

BRISK

NEWS

TOWARDS EXCELLENT CUSTOMER SERVICE | UTAS MAJU SDN BHD NEWSLETTER

GASTAT-NAVI

HAND TYPE BLOOD
GAS ANALYZER



REMISOL ADVANCE
MIDDLEWARE
BY BECKMAN COULTER

VOLUME NO.

34

BECKMAN
COULTER

TOP DINNER SOUTH EAST ASIA DISTRIBUTORS

JANUARY 16, 2019
Kuala Lumpur, Malaysia



AWARD 2018
Hospital Sultan Abdul

MAJU Sdn Bhd
Malaysia



Beckman Coulter

- 2019 South East Asia Distributor Meeting

On 16th Jan 2019, during the South East Asia Distributor Meeting 2019, Utas Maju has received two awards, namely Highest Core Growth Award and Innovation Award on continuous achievement in implementation of track automation system for chemistry and immunoassay in Malaysia. The award was received by Mr Adnan Bin Md Noh as Managing Director of Utas Maju Sdn. Bhd.

Congratulations Utas Maju !

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GASTAT-navi

WHAT IS BLOOD GAS ANALYSIS?

Blood gas analysis or arterial blood gas (ABG) is a group of test performed together to measure pH, oxygen and carbon dioxide in blood; usually in artery. Your red blood cells transport oxygen and carbon dioxide (known as blood gases) throughout the body. As blood passes through your lungs, oxygen flows into the blood while carbon dioxide flows out from the blood into the lungs to be expelled from the body.

WHY IT IS IMPORTANT?

The test is an essential part of diagnosis and provides information on how well your lungs, heart and kidneys are working, along with other tests. It is used to evaluate how effective the lungs are delivering oxygen to the blood (oxygenation) and how efficient they eliminate carbon dioxide from it (ventilation). Also, it indicates how well the lungs and kidneys are interacting to maintain normal pH (acid-base balance). Disorders of acid-base balance can lead to severe complications in many disease states, and if the abnormality is so severe, it may become a life-threatening.

A doctor may order blood gas test when someone has symptoms of oxygen, carbon dioxide or pH imbalance. When someone is having a worsening symptom of a respiratory problem, such as difficulty breathing or shortness of breath, a blood gas test is ordered. Apart of that, doctors may use blood gas analysis for patient who is on ventilation to monitor the effectiveness of supplemental oxygen treatment for the patient.

Blood gases can also be used to detect an acid-base imbalance, which can occur in kidney failure, heart failure, uncontrolled diabetes, severe infections, and drug overdose. They may be ordered along with other tests, such as electrolytes to determine if an electrolyte imbalance is present, BUN and creatinine tests to evaluate kidney function, and glucose to evaluate blood sugar concentrations. Blood gas analysis helps in diagnosis and managing the acid-base balance of the high-risk patients as well as those critically ill patients in the Intensive Care Unit.

SIMPLE ACID-BASE DISORDER

Disorder	Type	Primary Disturbance	Compensatory Mechanism
Respiratory	Acidosis	High $p\text{CO}_2$	H^+ excretion; HCO_3^- generation
	Alkalosis	High $p\text{CO}_2$	HCO_3^- excretion
Metabolic	Acidosis	High $p\text{CO}_3$	Hyperventilation (Lowering $p\text{CO}_2$)
	Alkalosis	High $p\text{CO}_3$	Hyperventilation (Higher $p\text{CO}_3$)



Problems in Blood Gas Analysis

The accuracy of ABG result is depend on the proper manner of sample handling as ABG is vulnerable to pre-analytical error such as:

01

Present of air bubble in the sample. Air bubbles may cause lower of pCO₂ and increase in pO₂

02

Delayed in analyzing ABG sample (may cause in error of pO₂ reading)

03

Inadequate mixing with heparin (increases the possibility of blood clotting)

