The AU5800 series is the newest addition to Beckman Coulter’s AU chemistry portfolio, representing the highest throughput and fastest chemistry analyzers in the AU family. With true random access capabilities and a throughput ranging from approximately 2,000 tests up to an impressive 9,800 tests per hour, the AU5800 is available in four different scalable models, positioned for the high-volume core hospital laboratory to the ultra-high-test volume commercial laboratory market segments.

Anchored around a set of core features that set the AU systems apart from the competition, the AU5800 series continues to follow high standards of AU reliability and maximum uptime with even more flexibility. Hardware consumables, reagents and operating software are standardized across the entire AU family to minimize training requirements and streamline inventory management.

The AU5800 is engineered for connectivity with Beckman Coulter’s Power Processor which allows for the integration of chemistry, immunoassay and clinical information systems. The comprehensive AU test menu consists of more than 125 convenient, bar-coded, liquid reagents that are standardized across the entire AU family of chemistry systems. The AU5800 employs three transportation lanes for intelligent sample management and a bypass lane provides flexible options for sample transportation by processing STAT samples and critical repeats prior to routine sample racks.

Beckman Coulter’s AU5800 series offers a clear and customizable upgrade path for laboratories, enabling them to add components as their workflow demands increase. AU5800 systems can be used as stand-alone instruments or are designed for connectivity with Beckman Coulter automation solutions, allowing for potential integration with the company’s clinical information systems and immunoassay testing platforms to meet a lab’s specific workflow performance needs.
Automation Abstract

Reducing Off-line Sample Handling: The Challenge for Laboratory Automation Systems
M.D., Senior Consultant Pathologist, Tan Tock Seng Hospital, Singapore

Total walk-away laboratory automation with absolutely no operator intervention is the dream of many laboratory staff but in reality, there will always be samples that require special or additional handling offline. Common reasons for off-line handling include sample with concentrations outside the analytical measuring range (e.g., dilutions), samples with clots detected, analytical flags, barcode errors, insufficient sample volume, lipaemic samples, samples requiring off-line testing on non-LAS platforms and samples requiring off-line sample prep prior to further on-line testing (e.g., serology samples with initial reactive results with require retesting in duplicate, elevated prolactin samples requiring polyethylene glycol (PEG) treatment to screen for the presence of macroprolactin).

In an effort to reduce this last category, we reviewed the results from PEG treatment of all hyperprolactinaemic samples at Tan Tock Seng Hospital over the last 2 years and showed a macroprolactin prevalence of 6.6% with the highest and median prolactin concentration in the PEG-positive (macroprolactin) group of 1008 mU/L and 433 mU/L respectively. These results show that PEG positivity amongst hyperprolactinaemic samples measured using the Beckman Coulter UniCel Dxl 800 prolactin assay is uncommon and is mostly seen at mildly elevated prolactin concentrations. Testing for macroprolactin on samples with extremely elevated prolactin concentrations is not required and a reduction in PEG testing volumes of up to 25-30% is possible by choosing the appropriate upper limit. A greater reduction of up to 50-60% can be made by eliminating testing on samples with low prolactin values, offering a total potential reduction in PEG testing of up to 90%.
In today’s complexing healthcare environment, popular question arises: “Is Total Laboratory Automation (TLA) the right way to go?” The answer can be in a form of question as well – how do we; as personnel involves in this industry; identify the needs, understand the situation, and take action in enabling the solutions?

To be more specific, let us look at several main challenges arise in our laboratory. We are talking about doing more with less, stringent quality requirement, increase in quantity demands, more educated patients and critically limited budgetary.

In many occasions, we’re able to underline key strategies to overcome these challenges. Some have been executed but not in extensive mode. For example we do integrate operational activities and we tried to implement better automation systems. Also, we mapped our processes in order to see opportunities that maybe left behind while doing any improvisation.

It shows good results but in reality, there are still lots to do – as some issues are still repeating. Quoting Dr. Robert Hawkins from Tan Tock Seng Hospital in Singapore, he mentioned that “Turn Around Time (TAT) metrics are the key performance indicator in our department…” this is also one of the most important measure to show the success of any system that we apply, whilst the scope of errors shouldn’t be limited to laboratory compartment only.

Normally, when we talk about clinical diagnostic laboratory improvisation, we will read the situation from 3 angles which are pre-analytical, analytical and post-analytical. We also look for solutions within these circles – which in many circumstances, are very restricted to the laboratory boundary.

We have key solutions to share with any local hospital and laboratory and it works in continuum…

Total Laboratory Automation Solution (TLAS), when properly implemented, has been proven to produce significant results in many aspects. It can give shorter and consistent TAT, enhance patient services, and may address overall laboratory concerns such as job satisfaction, overtime etc. The main objectives of having TLAS are:

| i. | To enhance overall aspects of safety – which includes quality management; |
| ii. | Improve effectiveness and efficiency level of all processes, procedures and protocols; |
| iii. | Increase productivity which will cover human resource management and cost. |

In principle, the scope of implementation must be across laboratory. It has to be Pre-Laboratory, Laboratory (which will look at pre-analytical, analytical and post-analytical in depth), and also Post-Laboratory (which may consider extensive networking intra & inter organization). This concept may involve multi-departments commitment as it will aims at overall patient and hospital management satisfaction.

