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Medical Robotics Market by Product and Services (Instrument and Accessories, Robotic Systems, Services, and Consumables), by Application (General Surgery, Orthopedic Surgery, Neurosurgery, Gynecological Surgery, Urological Surgery, Oncological Surgery, Transoral Surgery, Physical Rehabilitation, External Beam Radiation Therapy, and Other Applications), by End Users (Hospitals, Home Care Settings, Ambulatory Surgery Centers, Rehabilitation Center, and Other End-Users) - Global Opportunity Analysis and Industry Forecast, 2024–2030

https://marketpublishers.com/r/MC1CC4DD4DE5EN.html
Date: February 2025
Pages: 0
Price: US$ 3,975.00 (Single User License)
ID: MC1CC4DD4DE5EN

Abstracts

The Medical robotics Market size was valued at USD 14.92 billion in 2023 and is predicted to reach USD 45.04 billion by 2030, with a CAGR of 17.1% from 2024 to 2030.

The integration of medical robots, particularly exoskeleton devices, plays a crucial role in addressing the challenges posed by conditions such as spinal cord injury, rehabilitation, multiple sclerosis, and stroke. The surge in cases of these health issues has led to a growing demand for innovative solutions, and medical robots that include exoskeletons have proven to be transformative in the healthcare landscape.

For instance, Ekso Bionics Holdings, Inc. introduced EksoNR, a next-generation robotic

exoskeleton designed to aid patients in their recovery from conditions including stroke. This intuitive exoskeleton device empowers individuals to relearn walking with a more natural gait, enhancing the rehabilitation process. The development of such advanced robotic technologies is instrumental in providing patients with a higher quality of care and improving their chances of regaining mobility.

Moreover, the medical robotics market is witnessing significant growth due to the proactive efforts of organizations aiming to extend the benefits of exoskeleton technology to a broader patient population. As an example, The International Spinal Cord Society conducted a clinical trial called WISE in 2022. This trial focused on a 12-week regimen of exoskeleton-based robotic gait training to monitor significant enhancements in independent gait speed among individuals with chronic incomplete spinal cord injury (iSCI).

In addition, governments around the world are actively contributing to the growth of the medical robotics market by implementing comprehensive strategies within the healthcare industry. Through substantial investments in research and development, governments are promoting the exploration of innovative solutions in medical robotics, leading to technological advancements that address the ever-changing healthcare landscape. For instance, in October 2021, the European Investment Bank (EIB) invested USD 17.4 million in Quantum Surgical for the commercial launch of its Epione medical robot that was used for the minimally invasive liver treatment of cancer.

However, the high initial cost of acquiring and implementing medical robotics systems constitutes a significant restraint on the market's growth. On the contrary, the integration of AI in medical robotics has the potential to streamline healthcare processes and enhance patient outcomes. AI-powered robotic systems can assist healthcare professionals by automating routine tasks, allowing them to focus on more complex aspects of patient care. This ongoing convergence of AI and medical robotics presents a pathway toward future advancements, promising innovative solutions, and further optimization of healthcare practices.

For instance, in September 2023, US Medical Innovations (USMI) and the Jerome Canady Research Institute for Advanced and Biological Technological Sciences (JCRI-ABTS) launched the new Canady Robotic AI Surgical System. It is claimed to be the world’s first artificial intelligence (AI) robotic system that generates cold atmospheric plasma (CAP), and a three-dimensional non-contact bioelectric pulse electromagnetic field.

Segment Overview

The global medical robotics market is segmented on the basis of product and services, application, end user, and region.

By product & services, the market is classified into instrument and accessories, robotic systems, services, and consumables.

By application, the market is segmented into general surgery, orthopedic surgery, neurosurgery, gynecological surgery, urological surgery, oncological surgery, transoral surgery, physical rehabilitation, external beam radiation therapy, and other application.

By end user, the market is categorized into hospitals, home care settings, ambulatory surgery centers, rehabilitation center, and other end-users.

Region-wise, the market is segmented into North America, Europe, Asia-Pacific, and the rest of the world (RoW).

