XE-5000™ Automated Hematology System

Your Complete Choice
Advanced Technology Solutions to Meet Your Lab’s Needs

Today’s Laboratory Challenges

Laboratories have continued to face a number of challenges for several years. These include clinical, operational and financial issues such as:

- Demand for clinically relevant information
- Medical technologist labor shortage
- Increased workload
- Need for faster turnaround time
- Requirement for high reliability
- Limited laboratory budgets

Even with these challenges, the need for hematology testing has remained steady or continued to grow. Laboratories are searching for hematology analyzers that can improve productivity and efficiency while providing enhanced clinical information. Designed to be scalable, reliable and efficient, the Sysmex XE-5000™ offers medium to high volume labs an automated hematology system that can truly meet and exceed their expectations. The XE-5000 streamlines your workflow by providing rapid testing for up to 150 samples per hour, enabling quick turnaround time.

The Sysmex XE-5000 Automated Hematology System utilizes the power of fluorescent flow cytometry and hydrodynamic focusing technologies. Using a unique, state-of-the-art, diode laser bench, Sysmex fluorescent flow cytometry provides the sensitivity needed for measuring and differentiating cell types in whole blood and body fluid samples. Fluorescent technology and hydrodynamic focusing enable the XE-5000 to consistently classify normal WBC, RBC and PLT populations from abnormal populations, thereby decreasing the number of manual interventions.
Clinically Relevant Information

The Sysmex XE-5000 offers a 6-part Differential, which includes an Immature Granulocyte Count (IG%, #). The IG count offers reportable, quantitative results that includes metamyelocytes, myelocytes and promyelocytes.

Immature Granulocyte Count

The IG Count provides:

Improved accuracy and sensitivity:
• Reduced false positive and false negative rates
• Result consistency by reducing tech-to-tech variation in reporting manual differentials

Improved workflow:
• Fewer manual differentials means faster turnaround time (TAT)

Labor Savings:
• Fewer manual slide reviews improves laboratory efficiency and supports higher laboratory output

Fluorescent Nucleated Red Blood Cells

Enumeration of NRBC is critical to providing an accurate WBC and differential in pathological samples. The XE-5000 fluorescent technology provides a NRBC in both % and # from a dedicated channel.

The NRBC measurement provides:

• Improved low-end sensitivity
• Rapid reporting to assist physicians in patient diagnosis and treatment decisions
• Efficient automatic correction of WBC and Diff results
• Decreased false negative and false positive rates with advanced separation of WBCs and NRBCs
• Available with every CBC

XE-5000 Technology Provides Clinically Relevant, Reportable Parameters:

• NRBC – Fluorescent NRBC count with excellent sensitivity and specificity
• PLT-O – Fluorescent optical platelet count and traditional impedance PLT counting to improve accuracy of very low and very high PLT counts
• Retic – Fluorescent reticulocyte count to reduce manual confirmation methods and their inherent errors
• RET-Hb – Reticulocyte Hemoglobin content measures the incorporation of iron into the red cell to assist the physician in anemia evaluation and management (e.g., functional iron deficiency anemia)
• IPF – Immature platelet fraction (measurement of reticulated platelets) to help the physician monitor thrombopoietic activity of the bone marrow
• HPC – Quantitative Hematopoietic Progenitor Cell count as a screen that can be used by the physician to determine the presence of Hematopoietic Progenitor Cells in peripheral blood and cord blood samples
Advanced Clinical Parameters

Fluorescent Reticulocyte Count

Known as the “Gold Standard” in reticulocyte testing, the fluorescent reticulocyte count is available on the XE-5000. Sysmex provides on-board retic testing in a dedicated channel, improving your efficiency in reporting reticulocytes 24 hours per day.

With the use of fluorescent technology, the retic channel assures:

• Accurate reticulocyte % and #
• Improved immature reticulocyte information for earlier diagnosis and treatment by physicians
• Elimination of common interferences from Howell-Jolly bodies, Pappenheimer bodies and immature reticulocytes to avoid manual counts

Reticulocyte Hemoglobin Measurement (RET-He)

The Reticulocyte Hemoglobin (RET-He) is a parameter measured in the reticulocyte channel and is used to measure the incorporation of iron into erythrocyte hemoglobin.

The RET-He parameter supports:

• Rapid, direct analysis of an earlier stage of RBC development for prompt clinical follow-up
• Assessment of anemia and is an established parameter used in KDOQI (Kidney Disease Outcomes Quality Initiative) guidelines for assessing the initial iron status of patients
• Accuracy and sensitivity in measurement of red cell production that supports effective monitoring of costly drug protocols for cell stimulation

Fluorescent Optical Platelet

The XE-5000 offers a fluorescent optical platelet along with the traditional impedance platelet count. These dual technologies maximize instrument output. Flagging associated with atypical or abnormal platelets, due to increased size or fragmentation, is minimized by use of the optical platelet count. The accuracy in reporting is supported by the availability of both technologies.

Fluorescent Optical Platelet (PLT-O) is a complementary, reportable parameter to the impedance platelet count.

The PLT-O parameter provides:

• Improved accuracy on low platelet counts
• Accurate counts when interferences are present, thus reducing manual intervention
• Automated judgment for reporting PLT-O or impedance PLT through instrument settings, eliminating tech-to-tech decision variability
Immature Platelet Fraction

The Immature Platelet Fraction (IPF %) is a parameter used to help the physician assess thrombopoiesis.

