

## SERVICE DELIVERABLES FOR BLOOD ANALYSIS

### Research use only

All listed biomarkers are available for Serum and Heparin plasma samples.

Biomarkers marked with \* are not available for EDTA plasma samples.

Biomarkers marked with \*\* are not available for Citrate plasma samples.

Name	Unit	Name	Unit
<b>Cholesterol</b>		Phosphatidylcholines	mmol/l
Total cholesterol	mmol/l	Sphingomyelins	mmol/l
Total cholesterol minus HDL-C	mmol/l	<b>Apolipoproteins</b>	
Remnant cholesterol (non-HDL, non-LDL -cholesterol)	mmol/l	Apolipoprotein B	g/l
VLDL cholesterol	mmol/l	Apolipoprotein A1	g/l
Clinical LDL cholesterol	mmol/l	Ratio of apolipoprotein B to apolipoprotein A1	ratio
LDL cholesterol	mmol/l	<b>Fatty acids</b>	
HDL cholesterol	mmol/l	Total fatty acids	mmol/l
<b>Triglycerides</b>		Degree of unsaturation	degree
Total triglycerides	mmol/l	Omega-3 fatty acids	mmol/l
Triglycerides in VLDL	mmol/l	Omega-6 fatty acids	mmol/l
Triglycerides in LDL	mmol/l	Polyunsaturated fatty acids	mmol/l
Triglycerides in HDL	mmol/l	Monounsaturated fatty acids	mmol/l
<b>Phospholipids</b>		Saturated fatty acids	mmol/l
Total phospholipids in lipoprotein particles	mmol/l	Linoleic acid	mmol/l
Phospholipids in VLDL	mmol/l	Docosahexaenoic acid	mmol/l
Phospholipids in LDL	mmol/l	<b>Fatty acid ratios</b>	
Phospholipids in HDL	mmol/l	Ratio of omega-3 fatty acids to total fatty acids	%
<b>Cholesteryl esters</b>		Ratio of omega-6 fatty acids to total fatty acids	%
Total esterified cholesterol	mmol/l	Ratio of polyunsaturated fatty acids to total fatty acids	%
Cholesteryl esters in VLDL	mmol/l	Ratio of monounsaturated fatty acids to total fatty acids	%
Cholesteryl esters in LDL	mmol/l	Ratio of saturated fatty acids to total fatty acids	%
Cholesteryl esters in HDL	mmol/l	Ratio of linoleic acid to total fatty acids	%
<b>Free cholesterol</b>		Ratio of docosahexaenoic acid to total fatty acids	%
Total free cholesterol	mmol/l	Ratio of polyunsaturated fatty acids to monounsaturated fatty acids	ratio
Free cholesterol in VLDL	mmol/l	Ratio of omega-6 fatty acids to omega-3 fatty acids	ratio
Free cholesterol in LDL	mmol/l	<b>Amino acids</b>	
Free cholesterol in HDL	mmol/l	Alanine	mmol/l
<b>Total lipids</b>		Glutamine	mmol/l
Total lipids in lipoprotein particles	mmol/l	Glycine	mmol/l
Total lipids in VLDL	mmol/l	Histidine	mmol/l
Total lipids in LDL	mmol/l	<b>Branched-chain amino acids</b>	
Total lipids in HDL	mmol/l	Total concentration of branched-chain amino acids (leucine + isoleucine + valine)	mmol/l
<b>Lipoprotein particle concentrations</b>		Isoleucine	mmol/l
Total concentration of lipoprotein particles	mmol/l	Leucine	mmol/l
Concentration of VLDL particles	mmol/l	Valine	mmol/l
Concentration of LDL particles	mmol/l	<b>Aromatic amino acids</b>	
Concentration of HDL particles	mmol/l	Phenylalanine	mmol/l
<b>Lipoprotein particle sizes</b>		Tyrosine	mmol/l
Average diameter for VLDL particles	nm	<b>Glycolysis related metabolites</b>	
Average diameter for LDL particles	nm	Glucose	mmol/l
Average diameter for HDL particles	nm	Lactate	mmol/l
<b>Other lipids</b>		Pyruvate	mmol/l
Phosphoglycerides	mmol/l	Citrate **	mmol/l
Ratio of triglycerides to phosphoglycerides	ratio	Glycerol *	mmol/l
Total cholines	mmol/l		

