

## 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>   |        |  |        |
| 3-Hydroxybutyrate  | mmol/l | Cholesterol in very small VLDL                   | mmol/l |
| Acetate  | mmol/l | Cholesteryl esters in very small VLDL            | mmol/l |
| Acetoacetate   | mmol/l | Free cholesterol in very small VLDL              | mmol/l |
| Acetone  | mmol/l | Triglycerides in very small VLDL                 | 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 |
| <b>Inflammation</b>  |        | Phospholipids in IDL                             | mmol/l |
| Glycoprotein acetyls   | mmol/l | Cholesterol in IDL                               | mmol/l |
| <b>Lipoprotein subclasses</b>  |        | Cholesteryl esters in IDL                        | mmol/l |
| <b>Chylomicrons and extremely large VLDL (particle diameters from 75 nm upwards)</b> |        | Free cholesterol in IDL                          | mmol/l |
| Concentration of chylomicrons and extremely large VLDL particles                     | mmol/l | Triglycerides in IDL                             | mmol/l |
| Total lipids in chylomicrons and extremely large VLDL                                | mmol/l | <b>Large LDL (average diameter 25.5 nm)</b>      |        |
| Phospholipids in chylomicrons and extremely large VLDL                               | mmol/l | Concentration of large LDL particles             | mmol/l |
| Cholesterol in chylomicrons and extremely large VLDL                                 | mmol/l | Total lipids in large LDL                        | mmol/l |
| Cholesteryl esters in chylomicrons and extremely large VLDL                          | mmol/l | Phospholipids in large LDL                       | mmol/l |
| Free cholesterol in chylomicrons and extremely large VLDL                            | mmol/l | Cholesterol in large LDL                         | mmol/l |
| Triglycerides in chylomicrons and extremely large VLDL                               | mmol/l | Cholesteryl esters in large LDL                  | mmol/l |
| <b>Very large VLDL (average diameter 64 nm)</b>                                      |        | Free cholesterol in large LDL                    | mmol/l |
| Concentration of very large VLDL particles   | mmol/l | Triglycerides in large LDL                       | mmol/l |
| Total lipids in very large VLDL  | mmol/l | <b>Medium LDL (average diameter 23 nm)</b>       |        |
| Phospholipids in very large VLDL   | mmol/l | Concentration of medium LDL particles            | mmol/l |
| Cholesterol in very large VLDL   | mmol/l | Total lipids in medium LDL                       | mmol/l |
| Cholesteryl esters in very large VLDL  | mmol/l | Phospholipids in medium LDL                      | mmol/l |
| Free cholesterol in very large VLDL  | mmol/l | Cholesterol in medium LDL                        | mmol/l |
| Triglycerides in very large VLDL   | mmol/l | Cholesteryl esters in medium LDL                 | mmol/l |
| <b>Large VLDL (average diameter 53.6 nm)</b>   |        | Free cholesterol in medium LDL                   | mmol/l |
| Concentration of large VLDL particles  | mmol/l | Triglycerides in medium LDL                      | mmol/l |
| Total lipids in large VLDL   | mmol/l | <b>Small LDL (average diameter 18.7 nm)</b>      |        |
| Phospholipids in large VLDL  | mmol/l | Concentration of small LDL particles             | mmol/l |
| Cholesterol in large VLDL  | mmol/l | Total lipids in small LDL                        | mmol/l |
| Cholesteryl esters in large VLDL   | mmol/l | Phospholipids in small LDL                       | mmol/l |
| Free cholesterol in large VLDL   | mmol/l | Cholesterol in small LDL                         | mmol/l |
| Triglycerides in large VLDL  | mmol/l | Cholesteryl esters in small LDL                  | mmol/l |
| <b>Medium VLDL (average diameter 44.5 nm)</b>  |        | Free cholesterol in small LDL                    | mmol/l |
| Concentration of medium VLDL particles   | mmol/l | Triglycerides in small LDL                       | mmol/l |
| Total lipids in medium VLDL  | mmol/l | <b>Very large HDL (average diameter 14.3 nm)</b> |        |
| Phospholipids in medium VLDL   | mmol/l | Concentration of very large HDL particles        | mmol/l |
| Cholesterol in medium VLDL   | mmol/l | Total lipids in very large HDL                   | mmol/l |
| Cholesteryl esters in medium VLDL  | mmol/l | Phospholipids in very large HDL                  | mmol/l |
| Free cholesterol in medium VLDL  | mmol/l | Cholesterol in very large HDL                    | mmol/l |
| Triglycerides in medium VLDL   | mmol/l | Cholesteryl esters in very large HDL             | mmol/l |
| <b>Small VLDL (average diameter 36.8 nm)</b>   |        | Free cholesterol in very large HDL               | mmol/l |
| Concentration of small VLDL particles  | mmol/l | Triglycerides in very large HDL                  | mmol/l |
| Total lipids in small VLDL   | mmol/l | <b>Large HDL (average diameter 12.1 nm)</b>      |        |
| Phospholipids in small VLDL  | mmol/l | Concentration of large HDL particles             | mmol/l |
| Cholesterol in small VLDL  | mmol/l | Total lipids in large HDL                        | mmol/l |
| Cholesteryl esters in small VLDL   | mmol/l | Phospholipids in large HDL                       | mmol/l |
| Free cholesterol in small VLDL   | mmol/l | Cholesterol in large HDL                         | mmol/l |
| Triglycerides in small VLDL  | mmol/l | Cholesteryl esters in large HDL                  | mmol/l |
| <b>Very small VLDL (average diameter 31.3 nm)</b>                                    |        | Free cholesterol in large HDL                    | mmol/l |
