Medlab Middle East
By Informa Markets

Daily Dose

Day 1, Monday 5 February 2024

The official daily newspaper of the Medlab Middle East Exhibition

Medlab 2024 to showcase the driving force of innovation

The latest edition of Medlab Middle East promises a peek into the laboratory of the future through exciting showcases and expert-led sessions.

By Farhana Chowdhury

The next generation of laboratories, fuelled by the convergence of breakthroughs in bioscience and computing power, is an evolving phenomenon that will enhance medical discovery, research, and development soon. In the dynamic landscape of scientific research and healthcare, lab professionals are pivotal in advancing various disciplines, from biology and chemistry to diagnostics and beyond.

Automation is at the heart of this evolution, bringing with it a promise of efficiency as well as easing the burden of burnout and the Great Resignation. This focus area is expected to reach a market value of about US$5.7 billion by 2030, according to MarketResearch.com, marking a CAGR growth of 5.9 per cent from US$3.6 billion in 2022.

But just as the demands of the field have evolved and diversified, specialists are often under pressure to stay abreast of trends and drive innovation within laboratory settings. This requires adopting a strategic approach that combines technical proficiency, continuous learning, and professional development.

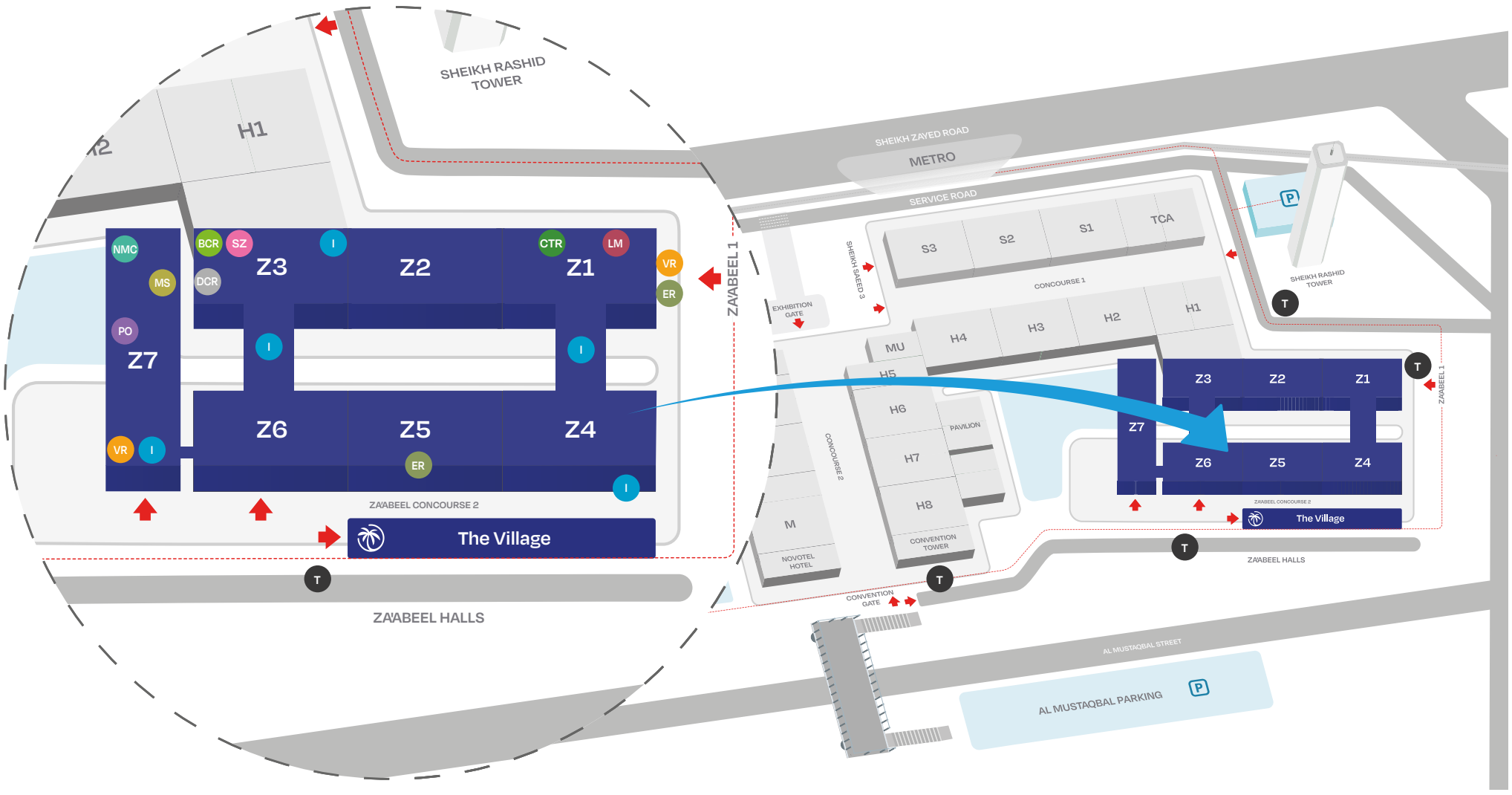
Bringing solutions to the forefront while addressing some of the pressing challenges that plague the sector, Medlab Middle East kicks off a wholesome new edition at the World Trade Centre, starting today until February 8. This year promises an even bigger format with 12 CME conferences led by over 130 regional and international speakers, each bringing exciting strategies and valuable titbits of case studies to nurture a community of informed and future-ready industry professionals.

Attendees will gain access to intensive and interactive courses that span across laboratory management, lab quality management, clinical chemistry, immunology, haematology, clinical microbiology, blood transfusion medicine, histopathology, future of lab and sustainability in the lab. What sets the latest edition of Medlab Middle East apart this time is the introduction of two new conference tracks — NextGen Medicine and Clinical Genomic Interpretation. Each subject signifies the ever-changing laboratory environment. Space is the new frontier and scientific working areas are gearing up to transition into smart hubs. This involves the integration of functional design with digital twin technology, automation, and cloud technology.

From AI-driven organ analysis for transplants to data governance, the NextGen Medicine conference is set to dive in the new age of precision medicine today and tomorrow. The track will also feature exclusive sessions with renowned leaders in the region, including Dr. Aaron Han from the Mohammed bin Rashid University of Medicine and Health Sciences in Dubai. On the other hand, the Clinical Genomic Interpretation, which takes place on February 7, is aimed to enhance collaboration, and standardise processes in focus areas such as genomic testing for diagnosis and accurate data interpretation. With Dr. Ali Hajeer, Vice-President of Academic Affairs, RAK Medical and Health Sciences University in Ras Al Khaimah, as the scientific chair, and experts from the US, Germany and Saudi Arabia, each session is carefully curated to position genomics as an important tool for disease management.

During the four-day Congress, attendees can also enjoy exclusive networking opportunities, share knowledge, establish partnerships, discover the latest in innovation and research, as well as gain inspiration from state-of-the-art technology and equipment to build and secure a sustainable laboratory of the future.

Medlab Middle East 2024 Floor Plan



Stand key prefix

- Entrance/Exit
- The Village
- Parking
- Taxi drop-off
- BCR Bangkok conference room
- NMC Nextgen Medicine conference room
- DCR Dubai conference room
- CTR Cape Town room
- SZ Sustainability zone
- PO Press office
- MS Medlab Series stand
- LM Lagos room
- I Infobooth
- ER Exhibitor registration
- VR Visitor registration

NextGen Medicine Track Agenda

In partnership with Express Med Diagnostics & Research | Location: NextGen Medicine Room, Za'abeel Hall 7

Focused on the transformative potential of early disease detection and preventive medicine, the NextGen Medicine Conference delves into the intersection of medicine and artificial intelligence, discussing cutting-edge AI applications in diagnostics, treatment development, personalised medicine, and healthcare delivery. Engaging discussions and presentations provide attendees with insights into the latest breakthroughs in genomics, proteomics, and innovative biomarkers that empower early diagnosis of diverse medical conditions.

