

Neurostimulation Devices Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Spinal Cord Stimulators, Deep Brain Stimulators, Sacral Nerve Stimulators, Vagus Nerve Stimulators, and Others), By Application (Pain Management, Hearing Loss, Urinary Incontinence, Parkinson's Disease, Epilepsy, and Others), By Region and Competition, 2019-2029F

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Abstracts

Global Neurostimulation Devices Market was valued at USD 5.41 Billion in 2023 and is anticipated to project robust growth in the forecast period with a CAGR of 12.02% through 2029. Neurostimulation is a therapeutic process that utilizes an implantable medical device to regulate and modulate brain activities. The devices used for this purpose, known as neurostimulators, are programmable and implanted to administer electrical stimuli to specific regions of the spinal cord and central nervous system. This treatment approach proves effective in managing various conditions such as Parkinson's disease, movement disorders, epilepsy, and chronic pain. By interrupting the transmission of chronic pain signals from the spinal cord to the brain, neurostimulation devices significantly alleviate suffering. The therapy involves the implantation of a fully reversible system, allowing patients to adjust their stimulation level using a handheld device. A complete implantable neurostimulation system comprises a neurostimulator, leads, a physician's programmer, and a patient's programmer. It operates silently and is discreetly felt as a small bump beneath the skin.

Key Market Drivers

Increase Prevalence of Neurological Disorders

The Neurostimulation Devices Market is witnessing significant growth attributed to various factors. Neurological conditions such as Alzheimer's disease, Parkinson's disease, epilepsy, and cerebrovascular disorders affect both the central nervous system (CNS) and peripheral nervous system (PNS) of the human body. Neurostimulation procedures play a crucial role in managing these neurological disorders. The electrodes in these devices generate gentle electrical impulses to enhance neurological activities in patients. These devices can be implanted internally or used externally. Neurostimulation devices are directly placed within the brain, PNS, or CNS. Some of the neurostimulation devices used include spinal cord stimulators, deep brain stimulators, sacral nerve stimulators, and vagus nerve stimulators. These devices are employed to treat various conditions such as pain management, hearing loss, urinary incontinence, Parkinson's disease, and epilepsy.

These include the increasing prevalence of lifestyle diseases such as depression and chronic pain, the rise in neurological disorders, and notable investments in neurological research and development. Moreover, the market is being driven by the growing demand for minimally invasive surgery, the adoption of technologically advanced products, and the expanding elderly population, which is more susceptible to neurological disorders like epilepsy, Parkinson's disease, Alzheimer's disease, and chronic pain. However, it is important to note that the implantation of Neurostimulation Devices Market into the body may lead to adverse effects, such as allergic responses and tingling or prickling sensations of the skin. Additionally, the projected rise in the cost of devices poses a potential hindrance to market expansion. Furthermore, the availability of alternative treatments, including medical procedures and medication therapy, limits the growth of the market. Nevertheless, ongoing research into the use of neurostimulators for treating conditions like obsessive-compulsive disorders, interstitial cystitis, and asthma presents promising opportunities for future market expansion in the Neurostimulation Devices Market.

Increasing Geriatric Population

Based on projections by the UN Department of Economic and Social Affairs, the global elderly population is set to increase from 7.7 billion to 9.7 billion by 2050. This demographic shift is accompanied by a steady rise in the incidence of Parkinson's and Alzheimer's diseases. Consequently, there is a substantial growth potential in the neurostimulation devices market, particularly in developing nations like China and India, where the geriatric population is expanding significantly. Remarkably, in Japan, over

20% of the population is aged 65 and above, as per survey findings. The aging population demonstrates a heightened susceptibility to neurological ailments, including Parkinson's disease, Alzheimer's disease, chronic pain, and movement disorders. Consequently, there is a growing market demand for neurostimulation devices. The appeal of non-invasive treatment provided by these devices lies in their ability to minimize risks and avoid surgical intervention, ultimately enhancing longevity and improving overall quality of life. This, in turn, fuels the growth of the neurostimulation devices market.

