Together for a healthier world

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Trends redefining the medical laboratory industry in 2023

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Report compiled by **Suneeti Ahuja-Kohli**

Introduction

Medlab Middle East 2023 was yet another successful edition of the annual event. The four-day exhibition, offering the region›s only CME-accredited multidisciplinary conferences and a shop floor with hundreds of exhibitors spanning six halls at the Dubai World Trade Centre, was attended by over 25,000 healthcare and medical laboratory professionals from all over the world. Despite being a regional event, the participation of more than 700 exhibitors representing 150 countries highlighted the wide reach and popularity of the event.

From the importance of laboratories in ensuring healthier societies to the role of data and accreditations, increasing use of point-of-care testing (POCT) devices, and focus on sustainability and the use of new-age technology in improving diagnostic results and reach, numerous panel discussions at the Medlab Middle East Congress provided a wealth of information to the attendees and offered a fertile ground for dialogue.

This year the conferences focused on immunology, histopathology, and POCT tech advances, among other trending topics. While exhibitors showcased new-age laboratory management solutions and services at the show, shedding light on the evolution of the medical laboratory industry.

For the first time this year, the event hosted an intercollegiate quiz, 'Lab Q', open to senior graduating college and university students in the UAE majoring in medical laboratory sciences. The Congress also introduced the 'Sustainability Awards', where participating laboratories were judged on their sustainability initiatives, with Dubai Police Laboratories being crowned as the winners. Another engaging contest during the event was the start-up competition 'Labpreneur', where entrepreneurs pitched their innovative ideas to an esteemed panel of judges.

In the following pages, we highlight key points and major trends emerging from the various discussions held during the show that are all set to transform the medical laboratory industry.

Chapter 1

POCT: What's the future, and how can it become more accessible?

The growing acceptance and popularity of POCT devices across geographies were evident at Medlab Middle East. Various aspects of this technology and the need for standardisation in the industry were discussed and showcased during the exhibition.

Dr. Barb Jones, CEO, Clinical and Laboratory Standards Institute (CLSI), US, piqued the interest of fellow panellists and the audience when she said that the industry needs standardisation. "POCT is a place where standards are sorely needed. We (CLSI) are working on a dedicated testing initiative to bring our current standards into the field. The current complexity of our standards (for laboratories) is not necessarily needed in the POCT environment because the users are following manufacturer instructions. But the overarching principles are very much needed," Dr. Jones said.

Interestingly, the point-of-care (POC) diagnostic market is expected to grow at a CAGR of 10.7 per cent between 2022 to 2027. In terms of revenue growth, the global POC diagnostics market was estimated to be worth US$45.4 billion in 2022 and is expected to clock US$75.5 billion by 2027, according to a Markets and Markets research report.

It was in the 1980s when POCT technology was first introduced to the world. In over four decades, the space has evolved to include a wide gamut of tests that can be performed outside the realms of hospitals and in the comfort of homes. Today, POCT is at the forefront of creating value in healthcare by offering digital data collection and using real-world data to integrate different aspects of customised patient care. Physicians are finding it helpful as POC optimises processes and makes them more efficient with accurate and timely information.

Come to think of it, one of the biggest positives of this technology is its non-intrusive nature in many cases and the immediacy of results. "Patients are more comfortable with

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finger pricks versus a venous draw, which is strengthening the popularity of POCT across the globe," said Prof. Rajiv Erasmus, Head of the Department of Chemical Pathology at the University of Stellenbosch in South Africa.

Additionally, the medical field could soon witness devices that allow multiplex testing. "It could be the next biggest trend in the field, providing accurate diagnosis of multiple underlying infections in one sitting while retaining quality control. We are now getting point of care instruments that are very precise, accurate, portable, and use very small amounts of blood," said Prof. Erasmus.

Qiagen, a global player offering advanced molecular testing solutions, was among the companies exhibiting its newly developed digital PCR solution, a POCT device.
The ease of use and availability has made some of the POCT devices popular among health enthusiasts, too, and are being used to keep vitals in check and pre-empt diseases. However, medical professionals pointed out some limitations of rapid diagnostic tests for infectious diseases. The simplicity of the devices isn't helpful for researchers in getting an understanding of the disease well. "Rapid diagnostic tests (RDT) are very cost-effective and offer useful

ways of conducting tests. But they have limitations. These are designed for specific targets, so it is important to know that they cannot be used for all kinds of testing. These tests do not provide biological material for additional studies, etc., susceptibility testing, or typing, which are crucial ways of understanding more about the vaccine strains. All these aspects are not part of this panel," noted Dr. Fouzia Jabeen, Consultant Microbiologist and Virologist at Sheikh Khalifa Medical City.