Day 1 - Monday, 5 February

10:00 Opening remarks

Session 1: Genome Projects – Middle East

10:15 Introduction to the Arab Genome Projects: The genomic history of the Middle East and analysis of human genetic diversity
10:45 Qatar paediatric precision medicine programme
11:15 Arab Pangenome Reference and the future of Clinical Genomics
11:45 The Prostate Biomarkers (ProBio) trial: Inferring clinical utility of circulating cell-free DNA biomarkers for precision medicine in metastatic prostate cancer

Session 2: Precision Medicine Targeted Therapies

14:40 Precision medicine of oncology
15:00 AI in pathology
15:20 Predictive biomarkers in lung cancer
15:40 Studying melanoma evolution in space and time and one cell at the time
16:30 Importance of precision oncology – need to adopt the latest technologies for improving patient outcomes
16:50 Tumour microenvironment - Next Generation IHC
17:10 Personalised oncology

Day 2 - Tuesday, 6 February

10:00 Opening remarks

Session 1: Digitalisation, Automation, Innovation

10:10 Using genome sequencing to enroll physical biometric
10:30 Organ quality analysis for transplantation using Artificial Intelligence
10:50 CRISPR: Future of disease diagnosis and treatment
11:10 Data governance, and real-world evidence use of secondary data
11:50 Recent advances in health tech solutions

Session 2: Precision Medicine Targeted Therapies (Part 2)

15:00 Personalised medicine advancement – Middle East perspective
15:25 Applying forensic science into early cancer detection
15:50 Role of Next Generation Sequencing in malignancies management in the Middle East
16:15 Role of precision pharmacogenomics in cancer management
16:40 Molecular pathology of solid tumour
17:05 Breast cancer genomics – Middle Eastern Perspective

Medlab Middle East at a glance

Medlab Middle East 2024 Congress

Monday, February 5

Conference	Room	Start	Finish
Laboratory Management	Dubai Room, Za'abeel Hall 3	10:15	17:30
Haematology	Bangkok Room, Za'abeel Hall 3	10:15	17:30
NextGen Medicine	NextGen Medicine Room, Za'abeel Hall 7	10:00	17:30

Tuesday, February 6

Conference	Room	Start	Finish
Lab Quality Management	Dubai Room, Za'abeel Hall 3	10:10	17:30
Clinical Microbiology	Bangkok Room, Za'abeel Hall 3	10:30	17:00
Histopathology	Lagos Room, Za'abeel Hall 1	10:15	17:00
NextGen Medicine	NextGen Medicine Room, Za'abeel Hall 7	10:00	17:30

Panel

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Industry workshops

Gain first-hand insights into the latest innovations in the medical laboratory industry through the industry workshops feature, where industry leaders share their knowledge and expertise.

Monday, February 5

From Spatial Discovery to Spatial Signatures

Hosted by Akoya Biosciences

Location: NextGen Medicine Conference room, Z7.N10, 12:45 - 13:45

Discovering and choosing predictive biomarkers enabled by spatial phenotyping with multiplex imaging allows efficient assessment of spatial phenotypic signatures. We show that these biomarkers may be successfully deployed in clinical settings with standardised, reproducible workflows for multiplex imaging using multiplex immunofluorescence (mIF) technology, enabled by Akoya Biosciences systems.

Tuesday, February 6

Get Spatial with Nanostring: Take your discoveries to the next level

Hosted by NanoString Technologies

Location: NextGen Medicine Conference room, Z7.N10, 13:30 - 14:30

In this session, you will be introduced to how NanoString's platforms allow researchers to combine whole-tissue imaging, gene expression, and protein data to advance their research. Achieve multicellular analysis with GeoMx Digital Spatial Profiler or zoom in to view single cells with the CosMx Spatial Molecular Imager (SMI). Join this session to see into the private lives of these cells in situ, at both cellular and subcellular levels supported by AtoMx Spatial Informatics Platform (SIP), a cloud-based solution that provides advanced data analytics and global collaboration capabilities.

Product showcases

Immerse yourself in the latest technological advancements brought to you by global companies that are shaping the landscape of the medical laboratory industry.

Monday, February 5

- **AstraGene:** An emerging brand in the diagnostics manufacturing space, 14:00 - 14:30
- From early discovery to clinical trials: Unlocking the power of dynamic insights in human biology using **SomaLogic** technology, 14:30 - 15:00
- Solutions for laboratory diagnostics by **Vector-Best**, 15:00 - 15:30
- Automated Desktop Immunoassay Analysers: The **Tosoh** AIA-CL solution, 15:30 - 16:00

Location: Cape Town room, Z1.C02

Harness the power of AI to transform medical lab management

With careful planning, collaboration, and adherence to regulatory guidelines, AI can significantly enhance the capabilities and performance of medical laboratories.

By Dr. Samer Ellahham, MD

The field of medical laboratory management plays a crucial role in healthcare, providing essential diagnostic information and supporting clinical decision-making. With the rapid advancements in technology, particularly in the realm of artificial intelligence (AI), medical laboratories have the opportunity to integrate AI solutions to enhance efficiency, accuracy, and overall quality of laboratory operations. This submission explores the potential benefits, challenges, and implications of incorporating AI in medical laboratory management.

Benefits of AI in medical laboratory management

Enhanced efficiency: AI-powered automation can streamline routine laboratory processes, such as sample sorting, test result interpretation, and data analysis. This automation reduces manual labour, increases throughput, and improves turnaround times, allowing for faster and more efficient delivery of test results.

Improved accuracy: AI algorithms have demonstrated excellent performance in tasks such as image analysis and pattern recognition. By incorporating AI into laboratory workflows, errors and variability associated with human factors can be minimised, leading to more accurate and reliable test results.

Quality assurance: AI systems can continuously monitor laboratory processes, flagging any deviations or anomalies that may indicate quality control issues. This real-time monitoring enhances quality assurance and assists in maintaining compliance with regulatory standards.

Predictive analytics: AI algorithms can analyse vast amounts of data from patient records, laboratory results, and other relevant sources to identify patterns and correlations. This analysis enables the prediction of disease progression, patient outcomes, and treatment responses, aiding in personalised patient care and proactive intervention strategies.

Resource optimisation: AI can optimise resource allocation in medical laboratories by predicting test demand, inventory management, and staffing needs. This optimisation helps laboratories maintain cost-effectiveness while ensuring efficient utilisation of resources.

Challenges and implications

Data integration and standardisation: Effective integration of AI in medical laboratory management requires robust data infrastructure, including interoperability and standardisation of data formats across different systems. This challenge necessitates collaboration between laboratory information management system (LIMS) providers, healthcare institutions, and AI developers.

Data privacy and security: Medical laboratories handle sensitive patient data, making data privacy and security critical concerns. AI systems must adhere to stringent data protection regulations and employ robust security measures to safeguard patient information.

Algorithm bias and interpretability: AI algorithms are only as reliable as the data they are trained on. Bias present in the training data can lead to biased outcomes. It is essential to address algorithmic bias and ensure transparency and interpretability of AI systems to gain the trust of healthcare professionals and patients.

Ethical considerations: As AI systems become more integrated into medical laboratory management, ethical considerations arise. Transparency in the development and deployment of AI algorithms is crucial to ensure that decisions made by AI systems align with ethical guidelines and principles. Additionally, the potential impact of AI on the workforce should be considered, including the need for retraining and upskilling of laboratory personnel to work alongside AI technologies.

Regulatory framework: The integration of AI in medical laboratory management requires a robust regulatory framework to ensure the safety, efficacy, and ethical use of AI systems. Regulatory bodies must establish guidelines and standards for the development, validation, and deployment of AI algorithms in laboratory settings.

