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# United States Deep Brain Stimulation In Parkinson’s Disease Market By Product (Single-channel, Dual-channel), By Region, By Competition, Forecast & Opportunities, 2019-2029F

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## Abstracts

United States Deep Brain Stimulation In Parkinson’s Disease Market was valued at USD 522.01 million in 2023 and is anticipated to project impressive growth in the forecast period with a CAGR of 7.10% through 2029. The rising incidence of Parkinson's Disease (PD) is a significant driving force behind the growth of the deep brain stimulation devices market. PD is the second most prevalent neurodegenerative disorder after Alzheimer's Disease (AD). Its development is influenced by a combination of genetic factors, such as mutations in the alpha-synuclein gene, and environmental factors, including repeated head injuries, with aging being the primary risk factor. The COVID-19 pandemic has had adverse effects on market expansion, impacting both demand and production directly. It disrupted supply chains and imposed financial challenges on businesses. During the pandemic, there was consistent postponement or cancellation of neurological surgeries to prevent the spread of COVID-19. Neurosurgical procedures saw a 55% decline in the most severely affected countries, including the United States, Russia, India, Brazil, France, the United Kingdom, Italy, and Spain. There is increasing evidence suggesting that the COVID-19 virus can lead to symptoms such as brain fog and other neurological issues.

Key Market Drivers

Increasing Prevalence of Parkinson's Disease

Parkinson's Disease (PD) is a progressively debilitating neurological condition that affects millions of individuals worldwide. In the United States, as in many other

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countries, the prevalence of Parkinson's Disease is on the rise. This alarming increase in the number of people affected by PD is not only a public health concern but also a significant driver behind the growth of the United States Deep Brain Stimulation (DBS) in Parkinson's Disease market. Parkinson's Disease is characterized by motor symptoms such as tremors, bradykinesia, rigidity, and postural instability. It is a progressive condition that affects the central nervous system, leading to a deterioration in quality of life. The exact cause of Parkinson's Disease remains unknown, but both genetic and environmental factors are believed to play a role. One of the most concerning aspects of PD is its increasing prevalence, which has a profound impact on healthcare systems and treatment options. One of the primary factors contributing to the rising prevalence of Parkinson's Disease is the aging population. As the Baby Boomer generation continues to age, there is a natural increase in the number of individuals at risk for PD. The disease primarily affects people over the age of 60, and with longer life expectancies, a greater portion of the population is entering the age range where PD is more common. Advancements in medical technology and diagnostic criteria have led to earlier and more accurate diagnoses of Parkinson's Disease. This means that individuals who may not have been identified in the past are now receiving proper diagnoses and care. This early detection increases the demand for effective treatments, including DBS. In addition to aging, environmental factors such as exposure to certain pesticides and industrial chemicals have been associated with an increased risk of developing Parkinson's Disease. As environmental factors continue to play a role, the prevalence of the disease is likely to rise, further driving the demand for effective therapies like DBS. DBS is a surgical procedure that involves implanting electrodes into specific areas of the brain and connecting them to a pulse generator, which delivers controlled electrical impulses. This technique has shown remarkable effectiveness in managing the motor symptoms of Parkinson's Disease, providing patients with improved quality of life and functional independence. With a larger pool of individuals diagnosed with Parkinson's Disease, there is a growing number of potential candidates for DBS therapy. The greater the number of patients, the higher the demand for this advanced treatment option. As awareness of Parkinson's Disease and its treatment options spreads, more healthcare providers and medical institutions are equipped to offer DBS procedures. This improved access to care ensures that eligible patients have the opportunity to explore DBS as a treatment choice. The rising prevalence of Parkinson's Disease has prompted increased research and investment in the development of advanced DBS technologies and techniques. This innovation not only enhances the efficacy of DBS but also expands its potential applications to address a wider range of neurological conditions.