In the context of infectious diseases, the term rapid diagnostic test refers to lateral flow, immunochromatographic tests used to detect certain infections. More generally, such assays are point-of-care tests. It is the focus on performance time and simplicity that defines RDT or POC.

RDT is also not helpful in the case of intensive care unit patients who may also have many other comorbidities. "You have cycles of infections, and there are not many details to understand which infections might recur," Dr. Jabeen.

Another crucial aspect of POCT highlighted by panellists and speakers was the high cost of the devices, which acts as one of the biggest impediments to its greater use and adoption in developing countries. "The cost of POCT is a major concern. POCT tends to be more expensive than tests conducted in laboratories, which poses a challenge to greater adoption in developing countries. But I think many countries are developing their own point-of-care systems. There is growth in the In-Vitro Diagnostics (IVD) industry. Systems become more affordable when they are produced locally," said Prof. Khosrow Adeli, Division Head, Clinical Biochemistry, The Hospital for Sick Children, Canada.

Access and use of PCOT can significantly impact a child's health. "Take, for instance, diarrhoea. It is a major killer of infants. If parents can do a quick test and see that the electrolyte levels in the child are suddenly dropping, they can give the child fluids, which could prevent the health from worsening," noted Prof. Adeli.

He added that the industry has huge potential for growth in the Middle East. "Before the pandemic, the global market for POCT was growing at 7 per cent per year, but in the last couple of years, the market has expanded significantly. The surge in popularity isn't just for testing COVID-19 but for a host of other medical conditions, too. There is a significant need for POCT in acute care hospitals, primary care and rural and remote areas that do not have access to hospitals or laboratories. The sector will continue to register robust growth in the region."

Chapter 2

Green medical laboratories: The way forward for the pathology industry

One of the key messages that reverberated across sessions and discussions among industry professionals during the event was the need for the pathology industry to embrace sustainable ways and play its part in the pursuit of a healthier world. Several forums dedicated sessions on learning from industry leaders on why and how sustainability can become integral to business plans going forward.

Talking about the importance of this subject, Tom Berkovits, Senior Director, Marketing, Illumina Middle East, said, "Sustainability is important because we need to give back as well. We want to ensure that the products we release are environmentally friendly. The materials we use are sustainable and kind to the environment. And, most importantly, the packaging we provide for our instruments is easily disposable and can be put back into recycled materials."

Several industry reports highlight the flip side of the global pharmaceutical industry: It is responsible for 55 per cent more carbon emissions than the auto industry. The pharmaceutical industry also produces 5 per cent of the worldwide global emissions.

Dr. Rana Nabulsi, Head of Operations and Quality, Pathology and Genetics, Dubai Academic Health Corporation, a passionate advocate of the urgent need for change in the industry, was among the panellists and speakers at several sessions during the Congress. She insists on the need for global stewardship in the case of the pharmaceutical industry to make well-meaning and uniform changes.

"Policymakers and governments must sit together and agree on legislation to make healthcare organisations less polluting to the environment, including the pathology industry. While the pathology industries in Europe, Canada, the US, and the Middle East are doing well, the same cannot be said for some developing countries. We need legislation for sustainability equipped with incentives, taxes, subsidies, green finance, etc. Healthcare systems and organisations should be supported in their green efforts and sustainability practices."

Dr. Nabulsi added, "Sustainability is an ecosystem with various stakeholders such as patients, regulatory agencies, legislators, insurance companies and policymakers, C-suite leaders, etc. It needs a big organisation such as the United Nations that can allow collaboration across stakeholders and countries and ensure the same standards are followed on sustainability everywhere. We need to support less fortunate countries. We need a budget, leaders, policies, incentives, and taxes, in addition to awareness. We need global stewardship to work towards a net zero carbon footprint."

Dr. Bernard Gouget, IFCC, France, too echoed similar thoughts and pointed at the need for global regulations to ensure uniform rules and framework for the pathology industry. "We already have several policies in some Western countries, but we need a more global approach to this. We need to work with developing countries to improve resource management," he said.

Industry reports reveal that an average research laboratory uses three times more energy than an office building. Also, laboratories generate an enormous amount of waste, most of which is plastic waste. A recent estimate said a scientist working

