Dr Kofi Antwi
Secretary: 01173427708

Weston General Hospital
Consultant: Dr Wycliffe Mbagaya
Secretary: 01934 881006

FH Clinical Nurse Specialist
Lisa Gritzmacher 01173427835

All referrals to the Lipid clinic at BNSSG should be made through the electronic referrals service (eRS). A proforma should be completed (available on eRS) to collect the minimum dataset required for triaging the referral. An advice and guidance service is also available by this means to assist management decisions on known patients to the clinic, or appropriateness of making a clinical referral where one is being considered but does not meet the criteria above.

Contents page

Lipoprotein (a) guideline

This local pathway outlines the indications for Lipoprotein (a) measurement and management of abnormal results based on the HEART UK consensus statement and local consensus from lipid specialists

Author: Dr Laura Hancox, Dr Andrew Day. Version 2, August 2023. Review date: August 2026

NHS Bristol, North Somerset and South Gloucestershire Integrated Care Board
NHS North Bristol NHS Trust
NHS University Hospitals Bristol and Weston NHS Foundation Trust
Healthier Together Improving health and care in Bristol, North Somerset and South Gloucestershire

Lipoprotein (a) Information for Primary Care

Contents page

The scope of this guideline is to provide further information to aid the management of patients with raised lipoprotein (a) (Lp(a)) and to facilitate testing in patients who's relatives are known to have high Lp(a).

Elevated lipoprotein (a) is a known causal risk factor for cardiovascular disease.

What is Lipoprotein (a)?

Lp(a) is an atherogenic LDL-like particle, consisting of a single apolipoprotein B100 (apoB), linked to a single apolipoprotein (a). The size of apolipoprotein (a) varies considerably; the smaller it is the higher the concentration of Lp(a).

Lipoprotein(a) inheritance and risk of cardiovascular disease

Lp(a) is a major independent risk factor for coronary artery disease and stroke and promotes atherosclerosis. Lp(a) levels are predominantly genetically inherited in an autosomal co-dominant fashion. Cardiovascular risk conferred by serum Lp(a) depends on concentration, those with most severely elevated Lp(a) being at greatest risk.

Table 1: Classification of Lp(a) based on impact on CVD risk

Lp(a) (nmol/L)	Population percentile	Impact on CVD risk
<90	<80th	Minor
90 – 200	80th – 95th	Moderate
200 – 400	95th – 99.8th	High
≥400	>99.8th	Very high (CVD risk equiv to heterozygous FH)

Family Cascade Testing

Given the dominant inheritance of Lp(a) levels, the cascade testing of **first degree** relatives of an index case with a **Lp(a) >200nmol/L**is recommended. Relatives of an index case do not routinely require referral to a lipid clinic.

Sample requirements

Lipoprotein (a) is measured on a serum sample. Ideally results should be expressed in nmol/L. Historically some labs have reported in mg/dL; to convert from mg/dL → nmol/L the approximate conversion factor is to multiply by 2.4.

Secondary causes of raised Lipoprotein (a)

Secondary causes of high Lp(a) include CKD, nephrotic syndrome and hypothyroidism and these should be sought and corrected.

There is currently no indication for repeating Lp(a) measurement unless possible secondary causes of raised concentrations are identified and treated.

Other issues to be considered for individual patients with raised Lp(a)

- **Calcific aortic valve stenosis.** Elevated Lp(a) is a risk factor for calcific aortic valve stenosis.
- **Effect of racial origin.** Early studies of Lp(a) and CVD were mainly conducted in Caucasian populations. Lp(a) concentrations may be up to two times higher in people of black African descent. There are currently no ethnicity specific reference intervals.