Collaboration and training: Successful implementation of AI in medical laboratory management requires collaboration between laboratory professionals, AI experts, and healthcare institutions. Training laboratory personnel on how to effectively use and interpret AI-generated insights is essential to maximise the benefits of AI technologies.

Cost considerations: While AI has the potential to improve efficiency and reduce costs in medical laboratory management, there are initial investment costs associated with implementing AI systems. Laboratories must carefully evaluate the cost-benefit ratio before adopting AI technologies and consider long-term sustainability.

Case studies: Several medical laboratories have already started harnessing the power of AI in their operations. For example, AI algorithms have been successfully used in image analysis for pathology, radiology, and cytology, improving diagnostic accuracy and efficiency. AI has also been employed in predictive analytics to identify patients at risk of developing certain diseases, enabling early intervention.

Conclusion

Artificial intelligence has the potential to revolutionise medical laboratory management, offering numerous benefits such as enhanced efficiency, improved accuracy, predictive analytics, quality assurance, and resource optimisation. However, the integration of AI in laboratory workflows comes with its own set of challenges and implications, including data integration, privacy, bias, and regulatory considerations. Addressing these challenges and ensuring ethical use of AI technologies will be crucial for the successful implementation of AI in medical laboratory management.

With careful planning, collaboration, and adherence to regulatory guidelines, AI can significantly enhance the capabilities and performance of medical laboratories, ultimately leading to improved patient care.

Dr. Samer Ellahham will be speaking at the Laboratory Management conference at 4.15pm today.

References

1. Topol, E. J. (2019). High-performance medicine: the convergence of human and artificial intelligence. Nature medicine, 25(1), 44-56.
2. Esteva, A., Kuprel, B., Novoa, R. A., Ko, J., Swetter, S. M., Blau, H. M., & Thrun, S. (2017). Dermatologist-level classification of skin cancer with deep neural networks. Nature, 542(7639), 115-118.
3. Saria, S., & Goldenberg, A. (2015). Subtyping: What it is and its role in precision medicine. IEEE Intelligent Systems, 30(4), 70-75.

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Deepen industry connections: Network with key stakeholders within the Middle East healthcare market, establish valuable partnerships and explore collaboration opportunities.

Gain expert insights: Attend insightful presentations and panel discussions delivered by the company team of specialists.

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TM Media, the microbiology brand of Titan Biotech Ltd., has been a trusted provider of top-quality microbial products since 1992. With a strong focus on quality, reliability, and sustainability, the company have become a renowned name in the field of microbiology. Its diverse product portfolio includes biological media bases, 2,000-plus dehydrated culture media, media supplements, antibiotic discs, and ready-to-use media.

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Laboratory accreditation: not a luxury anymore

The advancement of medical technology is another critical aspect that underscores the importance of laboratory accreditation.

By Abdulaziz AlJohani

Laboratory accreditation, once regarded as a mark of distinction for a select few, has now become an indispensable standard in the healthcare industry. This evolution reflects the growing complexities and demands of modern healthcare, emphasising the crucial role of laboratories in patient care. For laboratorians and healthcare professionals, understanding this shift is not just about compliance but about embracing a culture of excellence and safety.

At the heart of laboratory accreditation lies the commitment to quality assurance and patient safety. Accredited laboratories are rigorously evaluated to ensure that they meet specific standards in their testing processes. This scrutiny guarantees the accuracy and reliability of diagnostic tests, directly impacting patient outcomes. By adhering to these standards, laboratories not only uphold the highest levels of service but also play a pivotal role in patient care, influencing treatment decisions and overall healthcare quality.

However, accreditation extends beyond mere quality control. It ensures that laboratories remain compliant with evolving national and international regulatory standards. This compliance is increasingly important in a world where healthcare policies and insurance reimbursements are intricately linked to laboratory performance standards. Accreditation, thus, becomes a bridge between laboratories and the complex web of healthcare regulations, ensuring that they stay relevant and compliant in a dynamic regulatory landscape.

The advancement of medical technology is another critical aspect that underscores the importance of laboratory accreditation. The healthcare sector is witnessing rapid technological innovations, from automated testing equipment to cutting-edge diagnostic methodologies. Accreditation bodies incorporate these advancements into their standards, ensuring that laboratories are not only equipped with the latest technologies but also proficient in their application. This alignment with technological progress not only enhances laboratory operations but also ensures that patients benefit from the latest advancements in medical science.

Moreover, laboratory accreditation has a significant impact on global healthcare initiatives. Accredited laboratories gain international recognition, facilitating collaborations and data sharing across borders. This global recognition is particularly crucial in handling public health emergencies, such as pandemic responses, where standardised, reliable data is essential for coordinated international efforts.

The journey towards accreditation, however, is not without its challenges. Laboratories often face hurdles such as resource constraints, lack of awareness, and the complexities inherent in the accreditation process. Overcoming these challenges requires a multifaceted approach, including governmental support, targeted training programmes, and streamlined processes that make accreditation more accessible and achievable for laboratories of all sizes and scopes.

The continuous improvement aspect of accreditation cannot be overstated. Unlike a one-time certification, accreditation is a dynamic process, encouraging laboratories to continually enhance their practices and stay abreast of industry advancements. This culture of continuous improvement is not just beneficial for the laboratories; it also contributes to the professional growth and development of the laboratory personnel.

In conclusion, laboratory accreditation has transformed from a perceived luxury into a fundamental requirement in the healthcare sector. It is a testament to a laboratory's commitment to quality, compliance, efficiency, and continuous improvement. As healthcare continues to evolve, the role of accredited laboratories becomes increasingly integral, directly influencing patient care and global health outcomes.

For laboratorians and healthcare professionals, embracing this shift is not just a matter of regulatory compliance; it's a step towards ensuring excellence in healthcare delivery.

Abdulaziz AlJohani will be speaking at the Lab Quality Management conference on February 6 at 11.15am.

Abdulaziz M Aljohani is a dynamic professional with over 20 years of experience in laboratory management and quality improvement. Recognised for pioneering the first laboratory in the Middle East to achieve A2lA ISO 15189 accreditation, along with accreditation by CBAHI and the College of American Pathologists (CAP), he is a seasoned speaker at national and international symposiums, emphasising the importance of quality standards in medical laboratories.

He is also a certified ISO 15189 lead assessor and Specialty Team Leader of the Clinical Laboratory and Blood Bank Program in CBAHI, and Assessor for the National Newborn Screening Laboratories Accreditation Program. He further contributes to the development of national standards, including CLBB and PHC CBAHI programmes.

UAE lab equipment market is expected to reach US$1.5 billion by 2027

The upward trajectory is also reflected in the UAE's clinical diagnostic market.

The laboratory equipment market in the UAE is thriving, according to a recent report by Grand View Research, which suggests the sector will reach US$1.5 billion by 2027. The report estimates that the market will increase at a CAGR of over 7 per cent over the next three years, fuelled by factors such as a rising population, the growing prevalence of chronic diseases and continued investments in the healthcare sector.

This upward trajectory is also reflected in the UAE's clinical diagnostic market. Currently valued at US$345 million, a recent study conducted by Insights 10, estimates the market to reach US$592 million by 2030. These figures suggest that efforts by the UAE Government to promote investment in the medical industry sector are yielding positive results, and the UAE's healthcare expenditure was expected to amount to US$272 billion last year (source: Alpen Capital).

The UAE Government has set some ambitious goals for its healthcare sector, such as increasing the number of hospitals to 200 by 2025 and the number of beds to 25,000 by 2030. To achieve these goals, the government has implemented various measures across multiple channels, with a particular emphasis on improving medical laboratories.

"Medical laboratories play a crucial role in healthcare by providing unbiased and factual information that ensures the delivery of safe and effective medical treatments to patients. With the aid of technological advancements and scientific developments, the laboratory industry has undergone remarkable progress, resulting in faster, more accurate diagnoses and improved patient outcomes," said Tom Coleman, Group Exhibition Director, Informa Markets Healthcare.