04

Incorrect type and amount of anticoagulant used

05

Improper storage during transportation of the sample

06

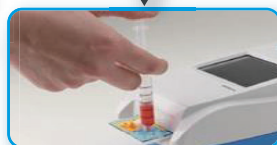
False or mixed patient identification



GASTAT-navi Features

- Easy operation and safe
- Automatic pre-heating (enable usage at cold place)
- User friendly color touch panel LCD display
- Direct sample injection
- QR code management
- Long shelf-life sensor card
- 1 point calibration before each analysis
- Battery and plug-in mode
- Data storage of 1000 results
- Integrated printer and easy loading thermal paper
- Compact and light (weight: 1.4 kg)

ABG Result
in 3 Easy Steps



How GASTAT-navi Helps in Improving the Quality of Blood Gas Analysis

GASTAT-navi is an advanced handheld blood gas analyzer that provides real-time lab quality result within minutes to accelerate the patient care decision-making process. The features present in GASTAT-navi can helps to reduce the pre-analytical errors as mentioned previously.

Immediate use at anytime and anywhere

- Reduce the delayed in blood gas analysis where may effect in pO₂ result.

Patient information insertion

- Avoid false and mixed patient sample by entering patient ID before analysis

Use of heparin syringe

- Using heparin coated syringe as recomended by NCCLS

Short analysis time of 45 seconds

- Fast sample analysis

In blood gas analysis, pre-analytical plays the biggest part in producing an accurate and reliable result. GASTAT-navi helps in reducing the errors but at the end, a proper sample handling is the main key in order to get a good and valid ABG result. Inaccurate result may lead to wrong diagnosis and treatment, that may cause harm to patient.



Test	pH	pCO ₂	pO ₂	Na ⁺	K ⁺	Ca ²⁺	Hct
Available							
Sensor Card 091	✓	✓	✓				✓
Sensor Card 092	✓	✓	✓	✓	✓		✓
Sensor Card 093	✓	✓		✓	✓	✓	✓

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2. Williams A. J. (1998). ABC of oxygen: assessing and interpreting arterial blood gases and acid-base balance. BMJ (Clinical research ed.), 317(7167), 1213-6.
3. Sood, P., Paul, G., & Puri, S. (2010). Interpretation of arterial blood gas. Indian journal of critical care medicine : peer-reviewed, official publication of Indian Society of Critical Care Medicine, 14(2), 57-64.
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“Software that acts as a bridge between an operating system or database and applications, especially on a network” [1].

Middleware has two separate but related meanings. One is software that enables two separate programs to interact with each other. Another is a software layer inside a single application that allows different aspects of the program to work together.

The most common type of middleware is software that enables two separate programs to communicate and share data. An example is software on a Web server that enables the HTTP server to interact with scripting engines like PHP or ASP when processing webpage data. Middleware also enables the Web server to access data from a database when loading content for a webpage. In each of these instances, the middleware runs quietly in the background, but serves as an important "glue" between the server applications.

Middleware also helps different applications communicate over a computer network. It enables different protocols to work together by translating the information that is passed from one system to another. This type of middleware may be installed as a "Services-Oriented Architecture" (SOA) component on each system on the network. When data is sent between these systems, it is first processed by the middleware component, then output in a standard format that each system can understand [2].

What is Middleware?

