Special Hematology/ 104 ERYTHROCYTE SEDIMENTATION RATE(ESR)

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Approval and Periodic Review Signatures

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Periodic review	Lab Director	4/2/2024	1.0	Ali Mousa Ramadan MD	
Periodic review	Medical Pathologist	3/22/2024	1.0	Lekidule Taddesse-Heath	
Approval	Lab Director	8/15/2021	1.0	Ali Mousa Ramadan	
Approval	Laboratory Operations Manager	8/13/2021	1.0	Wendell McMillan	
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Version History

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1.0	Approved and Current	Initial version	7/22/2021	8/15/2021	Indefinite

HOWARD UNIVERSITY HOSPITAL
DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE

STANDARD OPERATING POLICY AND PROCEDURE MANUAL

Special Hematology/104 **Erythrocyte Sedimentation Rate (ESR)**

PURPOSE:

If an anticoagulant is added to blood and the mixture set up in a vertical tube, the red cells gradually fall and the plasma is displaced upward. The rate of this action is constant in health and is known as the sedimentation rate. The cells settle because their density is greater than that of plasma. The cause of this phenomenon is not clear, but is thought to be related to the albumin, globulin, and fibrinogen fractions of the plasma. The length of the fall of the meniscus of the red cells column (measured from the plasma meniscus) in a unit of time is the ESR (Erythrocyte sedimentation rate).

REAGENTS:

1. Vials (may or may not contain diluent)
2. Two bottles of commercial controls

EQUIPMENT AND SUPPLIES:

1. A Vial Holder
2. Fixed Bore Pipettes (Tubes) 2.55 mm and 1 mm
3. Timer
4. Transfer pipette

SPECIMEN:

Anticoagulated blood with EDTA is recommended. Blood stored at room temperature (18-25°C) must be tested within two hours. If the sample cannot be tested with two hours, it should be refrigerated (2- 6^0C). Refrigerated specimens are stable for up to 24 hours.

PROCEDURE:

Preparation:

No preparation is necessary for Sediplast with saline. For Sediplast without diluent a 4: 1 (sample

to diluent) dilution of the whole blood is required. Mix 1.0 ml of blood with 0.25 ml of 3.8% sodium citrate(or saline).

Sediplast with Diluent:

1. Remove the stopper on the pre-filled vials. Using a transfer pipette, fill the vial to the indicated fill line with 0.8 ml of blood to make required 4:1 dilution. Replace pierceable stopper and gently invert several times to mix.
2. Place vial in its rack on a level surface. Carefully insert the pipette (tube) through the pierceable stopper until the pipette comes in contact with the bottom of the vial. The pipette will autozero the blood and any excess with flow into the reservoir compartment.
3. Let sample stand for exactly one hour and then read the numerical results Of ESR in millimeters. This is done by reading the plasma meniscus on the calibrated pipette.

Sediplast without Diluent:

1. Transfer .24 ml of .85 of .85% sodium chloride to the base of the vial. Transfer .96 ml of EDTAblood to vial. Replace pierceable stopper and gently invert several times to mix.
2. Continue with steps 2 and 3 above (Sediplast with diluent).

Micro-ESR:

For pediatric specimens and all patient collected in pediatric tubes, sedimentation rate will be done with the Micro-dispette bore (smaller bore size 1 mm).

1. Collect 200 micro liters of EDTA blood and transfer into the white reservoir.
2. Add 50 micro liters of saline and mix.
3. Gently insert the plugged MICRO DISPETTE into the white reservoir with a twisting motion.Allow the blood to rise into and saturate the lower half of the cotton plug.

Note: It is not necessary to settle the MICRO DISPETTE on the bottom of the white reservoir once the plug is saturated. Sedimentation should start at the 0 mark.

4. Place the reservoir assembly and bore into stand and let stand in a vertical position.
5. Let stand for exactly one hour and then read the numerical results of ESR in millimeters

QUALITY CONTROL:

A low and a high control must be performed at least daily during the am shift. The results must be within acceptable range and documented on the QC log sheet. If controls are not within acceptable limits, repeat control. If still not acceptable, use a new vial of control. Controls must be within acceptable limits to accept patient results.

INTERPRETATION/RESULTS:

The ESR is a non-specific test which indicated the presence if inflammation in the body. The test is used as initial screening tool and also as follow –up test to monitor the effects of therapy and the progression or regression of disease.

Reference range:

0-10 mm/hr.

ENTERING RESULTS IN THE NOVIUS LIS SYSTEM- SPECIAL TESTING

1. After signing on. Activate TESTS by clicking once.
2. Click Spcmn/Smpl tab
3. Enter the sample ID number, make sure the check box 'Not Rcvd/Comp/Final is checked and hit ENTER
4. Activate the ENTER INDIVIDUAL RESULTS button and then enter the results.
5. Select COMP/SAVE box to file results.

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REFERENCES:

1. Simmonds, A: Technical Hematology, Third Edition, J.B. Lippencott Co 1980.

2. Sediplast Autozero Westergreen ESR System, Polymedco, Inc., **N.Y**. 1991.

3. Micro-Dispette, Guest Medical & Dental Product, Switzerland 1991.

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Replaces Core Lab/Special Hematology/307/206/2. Approval and revision of documentation maintained electronically