Name	Unit	Name	Unit
<b>Ketone bodies</b>		Cholesterol in very small VLDL	mmol/l
3-Hydroxybutyrate	mmol/l	Cholesteryl esters in very small VLDL	mmol/l
Acetate	mmol/l	Free cholesterol in very small VLDL	mmol/l
Acetoacetate	mmol/l	Triglycerides in very small VLDL	mmol/l
Acetone	mmol/l		
<b>Fluid balance</b>		<b>IDL (average diameter 28.6 nm)</b>	
Creatinine	mmol/l	Concentration of IDL particles	mmol/l
Albumin	g/l	Total lipids in IDL	mmol/l
		Phospholipids in IDL	mmol/l
		Cholesterol in IDL	mmol/l
		Cholesteryl esters in IDL	mmol/l
		Free cholesterol in IDL	mmol/l
		Triglycerides in IDL	mmol/l
<b>Inflammation</b>			
Glycoprotein acetyls	mmol/l		
<b>Lipoprotein subclasses</b>		<b>Large LDL (average diameter 25.5 nm)</b>	
<b>Chylomicrons and extremely large VLDL (particle diameters from 75 nm upwards)</b>		Concentration of large LDL particles	mmol/l
Concentration of chylomicrons and extremely large VLDL particles	mmol/l	Total lipids in large LDL	mmol/l
Total lipids in chylomicrons and extremely large VLDL	mmol/l	Phospholipids in large LDL	mmol/l
Phospholipids in chylomicrons and extremely large VLDL	mmol/l	Cholesterol in large LDL	mmol/l
Cholesterol in chylomicrons and extremely large VLDL	mmol/l	Cholesteryl esters in large LDL	mmol/l
Cholesteryl esters in chylomicrons and extremely large VLDL	mmol/l	Free cholesterol in large LDL	mmol/l
Free cholesterol in chylomicrons and extremely large VLDL	mmol/l	Triglycerides in large LDL	mmol/l
Triglycerides in chylomicrons and extremely large VLDL	mmol/l		
<b>Very large VLDL (average diameter 64 nm)</b>		<b>Medium LDL (average diameter 23 nm)</b>	
Concentration of very large VLDL particles	mmol/l	Concentration of medium LDL particles	mmol/l
Total lipids in very large VLDL	mmol/l	Total lipids in medium LDL	mmol/l
Phospholipids in very large VLDL	mmol/l	Phospholipids in medium LDL	mmol/l
Cholesterol in very large VLDL	mmol/l	Cholesterol in medium LDL	mmol/l
Cholesteryl esters in very large VLDL	mmol/l	Cholesteryl esters in medium LDL	mmol/l
Free cholesterol in very large VLDL	mmol/l	Free cholesterol in medium LDL	mmol/l
Triglycerides in very large VLDL	mmol/l	Triglycerides in medium LDL	mmol/l
<b>Large VLDL (average diameter 53.6 nm)</b>		<b>Small LDL (average diameter 18.7 nm)</b>	