References

1. Cegla J et al. HEART UK consensus statement on Lipoprotein(a): A call to action. *Atherosclerosis* 291 (2019) p62-70.
2. Kronenberg F et al. Lipoprotein (a) in atherosclerotic cardiovascular disease and aortic stenosis: a European Atherosclerosis Society consensus statement. *European Heart Journal*. 43 (2022), p3925-3946

Lipoprotein (a) Information for Primary Care

Management of patients with raised Lp(a) (>90 nmol/L)

There are no treatments currently available that specifically lower Lp(a). The aim is to target residual cardiovascular risk through multiple risk factor intervention. As such attention should be given to other risk factors including diabetes risk, hypertension, smoking etc.

All patients with evidence of atherosclerotic CVD should be treated to secondary prevention lipid target regardless of Lp(a) concentration

In patients without atherosclerotic CVD, management of raised Lp(a) is dependent on their baseline cardiovascular risk estimate as well as the Lp(a) concentration.

** If QRISK3 is less than 5% and Lp(a) 200-400 nmol/L consider only treating to primary prevention target.*

	10y CVD risk <5%	10y CVD risk 5-10%	10y CVD risk >10%
Lp(a) <90 nmol/L	Lifestyle advice	Lifestyle advice	Treat to primary prevention target
Lp(a) 90-200 nmol/L	Lifestyle advice; risk assessment in five years	Treat to primary prevention target (i.e. 40% reduction in non-HDL cholesterol)	Treat to secondary prevention target (i.e. non-HDL-cholesterol <2.5 mmol/L or LDL-cholesterol <1.8 mmol/L)
Lp(a) >200 nmol/L	*Treat to secondary prevention target	Treat to secondary prevention target	Treat to secondary prevention target
Lp(a) >400 nmol/L	Consider referral to lipid clinic.		

Contents page

Contents page

BNSSG Secondary prevention pathway

This local pathway outlines the management of lipids across all facets of post acute-cardiovascular/cerebrovascular/elective cardiac surgery services in secondary care

Author: Dr Kofi Antwi, Dr Eloise Willis, Dr Nathan Cantley, Victoria Ruszala.
Version 2, May 2025. Review date: May 2027

NHS Bristol, North Somerset and South Gloucestershire Integrated Care Board
NHS North Bristol NHS Trust
NHS University Hospitals Bristol and Weston NHS Foundation Trust
Healthier Together Improving health and care in Bristol, North Somerset and South Gloucestershire

Management of lipids in secondary prevention

Contents page

SECONDARY PREVENTION

Offer statin therapy to adults with ASCVD, including coronary artery disease, cerebrovascular disease and peripheral vascular disease

Ensure a full lipid profile and lipoprotein (a) is taken on admission (within 24 hours and non-fasting)

Please note: Although AAC national guidelines give a treatment target of LDL-C ≤2.0 mmol/L, local lipid specialists within BNSSG recommend a target of LDL-C ≤1.8 mmol/L (or ≤1.4 mmol/L in high-risk individuals including recurrent disease, elevated Lp(a) ≤90 nmol/L, familial hypercholesterolaemia or diabetes mellitus)

STATIN INTOLERANCE

Defined as inability to take recommended dose of high intensity statin, typically Atorvastatin 40-80 mg once a day

See National Statin Intolerance Management Pathway for further guidance

Prescribe a high intensity statin, typically:

Atorvastatin 80 mg daily

Use a lower dose if there is a potential drug interaction or high risk of experiencing adverse effects

Statin dose optimised/on maximally tolerated dose of statin

LDL-C ≥3.5 mmol/L

Offer Inclisiran/PCSK9 inhibitor

PCSK9 inhibitor is available on referral to the lipid clinic, dependent on patient choice and degree of LDL-C elevation

LDL-C ≥2.6 mmol/L

Offer Inclisiran

Initiated in primary care ideally. Ensure clearly indicated on discharge summary/clinic letter if suggested in secondary care

LDL-C 1.8–2.5 mmol/L

Offer Ezetimibe (plus Bempedoic acid if patient is not on a high intensity dose of statin and ezetimibe alone does not meet lipid target)

LDL-C <1.8 mmol/L

Consider adding Ezetimibe

LDL-C ≥1.8 mmol/L

Offer Ezetimibe (plus Bempedoic acid if patient is not on a high intensity dose of statin and ezetimibe alone does not meet lipid target)

