

Dyslipidaemia

Case Definition

Dyslipidaemia is normally considered to be a persisting abnormal lipid profile, defined by serum lipids on at least 2 occasions of:

- Low Density Lipoprotein (LDL) $>3\text{mmol/L}$
- Total cholesterol (TC) $>5.5\text{mmol/L}$ and / or:
- Triglycerides (TG) $>2.0\text{mmol/L}$ and / or
- High density lipoprotein (HDL) <1.0

It is also very important to assess and document cardiovascular risk factors and determine cardiovascular disease (CVD) risk (refer to online risk calculator www.cvdcheck.org.au) in patients who are asymptomatic.

Screening

Screening should be performed in patients who are asymptomatic and have no previous history of ischaemic heart disease, cerebrovascular disease or peripheral vascular disease.

Non Aboriginal or Torres Strait Islander Patients

Age 45-74yrs

- Assess the patient's cardiovascular risk, using the online risk calculator: www.cvdcheck.org.au

→ Low risk: 5 yearly screening

→ Medium risk: 2 yearly screening

→ High risk: yearly screening

Aboriginal and/or Torres Strait Islander Patients

Age 18-74yrs:

- Calculate CVD risk www.cvdcheck.org.au*
- Assess cardiovascular risk factors
- Annual screening (non fasting full lipid profile)

**For those aged 18-35yrs the Framingham calculator can be used to give an idea of the patient's cardiovascular risk, however it has not been validated. If unsure about risk stratification in this group, please liaise with regional physician.*

RISK CATEGORIES

It is important to note that the Framingham CVD risk calculator is known to underestimate risk in Aboriginal and Torres Strait Islander populations. Consider the risk calculated to be the minimum risk for this patient group.

Table 1. CVD risk categories

Risk Category	
Low	Less than 10% risk of CVD within the next 5 years
Medium	10-15% risk of CVD within the next 5 years
High	Greater than 15% risk of CVD within the next 5 years
Very High	Primary Prevention <ul style="list-style-type: none">• Diabetes mellitus in ATSI patients• Diabetes and >60yrs of age• Diabetes with microalbuminuria (urine ACR $>2.5\text{mg}/\text{mmol}$ for males, $>3.5\text{mg}/\text{mmol}$ for females)• Moderate to severe chronic kidney disease (persistent proteinuria or eGFR <45)• Previous diagnosis of familial hypercholesterolemia• Systolic BP ≥ 180 or diastolic BP ≥ 110• Serum cholesterol $>7.5\text{mmol/L}$• ATSI patients >74 yrs Secondary Prevention <ul style="list-style-type: none">• Established coronary heart disease• Established cerebrovascular disease• Established peripheral vascular disease

Assessment

HISTORY

- Document cardiovascular risk factors

PHYSICAL EXAM

- Weight, BMI, Waist Circumference, BP

INVESTIGATIONS

- Full lipid profile (fasting not required)
- HbA1c, LFTs
- CK (before starting a statin)

CALCULATE CVD RISK

- www.cvdcheck.org.au

Management

NON PHARMACOLOGICAL

- See also HEALTHY LIVING
- Encourage exercise: walking or aerobic exercise for 30 minutes at least 5 times/week
- Consider dietitian referral and offer advice:
 - A diet low in saturated and trans fats
 - Polyunsaturated fats help lower cholesterol eg fish, unsalted nuts and polyunsaturated margarines and oils
 - Patients with high triglycerides: reduce sugar/fructose and cease alcohol consumption
- Maintain a healthy weight and waist circumference. For those who are overweight a 5-10% weight reduction can be very beneficial
- Encourage all smokers to quit (see SMOKING CESSATION).

PHARMACOLOGICAL

Primary Prevention

When deciding to initiate treatment consider a patient's cardiovascular risk and the PBS criteria (see Table 3)

6 weeks of lifestyle management should ideally be trialled prior to starting pharmacological treatment in primary prevention

Treat with atorvastatin 20mg daily. Ensure CK and LFTs are ordered before commencing therapy.

There is no need to meet a treatment target or intensify dose.

Very High Risk Patients and Secondary Prevention*

Aim to treat with an intensive dose of statin, independent of baseline LDL-C. Start treatment with atorvastatin 40mg daily. Increase the dose after 4-6 weeks to 80mg in all patients, as tolerated. Ensure CK and LFTs are ordered before commencing therapy.

For patients who are not achieving a LDL <2 despite maximal oral therapy, the addition of ezetimibe 10mg daily can be considered, although the additional CVD risk benefit is small.

**Secondary prevention is for patients who have pre-existing cardiovascular, cerebrovascular or peripheral vascular disease, with the aim of preventing further events.*

⚠ CAUTION

There is increased risk of myopathy/rhabdomyolysis with statin use in the following circumstances:

- Intercurrent illness
- drug interactions (CYP3A4 inhibitors eg clarithromycin)
- renal impairment
- higher doses of statins
- alcohol abuse

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SPECIAL CONSIDERATIONS

Hypertriglyceridaemia

- First assess the degree of elevated triglycerides with a fasting lipid profile
- Address lifestyle factors first. In particular, encourage a low sugar intake and cessation of alcohol
- Consider secondary causes of hypertriglyceridaemia including hypothyroidism and poorly controlled diabetes
- A fibrate (fenofibrate 145mg) can be considered in patients with persistently elevated triglycerides (>5.7). There is no current evidence that this improves cardiovascular risk profile

Patients on Statins other than Atorvastatin and Rosuvastatin

For patients taking a statin which is not listed on the Kimberley Standard Drug List it is recommended to switch to atorvastatin.