Medical laboratories are responsible for delivering up to 90 per cent of the unbiased information that appears in medical records, including test results, analysis, and other important data. In addition, medical laboratories contribute significantly to the decision-making process in healthcare, with estimates suggesting that they play a role in 60-70 per cent of all medical lab decisions.

The upcoming edition of Medlab Middle East will showcase the latest breakthroughs and innovations in the medical laboratory industry which include automation, Artificial Intelligence (AI) and NextGen medicine. Given the significant potential for precision medicine to transform the laboratory industry, Medlab Middle East has launched a new NextGen Medicine Zone at the exhibition this year, in association with Express Med Diagnostics & Research.

The NextGen Medicine zone and conference will showcase all the latest developments in the field worldwide, including updates on Arab genome projects, which are working towards the development of groundbreaking treatments tailored to the Middle Eastern population.

In addition, the Next Gen Medicine Conference will share fascinating insights into the Qatar Paediatric Precision Medicine Program with the latest updates on AI in precision medicine and will delve into how the field is impacting the way a range of diseases are diagnosed and treated. Over 1,000 delegates are expected to attend, and more than 100 exhibitors will be featured in this new exhibition feature.

The 2024 edition of Medlab Middle East will feature industry leaders such as Abbott, Sysmex, Biomerieux, Beckman Coulter, BD, Illumnia, Eurouimmun, Randox, and Mindray among others. In addition to the Next Gen Medicine zone, key tracks at Medlab Middle East 2024 include Laboratory Management, Haematology, Quality Management, Clinical Microbiology, Histopathology, Clinical Chemistry, Clinical Genomic Interpretation, Future of the Lab, Immunology, Blood Transfusion Medicine, and Sustainability in the Lab.

Medlab Middle East is the MENA region's largest medical laboratory exhibition and congress. Following a record-breaking year in 2023, when Dh1.9 billion of deals were secured, Medlab is expected to welcome more than 30,000 visitors and 900 exhibitors this year, representing a 20 per cent increase in exhibitor numbers from 2023.

Pharmacogenomics in oncology: advancing personalised cancer treatment

Pharmacogenomics has the potential to revolutionise cancer treatment by enabling effective treatment tailored to an individual patient's unique genetic makeup.

By Dr. Mohamed Nagy

Pharmacogenomics (PGx) studies how an individual's genetic makeup affects their drug response. In cancer, PGx helps personalise treatment by identifying drug efficacy and toxicity variations based on genetic variants.

Why is PGx important in oncology?

Cancer is a complex disease with diverse tumor types and individual responses to treatment. PGx can help optimise drug dosages, minimise side effects, and improve treatment outcomes for individual patients.

What are the main types of genetic variations relevant to PGx in cancer?

Germline variations: These are inherited genetic changes that remain constant throughout the body. They influence drug metabolism and response across various medications.

Somatic variations: These are acquired mutations found only in cancer cells and may directly affect drug targets, influencing the effectiveness of specific cancer treatments.

Which regulatory bodies provide PGx information on drug labels?

Several organisations, including the US FDA, European Medicines Agency (EMA), Swissmedic, Health Canada (HCSC), and Pharmaceuticals and Medical Devices Agency (PMDA) in Japan, provide PGx information in drug labels. However, the level of detail and recommendations can vary between them.

What are some examples of PGx guidelines for specific drugs in oncology?

- **Thiopurines:** Guidelines recommend dose adjustments based on TPMT and NUDT15 genotypes to avoid severe myelosuppression.
- **Fluoropyrimidines:** Recommendations advise genotyping for DPYD variants and suggest alternative drugs or dose adjustments for patients with low enzyme activity to prevent severe side effects.
- **Cisplatin:** TPMT preemptive testing is recommended for children receiving cisplatin due to its association with hearing loss.
- **Anthracyclines:** CPNDS guidelines recommend genotyping for UGT1A6*4, SLC28A3, and RARG variants in pediatric patients to assess anthracycline cardiotoxicity risk and adjust monitoring and treatment plans accordingly.

What are the challenges of PGx implementation in clinical practice?

Despite its immense potential to revolutionise cancer treatment, PGx faces several challenges in becoming a routine part of clinical practice. These challenges can be broadly categorised into three main areas:

1. Awareness and education

- **Limited awareness among healthcare workers and patients:** Many healthcare professionals lack sufficient knowledge and training in PGx, hindering their ability to interpret test results and integrate them into treatment decisions. Moreover, patients often remain unaware of how their genes can influence their response to medication, limiting their active participation in treatment choices.
- **Inconsistent guidelines and regulations:** Lack of standardised guidelines across different healthcare systems creates confusion and inconsistency in PGx implementation.

2. Integration and accessibility

- **Logistical hurdles in integrating testing into routine care:** Integrating PGx testing into existing clinical workflows presents logistical challenges, requiring additional resources, personnel, and efficient data management systems.
- **Reimbursement issues:** Uncertainty about insurance coverage for PGx testing can limit its accessibility for patients, particularly those with limited resources.

3. Ethical consideration

- **Privacy concerns:** Concerns about the privacy and security of genetic data require careful consideration and robust ethical frameworks to build trust and protect patient autonomy.
- **Informed consent and potential discrimination:** Ensuring patients understand the implications of PGx testing and obtaining informed consent before testing requires clear communication and education. Avoiding potential discrimination based on genetic information is crucial.

What are the future directions to accelerate PGx implementation?

Future efforts should focus on:

- **Education and training programmes:** Focused educational programmes for healthcare workers and patients can increase awareness, improve understanding, and build confidence in PGx.
- **Development of standardised guidelines and decision support tools:** Collaborative efforts among stakeholders can establish clear guidelines and user-friendly tools to facilitate seamless integration of PGx into clinical practice.
- **Research and development:** Continuing research on the genetic basis of drug response and developing new, cost-effective PGx tests can improve affordability and accessibility.
- **Advocacy and policy changes:** Engaging policymakers and healthcare systems to recognise the value of PGx and explore reimbursement models can ensure broader access to this technology.
- **Addressing ethical concerns:** Building robust ethical frameworks prioritising patient privacy, informed consent, and non-discrimination can foster trust and public acceptance of PGx

Finally, pharmacogenomics (PGx) has the potential to revolutionise cancer treatment by enabling personalised, safer, and more effective treatment tailored to an individual patient's unique genetic makeup.

Despite several challenges in its implementation, we can overcome these hurdles by pursuing future directions that focus on education, research, policy changes, and ethical considerations. By doing so, we can pave the way for the widespread implementation of PGx in clinical practice and improve treatment outcomes for cancer patients.

Dr. Mohamed Nagy will be speaking at the NextGen Medicine conference on February 6 at 4.15pm.

Discover the new age of personalised health strategies

The new NextGen zone at Medlab Middle East is set to shine the spotlight on transformative breakthroughs in science and healthcare.

In collaboration with Express Med Diagnostics and Research, Medlab Middle East will host a new zone and conference dedicated to NextGen medicine, which uses genome sequencing to create targeted healthcare strategies for specific populations and individuals across a range of diseases and rare conditions. The Human Genome Project successfully developed the first complete sequence of the human genome in 2023, paving the way for one of the most transformative breakthroughs in science and healthcare.

Dr. Karolina Kobus, Head of Genomics and Precision Medicine Lab Technology and Innovation Advisor at Express Med Diagnostics and Research, said: "In recent years, the advent of next-generation sequencing (NGS), proteomics and artificial intelligence (AI) have allowed research centres worldwide to initiate scientific programmes, discover new molecular pathways and develop personalised therapies. There are three key components of NextGen medicine — prevention, early detection, and the development of targeted treatments. The future of medicine is all about moving away from a 'one size fits all' approach, to more personalised health strategies.