ADDITIONAL CONSIDERATION TO LDL-C LOWERING THERAPY

Triglycerides ≥1.7 mmol/L and LDL-C 1.0–2.5 mmol/L

Offer Icosapent ethyl 1.996 g twice a day

MANAGEMENT OF ADDITIONAL CVD RISK FACTORS

Smoking	Refer to https://remedy.bnssg.icb.nhs.uk/adults/self-care/smoking-cessation/ for support to help patients quit smoking
Obesity	Refer patient meeting eligibility criteria to the Bristol Weight Management and Bariatric Service for further support
Blood pressure	Refer to https://remedy.bnssg.icb.nhs.uk/adults/cardiology/hypertension/ for further guidance to meet patients' blood pressure targets
Diabetes mellitus	In patients managed for T2DM, consider SGLT2 inhibitors or GLP-1 analogues if appropriate for their CVD risk reduction properties

Contents page

Non-statin/ezetimibe lipid management

This local pathway summarises other lipid lowering therapies in use for cardiovascular risk reduction not including statins and ezetimibe

Author: Dr Nathan Cantley. Version 2, June 2025. Review date: June 2028

NHS Bristol, North Somerset and South Gloucestershire Integrated Care Board
NHS North Bristol NHS Trust
NHS University Hospitals Bristol and Weston NHS Foundation Trust
Healthier Together Improving health and care in Bristol, North Somerset and South Gloucestershire

Non-statin/ezetimibe therapy in BNSSG

Contents page

Icosapent Ethyl

Formulary status : Blue

Mechanism of action
- High dose EPA preparation
- Reduces CVD risk by 26% (RRR) or NNT=28 for MI, CVA and CV death

Indications
- Established CVD
- LDL 1.04-2.6 mmol/L **AND** triglyceride >1.7 mmol/L

Prescribing Information
- BNF link, Formulary
- 1.996 g twice a day
- No dose titration or monitoring required

Safety info/side effects
- Caution in those on antithrombotic treatment and history of atrial fibrillation or flutter

Bempedoic Acid

Formulary status : Blue

Mechanism of action
- ATP citrate lyase inhibitor
- Inhibit cholesterol synthesis by hepatic specific enzyme

Indications
- Primary or secondary prevention
- Statin intolerance or contraindicated

Prescribing Information
- BNF link, Formulary
- 180 mg once a day
- No dose titration
- No additional monitoring

Safety info/side effects
- Do not use in those with history of clinical gout
- Asymptomatic hyperuricaemia does not preclude use

Inclisiran

Formulary status : Blue

Mechanism of action
- Silencing RNA against PCSK9
- Subcutaneous injectable

Indications
- Established CVD
- LDL ≥2.6 mmol/L despite maximum tolerated statin therapy

Prescribing Information
- BNF link, Formulary
- Injection loading doses at 0 and 3 months, then 6 monthly thereafter
- No dose titration required

Safety info/side effects
- Some injection site reactions possible
- No monitoring required
- If dose missed >3 months, re-loading required

Evolocumab/Alirocumab

Formulary status : Red

Mechanism of action
- Monoclonal antibody against PCSK9
- Subcutaneous injection

Indications
- Established CVD and LDL-C >4.0 mmol/L (unless very high risk or FH present – then LDL-C >3.5 mmol/L)
- Non-CVD FH where LDL-C >5.0 mmol/L

Safety info/side effects
- Some injection site reactions and flu-like symptoms possible
- U&E, LFTs, lipid profile at 3 months

Prescribing Information
- BNF link: Evolocumab, Alirocumab, Formulary
- Secondary care only

Developed in partnership between:

NHS
Bristol, North Somerset and South Gloucestershire
Integrated Care Board

NHS
North Bristol
NHS Trust

NHS
University Hospitals Bristol and Weston
NHS Foundation Trust

Healthier Together
Improving health and care in Bristol, North Somerset and South Gloucestershire

Contents page