| Concentration of very small VLDL particles   | mmol/l | Triglycerides in large HDL                       | mmol/l |
| Total lipids in very small VLDL  | mmol/l | <b>Medium HDL (average diameter 10.9 nm)</b>     |        |
| Phospholipids in very small VLDL   | mmol/l | Concentration of medium HDL particles            | mmol/l |
|  |        | Total lipids in medium HDL                       | 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 | <b>Medium LDL ratios</b>   |      |
| Triglycerides in small HDL  | mmol/l | Phospholipids to total lipids ratio in medium LDL  | %    |
| <b>Relative lipoprotein lipid concentrations</b>                                  |        | Cholesterol to total lipids ratio in medium LDL  | %    |
| <b>Chylomicrons and extremely large VLDL ratios</b>                               |        | Cholesteryl esters to total lipids ratio in medium LDL   | %    |
| Phospholipids to total lipids ratio in chylomicrons and extremely large VLDL      | %      | Free cholesterol to total lipids ratio in medium LDL   | %    |
| Cholesterol to total lipids ratio in chylomicrons and extremely large VLDL        | %      | Triglycerides to total lipids ratio in medium LDL  | %    |
| Cholesteryl esters to total lipids ratio in chylomicrons and extremely large VLDL | %      | <b>Small LDL ratios</b>  |      |
| Free cholesterol to total lipids ratio in chylomicrons and extremely large VLDL   | %      | Phospholipids to total lipids ratio in small LDL   | %    |
| Triglycerides to total lipids ratio in chylomicrons and extremely large VLDL      | %      | Cholesterol to total lipids ratio in small LDL   | %    |
| <b>Very large VLDL ratios</b>   |        | Cholesteryl esters to total lipids ratio in small LDL  | %    |
| Phospholipids to total lipids ratio in very large VLDL                            | %      | Free cholesterol to total lipids ratio in small LDL  | %    |
| Cholesterol to total lipids ratio in very large VLDL                              | %      | Triglycerides to total lipids ratio in small LDL   | %    |
| Cholesteryl esters to total lipids ratio in very large VLDL                       | %      | <b>Very large HDL ratios</b>   |      |
| Free cholesterol to total lipids ratio in very large VLDL                         | %      | Phospholipids to total lipids ratio in very large HDL  | %    |
| Triglycerides to total lipids ratio in very large VLDL                            | %      | Cholesterol to total lipids ratio in very large HDL  | %    |
| <b>Large VLDL ratios</b>  |        | Cholesteryl esters to total lipids ratio in very large HDL   | %    |
| Phospholipids to total lipids ratio in large VLDL                                 | %      | Free cholesterol to total lipids ratio in very large HDL   | %    |
| Cholesterol to total lipids ratio in large VLDL                                   | %      | Triglycerides to total lipids ratio in very large HDL  | %    |
| Cholesteryl esters to total lipids ratio in large VLDL                            | %      | <b>Large HDL ratios</b>  |      |
| Free cholesterol to total lipids ratio in large VLDL                              | %      | Phospholipids to total lipids ratio in large HDL   | %    |
| Triglycerides to total lipids ratio in large VLDL                                 | %      | Cholesterol to total lipids ratio in large HDL   | %    |
| <b>Medium VLDL ratios</b>   |        | Cholesteryl esters to total lipids ratio in large HDL  | %    |
| Phospholipids to total lipids ratio in medium VLDL                                | %      | Free cholesterol to total lipids ratio in large HDL  | %    |
| Cholesterol to total lipids ratio in medium VLDL                                  | %      | Triglycerides to total lipids ratio in large HDL   | %    |
| Cholesteryl esters to total lipids ratio in medium VLDL                           | %      | <b>Medium HDL ratios</b>   |      |
| Free cholesterol to total lipids ratio in medium VLDL                             | %      | Phospholipids to total lipids ratio in medium HDL  | %    |
| Triglycerides to total lipids ratio in medium VLDL                                | %      | Cholesterol to total lipids ratio in medium HDL  | %    |
| <b>Small VLDL ratios</b>  |        | Cholesteryl esters to total lipids ratio in medium HDL   | %    |
| Phospholipids to total lipids ratio in small VLDL                                 | %      | Free cholesterol to total lipids ratio in medium HDL   | %    |
| Cholesterol to total lipids ratio in small VLDL                                   | %      | Triglycerides to total lipids ratio in medium HDL  | %    |
| Cholesteryl esters to total lipids ratio in small VLDL                            | %      | <b>Small HDL ratios</b>  |      |
| Free cholesterol to total lipids ratio in small VLDL                              | %      | Phospholipids to total lipids ratio in small HDL   | %    |
| Triglycerides to total lipids ratio in small VLDL                                 | %      | Cholesterol to total lipids ratio in small HDL   | %    |
| <b>Very small VLDL ratios</b>   |        | Cholesteryl esters to total lipids ratio in small HDL  | %    |
| Phospholipids to total lipids ratio in very small VLDL                            | %      | Free cholesterol to total lipids ratio in small HDL  | %    |
| Cholesterol to total lipids ratio in very small VLDL                              | %      | Triglycerides to total lipids ratio in small HDL   | %    |
| Cholesteryl esters 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. |      |
| 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                                     | %      |  |      |