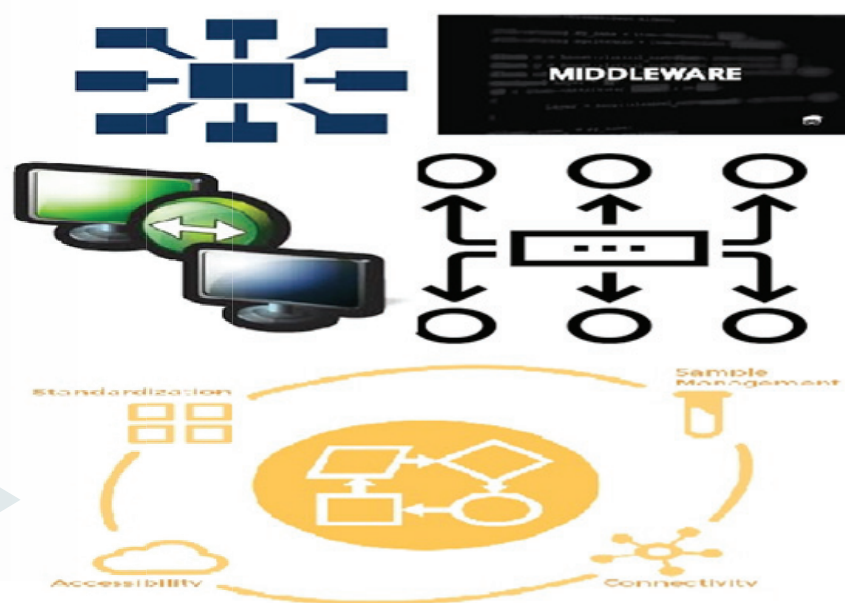


Figure 1: Picture shows the middleware acts as a bridge between server or database and application software.

Why Using Middleware?

Middleware is a piece of software that connects disparate computer systems and allows them to talk. Both for example in hospitals Laboratory Information System (LIS) and Analysers sides have mechanisms for communication and the middleware sends the data from one side to the other. This allows the systems to run without worrying about what the other system is doing.

With network-based interactions, a client, or requesting program, can make a request. That client is typically an application that resides on the front end, which is where the user interacts with software. Resources such as databases, message queues, NoSQL data stores and file servers are often referred to as being part of the back end. The name middleware stems from the fact that it is the software that sits between the client-side request on the front end and the back-end resource being requested [3].

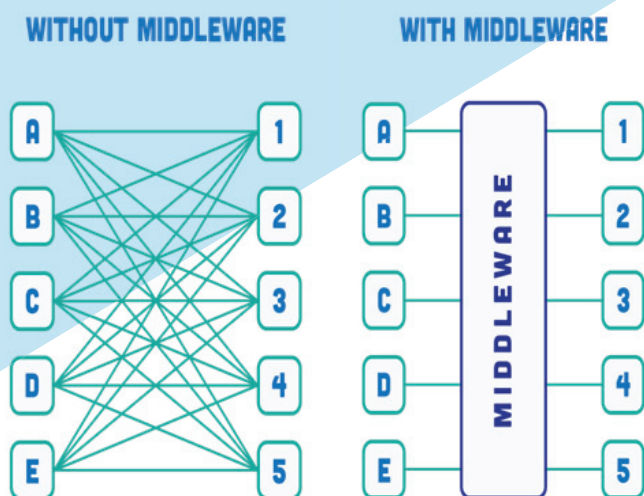


Figure 2: Diagram show the communication between operating system and application software with and without middleware.

*Driven by ISO15189: the need to maintain sample traceability; this is paramount to ensure lab quality results Lab consolidation drives an increase of outreach samples; the ability to track the draw and transport of those samples for testing helps ensure the highest quality and the lab's ability to meet regulatory requirements.

Remisol Advance Middleware

Remisol Advance (RADV) is current Middleware solution developed by Normand. RADV has Multi-site capability, open system, advanced QC management, and auto validation. Modules Remisol Advance consists of [4]:-

1. Multisite Connectivity

Remisol Advance features multisite networking capabilities to standardize and enable centralized management of labs across multiple sites.

2. Custom Lists

Provides customers the capability of utilizing the lab's data in a customized fashion to transform raw data into actionable information.

3. Peer QC Data Export

Features the capability to export quality control (QC) data to third party peer QC application to help customers in their workflow

4. Auto verification Rules Library

To help customers overcome the initial barrier of auto verification and to standardize the rule writing process, the rules sets were established

5. Intranet

Browser based, light version of the software that provides a reduced hardware solution with limited functionality

6. Monitor IT

Patient Data tracking module to trace the history of patient results beyond the standard archival period

7. Sample Delivery Management

Browser based sample tracking module to provide core labs complete quality management solution throughout the transport process

Multi-site capability & Extended Quality Control

Multi-site capability:

- Delta checking of patient results across the network
- Apply rules across multiple sites
- Control all networked labs from one location
- Manage labs on different LIS without standardizing the LIS