Assess why the patient is taking the medication and their risk category, which will allow determination of dose.

Familial Hypercholesterolemia

A genetic syndrome characterised by elevated LDL-C levels, a propensity to develop tendon xanthomata, and early onset coronary heart disease. If this is suspected, please discuss/refer to physician.

TREATMENT CONTRAINDICATIONS

Absolute contraindications

- known hypersensitivity to statins
- advanced liver disease e.g. cirrhosis (discuss with physician)
- baseline transaminases >3 x upper limit of normal
- baseline CK >5 x upper limit of normal
- pregnancy and lactation

Relative contraindications

- CK < 5 x upper limit of normal (discuss with physician)
- Abnormal transaminases – if <3 x upper limit of normal can start treatment, but repeat after 8 weeks or increasing dose. If no change, repeat yearly. If increasing, discuss with physician

TREATMENT SUMMARY

Table 2. Treatment summary for dyslipidaemia in patients relating to CVD risk category

Risk Category	Management
Low Risk	Lifestyle advice Re-evaluate in 5 years
Medium Risk	Lifestyle advice (trial for 6 weeks) Dietitian referral Consider pharmacotherapy (atorvastatin 20mg daily) if ATSI, South Asian, Middle Eastern, Maori or Pacific Islander descent, no improvement at 6 months or if family history of premature IHD. Consider PBS criteria (see Table 3)
High Risk	Lifestyle advice (trial for 6 weeks) Dietitian referral Commence atorvastatin 20mg daily Check LFTs (before starting statin and at 8 weeks) and CK (before starting statin)
Very High Risk/ Secondary Prevention	Lifestyle advice Dietitian referral Aim for atorvastatin 80mg daily. Start at 40mg, increase to 80mg after 4-6 weeks if tolerated Check LFTs (before starting statin and at 8 weeks) and CK (before starting statin)

Follow Up

⚠ CAUTION

Ask patients if they have any symptoms of rhabdomyolysis/myopathy eg. unexplained muscle tenderness, weakness, aches or dark brown urine. If any symptoms present, check CK and cease statin whilst awaiting result.

1. CHECK LFTS (specifically transaminases)

- 8 weeks after starting drug treatment or after any dose increase
- Annually thereafter if transaminases <3 x ULN
- If transaminases are abnormal:
 - <3 x ULN:
 - Continue therapy; recheck LFTs in 4-6 weeks
 - >3 x ULN:
 - Stop statin; recheck within 4-6 weeks, can reintroduce if has returned to normal

2. CHECK CK

Before commencing treatment (if >5 x ULN do NOT start drug therapy, re-check). Routine monitoring is not required.

If CK is abnormal:

- >5 x ULN discuss with physician and:
 - Asymptomatic: closely monitor CK and U&Es.
 - Symptomatic: stop statin, DO NOT restart statin
- <5 x ULN
 - Asymptomatic: continue statin
 - Symptomatic: stop statin, DO NOT restart statin

3. CHECK LIPIDS (AFTER STARTING STATIN THERAPY)

- **Primary Prevention**
 - Not required. Review compliance
- **Very High Risk and Secondary Prevention**
 - Annual review and discussion to support compliance
- If not reaching target of LDL-C <2.0mmol/L ezetimibe 10mg daily can be considered, although the additional CVD risk benefit is small

Women of Childbearing Age

STATINS

- Ensure all women are on appropriate contraception
- Contraindicated in pregnancy, risk is greatest in first trimester
- Avoid if breast feeding

FIBRATES AND EZETIMIBE

- Reconsider need for medication, limited data on CVD risk reduction
- Avoid in pregnancy and if breast feeding

Refer/Discuss

DIETITIAN

- All patients at diagnosis in the moderate to very high risk categories.

PHYSICIAN

- Patients unable to tolerate therapy who are high risk for CVD
- Any other existing liver disease prior to commencement of statin treatment
- If CK is abnormal or transaminases greater than 3 times upper limit of normal on baseline testing
- Familial hypercholesterolemia is suspected

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Table 3. Post dietary PBS qualifying criteria for statin initiation in primary prevention

Patient Category	Levels for PBS subsidy
Patients with diabetes mellitus not otherwise included	Total chol >5.5mmol/L
ATSI patients Patients with hypertension	Total chol >6.5mmol/L OR Total chol >5.5mmol/L and HDL <1mmol/L
Patients with HDL <1mmol/L	Total chol >6.5mmol/L
Patients with familial hypercholesterolemia identified by: <ul style="list-style-type: none"> • DNA mutation • Tendon xanthomas in the patient or first or second degree relatives Patients with: <ul style="list-style-type: none"> • Family history of CVD which became symptomatic before age 60yrs in one or more first degree relatives • Family history of CVD which became symptomatic before the age of 50yrs in one or more second degree relatives 	If aged 18yrs or less at treatment initiation: LDL >4mmol/L If aged more than 18yrs at treatment initiation: LDL >5mmol/L OR Total chol >6.5mmol/L OR Total chol >5.5mmol/L and HDL <1mmol/L
Patients not eligible under the above: <ul style="list-style-type: none"> • Men aged 35-75yrs • Post-menopausal women up to 75yrs 	Total chol >7.5mmol/L OR Triglycerides >4 mmol/L
Patients not otherwise included	Total chol >9mmol/L OR Triglycerides >8mmol/L