Increasing Patient Preference for Non-Pharmacological Treatment

Non-pharmacological treatments are gaining popularity in the management of chronic neurological conditions such as epilepsy, Parkinson's disease, and migraine. Neurostimulation devices provide therapeutic options that can complement or reduce the need for medications in managing these conditions. Neurostimulation devices can significantly improve the quality of life for patients with neurological disorders. They can reduce pain, alleviate motor symptoms, and enhance overall functioning, allowing patients to lead more fulfilling lives without relying solely on medication. Neurostimulation devices can be tailored to individual patient needs, offering a personalized treatment approach. Patients appreciate the ability to adjust and control the device settings to optimize their therapy, providing a sense of empowerment in managing their condition. Neurostimulation has shown long-term efficacy in managing various neurological conditions. Patients are increasingly willing to invest in these devices for sustained relief and improved symptom control over time. The increasing preference for non-pharmacological treatment options, driven by concerns about medication side effects, long-term efficacy, and the desire for a higher quality of life, is contributing to the rising demand for neurostimulation devices. These devices offer a promising and patient-centered approach to managing various neurological conditions, providing effective relief with fewer pharmaceutical interventions.

Technological Advancement and New Product Development

The increased demand for enhanced product outcomes and efficiency has driven the development of innovative products and technologies to address unmet needs in patient care and surgery. To provide improved and alternative solutions for unmet medical needs in neurological disorders, companies have developed novel technologies and devices, such as neurostimulation equipment, to enhance the overall quality of life for affected patients. For instance, in January 2019, Boston Scientific Corporation launched the Vercise Primary Cell and Vercise Gevia Deep Brain Stimulation system for the

treatment of Parkinson's disease symptoms. Similarly, in December 2018, Axonics Modulation Technologies, Inc. filed a Premarket Approval Application (PMA) with the U.S. FDA for their rechargeable implantable sacral neurostimulation system. Furthermore, in January 2017, Abbott Laboratories introduced the Proclaim DRG neurostimulation system in Europe, providing targeted relief for chronic neuropathic pain through dorsal root ganglion (DRG) stimulation. Abbott is the first and only company to offer DRG therapy for certain types of chronic pain. As a result, the key trend of developing and commercializing novel electrical stimulation devices is driving the growth of the global neurostimulation devices market.

Key Market Challenges

Complications Associated with Neurostimulation Devices

Complications, including device malfunction, lead migration, or infection, can raise safety concerns among patients and healthcare providers. Fear of adverse events may deter individuals from considering or recommending neurostimulation therapies. Many neurostimulation devices require surgical implantation, which carries inherent risks. Patients may be hesitant to undergo invasive procedures, especially if they perceive the potential complications as significant. The risk of infection is a major concern with implanted devices. Infections can lead to device removal, additional surgeries, and prolonged recovery periods, which can deter patients from pursuing neurostimulation therapies. Lead migration, where the implanted electrodes move from their intended location, can result in decreased therapy effectiveness and the need for additional surgical interventions. This risk can undermine patient confidence in the therapy. Device malfunctions, such as battery failures or programming issues, can disrupt therapy and necessitate device replacement or revision. These complications can be burdensome for patients and impact their overall satisfaction with the treatment.

Stringent Device Approval Regulations

Stringent regulatory approval processes, such as those required by the U.S. Food and Drug Administration (FDA) in the United States or the European Medicines Agency (EMA) in Europe, can be lengthy and time-consuming. The extended time from development to market availability can delay patient access to innovative neurostimulation therapies, leading to frustration and potentially impacting demand. Complying with stringent regulatory requirements often entails significant financial investments. Device manufacturers must conduct extensive clinical trials and gather comprehensive safety and efficacy data. These high development costs can lead to

higher device prices, potentially limiting patient and healthcare system affordability. Rigorous regulatory requirements may deter smaller manufacturers and startups from entering the neurostimulation device market. This can limit innovation and competition, reducing the variety of available devices and slowing down technological advancements.

Key Market Trends

Increasing Demand for Non-Invasive Treatment Options

Non-invasive treatment options are on the rise due to their numerous advantages, including painlessness, safety, and minimal side effects. Moreover, they have extensive applications in neurological disorders. Non-invasive treatments aim to enhance quality of life and mitigate the impact of speaking, swallowing, movement, and cognition issues. Both patients and healthcare providers are increasingly inclined towards non-invasive or minimally invasive treatment options for enhanced comfort. Neurostimulation devices, such as TENS and TMS devices, offer a non-invasive approach to treating pain and mood disorders. The growing demand for these less invasive treatments presents significant market opportunities for neurostimulation devices.