IPF offers:

- Accuracy and sensitivity in measurement of immature platelets
- Delineation of abnormal platelet populations seen by physicians in disease states such as AITP (autoimmune thrombocytopenic purpura) or TTP (thrombotic thrombocytopenic purpura)
- Rapid reporting of results for prompt clinical information that can potentially avoid invasive and costly procedures

Hematopoietic Progenitor Cell Counts

The Sysmex XE-5000 offers a quantitative Hematopoietic Progenitor Cell (HPC) count that can be used by the physician when determining the optimal time for cell harvest. The Sysmex automated HPC count is substantially equivalent to CFU and CD34+.

The HPC count from peripheral blood and cord blood samples supports:

- Quality screening information to better assist physicians with patient treatment protocols
- Rapid analysis versus conventional methods, thereby allowing for a prompt determination of optimal stem cell harvest time
- Automation of manual processes
- Cost reduction as the system does not require additional reagents, sample volume or specific technical expertise

XE-5000 Body Fluid Mode

The XE-5000 analyzer includes a body fluid specific mode. This mode provides a reportable RBC, WBC, WBC differential (polymorphonuclear and mononuclear) and a total count (TC-BF) for all common body fluid samples (CSF, synovial and serous). The analyzer applies proven impedance and fluorescent flow cytometry, ensuring an accurate body fluid count.

The XE-5000 Body Fluid Count Provides:

- Expanded sensitivity and linearity: WBC and RBC counts reportable to 3 decimal places
- 2-Part Differential
- No sample pretreatment
- No additional reagents
- An automatic background check prior to analyzing a sample

The XE-5000 Body Fluid Count Benefits:

- Improved productivity
- Decreased turnaround time (TAT)
- Decreased manual technical intervention
Improved Productivity & Efficiency
Maximizing Your Quality and Uptime

Productivity

The system provides a throughput of up to 150 samples per hour, producing high-quality results rapidly for physicians to use in diagnosis and treatment decisions.

- The system is compatible with Sysmex automation platforms, providing solutions that can be scalable to meet needs of all laboratories
- XE-5000 can also be used in conjunction with Sysmex WAM™ Decision Support Software for the Clinical Laboratory, which enhances sample and data workflow and improves turnaround time (TAT)

Improved Patient Care

An additional benefit to the XE-5000 analyzer is the ability to analyze patient samples when only small volumes of sample are available. The capillary mode (pre-dilute analysis mode) requiring only 40 μL of whole blood provides quality clinical data rapidly and consistently. Results from the capillary mode includes CBC, 6-part differential, retic and NRBC.

Excellent Performance

- Reliable platform
- Low sample volume requirements
- SNCS™ (Sysmex Network Communications System) remote monitoring system supporting maximum uptime
- Ranked by third party as highest vendor for reliability for 11 consecutive years*

*IMV ServiceTrak™ 2011

Your Complete Choice

The XE-5000 offers a comprehensive clinical testing menu for both whole blood and body fluids, providing accurate, precise and sensitive results. With its rapid throughput, your physicians receive quality, clinically relevant information to assist in the management and diagnosis of all patients.

Easy-to-use

- Intuitive software menus
- On-board help key for rapid troubleshooting
- Comprehensive quality control information
- Barcoded reagent management

Reportable, Diagnostic Information from a Single Sample Analysis

- 6-part whole blood WBC Differential (NE + Lymph + Mono + Eo + Baso + IG) with fluorescent NRBC count
- Body fluid cell count and differential
- Anemia evaluation parameters – Reticulocyte, IRF, and RET-Hε
- Optical and impedance platelet measurement capabilities
- Thrombopoietic activity assessment parameters (IPF)
- Quantitative Hematopoietic Progenitor Cell count (HPC)
Principles & Technologies

Fluorescent Flow Cytometry:
- WBC-Diff, IG, NRBC, RET, IRF, PLT-O
- RF-DC method:
  - HPC
- DC-Sheath-Flow:
  - PLT, RBC, HCT
- SLS-Method:
  - Hgb

31 Whole Blood Reportable Parameters

- WBC, RBC, HGB, HCT, MCV, MCH, MCHC, PLT (Impedance and Fluorescent Optical)
- NEUT%, LYMPH%, MONO%, EO%, BASO%, NRBC%, NEUT#, LYMPH#, MONO#, EO#, BASO#, NRBC#, IG%, IG#, HPC#, RDW-SD, RDW-CV, MPV, RET%, RET#, IRF, RET-Hr, IPF

7 Body Fluid Reportable Parameters

- WBC-BF, RBC-BF, MN%, MN#, PMN%, PMN#, TC-BF#

Linearity

- WBC: 0 – 440.00 x 10^3/µL
- RBC: 0 – 8.00 x 10^6/µL
- PLT: 0 – 5,000 x 10^3/µL

Body Fluid Linearity

- WBC-BF: 0.000 – 10.000 x 10^3/µL
- TC-BF: 0.000 – 10.000 x 10^3/µL
- RBC-BF: 0.000 – 5.000 x 10^6/µL

Throughput

- Whole Blood Mode: 150 samples/hr (max.)
- Body Fluid Mode: 38 samples/hr (max.)

Sample Volumes

- 200µL / 130µL (closed/open mode)
- 40µL for capillary mode

Data Storage

- 10,000 samples (incl. graphics)

Quality Control (Total QC Management)

- Levey-Jennings control chart
- X-bar M file
- Comprehensive QC files including “current” and “new” lot feature
- Online Online Quality Assurance Program - Insight™

Interfaces

- Sysmex WAM™ (HL7 & ASTM)

Dimensions / Weight

- Main unit: 27.8” x 35.9” x 28” / 178 lbs.
- Sampler: 22.8” x 7.7” x 14.8” / 26 lbs.
- IPU: 18” x 17.6” x 5.3” / 24 lbs.

Configurations

- Standalone
- Sysmex HST-N™, Sysmex XE-AlphaN™