

# BCS<sup>®</sup> XP Coagulation System means standardized results, while meeting individual needs

West Virginia University Hospitals evaluated the hospitals' need for new coagulation instrumentation, with the goal of standardizing test results across the health system while maintaining the high level of hemostasis expertise.

By Patricia A. Miller-Canfield

West Virginia University Hospitals (WVUH) is a health system comprising five institutions in various regions. The largest of the system is the combination of Ruby Memorial Hospital and Chestnut Ridge Hospital – a medical center facility and an adjacent Psychiatric Hospital. The two hospitals have approximately 522 beds, along with a pediatric hospital. Together, they perform approximately two million laboratory tests yearly. The remaining institutions include a large regional/community hospital, a city hospital, a critical access hospital, an extended care facility, and numerous rural clinics and physicians' offices. Based on the diverse sizes of these institutions, annual laboratory test volume is as high as 1.5 million laboratory tests per year, and as low as 200,000 annual tests. WVUH serve as reference laboratories for most of West Virginia, excluding the Charleston and Huntington areas. Patients from throughout all of West Virginia are referred to WVUH for trauma, transplant, oncologic care, neurosurgery, high-risk obstetrics, and numerous other specialties. A progressive Hematology Department with several resident physicians operates both a hemophilia and a thrombophilia clinic, demanding special testing for these disorders. As a result, our WVUH lab is challenged to maintain the highest level of hemostasis expertise and cutting-edge technology to deliver a high level of care.



We recently evaluated the hospitals' need for new coagulation instrumentation, with the goal of standardizing test results across the health system while meeting the individual needs of each facility. Before choosing the vendor, the purchasing department, the administrative directors, and the medical director held several meetings to be certain that all hospitals' needs and desires were addressed. These included state-of-the-art equipment in various sizes and with various capacities. The equipment needed to be reliable, and vendor service, if required, was to be prompt and efficient. At our facilities, we had the high-volume BCS<sup>®</sup> System, and our smaller hospitals had various other systems from other vendors. At the time, Dade Behring (now a Siemens company) was scheduled to release a new high-volume analyzer never before

used for clinical testing in the United States. This system would improve on the current BCS<sup>®</sup> technology and would be known as the BCS<sup>®</sup> XP Coagulation Analyzer.

## The right choice: Siemens Healthcare Diagnostics

After only a few months of research, we chose Siemens, based on the reliability of equipment, history of prompt attention to needs, and continued dedication to improvements. The company offers a variety of coagulation equipment, from high-volume instruments, to mid- and low-volume analyzers. We decided that Ruby Memorial Hospital, our largest facility, would purchase two of these new BCS<sup>®</sup> XP analyzers to be used for clinical coagulation testing. During the

transition to the new equipment, we kept one BCS® System as a backup, since new analyzers sometimes require minor adjustments and interruption of testing was not an option. In October of 2006, Ruby Memorial Hospital received two new BCS® XP analyzers.

It was an exciting process for us. These two new machines would be the first ones placed in a U.S. clinical setting. After more than 10 years of high-quality service and experience with BCS® technology, it was still difficult to enact change in our institution, although our system needed updating and uniformity. Both Jefferson Memorial Hospital and City Hospital acquired Sysmex®CA-1500 and CA-560 mid- and low-volume instruments while United Hospital Center received BCS® technology. By placing these various instruments in our hospitals, we were able to standardize patient results in our system, utilizing one normal and therapeutic range throughout our WVUH system. We also consolidated our routine and special coagulation testing from two instrument platforms to a single instrument, and integrated improved turn-around time.

We implemented and validated the Sysmex® and BCS® Systems in our three smaller hospitals without incident over the next few weeks. Implementation of the BCS® XP Systems required the usual comparison studies and validations while introducing new technology. The BCS® XP analyzers employ clot-based testing, chromogenic technology, and immunologic testing in a single system while maintaining efficiency and high-throughput.

New hardware features on the analyzer include an expanded reagent cooling system, and more flexible reagent rack system with reagent stirring capacity, which we felt will make a difference to us when we run our specialty coagulation tests. New computer options on the BCS® XP System offer advantages for managing users of the system, tracing data, and improving security regarding system backups. Windows-based software is the operating system of the BCS® XP analyzers, and our techs were happy that the same computer screens from the Macintosh computer of the BCS® were depicted on the new instrument. This particular feature was favored by our technologists since almost everyone is familiar with Windows-based systems.

## BCS® XP Coagulation Systems: A success from the start

As a result of the new features on the BCS® XP and because of our fantastic Clinical Application Specialist, our implementation project went very smoothly. We currently have two BCS® XP Analyzers fully-operational, performing patient/client testing 24-hours per day, 7 days a week. Our BCS® XPs are workhorses for routine coagulation testing, factor assay performance, and other specialized coagulation testing. We exclusively use the Siemens routine and specialty reagents, which we are completely satisfied with. Siemens' ability to produce large lot sizes of reagent and sequester product adds value to our lab by reducing comparisons and calibrations to a minimum. In particular, for our Dade® Innovin® PT reagent, and our Dade® Actin® FSL APTT reagent, we consistently sequester our lot numbers for approximately 12 months. We also have the flexibility to reserve our specialty reagents. All analyzers are interfaced with our LISs;

ours at Ruby Memorial Hospital is Mysis (Sunquest). Whenever we discovered a "glitch" in the system – I believe only three, total – our service representatives were prompt and efficient in diagnosing the problems as either LIS- or instrument-related, and then worked with us to correct them. Our comparison and validation studies have been impressive with excellent correlations. We have had absolutely no surprises, except pleasant ones!

Choosing hemostasis equipment from Siemens was a wise choice for our system. We have formed a relationship and a partnership that includes high-quality instruments and reagents, rapid and reliable service, and skilled customer support. Keeping our staff up to speed with changes in the coagulation field is important to us, and we have been pleased with the continuing education offered to our technologists. As a pathologist, all of these components are essential to me, so we can continue to deliver the highest-quality patient care, and Siemens Healthcare Diagnostics has helped us achieve this.

Test / Reagent	Sample number (n)	Coefficient of correlation (r)	Slope	Intercept
Dade® Innovin® PT	85	0.9991	1.029	-0.63
INR	85	0.9987	1.020	-0.04
Actin® FSL APTT®	81	0.9969	0.941	1.50
Fibrinogen	86	0.9914	1.063	14.60
Advanced D-dimer	85	0.9956	0.851	-0.08
Thrombin Time	95	0.9967	0.998	-1.15
Antithrombin III	58	0.9468	0.931	6.20
vWF Activity	28	0.9850	1.000	-1.60
Lupus Anticoagulant Screen	32	0.9412	1.146	-4.89
Lupus Anticoagulant Confirm	33	0.9918	1.065	-2.13
LA1/LA2 Ratio	26	0.9454	1.150	-0.16
Factor VIII	45	0.9544	1.100	-8.09
Factor IX	9	0.9760	0.951	4.94
Factor XI	9	0.9968	0.998	1.36
Factor XII	10	0.9860	0.987	-0.15
Factor V	26	0.9732	0.902	5.44
Factor VII	14	0.9931	0.892	1.97
Factor X	14	0.9970	0.989	0.78

**1** Summary of method comparison studies between BCS® XP System and BCS® System