For example, we know from many statistics that up to 70% errors happened in diagnosis were due to sample handling; which falls in the first part of the concept – the Pre-Laboratory. And yet, so little improvement has been done to tackle the issue.

Our organization believes that this concept will leads towards achieving above objectives. This solution concept is based on strong implementation foundations – the Lean & Six Sigma workflow analysis, efficient information management and effective change management (to cater resources and project management).

<table>
<thead>
<tr>
<th>No</th>
<th>Segments</th>
<th>Key Solutions</th>
<th>Main Components</th>
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<tbody>
<tr>
<td>2</td>
<td>Laboratory</td>
<td>Laboratory Automation System</td>
<td>Beckman Coulter Power Processor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(consists of pre-analytical instruments, chemistry + immunoassay instruments, automated stockyard, and conveyors).</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Post Laboratory</td>
<td>Web-based Information System</td>
<td>Hemasoft e-Delphyn LIS</td>
</tr>
</tbody>
</table>

Theoretically, by implementing this solution concept, the total TAT can be saved up to 57%, sample-related errors will significantly reduce, results can be viewed at real time, satisfaction level will boost up, and healthcare services will have better perception from all levels of users. The solution works excellently well in our neighboring countries e.g. Thailand and Singapore. If it is beneficial to improve our industry, we in Utas Maju are committed to work hand-in-hand with local healthcare organizations to bring up the quality to the next level.
Correlation Study And Establishing Reference Ranges For ESR Using Roller 20 PN

Ahmad Zakwan M1, Noor ‘Abidah MD2, Hamizah AH2, Narshah S1, Rosline H1, Tan DL1, Abuzar E1, Wan Zaidah A1

1 Department of Haematology & Transfusion Medicine Unit, School of Medical Sciences, Universiti Sains Malaysia. 2 Ulas Maju Sdn. Bhd.

ABSTRACT

This study focuses on ESR tests to see the correlations between two different automated ESR analysers and Westergren reference method (WM), and to establish laboratory reference range for local population.

INTRODUCTION

Length of Sedimentation Reaction in Blood (LSRB), which is commonly but incorrectly called the erythrocyte sedimentation rate (ESR), WM has a long standing history and tradition in clinical laboratories. ESR is widely used as a screening or monitoring test for patients with acute or chronic inflammatory diseases. Even as a reference technique for LSRB, WM has many variables and limitations. Alfaxis has developed a new automated ESR analyser which can give a result in 20 seconds with its Roller 20 PN. This technology analyses the aggregation capacity of red blood cells via optical density. However, this analyser still uses reference values of ESR from National Committee for Clinical Laboratory Standards (NCCLS) as a guideline.

OBJECTIVE

The aim of this study is to correlate ESR test on the new method (Roller 20PN) with the current method (Miracel X-20) and WM. Besides, it is also to establish an ESR laboratory reference range for local Malaysian adult population using Alfaxis Roller 20PN.

METHODS

This study uses different principles on getting ESR values, namely WM, semi-automated Westergren modified (Miracel X-20) and microphotometry aggregation (Roller 20PN).

For method correlation, 90 samples were collected at randomly distributed population and analysed using three different methods, with sample size is according to Westgard correlation reference. For establishment of ESR laboratory reference range for local adult population, sample collected from 90 healthy subjects, according to ICSH reference range calculation guideline, were tested. Then, reference range were calculated for healthy male and female. All the procedure followed manufacturer's instructions and ICSH guidelines for ESR test.

DISCUSSION

All data show good correlation, but R values are a bit lower as expected. Therefore, t-test was conducted. However, t-test shows there are no significant differences in the correlation between three methods. Reference interval has been established, with 4 to 20 mm/hr for male and 10 to 26 mm/hr for female. It is recommended to refer to this new and locally established reference intervals before any interpretation of laboratory test uses Alfaxis Roller 20PN.

CONCLUSION

This study shows that Roller 20 PN do not have significant difference with WM and also Miracel X-20, so this system is reliable to be used in ESR measurement.

RESULTS

Correlation (between Alfaxis Roller 20PN & Miracel X-20)

Correlation (between Alfaxis Roller 20PN & WM)

Correlation (between Miracel X-20 & Westergren)

Correlation (between Roller 20PN and Miracel X-20)

Bias between Roller 20PN and Miracel X-20

Bias between Roller 20PN and WM

Bias between Miracel X-20 and WM

Correlation (r value and t value)

<table>
<thead>
<tr>
<th>Correlation</th>
<th>r value</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roller 20PN / Miracel X-20</td>
<td>0.8720</td>
<td>0.0046</td>
</tr>
<tr>
<td>Roller 20PN / Westergren</td>
<td>0.9216</td>
<td>0.0003</td>
</tr>
<tr>
<td>Miracel X-20 / Westergren</td>
<td>0.9010</td>
<td>0.0087</td>
</tr>
</tbody>
</table>

Erythrocyte laboratory reference range for local adult population using Roller 20PN

