



Laboratory Communiqué

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The Laboratory Communiqué is a quarterly publication released by Billings Clinic Laboratory Services as an informational tool for medical staff and laboratorians.

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New Hematology Instrumentation Coming



New SYSMEX instrumentation will be installed early 2019 which will improve our current workflow. Our current instruments were installed late 2010 and have served us well but are nearing their life expectancy and require frequent service calls. Our new instrumentation line will be more expansive by having two XN-10 instruments that will offer the same advanced technologies as our current Sysmex 5000 and Sysmex 1800 but with a much smaller footprint. In addition to the XNs, a Slide Maker/Stainer and CellaVision will also be on the automation line and facilitated by WAM, a middleware product interfaced to our Cerner LIS.

Sysmex XN-10 Functionality

- Immature granulocytes with every auto differential
- Nucleated RBC with every CBC
- Reticulocyte profiles including reticulocyte hemoglobin (RET-He) and immature reticulocyte fraction (IRF)
- Immature platelet fraction (IPF) and a fluorescent platelet count (PLT-F) designed for very low platelet counts.
- Body fluid analysis that includes a 2-part diff including polymorphonuclear #, % and mononuclear #, %.

BioFlash Panel Clarifications

aCL Panel

aCL IgG

aCL IgM

β2GP-1 IgG

β2GP-1 IgM

ANA Panels

ANA, IFA

Ro52

Ro60

SSB

Sm

RNP

Jo-1

Sci-70

ds-DNA

ANCA Panels

ANCA, IFA

MPO

PR3

GSE Panel

Serum IgA

tTG IgA

Reflex tests as needed

tTG IgM

DGP IgA

DGP IgM

XN-RU20

- Reagent Delivery System uses smaller, lighter reagent containers
- Concentrated diluent is diluted to create ready-to-use CellPack DCL.
- Fewer reagent changes provide greater instrument availability and improved workflow.

Sysmex SP-50 Integrated Slide Processing System

- Fully automatic standardized slide maker and stainer
- Top smear quality through automatic adjustment to the hematocrit for 8 different concentration areas
- Continuous handling through individual cassette staining
- High throughput with up to 120 stained slides per hour
- Selective random access, slide making either result-oriented and/or patient-oriented (SIS)
- No direct contact with blood sample
- Bar code sample identification
- Bar code slide identification

DI-60 CellaVision-Cell Image Analysis System

- Automatically locates and presents images of cells on blood smears
- Differential count of white blood cells
- Reduces subjectivity of cell identification with automatic cell location and pre-classification
- Standardize quality of results
- Characterization of red blood cell morphology and platelet estimation
- Reduces the time to review each smear
- Enables training and morphological standardization
- Performing differentials does not fatigue eyes, neck or wrists like microscopy can
- Regions of interest can be tagged, and comments added
- Cell images stored for easy retrieval

Update on CMV Safe Blood Products

Billings Clinic and all regional affiliates moved to CMV safe blood products effective Tuesday December 11, 2018. Blood products must have less than 5×10^6 White Blood Cells to be considered CMV safe. The 3rd generation Leukoreduction filters that are used in the manufacturing of blood products produce a product with 0.2×10^6 WBC's. AABB and Vitalant (formerly United Blood Services) support the use of CMV safe blood products, instead of CMV negative for all patient populations, including neonates and transplant patients. Literature (available upon request) also supports this change. Billings Clinic Blood Utilization Committee has reviewed, discussed and approved this change as well. If you have any questions or concerns, please feel free to contact Stacey LaFountain, Mary Smith or Dr. Trudie Muir at the Billings Clinic Laboratory.

GFR Calculation Change

Effective December 26, 2018, the calculation used for estimated glomerular filtration rate (eGFR) was changed from the previously used MDRD Study equation to the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation. The CKD-EPI equation is more accurate than the MDRD equation for patients with higher levels of GFR. If you have any questions, please contact Dr. Jeffrey Smith at 406-657-4069 or Marty Mahon at 406-435-2129.

Previous MDRD Study formula and interpretation:

Chronic Kidney Disease less than 60 mL/min/1.73m²

Kidney Failure less than 15 mL/min/1.73m²

Comment: Estimated GFR is a screening test only. This should not be used for determining medication dosages. GFR is calculated using the MDRD equation and normalized to 1.73m² body surface area.

New Formula and Interpretations:

Chronic Kidney Disease less than 60 mL/min/1.73m²

Kidney Failure less than 15 mL/min/1.73m²

Comment: Estimated GFR is a screening test only. This should not be used for determining medication dosages. GFR is calculated using the CKD EPI equation and normalized to 1.73m² body surface area.

$$\text{GFR} = 141 \times \min(\text{Scr}/\kappa, 1)^\alpha \times \max(\text{Scr}/\kappa, 1) - 1.209 \times 0.993^{\text{Age}} \times 1.018 \text{ [if female]} \times 1.159 \text{ [if black]}$$

Where:

Scr is serum creatinine in mg/dL

κ is 0.7 for females and 0.9 for males

α is -0.329 for females and -0.411 for males

min indicates the minimum of Scr/ κ or 1, and

max indicates the maximum of Scr/ κ or 1

BioFlash Panel Clarification

Anti-Cardiolipin Panel

Our Cardiolipin Panel includes the following 4 tests:

- aCL IgG and aCL IgM
- β 2GP-1 IgG and β 2GP-1 IgM

Frequently the β 2GP-1 assays are also ordered with the aCL Panel which will be duplicate orders. When this occurs, the duplicate tests will be cancelled.

BioFlash aCL Testing is performed on Friday dayshift.

ANA Panels

We have two ANA panels available in addition to the 8 ENA assays that can be ordered individually. The two panels are:



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1. ANA Panel- This order is all inclusive and includes the ANA IFA test performed in Microbiology and the ENA Panel (Extractable Nuclear Antigen assays) performed in Immunology on the BioFlash chemiluminescent analyzer.
2. ANA Reflex Panel-This panel starts with the ANA IFA and reflexes. If the IFA is negative, no further testing is performed. If the IFA is positive, reflex testing will include the IFA titer and the ENA Panel.

BioFlash ANA testing is performed Tuesday and Thursday on dayshift.

ANCA Panels

We have two ANCA panels which are available in addition to the MPO and PR3 individual assays. They are:

1. ANCA Panel- This order is all inclusive and includes the ANCA IFA test performed in Microbiology and the MPO and PR3 performed in Immunology on the BioFlash chemiluminescent analyzer.
2. ANCA Reflex Panel- This panel starts with the ANCA IFA and reflexes. If the IFA is negative, no further testing is performed. If the IFA is positive, reflex testing will include the IFA titer and the MPO and PR3.

BioFlash ANCA testing is performed on Monday, Wednesday and Friday dayshift. *Testing outside of this routine testing schedule will be available for critically ill patients. Please call the lab to alert staff of those cases.*

GSE (Gluten Sensitive Enteropathy) Panel

This panel includes initial testing with a serum IgA and a tTG IgA. Reflex testing occurs based on those results and will follow our GSE Algorithm.

The in-house GSE panel is recommended over the Celiac Disease Panel sent to Mayo Laboratories.

BioFlash GSE Panel and the individual Celiac assays are performed on Wednesday dayshift.

For more information about Billings Clinic Laboratory please call (406) 657-4060.
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