"Global differences in the prevalence and distribution of diseases and their risk factors are a complex phenomenon determined by population history, adaptive evolution, environmental, social, demographic, cultural and genetic factors. Genomic inheritance is unique for every population, and this means that disease patterns might differ in a Caucasian individual compared with those native to the Middle East, for example. While significant progress has been made in genome projects in the Western world, we must acknowledge that the current human genome that is widely referenced is mainly based on data from Caucasian individuals."

The goal for researchers is to replace the old 'linear' reference genome with a 'graph' genome that better represents genetic diversity across populations. In May 2023, the Human Pangenome Reference Consortium (HPRC) published an update on the human pangenome based on 47 individuals, which represents a wider genetic diversity. The Arab population however is still underrepresented in the human reference genome, a situation that researchers around the region are working to rectify.

Tom Coleman, Group Exhibition Director, Informa Markets Healthcare, said: "The Middle East genome projects have the potential to contribute significantly to global science and improve healthcare in the region. This field of study is extremely promising, and the findings could lead to major advancements in the treatment of various illnesses, such as diabetes, heart disease, and cancer.

"Medlab's partnership with Express Med Diagnostics and Research at Medlab Middle East will showcase the latest advancements in medical technology, precision diagnostics and medical laboratory solutions. Chaired by Dr. Karolina Kobus, the NextGen Medicine Conference will bring together top industry experts, researchers, and healthcare professionals who are driving innovations forward. The conference will share the latest updates on regional genome projects and delve into pressing topics such as early cancer detection, precision oncology, preventative health screening, and longevity."

In March 2023, the UAE launched a 10-year National Genome Strategy to support the development and implementation of genomic research projects and improve public health priorities in the UAE. The project aims to accelerate developments in personalised medicine and combat chronic and genetic diseases.

The Emirati Genome Programme is the founding project of the UAE's National Genome Strategy and will explore the genetic profile of Emiratis using cutting-edge DNA sequencing and artificial intelligence.

Are laboratories ready for operational excellence and quality awards?

The time has come for the clinical laboratories community to launch centres of excellence in niche diagnosis and specialised testing.

By Dr. Nashat Nafouri

In 2006, I wrote an article emphasising the necessity of building the hierarchy of a quality pyramid in the Gulf Countries Council (GCC) clinical laboratories, starting with mastering the daily quality control standards (QC) and followed by launching a comprehensive laboratory quality assurance (QA) system. This would then set the foundation of a quality management system (QMS) until it reaches maturity with a total quality management system (TQM). Finally, the seed of quality culture would flourish and dominate to set the ground for sustainable continuous quality improvement cycles. This journey took almost two decades to mature and many different types of laboratory accreditations and peer review were utilised as tools to achieve desired quality standards.

The most popular laboratory accreditation that had a strong footprint in the region is the College of American Pathologists (CAP). It started with a few laboratories being accredited in the Kingdom of Saudi Arabia back in 2002, and then spread over the years in the region to become the most predominant international laboratory accreditation in the GCC region, with a total of 240 accredited laboratories and 11 accredited laboratories in other Arab countries in 2023.

After the reform of ISO 15189, it became the second excelling accreditation model expanding in the Middle East where many laboratories seeking its certification. In addition to international accreditations, the Kingdom of Saudi Arabia managed to establish its national accreditation program offered by the Central Board for Accrediting Healthcare Institutions (CBAHI) and released its first edition for clinical laboratories and blood banks in January 2015. Now it is mandatory to obtain this kingdom-wide to be licensed lab for practice. In Dubai, any type of accreditation was mandatory to be obtained to be licensed since 2006.

In summary, laboratory accreditations played a vital role in advancing quality standards of practice in clinical laboratories and became its cornerstone.

Over the two decades, many technological leaps, mind shifts, and transformations have taken place and changed the business landscape in healthcare. Clinical laboratories have been at the forefront of the fact that 60 per cent to 70 per cent of diseases detection, diagnosis, and treatment depend on laboratory testing.

Variability remains the enemy of quality due to many characteristics, including differences among patients or clients, and differences in the way the same service is rendered by the same or different people. If laboratories are successful at applying methods of achieving greatness, but then stop doing them, the lab would slide backwards from great to good or worse. There is no single defining action for achieving greatness such as no grand program, no killer innovation, no solitary lucky break, nor great revelation. The only way to remain great is to deploy those approaches that make the lab great.

Quality should become like the DNA and embedded in every process in the laboratory scope of services. It should become the norm and habit of every employee in all laboratory phases from pre-analytical, analytical, and post-analytical. Laboratories that adapt the organisational excellence roadmap from prescription to consultation work through people and the responsibility of spreading the culture is everyone's daily business, not just during the accreditation period.

Health is driven by multiple factors that are intricately linked – of which medical care forms 10 per cent and 40 per cent is personal behaviour. The demand is justified now for those laboratories to shift from the static accreditation mode to the dynamic organisational excellence culture

I strongly believe that the benchmarking concept deployed in quality comparisons should be re-defined in healthcare. It is not just a reported Key Performance Indicators (KPIs) or a Dashboard for the C-suite. It is an improvement process in which an organisation measures its strategies, operations, or internal processes performance against that of best-in-class organisations within or outside of its industry, determines how those organisations achieve their performance levels and use this information to improve its performance levels.

It is all about attitude, culture, workplace environment and commitment in organisations that are willing to thrive through organisational excellence much more than accreditations. The roadmap to excellence has started alongside the continuous quality improvement (CQI) within the last two decades and the time has come for the clinical laboratories community to move out of its classical nutshell and benefit from the maturation of its quality standards, build on the potential of its human capital, and start launching centres of excellence in niche diagnosis and specialised testing.

It is a glorious moment of history for clinical laboratories to unleash their potential and seek all kinds of quality awards and recognition they deserve for their many years of dedication to quality improvement. In my opinion, clinical laboratories are the pride of healthcare, especially after the remarkable achievement in saving lives considering the recent COVID-19 pandemic.

Is the laboratory leadership ready for such change and would classical lab directors evolve or dissolve with it?

The answer to this question was addressed in an article "Laboratory Leadership" where the first edition of Laboratory Leadership Competency Framework published by the World Health Organization (WHO) in 2019 was introduced to establish a unified "know-how" model, which can be used to build sustainable national health laboratory systems that are a component of overall health systems. The Framework is intended to be used as a tool in mentoring current and emerging laboratory leaders engaged in the process of building, strengthening, and sustaining national laboratory systems. It can be used as a roadmap to build an effective and efficient learning and training program for leadership and used as a benchmark tool to assess competency of not only laboratory leadership but healthcare leaders worldwide.

The metaverse and clinical laboratories practices

With the acceleration of digital technology and the discoveries of human genome project in 2000, it became evident that 6 characters 0, 1, A, T, C, and G are rebooting medicine and health in modern medicine today to enhance the quality of life. I personally strongly believe that the human DNA discoveries combined with Information Technology (IT) and Quality 4.0 are forming the new "Trilogy Matrix" for the upcoming generations where diseases, cancers, and syndromes can be prevented not just predicated and the quality of human life will be much better with efficient and cost-effective prevention, diagnostics and treatments.

The big data in laboratories, blockchain, and artificial intelligence (AR) shall accelerate the predication of diseases, unveil scientific mysteries, and provide state-of-the-art solutions to enhance quality of life, life span longevity, and prevent chronic and genetic disorders.

In conclusion, achieving a culture of excellence in clinical laboratories is crucial for ensuring accurate diagnostic results, patient safety, and overall healthcare quality. Innovation and creativity complained with laboratory big data, blockchain, and AI tools are the fuel that will ignite the laboraterians potential for remarkable discoveries in the upcoming years.

Finally, laboratory's leadership has the roadmap for organisational excellence now and the model to build, mentor, coach, equip, and assess future leaders to be the leaders who can build success through people, achieve elite quality awards, and tell a story about how technology improves culture, collaboration, competency, community, sustainability, and leadership.