<table>
<thead>
<tr>
<th>Gender</th>
<th>n</th>
<th>Normality Test</th>
<th>Mean (SD)</th>
<th>95% CI</th>
<th>Reference Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>51</td>
<td>Normal (P=0.3813)</td>
<td>12 (6)</td>
<td>10-14</td>
<td>4-20</td>
</tr>
<tr>
<td>Female</td>
<td>49</td>
<td>Normal (P=0.7814)</td>
<td>15 (5)</td>
<td>15-22</td>
<td>10-28</td>
</tr>
</tbody>
</table>

ACKNOWLEDGEMENT

Special thanks to Universiti Sains Malaysia (USM) for allowing and supporting this research to be done, especially to Department of Haematology, School of Medical Sciences and Hospital USM. A token of appreciation to the volunteers who were willing to undertake this study, their cooperation is highly appreciated.

Grateful thanks also to Ulas Maju Sdn Bhd for the commitment shown in making this research a success with financial and technical support expertise concurred.
Vascular access or venipuncture is required for many reasons such as to administer fluids, drugs or solution and to obtain blood sample for tests. Currently, vascular access is performed with unaided visualization by trained clinicians. These procedures only rely on what is observed looking at the patient’s skin and by the clinician’s ability to palpate the vessel. The process is problematic even for trained personnel as there are multiple variables that affect venipuncture. There are many important and reasons for adopting new technologies which is vein viewing device to improve vascular access success. Vein viewing device is a non-invasive electronic device for visualization of patient vasculature.

**REASONS FOR UTILIZATION OF VEIN VISUALIZATION DEVICES**

**Success Rate**
The peripheral catheter insertion success rates have proved to be increased when using a vein visualization device. First attempt success as shown by statistics below:

<table>
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<tr>
<th>Peripheral Catheter First Attempt Insertion Success Rates</th>
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<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Unaided Visualization</td>
</tr>
<tr>
<td>Visualization Device</td>
</tr>
</tbody>
</table>

From data above, use vein visualization devices significantly increases first attempt success rates in both adults and pediatrics.

**Satisfaction Comparison**

Survey satisfaction evaluations were performed on clinician and patients when using the AV300 by AccuVein. Survey results showed 87% of the clinicians have agreed the device assisted in visualizing veins and 89% said they are better able to assess the patient’s vasculature. Important to patient safety was the finding that 76% of clinicians agreed they were able to avoid unnecessary sticks while using the device. *This device does not substitute a nurse’s traditional skill in locating veins by visual or feeling means, but rather this device supplements their skills and enhances them*” Sánchez-Morago GV. et al. 2010, Viewing veins with AccuVein AV300.

**Expenses & Payment by IV Catheter Complication**

There were 140 claims for injuries between 1975 and 2000 related to peripheral vascular catheterization and half of all claims related to peripheral vascular catheters resulted in payment for injury. 17% from all catheter complication is infection complication. Eventhough less frequent, systemic infection resulting from peripheral access is serious. It is start with local infection, progressing to bacteremia and sometimes further progressing to more serious septicemia. Infection is costly as patients may seek financial compensation and increased costs of treating infection with antibiotic therapy and longer stay at hospital. Complications resulting from accessing the vasculature may be reduced by using a vein visualization device, as direct visualization improves accuracy and decrease blind sticks.

Obviously attaining vascular access need to improve its success to preserve a patient’s vasculature and avoid complications.
KEDAH STATE CME: “AIM HIGH IN QUALITY”

On April 12, 2012, a CME program organized by Jabatan Kesihatan Negeri Kedah (JKNK) together with Utas Maju Sdn Bhd was held at the Klinik Kesihatan Daerah Pendang. The main objective of the program is to share knowledge with invited representatives from hospitals and health clinics in the state of kedah. There were 40 representatives attended this program. The main objective of this program is to improve the quality of the laboratory with the theme "Aim high in quality".

Selamat Menyambut Ramadhan Al-Mubarak
We would like to wish Selamat Berpuasa to all our customers.
May this Ramadhan increase our faith and belief to the extent we never go again on the path of mistake.
Wish you a sweet Ramadhan Month from Utas Maju Sdn Bhd.

PRESENTATION STATE CME: PRE-ANALYTICAL, ANALYTICAL & POST ANALYTICAL WORKSHOP

On 28th April 2012, Pre-Analytical, Analytical and Post Analytical Workshop was successfully organized by Jabatan Kesihatan Negeri Pulau Pinang (JKNPP) in correlation with Utas Maju Sdn. The workshop was held in Klinik Kesihatan Seberang Jaya. 32 participants from various Klinik Kesihatan attended the program. This whole day workshop hold the objective to increase the understanding about the important of Pre-analytical, Analytical and Post Analytical in ensuring the aim and objective of laboratory testing achieved.

Utas Maju Sdn Bhd is moving step ahead by complying with GDPMD-Draft requirements. We take it into our daily practice as a benchmark in providing quality goods and services to our customers. Rest assured, we are committed. Nothing less.

By; Haiyan Mohd Nakhaie
(Product Manager)

MANAGEMENT PROFILE

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<thead>
<tr>
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</tr>
<tr>
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