Extended Quality Control (EQC)

- Ensure lab processes are in check 24 hours a day, seven days a week.
- Increased confidence in reported results by identifying instrument and control irregularities faster.
- Saves labs money by reducing utilization of QC materials. EQC allows centralizing management of analyser controls:
- EQC allows defining an unlimited number of controls, using Westgard rules, Six Sigma or ranges.
- A failed result can either be included or excluded from statistical calculations, may necessitate action to be taken.
- That failed result can block auto-validation, or even stop programming the affected analyser => Interaction with Validation Console allows 4 levels of actions: warning, error, stop validation, stop programming.
- EQC offers numerous ways of displaying results; by list, report, statistics, or graphical representation (Levey Jennings, Shewhart, distribution)

Dashboard

With the increasing size of laboratories, often composed of multiple sites, it becomes important to be able to monitor the activity of a laboratory from a central location. Production level KPI's to assist Labs in managing and monitoring workflow.

- Routine sample metrics
- QC metrics
- Test metrics
- Auto validation

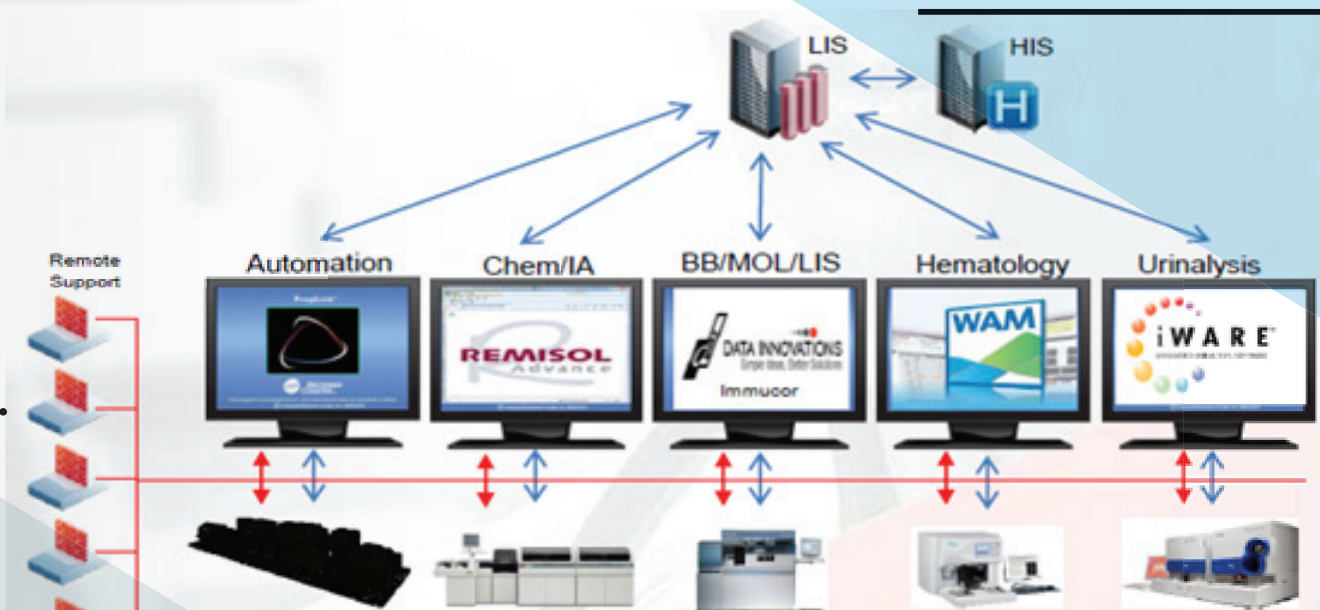
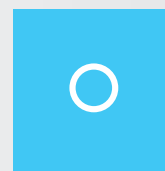


Figure 3: Diagram shows the interaction between HIS/LIS through middleware to analyser.

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2. <https://techterms.com/definition/middleware>
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4. Remisol Advance Catalogue

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