Effectiveness of Deep Brain Stimulation

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Deep Brain Stimulation (DBS) has emerged as a transformative therapeutic approach in the management of Parkinson's Disease (PD). This innovative treatment has demonstrated remarkable effectiveness in alleviating the motor symptoms of PD, significantly improving patients' quality of life. In the United States, the effectiveness of DBS is a driving force behind the growth of the DBS market for Parkinson's Disease. Deep Brain Stimulation (DBS) has emerged as a transformative therapeutic approach in the management of Parkinson's Disease (PD). This innovative treatment has demonstrated remarkable effectiveness in alleviating the motor symptoms of PD, significantly improving patients' quality of life. In the United States, the effectiveness of DBS is a driving force behind the growth of the DBS market for Parkinson's Disease. The primary reason behind the growing popularity of DBS in the United States is its proven efficacy in managing the motor symptoms of Parkinson's Disease. DBS involves the implantation of electrodes into specific regions of the brain, which are connected to a pulse generator. This device delivers controlled electrical impulses, effectively modulating the brain circuits responsible for PD symptoms. Patients who undergo DBS often experience significant improvements in their motor symptoms, including reduced tremors, enhanced mobility, and better overall motor function. DBS not only provides immediate relief but also offers prolonged and lasting benefits. Many patients find that their motor symptoms remain well-managed for several years following the procedure. This prolonged effectiveness is a crucial factor in boosting patient confidence in DBS as a long-term solution for PD management. Another significant advantage of DBS is its potential to reduce the reliance on medication. As DBS provides substantial symptom relief, patients may be able to reduce the dosage of their Parkinson's medications. This can lead to fewer medication-related side effects, enhancing the overall quality of life for individuals with PD. Perhaps the most compelling aspect of DBS therapy is its profound impact on the quality of life for Parkinson's patients. Beyond motor symptom management, DBS can improve non-motor symptoms such as mood, cognition, and sleep. This holistic approach to PD management contributes to an improved overall well-being for patients and their caregivers. As the effectiveness of DBS becomes more widely recognized, the demand for this therapy continues to surge. Patients who have exhausted traditional medication options or are seeking a more comprehensive approach to symptom management are increasingly turning to DBS as a viable solution. Advancements in the field of neurology are expanding the eligibility criteria for DBS beyond the traditional stages of PD. As researchers uncover new insights into the brain circuits involved in PD, DBS is being considered for use in earlier stages of the disease and for a broader range of symptoms. This expansion in eligibility criteria further contributes to the growth of the DBS market. The remarkable effectiveness of DBS therapy has spurred significant investments in research and development within the

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medical device industry. Companies are continually innovating and improving DBS technology, making it even more precise, customizable, and accessible. These advancements fuel the growth of the DBS market in the United States.

Expanding Clinical Indications

Deep Brain Stimulation (DBS) has long been recognized as a highly effective treatment for Parkinson's Disease (PD). However, its potential extends far beyond this one application. In recent years, there has been a noteworthy expansion in the clinical indications for DBS, particularly in the United States. This expansion is proving to be a significant driver for the growth of the DBS market, as the therapy's versatility attracts the attention of both healthcare providers and patients alike. DBS was initially developed as a treatment primarily for PD, with a focus on alleviating the motor symptoms of the disease. However, its mechanism of action – the precise modulation of neural circuits through targeted electrical impulses – has broadened its potential applications in various neurological and neuropsychiatric conditions. One of the first significant expansions beyond PD was the application of DBS in treating essential tremor (ET). Essential tremor is a neurological disorder characterized by uncontrollable shaking, often affecting the hands and head. DBS has demonstrated remarkable efficacy in reducing or even eliminating these tremors, offering a life-changing improvement in the quality of life for ET patients. As a result, DBS has become an accepted treatment option for ET, boosting its adoption and the growth of the DBS market. Dystonia is another neurological condition characterized by involuntary muscle contractions, leading to abnormal postures and repetitive movements. DBS has proven to be a game-changer in dystonia management, providing relief to patients who have struggled with debilitating symptoms for years. This expanded application has not only improved patient outcomes but has also widened the reach of DBS in the United States. Expanding the clinical indications for DBS has brought hope to individuals with severe, treatment-resistant obsessive-compulsive disorder (OCD). In recent years, studies have shown that DBS can effectively alleviate OCD symptoms in select cases. While this application is still in its early stages and requires further research, it has sparked interest in the potential of DBS to address other neuropsychiatric conditions. DBS has also demonstrated promise in the field of epilepsy management, particularly for patients who do not respond to traditional treatments like medication or are not suitable candidates for surgical resection. By modulating specific brain circuits, DBS may help reduce the frequency and severity of seizures in some epilepsy patients. As research continues in this area, the potential for DBS to become a viable epilepsy treatment option grows. The expansion of clinical indications for DBS has led to increased adoption of this therapy among both healthcare providers and patients. Physicians who

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previously focused solely on PD now consider DBS for a broader range of conditions, leading to more referrals and procedures. As DBS becomes applicable to a wider range of neurological and neuropsychiatric conditions, the patient pool for this therapy expands significantly. This increased demand fosters market growth, as more individuals seek the benefits of DBS. The growing clinical indications for DBS have spurred investment in research and development. Companies are exploring new technologies, electrode configurations, and stimulation parameters to optimize DBS for various conditions. This innovation not only enhances the efficacy of DBS but also opens the door to potential future applications.

