

# Blood Viscosity Profile

|                                    |                |  |                     |
|------------------------------------|----------------|--|---------------------|
| <b>Accession Number:</b> 0123456   | <b>Age:</b>    | <b>Date Collected:</b>                 | <b>Date Run</b>     |
| <b>Patient Name:</b> Doe, John     | <b>Sex:</b>    | <b>Date Received:</b>                  | <b>Report Date:</b> |
| <b>Outside Patient ID:</b>         | <b>DOB:</b>    | <b>Doctor ID:</b>                      |                     |
| <b>Doctor Name:</b> Sample Reports | <b>Height:</b> | <b>Phlebotomy Vol:</b> 431.26 mL/month |                     |
| <b>Comments:</b>                   | <b>Weight:</b> |  |                     |

## Blood Viscosity Test Results

| Test      | Out of range | Results | Reference Range | Units |
|-----------|--------------|---------|-----------------|-------|
| Systolic  | High         | 61.1    | 30 - 44         | mP    |
| Diastolic | High         | 196     | 74 - 126        | mP    |

## CBC Test Results

| Test              | Out of range | Results | Reference Range | Units      |
|-------------------|--------------|---------|-----------------|------------|
| White Blood Cells |              | 8.3     | 3.8 - 10.8      | K/ $\mu$ L |
| Red Blood Cells   | High         | 6.03    | 4.2 - 5.8       | M/ $\mu$ L |
| Hemoglobin        | High         | 17.4    | 13.2 - 17.1     | g/dl       |
| Hematocrit        | High         | 52.3    | 38.5 - 50       | %          |
| MCV               |              | 86.7    | 80 - 100        | fL         |
| MCH               |              | 28.8    | 27 - 33         | pg         |
| MCHC              |              | 33.3    | 32 - 36         | g/dl       |
| RDW               |              | 14.5    | 11 - 15         | %          |
| Platelets         |              | 258     | 140 - 400       | K/ $\mu$ L |
| MPV               |              | 8.7     | 7.5 - 12.5      | fL         |
| BUN               |              | 14      | 7 - 25          | mg/dL      |
| Creatinine        |              | 0.82    | 0.7 - 1.33      | mg/dL      |

## Blood Viscosity Results Interpretation

| Systolic Result | Diastolic Result | Comments/Investigations  | Potential Interventions  |
|-----------------|------------------|--|--|
| 50              | 150              | Check LDL, Tg, glucose<br>Check Hct for mild-moderate erythrocytosis | Therapeutic phlebotomy per phlebotomy algorithm<br>Nattokinase supplementation; hydration                  |
| 44              | 126              | Check LDL, Tg, glucose<br>Check Hct for mild-moderate erythrocytosis | Hydration; nattokinase supplementation<br>Determine if patient is eligible for phlebotomy                  |
| 30              | 74               | Check Hct/Hg for anemia<br>Check medications                         | Dietary changes or medications for anemia correction<br>Dosage changes or stop administering medication(s) |

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| <b>Comments:</b>                   | <b>Weight:</b> | <b>Phlebotomy Vol:</b> 431.26 mL/month |                   |

## CBC Differential Results

| Test                  | Out of range | Results | Reference Range | Units        |
|-----------------------|--------------|---------|-----------------|--------------|
| Neutrophils           |              | 60.8    |                 |              |
| Lymphocytes           |              | 25.3    |                 |              |
| Monocytes             |              | 9.6     |                 |              |
| Eosinophils           |              | 3.8     |                 |              |
| Basophils             |              | 0.5     |                 |              |
| Neutrophils, Absolute |              | 5046    | 1500 - 7800     | cells/ $\mu$ |
| Lymphocytes, Absolute |              | 2100    | 850 - 3900      | cells/ $\mu$ |
| Monocytes, Absolute   |              | 797     | 200 - 950       | cells/ $\mu$ |
| Eosinophils, Absolute |              | 315     | 15 - 500        | cells/ $\mu$ |
| Basophils, Absolute   |              | 42      | 0 - 200         | cells/ $\mu$ |

## Guidelines

### Hydration Guidelines

For all patients with blood viscosity levels above the optimum health range (systolic viscosity greater than 41 or diastolic viscosity greater than 110), therapeutic oral hydration is recommended. Hydrate one-half (1/2) of the patient's body weight in ounces daily, e.g., 100 oz of water daily for a 200 lb patient. Mineral supplementation and increases in hydration volume based on activity and humidity/temperature are discretionary for the clinician.

### Nattokinase Guidelines

For patients having hyperviscosity (i.e., greater than reference range values--systolic viscosity greater than 44 or diastolic viscosity greater than 126), administer 50 mg of nattokinase (or 1,000 fibrinolytic degradation units) three times daily with food, in addition to oral hydration as above. For patients who are also diagnosed with atrial fibrillation or having an artificial heart valve, dose 50 mg of nattokinase four times daily. Use nattokinase having activity of 20,000 fibrinolytic degradation units per gram. Nattokinase is contraindicated for patients with hemophilia. No contraindications with medications.

### Phlebotomy Guidelines

Balance and stabilize electrolyte levels (sodium, potassium) prior to administering any phlebotomy or IV hemodilution. Blood Viscosity Profile with patient's height, weight, and gender are required to determine the recommended phlebotomy volume for patients with hyperviscosity (i.e., greater than reference range values--systolic viscosity greater than 44 or diastolic viscosity greater than 126). Patients requiring less than 100 cc per month in blood volume removal are ineligible for phlebotomy and should be administered nattokinase and hydration as above. Patients requiring 100-250 cc of monthly blood volume removal may be phlebotomized without any pre-hydration by IV saline. In addition, these patients should receive oral hydration and nattokinase as above. Any patient requiring greater than 250 cc of blood volume removal should be hydrated using normal saline IV, in order to attain isovolemic phlebotomy. For isovolemic phlebotomy, administer the same volume of IV saline as the volume of phlebotomy: one-half before and one-half after phlebotomy. For any patient requiring greater than 250 cc monthly phlebotomy, a re-test for viscosity is required after one month prior to the next phlebotomy. These patients should also receive oral hydration and nattokinase as above. Therapeutic phlebotomy greater than 500 cc per month is not recommended for any patient.