Increasing Investments in RD

RD investments facilitate the development of innovative and technologically advanced neurostimulation devices. These advancements can lead to the creation of more effective, safer, and user-friendly devices, attracting both patients and healthcare providers to adopt the latest therapies. RD efforts can lead to the discovery of new indications and expanded applications for neurostimulation devices. As more clinical evidence emerges supporting the efficacy of these devices for various medical conditions, demand can increase due to broader utility. Ongoing RD helps refine and optimize neurostimulation therapies, leading to improved patient outcomes. Enhanced treatment efficacy, reduced side effects, and better patient experiences contribute to increased demand as more patients seek these therapies.

Continued RD can drive cost reduction in device manufacturing. More efficient production processes and economies of scale can result in more affordable neurostimulation devices, expanding access to a broader patient population.

Segmental Insights

Type Insights

Based on the type, the global market has undergone analysis for spinal cord stimulators, deep brain stimulators, sacral nerve stimulators, vagus nerve stimulators, and others. The market was led by the spinal cord stimulator segment in 2023, due to its broad product application scope and high market penetration of commercially available products. Technological advancements in this segment are poised to further drive its growth. Spinal cord stimulators are utilized in the management of non-malignant chronic neuropathic pain, providing pain relief through the generation of small nerve impulses, without any anatomical alterations to the target area. Deep brain stimulators find application in the treatment of various neurological disorders, particularly Parkinson's disease. These devices are currently in an experimental phase, leveraging nascent technology. The utilization of these devices for conditions like Alzheimer's, Tourette syndrome, refractory epilepsy, cluster headache, trigeminal neuralgia, and movement disorders caused by multiple sclerosis awaits FDA approval. Sacral nerve stimulators, employed in the treatment of chronic ailments such as urinary incontinence and fecal incontinence, are projected to witness the fastest compound annual growth rate from 2024 to 2029. The increasing awareness surrounding these devices is expected to be the primary driving factor for this segment.

Application Insights

Based on application, the global market has been categorized into various segments including pain management, epilepsy, essential tremors, urinary faecal incontinence, depression, dystonia, gastroparesis, parkinson's disease, and others. The pain management segment emerged as the market leader in 2023. This can be attributed to the high therapeutic value and increasing usage of products for pain management, driven by the prevalent chronic pain disorders. Furthermore, this segment is projected to exhibit the fastest CAGR throughout the forecast period. Conditions such as chronic pain, post-surgical pain, and leg pain are encompassed under this segment. Epilepsy, a neurological disorder causing seizures, affects approximately 50 million people worldwide, according to the World Health Organization (WHO). The segment's growth is expected to be driven by the high efficacy of products in treating epilepsy, along with limited treatment options available for the disease. Essential tremors, characterized by severe involuntary limb movement, also affect other body parts such as the neck and jaw. The growing global geriatric population is a significant driver for the growth of this segment. Additionally, the increasing prevalence of depression is expected to contribute to the market development, as neurostimulation equipment offers convenient treatment by modulating electrical brain signals.

Regional Insights

In 2023, North America claimed the largest share of revenue and is projected to remain the dominant force throughout the forecast period. However, stringent government regulations and prolonged FDA approval processes may present challenges to the region's growth. Following North America, Europe ranked second in revenue share. The rapid economic development in Eastern European nations is expected to accelerate this growth further. Additionally, the comparatively easier CE approval process has led to a higher level of production penetration in this region.

Key Market Players

Boston Scientific Corporation

Medtronic PLC

Abbott Laboratories Inc.

Nevro Corp.

Liva Nova PLC

Axonics Modulation Technologies Inc.

Neuropace Inc.

EndoStim Inc.

NDI Medical LLC

Neuronetics Inc.

Report Scope:

In this report, the Global Neurostimulation Devices Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Neurostimulation Devices Market,By Type:

- oSpinal Cord Stimulators

- oDeep Brain Stimulators

- oSacral Nerve Stimulators

- oVagus Nerve Stimulators

- oOthers

Neurostimulation Devices Market,By Application:

- oPain Management

- oHearing Loss

- oUrinary Incontinence

- oParkinson's Disease

- oEpilepsy

- oOthers

Neurostimulation Devices Market, By Region:

- oNorth America

 - United States

 - Canada

 - Mexico

- oEurope

France

United Kingdom

Italy

Germany

Spain

oAsia-Pacific

China

India

Japan

Australia

South Korea

oSouth America

Brazil

Argentina

Colombia

oMiddle East Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Neurostimulation Devices Market.

Available Customizations:

Global Neurostimulation Devices market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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