Concentration of large VLDL particles	mmol/l	Concentration of small LDL particles	mmol/l
Total lipids in large VLDL	mmol/l	Total lipids in small LDL	mmol/l
Phospholipids in large VLDL	mmol/l	Phospholipids in small LDL	mmol/l
Cholesterol in large VLDL	mmol/l	Cholesterol in small LDL	mmol/l
Cholesteryl esters in large VLDL	mmol/l	Cholesteryl esters in small LDL	mmol/l
Free cholesterol in large VLDL	mmol/l	Free cholesterol in small LDL	mmol/l
Triglycerides in large VLDL	mmol/l	Triglycerides in small LDL	mmol/l
<b>Medium VLDL (average diameter 44.5 nm)</b>		<b>Very large HDL (average diameter 14.3 nm)</b>	
Concentration of medium VLDL particles	mmol/l	Concentration of very large HDL particles	mmol/l
Total lipids in medium VLDL	mmol/l	Total lipids in very large HDL	mmol/l
Phospholipids in medium VLDL	mmol/l	Phospholipids in very large HDL	mmol/l
Cholesterol in medium VLDL	mmol/l	Cholesterol in very large HDL	mmol/l
Cholesteryl esters in medium VLDL	mmol/l	Cholesteryl esters in very large HDL	mmol/l
Free cholesterol in medium VLDL	mmol/l	Free cholesterol in very large HDL	mmol/l
Triglycerides in medium VLDL	mmol/l	Triglycerides in very large HDL	mmol/l
<b>Small VLDL (average diameter 36.8 nm)</b>		<b>Large HDL (average diameter 12.1 nm)</b>	
Concentration of small VLDL particles	mmol/l	Concentration of large HDL particles	mmol/l
Total lipids in small VLDL	mmol/l	Total lipids in large HDL	mmol/l
Phospholipids in small VLDL	mmol/l	Phospholipids in large HDL	mmol/l
Cholesterol in small VLDL	mmol/l	Cholesterol in large HDL	mmol/l
Cholesteryl esters in small VLDL	mmol/l	Cholesteryl esters in large HDL	mmol/l
Free cholesterol in small VLDL	mmol/l	Free cholesterol in large HDL	mmol/l
Triglycerides in small VLDL	mmol/l	Triglycerides in large HDL	mmol/l
<b>Very small VLDL (average diameter 31.3 nm)</b>		<b>Medium HDL (average diameter 10.9 nm)</b>	
Concentration of very small VLDL particles	mmol/l	Concentration of medium HDL particles	mmol/l
Total lipids in very small VLDL	mmol/l	Total lipids in medium HDL	mmol/l
Phospholipids in very small VLDL	mmol/l	Phospholipids in medium HDL	mmol/l
		Cholesterol in medium HDL	mmol/l
		Cholesteryl esters in medium HDL	mmol/l

