DOUGLASS HANLY MOIR PATHOLOGY

Information for Doctors

Guidance for assessment of lipid status

Key points

- For most patients, a non-fasting specimen is acceptable for the assessment of lipid status.
- Lipid testing on more than one occasion may be necessary to establish a patient's baseline lipid status, and for some patients, a fasting specimen may be required.
- Assessment of lipid status may not be valid if testing is performed in the presence of intercurrent illness.
- Non-HDL cholesterol is a clinically useful marker for predicting cardiovascular risk, especially determined in the non-fasting state.
- Douglass Hanly Moir Pathology (DHM) now uses new lipid reference limits and target levels for treatment.

Non-fasting specimens are now accepted

Fasting specimens have traditionally been used for the formal assessment of lipid status (total, LDL and HDL cholesterol, and triglycerides). The reasons[1,2] for this approach have been:

- Meals were thought to affect lipoprotein composition, particularly with an increase in triglycerides
- Elevated triglycerides (>4.5 mmol/L) affects the calculation of LDL cholesterol when using the Friedewald equation
- Many studies on which treatment goals are based used fasting specimens for lipid measurement

In 2016, the European Atherosclerosis Society (EAS) and the European Federation of Clinical Chemistry and Laboratory Medicine (EFLM) released a joint consensus statement that recommends the routine use of non-fasting specimens for the assessment of lipid status.[2] Large population-based studies were reviewed which showed that for most subjects the changes in lipid and lipoprotein values following food intake were not clinically significant.

Maximal mean changes at 1–6 hours after habitual meals were found to be:

- +0.3 mmol/L for triglycerides
- -0.2 mmol/L for total cholesterol
- -0.2 mmol/L for LDL cholesterol
- -0.2 mmol/L for calculated non-HDL cholesterol
- No change for HDL cholesterol

Additionally, studies have found similar or sometimes superior cardiovascular disease risk associations for non-fasting compared with fasting lipid test results.

There have also been large clinical trials of statin therapy, monitoring the efficacy of treatment using non-fasting lipid measurements.

Overall, the evidence suggests that non-fasting specimens are highly effective in assessing cardiovascular disease risk and treatment responses.

Non-HDL cholesterol as a risk predictor

In the 2016 European joint consensus statement,[2] as well as previously published guidelines and recommendations, non-HDL cholesterol, which is calculated from total cholesterol minus HDL cholesterol, has been described as a clinically useful predictor of cardiovascular disease risk. Moreover, this marker has been found to be more predictive of cardiovascular risk when determined in a non-fasting specimen.[2]

Full lipid reports now include a calculated non-HDL cholesterol result.

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What this means for your patients

The assessment of lipid status with a non-fasting specimen has the following benefits:

- No patient preparation is required, thereby reducing non-compliance
- Greater convenience, with specimen collection at any time
- Reports are available for earlier review instead of potential delays associated with obtaining fasting results

Indications for repeat testing or a fasting specimen collection

For some patients, lipid testing on more than one occasion may be necessary in order to establish their baseline lipid status. It is also important to note that an assessment of lipid status carried out in the presence of any intercurrent illness may not be valid.

Conditions for which a fasting specimen collection is recommended include:[2]

- Non-fasting triglyceride >5.0 mmol/L
- Known hypertriglyceridaemia followed in a lipid clinic
- Recovering from hypertriglyceridaemic pancreatitis
- Starting medications that may cause severe hypertriglyceridaemia (e.g. steroid, oestrogen, retinoid acid therapy)
- Additional laboratory tests are requested that require fasting or morning specimens (e.g. fasting glucose, therapeutic drug monitoring)

New lipid reference limits and target levels for treatment are now in use

DHM reports decision (or desirable) limits based on the EAS/EFLM 2016 consensus statement,[2] and the Australasian Association of Clinical Biochemistry and Laboratory Medicine (AACB) 2018 Lipid Reporting Guideline for all patients aged ≥10 years as reference limits.[3] This is in line with the EAS/EFLM consensus statement recommending that laboratory reports should flag abnormal values based on decision (or desirable) cut-point levels, rather than using the traditional 97.5th percentile value as the upper limit.[2]

Consensus target levels based on the AACB 2018 Lipid Reporting Guideline is now reported to better reflect treatment goals.[3]

For further information, please contact our Chemical Pathologists on (02) 9855 5312.

Table 1. Decision limits for fasting/non-fasting specimens in patients ≥10 years old

Total cholesterol	<5.5 mmol/L
HDL cholesterol	>1.0 mmol/L in males; >1.2 mmol/L in females
LDL cholesterol	<3.0 mmol/L
Triglycerides	<2.0 mmol/L
Non-HDL cholesterol	<4.0 mmol/L

Please note different decision limits may apply to children and the adolescent population.[4]

Table 2. Lipid treatment targets for patients at high risk of cardiovascular disease

Total cholesterol	<4.0 mmol/L
HDL cholesterol	>1.0 mmol/L
LDL cholesterol	<2.5 mmol/L (<1.8 mmol/L for very high risk)
Triglycerides	<2.0 mmol/L
Non-HDL cholesterol	<3.3 mmol/L (<2.5 mmol/L for very high risk)

High risk – Primary prevention
Very high risk – Secondary prevention

Please note that as there is a continuum of risk, benefits are obtained for any measured lipid components moving towards and beyond the various target levels.

Further information

- Absolute cardiovascular disease risk calculator is available at cvdcheck.org.au[5]
- If familial hypercholesterolaemia is suspected, e.g. LDL cholesterol persistently above 5.0 mmol/L in adults, then advice about diagnosis and management is available on the DHM report and also at athero.org.au[6]

References

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