Dr. Nashat Nafouri is the Chair of Healthcare Interest Group, Executive Officer of Saudi Quality Council, and Executive Consultant of Quality Logic. He will be speaking at the Lab Quality Management conference on February 6 at 4.45pm.

Elevating healthcare innovation and sustainability

BD demonstrates latest medical technologies to help enhance healthcare delivery.

The Dubai branch of BD (Becton, Dickinson, and Company), a leading global medical technology company, is marking its presence at the four-day event to showcase their latest innovations as part of its commitment to drive advancements in patient care, safety and sustainable healthcare practices.

"Our commitment is to foster a robust, innovative, and responsible healthcare system, one that keeps pace with global changes," said Maher Elhassan, Vice President and General Manager, BD Middle East, North Africa, and Turkey. "Our participation at Medlab Middle East this year will be pivotal as we will highlight cutting-edge practices and technologies that prioritise patient and caregiver safety. Through BD's continual innovation and collaboration with healthcare entities in the region, we aim to not only drive more operational sustainability but also fortify healthcare systems against future challenges."

BD is also highlighting its commitment to sustainable healthcare through three foundational focus pillars: patient safety, healthcare worker well-being, and operational efficiency.

Earlier this week, the company showcased BD Rowa technologies at its booth in Arab Health 2024. This award-winning automated dispensing robot technology streamlines medication management, encompassing ordering, logistics, storage, and dispensing processes freeing up more time for healthcare professionals to focus on patient care.

BD will be in Zabeel Hall5 Z5.E10. The company's experts will also be on the ground to host discussions on best practices and demonstrate solutions.

Role of labs in POC testing under ISO 15189:2022 and EQA for testing accuracy

Both place heavy emphasis on patient safety and satisfaction while allowing more flexibility in terms of laboratory structure.

By Dr. Lucy Perrone

In December 2022, the International Standards Organization (ISO) released a new revision of its standard for medical testing laboratories, ISO 15189. Based on input from a wide range of professionals, academics, and government advisors from around the world, the changes in ISO 15189:2022 address the advent of new technologies, evolving laboratory structures, and advancements in the practice of patient care such as point of care (POC) testing.

It places heavy emphasis on patient safety and satisfaction while allowing more flexibility in terms of laboratory structure. By being less prescriptive about how requirements should be implemented, this revised standard allows labs to implement practices that work for their unique situation while continuing to keep patients safe.

Maintaining patient safety in point of care testing

As testing strategies have become more reliant on lower complexity analytical tools, testing can move closer to patients providing results faster and making testing more convenient. Staff whose roles did not previously include diagnostic testing can help address global laboratory staffing shortages by being trained to perform tests at the point of care but need additional training and ongoing assessment to ensure high quality of test results.

Inaccurate diagnostic test results have a ripple effect: they burden medical systems with unnecessary procedures, erode patient trust, pollute data used to determine health policy, and – worst of all – result in patient harm. Currently, diagnostic errors contribute to approximately 10 per cent of preventable patient deaths, and medical reviews suggest that they account for six to 17 per cent of adverse events in hospitals.

To reduce the risk to patients as less specialised staff begin performing diagnostic testing, there is a strong need for quality management, oversight, and external quality analysis (EQA). Indeed, ISO 15189:2022 requires laboratories and point of care testing locations to subscribe to an EQA programme for each kind of testing that each site provides.

Even if a point of care testing site is overseen by a main diagnostic lab, each point of care testing site needs to subscribe to their own EQA programmes to ensure a high quality of testing at each location. The relationship between each point of care testing service location and the lab overseeing it must be elucidated and documented as part of adherence to the standard.

EQA as a tool for maintaining testing accuracy

While EQA is a necessary step for a lab to become accredited to the ISO 15189 standard, a subscription to an EQA programme can provide value beyond simply ensuring labs meet a minimum quality bar. It's important to recognise EQA as a tool for continual improvement and education of staff and refinement of procedure and quality practice. EQA providers have a unique opportunity to be a part of improving patient safety by helping labs find sources of error and working with the lab to remediate them. Some EQA providers – like Canadian Microbiology Proficiency Testing (CMPT) – expand the scope of evaluation to the pre and post analytical phase by offering simulated products that mimic real samples and providing critiques on not only the results of the test, but on the reporting of those results.

The global COVID-19 pandemic helped highlight the many benefits – and challenges – of bringing testing closer to the patient. In Canada and throughout the world, point of care testing locations for COVID-19 enabled health authorities to handle the greatly expanded volume of tests required to maintain population health and safety. Tests were simple to use but were often performed by less-experienced staff who were not as familiar with the intricacies of running and interpreting Rapid Antigen Diagnostics (RADs) or Nucleic Acid Amplification Tests (NAATs). It is worth mentioning, however, that even experienced staff can make mistakes or have misconceptions about a particular test.

At CMPT, our COVID-19 proficiency testing programme was launched in March 2021. The programme was designed for RAD and NAAT testing methods and included six shipments per year, each containing four samples which either contained or did not contain SARS-CoV-2 virus. Importantly, the concentration of the samples was varied to ensure that positive samples might be strong, medium, or weakly positive to simulate varying viral concentration in a real sample.

While NAAT performance was high from the very beginning, RAD testing performance was initially low at 46 per cent accuracy in 2021. In evaluating this data, CMPT found that for medium positive samples, the accuracy rate was 42 +/- 13 per cent, and that weakly positive bands were largely being reported as negative.

Since CMPT was aware of testing methods being used for its samples, labs using RAD tests were identified and given coaching on how to correctly interpret a medium or weakly positive result. This intervention was near-real time, and enabled labs to address the gap in training quickly. As a result, RAD testing accuracy improved rapidly, eventually reaching 93 +/- 7 per cent – roughly equivalent to NAAT accuracy – after eight months.

Total enrolment of labs in our proficiency testing programme for COVID-19 peaked in July 2022 with 110 testing locations, many of which were not testing labs and had not needed to be accredited before. When surveyed, one third of respondents had never heard of proficiency testing and were not fully aware of the accreditation process and its requirements. Not only does this suggest an explanation as to why some testing sites may have had trouble correctly interpreting the tests, it also indicates a need for discussion, education, coaching, and mentorship as point of care testing in community settings becomes more common.

Point of care testing is on the rise for many reasons – staffing shortages, increased testing volume, patients' desire for convenience – and will likely be a driver of improved population health. But with this large systemic change comes a need for great care as well as increased and continual training and education. ISO 15189:2022's requirement for testing sites to perform EQA will help ensure patients stay safe, but it is up to EQA providers to ensure their schemes exercise as much of the testing process as possible and that they identify issues and provide educational feedback to their subscribers. As bastions of testing quality, EQA providers are in a unique position to help ensure patient safety.

References available on request.

Dr. Lucy Perrone is the Professor of Laboratory Quality at the Dept of Pathology and Laboratory Medicine at the University of British Columbia in Canada. She will be speaking at the Laboratory Management conference at 1pm today.

Promea Therapeutics' portfolio set to enhance workflow efficiency

From cutting-edge devices to molecular diagnostic platforms, the company presents a variety of products for laboratory needs at the show.

Promea Therapeutics, a leading manufacturer of innovative In-vitro Diagnostic (IVD) medical devices and life science products, will showcase its cutting-edge portfolio of diagnostic solutions designed to enhance patient care and empower healthcare professionals. They are present in booth Z4.E29.

"We are thrilled to unveil our latest advancements and demonstrate how our products can deliver accurate, reliable, and accessible testing for optimal patient outcomes," said Dr. Rajesh Tummuru, Executive Director at Promea Therapeutics. "Medlab Middle East presents an invaluable opportunity to connect with industry leaders and showcase our commitment to revolutionising diagnostics."