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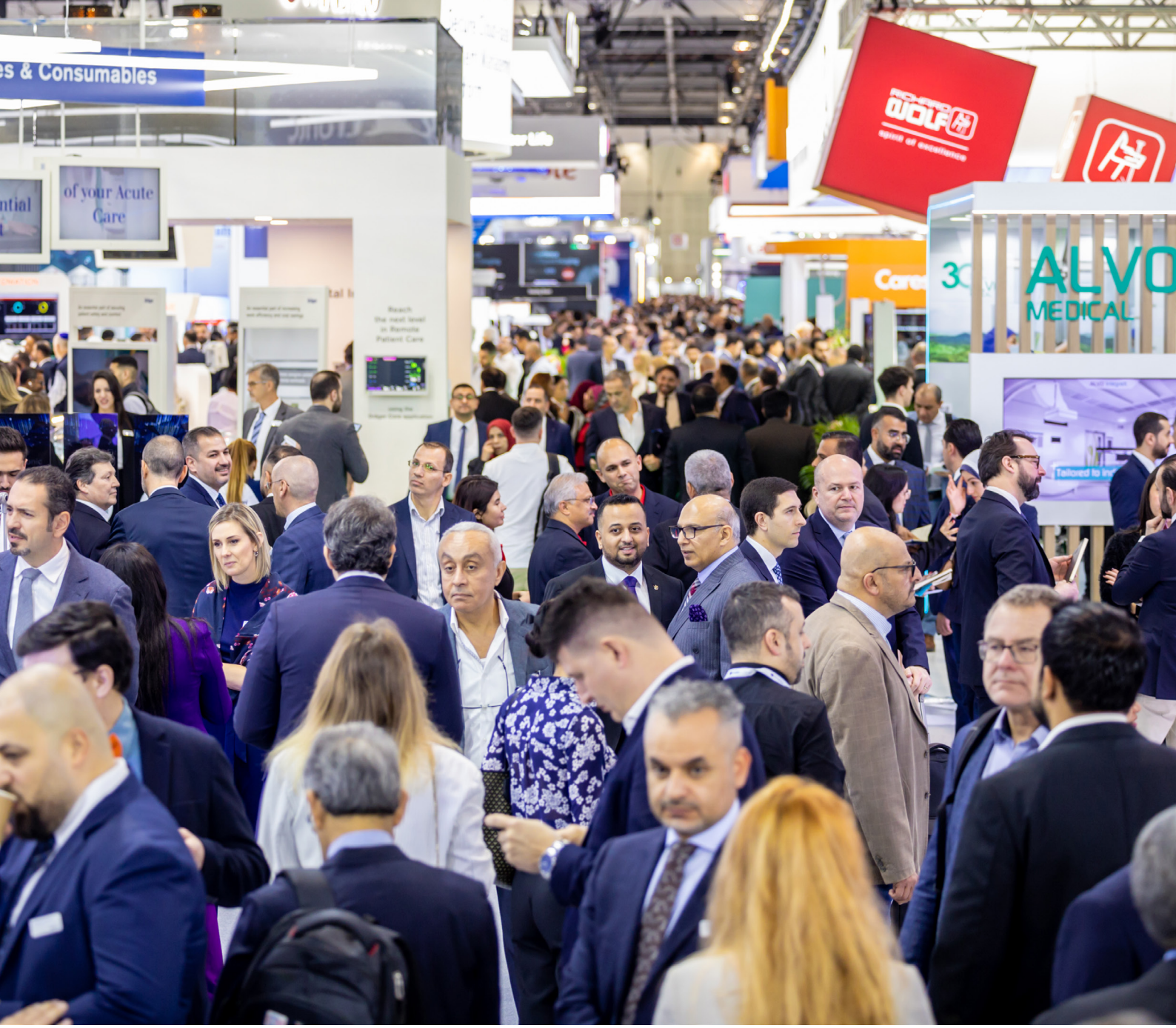

in a laboratory generates about one tonne of plastic waste in a year. If this data is extrapolated to the whole department where 280 scientists work, that would be equivalent to 5.7 million two-litre plastic bottles.

Prof. Sergio Bernardini, IFCC Division on Emerging Technology, Italy, suggests embedding sustainable practices as part of the accreditation process to encourage laboratories to carry out their business in a more environmentally friendly manner. “One of the best ways to get more effective in our message is to work with an accreditation and quality management organisation because sustainability should be part of the guidelines. If activation bodies try to enforce proper utilisation of resources in laboratories, in addition to their current focus on quality, it will help the cause,” Prof. Bernardini said.

Overall, the underlying message across panellists and discussion forums were the same — sustainability is an aspect of public health and should be accorded the same importance as other industries.

Dr. Nabulsi made fitting comments on the sidelines of one of the sessions when she said, “The government must lead the charge on this front. Otherwise, the industry might not want to commit to the cause. There should be guidance from the Ministry of Health. We need auditing to ensure compliance with standards. It will be great to see incentives or subsidies for SMEs and start-ups to encourage them to work on this front.”

For example, Qiagen, the advanced molecular testing solutions firm mentioned earlier, is walking the talk on the subject and has launched its sustainability strategy. The company has manufactured new kits that use substantially less amount of plastic and are less polluting to the environment. “We are proud to launch our environmental, social and governance (ESG) commitment and are trying to deploy our solutions with new kits wherein we are saving 63 per cent plastic and 43 per cent paper. All new tubes are manufactured from 100 per cent recyclable plastic,” said Simona Grandits, Head of Sales GEM EEMEA, Qiagen.

