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â€œAre you ready for Laboratory Transformation?â€?

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Rising populations in emerging economies will lead to increased demand for medical devices, diagnostic equipment and pharmaceuticals in the near future. At the same time, this demand will leverage technological advances. In vitro diagnostics (IVD) is one such industry that is witnessing proliferation of technology in terms of new assays, workflow excellence, turn-around time, etc.

IVD plays an integral role in healthcare & disease management. The influence of diagnostic tests on clinical decisions is very high - almost 75% of clinical decisions are based on a diagnostic test. The global in vitro diagnostics market is estimated to reach $75.1 billion by 2020, growing at a CAGR of 5.8%1. The Indian IVD industry, still in the inception stage is valued at more than $500 Million and is expected to surpass $1.5 Billion by 20182.

Growth Drivers for IVD

Demographic Change

With a population of more than 1 billion, India is world's second largest country and therefore a significant market to the healthcare providers. The demographic change has led to growth in tier || and ||| cities creating disposable income ultimately leading to a change in lifestyle patterns and an increase in the lifestyle diseases like cardiovascular diseases, lung disease, cancer, obesity, diabetes, etc. One in four Indians is at a risk of non-communicable lifestyle disease3.

Accurate and quick diagnosis of diseases has thus become a crucial factor in providing quality patient care.

Turn-around Time (TAT)

The diagnostics labs operate in a dynamic environment. In addition to the accurate diagnosis, reduced turn-around time

(TAT), consistent delivery and affordability have become the need of the hour. Turn-around time is the most noteworthy manifestation of laboratory service and a crucial barometer of laboratory performance. As a result, laboratories of all sizes are adapting total automation across pre-analytical, analytical and post-analytical processes integrated with information technology (IT) since information systems are a key differentiator among major healthcare providers.

Technological Innovations

The innovations and discoveries in the IVD market are transforming the healthcare arena. The IVD market includes a variety of advanced and cutting edge technologies to project the disease state, choose the right treatment and monitor the patients response to the treatment. An array of assay caters to wide spectrum of diseases.

Automation, a unified solution developed expressly for the changing workload and expanding needs of today's clinical laboratory is playing a key role in the entire diagnostics set up. It provides unlimited potential for lab optimization by combining peak performance, adaptability, and intelligent technology. However, the challenges of implementing lab automation can be formidable. It is a complex undertaking to meet business objectives and clinical requirements while managing logistics, timelines, people and technology to achieve workflow excellence. And the operations must continue uninterrupted during this transition!

The work in any laboratory is typically broken in three phases.

1. The pre-analytical phase: this comprises of patient sample identification, test request registration and billing, sample collection, labeling by barcode, separation followed by transport and sample processing.
2. The analytical phase: this comprises of properly calibrating the instruments, the quality control process and analysis of samples.
3. The post-analytical phase: This includes all the processes that follow the testing of the samples. Namely, the validation of test results, transcription of results into the records, printing and dispatch of the results. Also, the data so generated needs to be stored. The samples also need to be stored for specified period of time for repeats or add-ons.

With this background, it is critical for laboratories to optimize the following flow across these three phases.

â€¢ The Sample flow has to do with the collection of the samples, to sorting, transportation until their disposal and/or they are sent out.
â€¢ The Data (Information) flow goes from order entry to receiving or accessing, quality control, etc. all the way to validation, reporting and billing.
â€¢ The Material flow includes inventory tracking; invoicing and payment etc.

Removal of non value-added steps such as reducing sample touch points, manual bench sorting aliquoting & transportation, sample rerun, results review is a key to achieving workflow excellence.

Automation - the way ahead !

Statistics indicate that there has been an approximately 25 percent increase in laboratory tests due to screening and follow up for lipid profile, blood glucose levels, glycosylated haemoglobin, speciality tests for thyroid hormone levels, vitamin levels, infectious serology and basic cancer markers(4,5)

The diagnostics and pathological lab test market has the potential to grow at a CAGR of 18.9 percent(4,5)

With Automation, labs of all sizes can transform their operations to harness change and drive maximum performance and efficiency. Laboratories can also customize their automation solutions by identifying the sustainable workflows. Labs can consolidate multidiscipline testing into a single, fully automated solution or improve spatial efficiency, tube utilization, or resource allocation. Siemens has helped diagnostic laboratories leverage the benefits of automation and information technology since 1998-making workflow more efficient and flexible while improving turnaround times, reducing errors, and cutting costs.

Laboratory Automation allows for a broader diagnostic scope and increased accuracy.

Ultimately, laboratories will be able to perform more tests in-house and reduce their dependency on outsourcing services in addition to the decrease in number of duplicative laboratory process and increase in throughput.

This will also allow staff to be better utilized beyond bench testing and routine operation including but not limited to patient interaction, finance, marketing services and strategic planning.