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Future of medical refrigeration looks promising

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The confluence of the COVID-19 pandemic and the Russia-Ukraine war has generated an unprecedented and intricate impact on the medical refrigerator market, reshaping its dynamics in profound ways. This nexus of global events has triggered a series of cascading effects, engendering shifts in search behaviours, online trends, and market demands. As the pandemic swiftly engulfed the globe, people's online activity escalated dramatically. With lockdowns confining individuals to their homes, the virtual realm emerged as an essential avenue for connection, information, and commerce. Consequently, the medical refrigerator market experienced an immediate surge in relevance, as search queries veered towards health updates, remote work solutions, and entertainment options.



The exceptional growth in the healthcare industry today is driven by several factors such as a surge in chronic illnesses, the government's initiatives to improve healthcare infrastructure, and increased investments in the sector.
Consequently, the medical refrigeration device market in India has also seen commensurate growth in recent years. With the ever-growing demand for healthcare services and the need for proper storage and transport of medicines, vaccines, and blood products, the market for medical refrigerators has also expanded rapidly.

Growth

The market for medical refrigeration devices in India is growing for several reasons.

There is a rise in the number of clinics and hospitals, along with a growing population, resulting in a boost in the demand for these devices to store blood, medications, vaccines, and other essential medical supplies.

It has increased the need for refrigeration devices with cutting-edge temperature-control capabilities. Technical advancements in the medical industry have made these devices more refined, efficient, and more appealing to buyers. As a result, India is presently experiencing rapid growth in the medical refrigeration market.
In addition, the number of medical and pharmaceutical products that require precise temperature conditions is increasing significantly especially in fields such as oncology.

Research published by Benzinga has shown that India's medical refrigeration device market has been growing at an average rate of 8.5 per cent. In 2017, the revenue for medical refrigeration devices in India was nearly $10.4 million.

Medical refrigerators play a critical role in preserving the integrity of temperature-sensitive medical resources. However, they come with their own set of challenges.

Challenges

The Medical cold chain industry in India suffered from high capital costs, outdated technology, opaque networks, lack of skilled resources, poor reverse logistics, and extensive complexity. Some of the major challenges that we face in the medical refrigeration industry are:

Lack of Awareness:There is a general lack of awareness regarding the importance of maintaining the intended temperature of medicines, drugs, vaccines, and other biologics. Especially during transportation resulting in the spoilage of critical and expensive medical resources. There is also a general attitude where people mistakenly think that a domestic household refrigerator can do the work of a medical refrigerator.

Temperature Precision: Maintaining precise temperatures required for various medical products, such as vaccines, blood samples, and medications, can be challenging due to fluctuations.

Energy-efficient and Sustainable systems: Medical refrigeration devices can be energy-intensive, leading to high operational costs and environmental concerns especially ones that use non-green refrigerants.

Regulatory Compliance: The healthcare industry is subject to stringent regulations related to medical refrigeration to ensure patient safety. Compliance can be complex and demanding. Despite that in India there are many gaps in the policies and guidelines that allow substandard local players to operate in the market.

Overcoming challenges

This growth is predominantly attributed to the growing adoption of energy-efficient and precise cooling strategies within the biomedical refrigerators and freezers industry. However, addressing the various challenges in this field requires a multifaceted approach.

Awareness and training programmes are the need of the hour to ensure the best practices are followed during storage and transportation of valuable medical samples and resources.

Advanced control tech minimises fluctuations to maintain precise temperatures, ensuring safe medical storage.

Energy efficiency is crucial, encouraging eco-friendly refrigerants in cost-effective devices, reducing costs, and aiding conservation.

Meeting regulatory compliance is vital. Streamlined processes, simplified requirements, and strict adherence are essential for product safety. Raising awareness about low-temperature importance is key.

Government’s initiatives

The government's initiatives and policies profoundly influence the accessibility and affordability of healthcare services for individuals and communities. By implementing initiatives that prioritise healthcare innovation and research, the government can foster a conducive environment for advancements in medical technology and treatments.

Temperature Control Protocols: In India, regulations ensure that these temperature-sensitive products are stored and transported at the optimum temperatures to maintain their efficacy and safety. However, these regulations have room for improvement to make them more robust and effective. These include setting clear standards for temperature control, monitoring, and compliance to prevent product spoilage or degradation.

Investments to Strengthen Medical Cold-Chain Infrastructure: Investments are needed to strengthen the Cold-Chain infrastructure to ensure medical products remain safe and effective. These include upgrading storage and transportation facilities, adopting advanced temperature monitoring and control technologies, and providing training for healthcare personnel involved in handling these products. These investments are crucial to guarantee the integrity of medical supplies and contribute to better healthcare services in India.

These regulations and investments can help drive positive change in the healthcare market and improve the overall quality of healthcare services.

Environmental considerations

Do you know these medical refrigeration machines can greatly impact the environment? They consume a lot of energy and sometimes refrigerants that are not so friendly to the planet.

Medical refrigeration has a substantial environmental footprint, primarily due to energy consumption and the use of harmful refrigerants. However, the healthcare industry is actively pursuing eco-friendly alternatives like hydrofluoroolefins (HFOs) and natural refrigerants such as CO2 and hydrocarbons. These choices emit fewer greenhouse gasses, promoting environmental sustainability.

Technological advancements, including efficient compressors and insulation materials, contribute to energy savings in refrigeration. Moreover, solar-powered refrigeration solutions, like those offered by B-Medical Systems, are emerging as eco-

friendly alternatives, especially in hot climates and remote areas with inconsistent power supply. These systems benefit the environment and reduce operational costs for healthcare facilities.

Outlook

Recent advancements in medical refrigeration technology are transforming healthcare. IoT sensors have become increasingly common in cold-chain equipment. These are small devices embedded in cold-chain equipment such as refrigerators, freezers, and shipping containers. These sensors can measure temperature, humidity, and other environmental conditions and transmit that data to a central system.

Our investments and collaborative efforts aim to raise the bar for temperature control standards, ensuring the safety and efficacy of medical supplies and vaccines nationwide. Moreover, artificial intelligence algorithms analyse data from refrigeration units, detecting potential issues in real-time for proactive maintenance and preventing spoilage.

These advancements also enable predictive analytics, optimise inventory management, and ensure timely restocking of essential supplies. Due to these developments, the future of medical refrigeration looks extremely promising.

Jesal Doshi, Director, Board of Medical Technology Association of India (MTaI)