Chapter 3

Big data and the promise of healthier outcomes

In the era of digitalisation and biotechnology, copious amounts of data are harvested daily from patients. The numbers are staggering. Dr. Barb Jones, CEO, Clinical and Laboratory Standards Institute, shared some data points showing the booming wealth of data we are acquiring in the industry every day.

The health sector amounts to about 4 per cent of the total data generated worldwide. There has been an increase of over 235 per cent in genetic testing in three years. Laboratories globally are adopting electronic health records. In the US, this percentage stands at 94. Research by SNS Insider suggests healthcare data storage market will hit US$12.17 billion by 2030 because of the increasing adoption of cloud-based healthcare data storage solutions. Industry experts at Medlab Middle East concurred that the future of laboratory management and healthcare systems in countries rests on how successfully this data is utilised.

Talking about the role of data in the UAE healthcare space, Dr. Farida Al Hosani, Infectious Disease Expert and Executive Director of Infectious Diseases, Abu Dhabi Public Health Centre, said the government is working to strengthen its health surveillance system and use data to ensure preparedness against the next pandemic and other communicable diseases.

"We are automating and further developing our electronic notification system to be more integrated with the public and private hospitals. We are also expanding our passive and active surveillance for influenza and a wider panel of respiratory diseases that we would like to watch closely. We want to identify any risks that might emerge from, for example, MERS, RSV, adenoviruses, and other panels of respiratory diseases. These are part of our routine surveillance. We want to evaluate the priorities of the coverage and distribution of a vaccine. The availability of vaccines and treatment advocacy is important to lower the burden of infectious diseases," noted Dr. Al Hosani.

The key here is to see how various data points are integrated and processed to determine meaningful outcomes and trends.

Dr. Abdullah Nasser AlJurayyan, Executive General Director, Laboratory Operations Centre, Health Support Services, Ministry of Health, Kingdom of Saudi Arabia, agrees on the role data can play in improving public health. "Data has played a crucial role in allowing us to manage the pandemic in Saudi Arabia successfully. Initially, we had a unidirectional, reactive, and manual approach to public health. But COVID-19 pushed us towards digitisation, and we have transformed our health sector into adopting a digital-first approach for improving quality of service and access to care," he said.

The flip side of an increasing collection of data by the public and private sectors is the increased risk to data safety and security, which, if breached, could cost millions. An average cost of a breach in the healthcare industry is over US$10 million.

The pathology and healthcare industry overall should focus on data governance. "We need to focus on data governance to ensure clean and accurate data, which is very important to conduct our research studies and have a policy in place for data collection and protection. We also need to maximise the skills of the new workforce related to data, such as data scientists, AI engineers, etc.," said Dr. Naser Ammash, Chief Executive Officer of Abu Dhabi-based Sheikh Shakhbout Medical City.

Chapter 4

How do we prepare for the next pandemic?

Amid all the bustle at Medlab Middle East this year, one resounding argument was that even if the COVID-19 pandemic is far from over, the window to prepare for future threats is closing fast. The medical laboratory industry needs to adopt robust risk management practices, improve quality standards, and consciously think about how it can prepare for better management of diseases in the future without the need for the world to come to a standstill.

"In order to be prepared (for the next pandemic), we should adopt a new approach to risk management. Since 1998, we were expecting the influenza virus to re-emerge — the Hispanic one re-emerged at the beginning of the last century. But we could not predict the timing. So, what we can prepare for, at best, is the worst-case scenario," said Dr. Nashat Nafouri, Chief Operating Officer, Futurelab Medical Laboratories, Saudi Arabia.

"Agility is very important in healthcare, for only if the healthcare companies are agile will they be able to predict and prepare fast. Now, with artificial intelligence and the tools we have, we can predict risks better," Dr. Nafouri added.

There are several lessons to learn from the pandemic. Maintaining strict quality controls at laboratories is a good start, opine experts. "We are still walking when it comes to quality. If we can work on quality and build a system that will help us to improve our service continuously, that would be a good start," said Abdulaziz M. Aljohani, who works for the Ministry of National Guard Health Affairs, Saudi Arabia.

Quality is the cornerstone if laboratories are to go on the transformational journey from volume-based to value-based healthcare.

It all boils down to quality controls in laboratory management. Across discussions and panels, experts at Medlab Middle East argued that laboratories should embed cost of quality (COQ) in lab workflow to reach operational excellence. Quality is the cornerstone if laboratories are to go on the transformational journey from volume-based to value-based healthcare. Needless to say, it can happen only if the quality is moved from being a cost-centre dilemma to being a core-profit centre and becomes a core focus of the C-suite. Besides, medical laboratories should also equip themselves with quality professionals who have the knowledge and skills to implement COQ.

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