Promea Therapeutics will showcase the following product categories at the show:

Electrolyte: Promea's PA100 Electrolyte Analyzer is a cutting-edge device designed to accurately measure and analyse various essential parameters in a wide range of specimens, including whole blood, serum, plasma, and urine. Designed with precision and accuracy in mind, the Promea PA100 Electrolyte Analyzer offers rapid and reliable results, enabling healthcare professionals to make informed decisions swiftly. Its intuitive interface and automated features simplify the testing process, enhancing workflow efficiency in laboratories and clinical settings.

Blood gas: Promea's PA1000 blood gas analyser is intended specifically for critical care conditions where critical tests are performed each day. It is designed with comfort in mind where the maintenance of the analyser is extremely limited to the change of an all-in-one cartridge, and its tabletop footprint allows it to fit in multiple healthcare settings. In the faction of seconds, the PA1000 can deliver the information required to make the best diagnostic decisions for a critically ill patient.

Clinical chemistry: Promea's advanced clinical chemistry analysers offer exceptional precision and speed, enabling efficient diagnosis of a wide range of disorders. The PA200 analyzer, for example, boasts a comprehensive test menu, advanced automation features, and exceptional data management capabilities.

Haematology: Promea's PA300 & PA500 analysers are a combination of robust 3-part & 5-part haematology analyser integrating a range of advanced features intended for a cost-minded and quality-focused clinical laboratory. The enhanced specification expands clinical capabilities. The brand-new operating system simplifies the working process. The quality hardware components ensure reliable performance, and the improved fluidic system reduces reagent consumption.

Molecular diagnostics: Promea's cutting-edge molecular diagnostic platforms offer accurate and rapid detection of a broad spectrum of pathogens. The Pro PCR test kits deliver testing for multiple critical assays, enabling effective infection control and patient management.

POCT devices (glucose and haemoglobin): The Promea Dr. Protech D series Blood Glucose Meters and Dr. Protech H series Hemoglobin Analyzer are engineered with precise biosensor and micro fluidics technology to deliver fast and accurate measurements of glucose and haemoglobin levels. These parameters play a critical role in assessing the overall health status of patients. With these advanced devices, patients and healthcare professionals can obtain rapid and reliable results for prompt decision-making and optimal patient care.

Immunodiagnostics: Promea's immunodiagnostic assays provide sensitive and specific detection of infectious diseases, autoimmune conditions, and other biomarkers. The Proflow rapid test delivers quick and reliable results for various infectious specimens, empowering timely treatment decisions.

Infusion therapies: Prospected to be the biggest Infusion Therapy manufacturing facility in South India, Promea's Infusion Therapy Manufacturing Unit is equipped with five automated production lines which can create more than five million IV Fluids a month. Promea's Infusion Therapy facility is equipped with a highly quality controlled and clean environment and adequate well-indexed storage ability. By adhering to all the global regulatory compliances Promea manufactures a complete basket of IV Fluids to cater to multiple health needs.

In addition to product demonstrations, Promea will host productive discussions and presentations led by its team of experts, covering topics such as:

- Business partnerships and collaborations to cater to diverse sections of In-vitro Diagnostics (IVD)
- Empowering healthcare professionals through technological advancements
- The future of point-of-care diagnostics
- Improving patient outcomes with accurate and accessible testing

Visitors will have the opportunity to experience hands-on product demonstrations, discuss their specific diagnostic needs with Promea experts, learn about upcoming product launches and innovations, and participate in interactive discussions and presentations.

"We are confident that Medlab Middle East 2024 will be a fruitful platform for forging new partnerships, exchanging knowledge, and showcasing Promea's commitment to shaping the future of diagnostics," concluded Pavan Chandra Nagoor, Commercial Director at Promea Therapeutics.

To learn more about Promea Therapeutics, visit booth Z4.E29.

Well expands ibidi's chambered coverslip family

The highly recommended #1.5 ibidi Polymer Coverslip Bottom allows excellent cell adhesion on the tissue culture-treated ibiTreat surface.

The ability to achieve high-resolution imaging of large cell volumes is now possible with ibidi's latest innovation, the μ-Slide 1 Well. The creation of the μ-Slide 1 Well is a direct response to the many requests from researchers asking for a product that supports a larger growth area for increased cell numbers.

This new, specially designed product expands the range of ibidi μ-Slides — now featuring configurations from 1 to 18 wells. The μ-Slide 1 Well is ideal for applications that require expansive culture surfaces, such as bioprinting and tissue engineering.

Like its counterparts, the μ-Slide 1 Well is available with several surface options. The most recommended one is the thin #1.5 ibidi Polymer Coverslip Bottom, which allows for excellent cell adhesion on the tissue culture-treated ibiTreat surface. In addition, it has the highest optical quality and is ideally suited for many microscopy techniques, such as widefield fluorescence, confocal microscopy, and DIC. For specialised imaging applications, including TIRF and super-resolution microscopy, the μ-Slide 1 Well is also available with a #1.5H Glass Coverslip.

Researchers interested in evaluating the μ-Slide 1 Well can find free samples at ibidi.com

ibidi GmbH, located in Gräfelfing near Munich, Germany, is a leading supplier of functional cell-based assays and products for cell microscopy. The ibidi range of products offers solutions for classic cell culturing, and complex assays — for example, angiogenesis, chemotaxis, and wound healing. Their products help facilitate an understanding of the development of various diseases and related therapies.

ibidi's customers are working in scientific institutions, industrial pharmacology, and biotechnology. Technology development at ibidi is supported by the BMBF (Bundesministerium für Bildung und Forschung). The products are sold to customers worldwide.

Revolutionising respiratory pathogen detection

KRIVIDA Trivus unveils breakthrough RespiPanel RT-qPCR kit, dubbed the world's fastest of its kind to detect respiratory flu.

In a significant stride towards enhancing respiratory pathogen diagnostics globally, Kriya Medical Technologies proudly launched the world's fastest and India's first single tube, open platform RespiPanel RT-qPCR Kit, KRIVIDA Trivus. This innovative diagnostic tool enables simultaneous detection of RSV, Influenza and SARS-CoV-2, in a single oropharyngeal and nasopharyngeal swab sample in a single tube.

In the relentless pursuit of accurate and accessible diagnostics, Krivida Trivus recognises the global need for cost-effective testing capabilities in detecting respiratory infections beyond SARS-CoV-2. This multiplex approach ensures a comprehensive assessment of respiratory infections, such as RSV, Influenza A & B along with SARS-CoV-2 in a single test.

Key features of Krivida Trivus RespiPanel RT-qPCR kit

Comprehensive and rapid detection: With the world's fastest TAT of 27 minutes total cycle time for simultaneous amplification of RSV, Influenza and SARS-CoV-2 viruses in a single sample, KRIVIDA Trivus enables labs, hospitals and public health organisations for rapid screening. This enables timely identification for early intervention, reducing the risk of complications and improving patient outcomes specifically in ICUs, geriatric and paediatric populations.

Mitigating the risk of antimicrobial resistance: The Krivida Trivus RespiPanel RT-qPCR panel plays a crucial role by understanding WHO's mandate and notification on global AMR public health crisis. This kit enables prevention of unwarranted antibiotic usage by accurately detecting viral respiratory tract infections. Identification of these viruses enables a judicious approach, allowing for the prudent avoidance of antibiotics and, consequently, mitigating the risk of antimicrobial resistance (AMR).

Cost-effective solution: This Open System Multiplex kit not only streamlines the testing process but also proves to be 10 times more economical than individual tests.

Epidemiological insights: Multiplex testing generates valuable data on the prevalence of different pathogens within communities, aiding in quick and timely informed public health decision-making.

Anu Moturi CEO of Kriya Medical Technologies Pvt Ltd., said: "Our RespiPanel RT-qPCR Kit is a global game changer and is a significant leap forward in respiratory pathogen diagnostics. We recognised the importance of identifying Influenza and RSV in addition to SARS-CoV-2, considering the similarity in clinical presentations and the associated risks of hospitalisation and mortality, especially in paediatric and geriatric populations.