Name	Unit	Name	Unit
Free cholesterol in medium HDL	mmol/l	Triglycerides to total lipids ratio in IDL	%
Triglycerides in medium HDL	mmol/l		
<b>Small HDL (average diameter 8.7 nm)</b>		<b>Large LDL ratios</b>	
Concentration of small HDL particles	mmol/l	Phospholipids to total lipids ratio in large LDL	%
Total lipids in small HDL	mmol/l	Cholesterol to total lipids ratio in large LDL	%
Phospholipids in small HDL	mmol/l	Cholesteryl esters to total lipids ratio in large LDL	%
Cholesterol in small HDL	mmol/l	Free cholesterol to total lipids ratio in large LDL	%
Cholesteryl esters in small HDL	mmol/l	Triglycerides to total lipids ratio in large LDL	%
Free cholesterol in small HDL	mmol/l		
Triglycerides in small HDL	mmol/l	<b>Medium LDL ratios</b>	
		Phospholipids to total lipids ratio in medium LDL	%
		Cholesterol to total lipids ratio in medium LDL	%
		Cholesteryl esters to total lipids ratio in medium LDL	%
		Free cholesterol to total lipids ratio in medium LDL	%
		Triglycerides to total lipids ratio in medium LDL	%
<b>Relative lipoprotein lipid concentrations</b>		<b>Small LDL ratios</b>	
<b>Chylomicrons and extremely large VLDL ratios</b>		Phospholipids to total lipids ratio in small LDL	%
Phospholipids to total lipids ratio in chylomicrons and extremely large VLDL	%	Cholesterol to total lipids ratio in small LDL	%
Cholesterol to total lipids ratio in chylomicrons and extremely large VLDL	%	Cholesteryl esters to total lipids ratio in small LDL	%
Cholesteryl esters to total lipids ratio in chylomicrons and extremely large VLDL	%	Free cholesterol to total lipids ratio in small LDL	%
Free cholesterol to total lipids ratio in chylomicrons and extremely large VLDL	%	Triglycerides to total lipids ratio in small LDL	%
Triglycerides to total lipids ratio in chylomicrons and extremely large VLDL	%		
		<b>Very large HDL ratios</b>	
<b>Very large VLDL ratios</b>		Phospholipids to total lipids ratio in very large HDL	%
Phospholipids to total lipids ratio in very large VLDL	%	Cholesterol to total lipids ratio in very large HDL	%
Cholesterol to total lipids ratio in very large VLDL	%	Cholesteryl esters to total lipids ratio in very large HDL	%
Cholesteryl esters to total lipids ratio in very large VLDL	%	Free cholesterol to total lipids ratio in very large HDL	%
Free cholesterol to total lipids ratio in very large VLDL	%	Triglycerides to total lipids ratio in very large HDL	%
Triglycerides to total lipids ratio in very large VLDL	%		
		<b>Large HDL ratios</b>	
<b>Large VLDL ratios</b>		Phospholipids to total lipids ratio in large HDL	%
Phospholipids to total lipids ratio in large VLDL	%	Cholesterol to total lipids ratio in large HDL	%
Cholesterol to total lipids ratio in large VLDL	%	Cholesteryl esters to total lipids ratio in large HDL	%
Cholesteryl esters to total lipids ratio in large VLDL	%	Free cholesterol to total lipids ratio in large HDL	%
Free cholesterol to total lipids ratio in large VLDL	%	Triglycerides to total lipids ratio in large HDL	%
Triglycerides to total lipids ratio in large VLDL	%		
		<b>Medium HDL ratios</b>	
<b>Medium VLDL ratios</b>		Phospholipids to total lipids ratio in medium HDL	%
Phospholipids to total lipids ratio in medium VLDL	%	Cholesterol to total lipids ratio in medium HDL	%
Cholesterol to total lipids ratio in medium VLDL	%	Cholesteryl esters to total lipids ratio in medium HDL	%
Cholesteryl esters to total lipids ratio in medium VLDL	%	Free cholesterol to total lipids ratio in medium HDL	%
Free cholesterol to total lipids ratio in medium VLDL	%	Triglycerides to total lipids ratio in medium HDL	%
Triglycerides to total lipids ratio in medium VLDL	%		
		<b>Small HDL ratios</b>	
<b>Small VLDL ratios</b>		Phospholipids to total lipids ratio in small HDL	%
Phospholipids to total lipids ratio in small VLDL	%	Cholesterol to total lipids ratio in small HDL	%
Cholesterol to total lipids ratio in small VLDL	%	Cholesteryl esters to total lipids ratio in small HDL	%
Cholesteryl esters to total lipids ratio in small VLDL	%	Free cholesterol to total lipids ratio in small HDL	%
Free cholesterol to total lipids ratio in small VLDL	%	Triglycerides to total lipids ratio in small HDL	%
Triglycerides to total lipids ratio in small VLDL	%		
		<b>Very small VLDL ratios</b>	
Phospholipids to total lipids ratio in very small VLDL	%	If Nightingale is not able to deliver the Service Deliverables due to inability of Nightingale's Service to analyse the data with more than 20% of metabolic measures missing for a Sample, there will be no charge for the respective Sample.	
Cholesterol to total lipids ratio in very small VLDL	%		
Cholesteryl esters to total lipids ratio in very small VLDL	%		
Free cholesterol to total lipids ratio in very small VLDL	%		
Triglycerides to total lipids ratio in very small VLDL	%		
<b>IDL ratios</b>			
Phospholipids to total lipids ratio in IDL	%		
Cholesterol to total lipids ratio in IDL	%		
Cholesteryl esters to total lipids ratio in IDL	%		
Free cholesterol to total lipids ratio in IDL	%		