DIABETES AND DYSLIPIDAEMIA

BACKGROUND

- Type 1 (T1D) and type 2 diabetes (T2D) are associated with dyslipidaemia.[1] Statins reduce the risk that people with diabetes will develop major vascular events in patients with and without existing cardiovascular disease (CVD).[2]
- Each mmol/l reduction in low-density lipoprotein cholesterol (LDL-C) reduced:
  - All-cause mortality by 9%
  - Vascular mortality by 13%
  - Stroke by 19%
  - Major vascular events by 21%
  - Myocardial infarction (MI) or coronary death by 22%
  - Coronary revascularisation by 25%

The effects were similar irrespective of whether or not patients had a history of vascular disease.[1]

- As secondary prevention, standard-dose statins reduced any major cardiovascular (CV) or cerebrovascular event by 15% versus placebo. Intensive-dose statins resulted in an additional 9% reduction versus standard-doses.[2]

MEASURING LIPID LEVELS

- NICE suggests taking a full lipid profile: total cholesterol;
  - High density lipoprotein cholesterol (HDL-C)
  - Non-HDL-C
  - Triglycerides.
- Measuring non-HDL-C is more accurate, practical and cost-effective than determining LDL-C and does not require a fasting blood sample.
- Exclude secondary causes, including uncontrolled diabetes, liver disease and alcohol misuse.

WHEN TO REFER

- NICE suggests referring the following patients for specialist assessment:

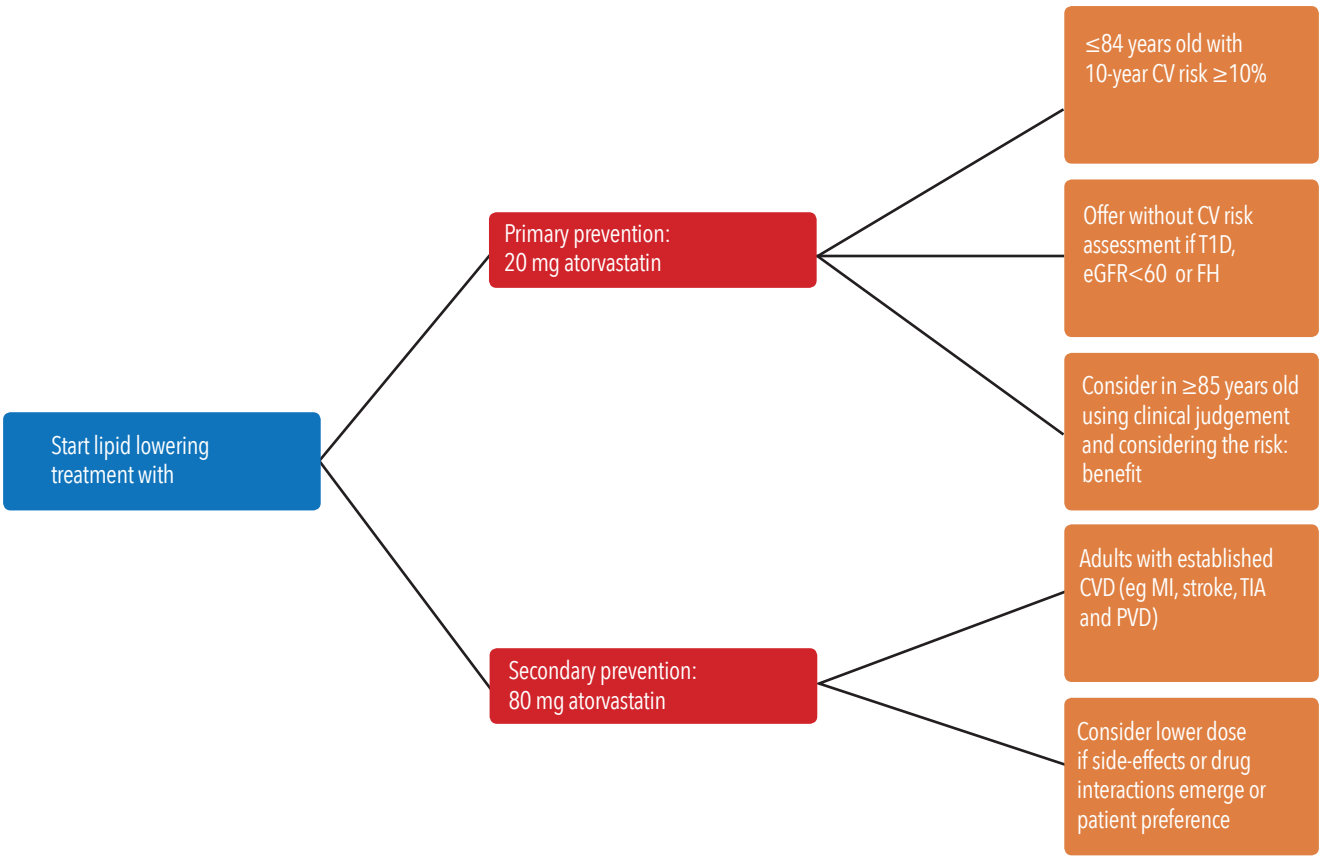
LIPID FRACTION	THRESHOLD	COMMENT
Total cholesterol	>9.0 mmol/l	■ Consider familial hypercholesterolaemia (FM) if > 7.5 mmol/l
Non-HDL-C	>9.0 mmol/l	■ Including patients without a history of premature coronary heart disease (CHD) in a first-degree relative
Triglycerides	>20 mmol/l	■ Urgent referral; Exclude excess alcohol and poor glycaemic control
	10-20 mmol/l	■ Repeat 5-14 days after initial reading and exclude secondary causes; ■ Refer if triglycerides remain >10 mmol/l
	4.5-9.9 mmol/l	■ Refer if non-HDL-C >7.5 mmol/l after optimising management of other risk factors