"Consequently, our research and development team meticulously designed and optimised this multiplex kit to effectively detect all three viral infections. This breakthrough technology not only enhances patient care but also provides crucial data for designing and executing public health strategies."

The importance of cloud data security in healthcare

Cybersecurity professionals play an important role in implementing best practices, including encryption and multi-factor authentication, to strengthen the defences against potential threats.

By Staff Writer

Lab experts and healthcare professionals often face recurring concerns regarding cloud data security. Issues faced include unauthorised access, data breaches, and compliance with industry regulations such as the Health Insurance Portability and Accountability Act (HIPAA).

Recently in New York, the Carthage Area Hospital and Claxton-Hepburn Medical Center announced they are taking legal action to recover patient data stolen by the LockBit ransomware gang. LockBit has a history of targeting hospitals globally, causing disruptions and delays in healthcare services. The stolen data is now stored on servers owned by Wasabi Technologies in Boston. Seeking a court order, the hospitals aim to compel Wasabi to return the data and require LockBit to destroy all copies. This incident highlights the ongoing threat posed by ransomware attacks targeting healthcare institutions.

Cybersecurity professionals play an important role in implementing best practices, including encryption and multi-factor authentication, to strengthen the defences against potential threats. The challenge lies in addressing privacy issues and safeguarding sensitive information, as unauthorised access or modifications can have severe consequences. A practical approach to securing sensitive information is through client-side encryption, a method where data is encoded on the user's system before being outsourced.

With client-side encryption, the encrypted data is then transferred to a cloud server, minimising the risk of data theft during transmission. Access to medical records is restricted to authorised users with a decryption key, exchanged using an elliptical curve Diffie-Hellman key exchange. This ensures that only authorised individuals can access the encrypted medical records for specific purposes, providing a strong layer of security.

Understanding and addressing the concerns faced by cloud storage is crucial, with cybersecurity professionals working diligently to establish protocols such as encryption, multi-factor authentication, and employee training to prevent potential breaches. The shared responsibility model sheds light on the division of responsibilities between service providers and organisations.

Healthcare providers are increasingly adopting a hybrid cloud strategy, blending public and private clouds with on-premise infrastructure for a smoother transition. While applications and IT functions easily migrate to the cloud, sensitive patient information remains on-premises for enhanced security. The HIPAA permits cloud storage for protected health information (PHI) as long as specific privacy and security measures are in place. Using a HIPAA-compliant cloud storage service with encryption enables the secure storage of electronic PHI and supports applications processing health data.

Best practices that healthcare organisations can adopt to enhance cloud data security include employee training programmes, regular security audits, and staying informed of the latest security trends and threats. Healthcare organisations need a comprehensive strategy that integrates both technological solutions and organisational practices to keep patient data in cloud storage safe.

Discover the first-of-its-kind test for traumatic brain injury

i-STAT TBI plasma test gives results 15 minutes after the plasma is placed in the cartridge.

Traumatic brain injuries (TBI), including concussions, are common, and not only within the sports world. An estimated 4.8 million emergency room visits per year can be attributed to TBIs, and roughly 40 per cent of all concussions are caused by slips and falls.

However, there has never been an objective method of assessing patients suspected to have sustained these invisible injuries — until now.

The main hurdle to recovery is that these injuries are often undiagnosed or misdiagnosed. Previously, concussions and TBIs have been evaluated through methods such as CT scans, patient questionnaires, or a neurological exam, which in some cases, are not empirical on their own. For a condition that impacts millions annually and poses a short-term risk, long-term risk, and even death — objective testing used in tandem with these methods is crucial.

The first rapid handheld objective blood test for concussions

The i-STAT TBI plasma test is the first rapid handheld traumatic brain injury (TBI) blood test, which will help clinicians assess individuals with suspected mild TBIs, including concussions. Test results are available within 15 minutes after the plasma is placed in the test cartridge.

TBIs, including concussions, refer to an alteration in brain function, caused by an external force. This test measures specific proteins present in the blood after a TBI. A negative result on this test can be used to rule out the need for a head CT scan, a common tool used to evaluate concussion. For those who test positive, this test result complements CT scans to help clinicians evaluate whether someone has a TBI.


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Laboratory landscape in West Africa — breakthroughs, challenges, opportunities, and what lies ahead

Laboratories in the region have recorded increased collaboration, fostering trust among researchers and nurturing avenues for groundbreaking scientific advancements.

By Jennifer Orisakwe

West Africa is emerging as a stimulating and fertile ground for novel concepts within laboratory settings. It represents a convergence point where significant discoveries confront formidable challenges, presenting numerous prospects for remarkable advancements. Scientists in this region engage in pioneering and excellent research endeavours yet the region grapples with substantial challenges such as insufficient resources and financial constraints.

Notwithstanding these hurdles, substantial opportunities await exploitation. Collaborative efforts among scientists leveraging cutting-edge technology hold the potential to revolutionise global scientific practices. The exploration of laboratories in West Africa underscores the region's commendable achievements, resilience in facing adversities, and pursuit of groundbreaking discoveries capable of instigating transformative changes on a global scale.

The In Vitro Diagnostics (IVD) market in Africa is expected to grow at a CAGR of 4.8 per cent from 2022 to 2029, reaching US$1.78 billion in 2029 according to an analysis report from Research And Markets. This is a pointer that in West Africa, laboratory equipment and supplies are in high demand.

Speaking to Kenneth Okolie, CEO of SynLabs, a state-of-the-art laboratory chain in the Nigerian market in an interview, he shares: "Since 2004, Nigeria's labs have changed a lot. At first, we relied on other countries for tests because of costs and not enough experts. Then COVID-19 hit. It pushed us to handle our problems on our own.

"The advent of COVID-19 served as a catalyst, thrusting us into an adaptability to confront local obstacles head-on. This pivotal moment propelled our industry towards self-reliance, birthing a remarkable proliferation of local laboratory services. We significantly curtailed our reliance on outsourcing, carving a path towards autonomy. This increased collaboration — both domestic and international — fostering trust among researchers and nurturing avenues for groundbreaking scientific advancements."

Amidst these promising advancements, multifaceted challenges create a storm in the industry. These encompass regulatory fragmentation, the ease of establishing laboratories with low entry barriers, and economic hurdles such as erratic power supply and the financial strain on patients reliant on out-of-pocket payments.

The laboratory market in West Africa is on a forward-ever movement now. Regarding opportunities available in the industry and what lies ahead. Some technologies to be expected in the region in 2024 will be more portable and rapid diagnostic tools for diseases such as malaria, HIV/AIDS, and tuberculosis are expected to become more prevalent. These devices offer quick and accurate results, enabling timely intervention and treatment.

Laboratories may increasingly adopt renewable energy sources, such as solar power, to ensure continuous operation and reduce dependency on traditional energy grids. There will be increased genomic technologies enabling laboratories to conduct more extensive genomic sequencing which will give way for personalised medicine

Okolie also envisages a forward-bound trajectory for the industry, foreseeing increased investments, streamlined operations, tighter regulations, and potential advancements in the national health insurance system. However, he reiterated that the pace of progress hinged significantly on economic variables, particularly substantial improvements in power supply.

Despite these hurdles, promising opportunities exist to reshape the laboratory landscape.

Collaborations between local and international institutions provide avenues for knowledge exchange, capacity building, and funding access. Modernising laboratory infrastructure, providing cutting-edge equipment, and emphasising STEM education can nurture a new generation of scientists, fostering innovation and sustainability.

Governments and policymakers play a crucial role in enabling scientific research by prioritising science and technology in national agendas and increasing funding allocations. Establishing regional research networks facilitates collaboration, enhancing the exchange of ideas and resources.

Jennifer Orisakwe *is a health researcher and data storyteller with an interest in topics that affect healthcare stakeholders' decision-making and outcomes.*

Medic West Africa is set to take place from April 17 to 19 in Lagos. Visit www.medicwestafrica.com to know more.

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