Regional Analysis

North America holds the dominant share of the market

The expansion of the medical robotics market is propelled by the active involvement of major industry leaders, such as Johnson & Johnson, Intuitive Surgical, iRobot Corporation, Zimmer Biomet Holdings, Inc., and others. These global giants are implementing strategic measures to enlarge their market presence and are heavily investing in research and development initiatives, thereby playing a pivotal role in the substantial growth of the medical robotics sector.

A noteworthy example of this trend is evident in August 2021, when Zimmer Biomet Holdings, Inc., a renowned global medical technology leader received FDA 510(k) clearance for the ROSA Hip System, designed for robotically-assisted direct anterior total hip replacement. This marked the introduction of the fourth robotic system by Zimmer Biomet, augmenting the comprehensive ROSA Robotics portfolio. This portfolio encompasses the ROSA Knee System for total knee arthroplasty, ROSA Partial Knee System for partial knee arthroplasty, and ROSA ONE for neurosurgical and spine procedures.

Additionally, the market growth is further propelled by the proactive initiatives taken by key players in the robotic-assisted surgery domain, particularly in Canada. An illustrative instance is the product launch by Medtronic Canada ULC in October 2021, wherein the Mazor X System for robotic-guided spine surgery was introduced. This innovative system employs advanced 3D planning software to assist surgeons in precise placement of screws and other implants. The Mazor platform, with its three-dimensional capabilities, enables surgeons to rapidly visualize anatomical structures and spinal features, contributing significantly to the overall expansion of the medical robotics market.

Key Market Players

The key players in the Medical Robotics Market include companies such as:

- Medtronic Plc
- Smith and Nephew
- Omnicell Inc.
- Accuray incorporated
- iRobot Corporation
- ARxIUM
- Renishaw Plc
- CMR Surgical
- BD Rowa
- Siemens Healthineers AG
- Zimmer Biomet holdings, Inc.
- Intuitive Surgical

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Stryker Corporation

Johnson & Johnson

Teladoc Healt

Recent Developments

September 2023

Accuray Incorporated received approval from the Japanese Ministry of Health, Labor, and Welfare (Shonin) to market the CyberKnife Robotic Radiosurgery System for treating trigeminal neuralgia (TN) in Japan. The CyberKnife system offers a high-precision radiosurgery treatment, administered in a single outpatient procedure

October 2022

Medtronic plc achieved major milestones in the medical robotics market with significant regulatory approvals for its Hugo robotic-assisted surgery system. These include CE Mark clearance for general surgery, a Health Canada license for general laparoscopic surgery, and approval from Japan's Ministry of Health, Labor, and Welfare for urological and gynecological indications. This highlights Medtronic's commitment to advancing medical robotics and enhancing healthcare solutions worldwide.

November 2021

Smith+Nephew, the global medical technology company, introduced the CORI handheld robotics system, a cutting-edge solution designed for both total and partial knee arthroplasties. The CORI system stands out as a compact and fully mobile5 solution, integrating a 3-D intra-operative imaging system alongside an advanced robotic sculpting tool.

February 2021

CMR Surgical introduced Versius Surgical Robotic System in Germany which is. specifically designed for minimally invasive surgery. It aims to be both affordable and flexible, intending to enhance accessibility to robotic surgery for hospitals and surgeons.

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October 2021

Medtronic Canada ULC launched the Mazor X System for robotic-guided spine surgery. This innovative system employs advanced 3D planning software to assist surgeons in precise placement of screws and other implants. The Mazor platform, with its three-dimensional capabilities, enables surgeons to rapidly visualize anatomical structures and spinal features, contributing significantly to the overall expansion of the medical robotics market.

KEY BENEFITS

The medical robotics market report provides a quantitative analysis of the current market and estimations from 2024 to 2030. This analysis assists in identifying the prevailing market opportunities.

The study comprises a detailed analysis of the medical robotics market trends, including current and future trends to depict prevalent investment pockets in the market.

The information related to key drivers, restraints, and opportunities and their impact on the medical robotics market is provided in the report.

The competitive analysis of the market players along with their market share in the medical robotics market is provided in the report.

The SWOT analysis and Porter’s Five Forces model are elaborated in the report.

The value chain analysis in the market study provides a clear picture of the role of stakeholders.

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