PEKIN HOSPITAL

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ERYTHROCYTE SEDIMENTATION RATE	**Procedure#: HE-0214**
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Prepared by:	**Date Adopted**	**Supersedes Procedure #**
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ERYTHROCYTE SEDIMENTATION RATE

I. PRINCIPLE:

It is well established that patients affected by various diseases (e.g. tuberculosis, malignancies, rheumatic fever, rheumatoid arthritis, multiple myeloma, acute inflammation) have a raised erythrocyte sedimentation rate (ESR), due mainly to alterations in some plasma and erythrocyte factors causing erythrocyte rouleaux formation.

Random access ESR analyzer is an automated instrument controlled by a microprocessor and exclusively employed for analysis of ESR. Excyte analyzers can be used for random and continuous loading of samples while following the sedimentation of each sample independently. The Excyte test system is comprised of 120 mm long tempered glass tubes containing 0.28 mL 3.8% sodium citrate (0.13 M). After being filled with 1.0 mL of blood, the sample must be mixed immediately with the sodium citrate solution. Immediately prior to analysis, the sample should be mixed by manual inversion at least 20 times.

The well -mixed sample is then placed in an individual holder in the Excyte instrument where a photoelectric cell passes up the outside of each tube to record the height of the column of red cells at which light transmission occurs at 950 nm (infrared). After 30 minutes of sedimentation, the new level at which light passes through the column is recorded and the decrease in height is corrected mathematically to give a result which is comparable to a 1 hour Westegren ESR.

II. POLICY:

Pekin Hospital laboratory techs will utilize the Excyte analyzer for analysis of erythrocyte sedimentation rate.

III. SPECIMEN:

A. Collect the specimen in an EDTA tube according to accepted clinical protocol. Blood should be drawn at least the minimum. 1 mL of EDTA blood is added to the Excyte ESR tube for analysis. ESR tube is labeled with a small LIS label or manually labeled with the patient's accession number.
B. Specimen Storage and stability:
    1. Blood drawn in an EDTA tube is stable for up to 12 hours at room temperature and 24 hours if refrigerated. Blood must be at room temperature before testing.
    2. The Excyte ESR tubes with 1.0 mL EDTA blood added are stable 4 hours at room temperature or 12 hours refrigerated. Specimen must be brought to room temperature prior to analysis.

IV. MATERIALS:

A. Analyzer: Excyte M, catalog no. EX-10314, automated ESR analyzer with 10 positions and on board mixing
B. Controls: Accu-Sed®Plus Normal Control, catalog no. DS-71002; Accu-Sed Plus Abnormal Control, catalog no. DS-71003; Accu-Sed Plus Control Set, 5 vials normal, 5 vials abnormal, catalog no. DS-71005A. Alternately, Bio-Rad Sedimentation Rate Control may be used
C. Tubes: Excyte ESR Non-Vacuum Tube, catalog no. EX-10100
    1. Glass tubes with a butyl-rubber stopper. The tubes contain 0.28 mL 3.8% sodium citrate (0.13 M). Tubes should be stored at 4°C - 25°C.

V. CALIBRATION:

A. The Excyte M will autotest and self-calibrate daily when it is turned OFF then ON.
B. The manufacturer will be notified at the time of any failed calibration and a notation made on the Action Log.

VI. QUALITY CONTROL

A. Vital Diagnostics recommends running two levels of controls per each day of use. The recommended controls are the Accu-Sed Plus Normal and Abnormal ESR Controls. Alternate Bio-Rad Sedimentation Rate Controls may be used.
B. Usable Range: The usable range of ESR on the Excyte is 1-140 mm/h. When a sample has a value > 140 mm/h, this message is displayed or printed: "> 140" and should be reported as such. Do not dilute the sample.
C. As with all ESR analyzers, abnormally high or low hematocrits, along with other hemoglobinopathies, may affect results.
D. Each morning the instrument must be turned OFF, then ON to self-calibrate.

VII. PROCEDURE:

A. After blood is drawn and the Excyte ESR Non-Vacuum tube is filled with 1.0 mL of blood, mix the sample immediately with the sodium citrate. Immediately prior to analysis, the sample should be mixed thoroughly as described below.
B. Remove the cap from the EDTA tube and transfer 1 mL blood sample to the Excyte ESR Non-Vacuum tube using a disposable pipette.
C. Run the blood down the wall of the tube and fill to at least the minimum line and not more than the maximum line on the tube. If too much blood is present (over the maximum mark - SAMPLE HIGH), mix well and remove the excess blood using a Pasteur pipette. If too little sample is present (below the minimum mark - SAMPLE LOW), the sample will be rejected by the instrument without being analyzed.

D. Cap the tube carefully.

~~E.~~ Mix the blood with the sodium citrate solution by turning upside down end to end until all blood has cleared the bottom at least ~~20 times~~ 10 times, before placing the tube in the instrument. ~~The only form of mechanical mixing is the ThermolyneVari-Mix rocker, at the preset speed, for 5 mins can be used to achieve optimal mixing.~~

~~F.~~E. Scan the patient's barcode and within 15 seconds insert the tube containing a well mixed patient sample into any open channel. Record the position number. The analyzer will associate the barcode with the position number.

~~G.~~F. At the end of the 30 minutes, the result is shown on the display, according to the order of the numbered positions. The result will print with the position number and barcode number.

~~H.~~G. Verify patient information on the Excyte ESR tube upon removal from the Excyte-M analyzer.

~~I.~~H. Results are temperature compensated for instrument internal temperature.

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VIII. REPORT RESULTING:

A. The results are reported in mm/hour.

B. Normal values are: Male – (0-15 mm/hr)
Female – (0-20 mm/hr)
Children - (0-10 mm/hr)

C. Refer to the Lab General Policy Manual, Reporting Results section.

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I. Accu-Sed Plus Package Insert, Vital Diagnostics L65502. Rev C

J. Excyte M Scan Automated ESR Operator's Manual, Vital Diagnostics, L7065, Rev D

K. Excyte ESR Vacuum Tubes package Insert, Vital Diagnostics L7065, Rev D

L. Greer, John P, MD, et all. Wintrobe Clinical hematology. 11th ed. Vol 2. pp 2697. Philadelphia. Lippincott Williams & Wilkins (2004)

M. Excyte Mini Automated ESR Operator's Manual, Vital Diagnostics L7248, Current Version

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