Non-HDL Cholesterol information sheet

What is non-HDL Cholesterol?

Non-HDL cholesterol is a calculated biomarker, the calculation is as follows:

Non-HDL Cholesterol = Total Cholesterol – HDL Cholesterol

Essentially non-HDL Cholesterol value represents the sum all of circulating atherogenic "bad" cholesterols added together (including LDL cholesterol)

Why is it being introduced by the laboratory?

- Recent research has shown that non-HDL Cholesterol is a better marker of cardiovascular risk in both primary and secondary prevention studies than LDL-cholesterol.

- Diagnostic guidance has begun to use 'Non-HDL Cholesterol' as the preferred lipid biomarker associated with cardiovascular risk. For example NICE GC181 (Cardiovascular disease Cardiovascular disease: risk assessment and reduction, including lipid modification) defines the treatment aim at 3 months for statins is a 40% reduction in non-HDL cholesterol.

- There is good evidence that relying on LDL-C alone can be misleading. For example, individuals with abdominal obesity, metabolic syndrome or diabetic lipid disorders often have elevated triglycerides, low HDL-C, and relatively normal calculated LDL-C. Despite their normal LDL-C, these patients produce highly atherogenic lipoproteins such as VLDL and IDL (intermediate density lipoprotein) as well as small dense LDL particles.

What are the benefits?

- The calculation for non-HDL cholesterol does not require patients to be fasted to obtain a result. Unlike LDL Cholesterol, which often requires patients to be fasted to obtain a result because the calculation is not valid when triglyceride levels are greater than 4.5 mmol/L.

- Recent research has demonstrated that non-HDL Cholesterol is a better marker of cardiovascular risk that LDL Cholesterol because it represents all circulating atherogenic lipid types.

What is the target range?

As with other biomarkers that make up the lipid profile there are no published 'normal' or 'reference' ranges. Instead target ranges for treatment optimisation and cardiovasular risk assessment calculations have been attributed to the different components of the lipid profile.

For example The National Cholesterol Education Program (NCEP) Expert Panel in the USA have advocated that treatment goals for non-HDL cholesterol should be 0.8 mmol/L higher than LDL cholesterol treatment goals and have suggested a non-HDL cholesterol less than 3.4 mmol/L as optimal in a person who has no other cardiovascular risk factors. Target ranges for high risk patients are however lower than this. For this reason we have chosen not to supply a target range with results as the value will be dependent on the patient's assessed cardiovascular risk.

References:

- NICE guidance – CG181 Cardiovascular disease: risk assessment and reduction, including lipid modification.
- Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). JAMA 2001;285(19):2486–97.
- Information for patients from Heart UK

https://heartuk.org.uk/health-and-high-cholesterol/cholesterol-tests---know-your-number

Contacts for further information:

Joanne Morris, Consultant Clinical Scientist, Tel 020 7288 5041, joanne.morris11@nhs.net

Rebecca Edwards, Principal Clinical Scientist, Tel 020 7288 5046 r.edwards1@nhs.net