WHEN TO START STATINS

- Offer lifestyle advice to all patients, including those taking statins, covering:
  - Physical activity and weight management.
  - Alcohol consumption.
  - Healthy eating.
  - Smoking cessation.
  - Consider suggesting initiatives to provide support and promote lifestyle change.
  - Refer to a health trainer, if appropriate.
- Do not routinely exclude people with liver transaminase levels <3 times the upper limit of normal.
- Advise women of child-bearing potential about statins' teratogenic potential.
  - Stop statins 3 months before conception.

SETTING	NICE RECOMMENDATION
Primary prevention	■ NICE recommends lifestyle modification and optimising management of other modifiable CVD risk factors if possible
	■ NICE recommendations for the use of statins in primary and secondary prevention, and in T1D and T2D are given below
	■ NICE recommends statins when lifestyle modification is ineffective or inappropriate
Secondary prevention	■ NICE recommends not delaying statins to manage modifiable risk factors
	■ Lifestyle modification and optimising management of other modifiable CVD risk factors is important
T1D	■ Do not use a CVD risk assessment tool
	■ NICE recommends considering statins in all adults with T1D
	■ NICE recommends offering statins to adults with T1D who: › Are older than 40 years of age › Have had diabetes for >10 years › Have established nephropathy › Have other CVD risk factors
T2D	■ NICE recommends offering statins to adults with T2D who have a ≥10% 10-year risk of developing CVD estimated using an assessment tool

RECOMMENDATIONS FOR THE INITIAL LIPID-LOWERING TREATMENT



eGFR: estimated glomerular filtration rate; TIA: transient ischemic attack; PVD: peripheral vascular disease

NICE RECOMMENDATIONS FOR MONITORING LIPID-LOWERING TREATMENT

- Aim to treat with the maximum tolerated dose of the statin.
- Check total cholesterol, HDL-C, non-HDL-C and liver function tests 3 months after starting a statin.
- NICE recommends aiming for a >40% reduction in non-HDL-C
- The Joint British Societies' recommendations suggest non-HDL-C <2.5 mmol/L.[3]
- In patients who do not attain the non-HDL-C target:
  - Discuss adherence and the timing of the dose.
  - Optimise adherence to diet and lifestyle measures.
  - Consider increasing the dose if the patient is on <80 mg atorvastatin and they are increased risk because of co-morbidities, risk score or in the healthcare professional's clinical judgement.
  - Consider an alternative statin (or reduce the dose) if patients are intolerant.
    - Stopping the statin and reintroducing when symptoms have resolved helps determine if symptoms are related to the statin.
    - Check levels of vitamins B_{12} and D, and perform thyroid function test; correct if low before restarting statin.
- Refer the following patients for specialist advice:
  - Patients are intolerant to three different statins.
  - When statins are contraindicated.
  - When these measures do not adequately reduce lipid levels.
- Review patients taking statins annually.

RESOURCES

- For full details of diagnosis and management see NICE clinical guideline 181: www.nice.org.uk/guidance/cg181
- Diabetes UK Information Prescriptions: www.diabetes.org.uk/professionals/resources/resources-to-improve-your-clinical-practice/information-prescriptions-qa
- British Heart Foundation: www.bhf.org.uk/for-professionals

REFERENCES

1 Cholesterol Treatment Trialists' Collaborators *Lancet* 2008; 371: 117–25

2 de Vries FM et al *PLoS ONE* 2014;9: e111247

3 Joint British Societies *Heart* 2014;100:ii1-ii67

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