Healthcare Infrastructure and Accessibility

The United States has long been at the forefront of medical innovation and technological advancement. In recent years, this leadership has extended to the realm of Deep Brain Stimulation (DBS), a groundbreaking therapy for Parkinson's Disease (PD). One crucial factor driving the growth of the DBS market for PD in the United States is the robust healthcare infrastructure and the accessibility it offers to patients in need. The United States boasts a well-established healthcare infrastructure that includes specialized centers and medical institutions dedicated to neurology and neurosurgery. These centers provide patients with access to highly trained neurologists and neurosurgeons who are experienced in the diagnosis and treatment of neurological conditions, including PD. The presence of these experts ensures that patients receive the best possible care and guidance when considering DBS as a treatment option. In addition to expert healthcare providers, the United States offers access to state-of-the-art medical facilities and equipment. The availability of advanced imaging techniques, such as functional MRI and diffusion tensor imaging, allows for precise pre-operative planning and accurate targeting of brain regions during DBS procedures. These facilities enhance the safety and efficacy of DBS surgeries, making the therapy even more appealing to patients and healthcare providers. Healthcare infrastructure in the United States is closely tied to insurance coverage. Many insurance plans provide coverage for DBS procedures, making the therapy financially accessible to a broader range of patients. This insurance support reduces the financial burden on patients and encourages them to consider DBS as a viable treatment option. The United States' vast geographical reach means that patients from various regions can access specialized healthcare services, including DBS treatment. Major metropolitan areas are typically equipped with comprehensive healthcare facilities, but even patients in more remote areas have the opportunity to access these services, thanks to well-connected healthcare networks. The accessibility of healthcare infrastructure extends to clinical trials and research initiatives. The United States hosts numerous clinical trials related to

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DBS and PD, allowing patients to participate in groundbreaking research and gain access to cutting-edge treatments. This accessibility to research opportunities not only benefits patients but also contributes to the growth of the DBS market by advancing the field. Healthcare infrastructure in the United States includes patient education and support programs that help individuals, and their families make informed decisions about treatment options like DBS. Patients can access resources, attend support groups, and engage with healthcare professionals who can guide them through the entire treatment journey. This support system is crucial in boosting patient confidence and increasing the adoption of DBS therapy.

Key Market Challenges

Limited Awareness and Education

One of the foremost challenges facing the DBS market in the United States is limited awareness among patients and even some healthcare providers. Many individuals with PD, especially those in the early stages of the disease, may not be aware of DBS as a treatment option. Healthcare providers also vary in their familiarity with DBS therapy, which can impact referrals and access to treatment. Comprehensive patient education and awareness campaigns are crucial to address this challenge and ensure that eligible patients are informed about DBS.

High Cost of Treatment

The cost associated with DBS procedures can be a significant barrier to access. While some insurance plans cover the cost of DBS, not all patients may have adequate coverage. Additionally, the out-of-pocket expenses, including co-pays and deductibles, can be substantial. The high upfront cost of the device itself, coupled with surgical and follow-up expenses, can deter some patients from pursuing DBS as a treatment option. Efforts to reduce the financial burden on patients, such as improved insurance coverage and cost-effective device options, are needed.

Access Disparities

Access to specialized healthcare and DBS treatment can vary significantly across different regions of the United States. While major metropolitan areas typically have comprehensive healthcare facilities, rural and underserved areas may lack access to neurologists, neurosurgeons, and DBS centers. This access disparity can result in delayed diagnosis and treatment for individuals living in these regions. Initiatives to

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improve healthcare infrastructure and expand access to specialized care are essential to address this challenge.

Ongoing Device Maintenance

DBS devices require ongoing maintenance and programming adjustments to ensure optimal therapeutic outcomes. Regular check-ups with specialized healthcare providers are necessary for patients with DBS implants. However, these follow-up appointments can be logistically challenging, especially for patients who live far from DBS centers. Telemedicine and remote programming options are emerging as potential solutions to improve access to device maintenance.

Key Market Trends

Expanding Clinical Indications

One of the most promising trends on the horizon is the expanding range of clinical indications for DBS. While DBS initially gained recognition as a treatment for PD, ongoing research is revealing its potential for addressing other neurological and neuropsychiatric disorders. In the United States, we can expect to see an increasing number of clinical trials and studies exploring the use of DBS in conditions such as essential tremor, dystonia, obsessive-compulsive disorder (OCD), epilepsy, and even depression. These expanded clinical indications will open up new avenues for DBS, increasing its relevance and adoption.

Miniaturization of Devices

Advancements in medical technology are driving the miniaturization of DBS devices. Smaller, more discreet devices are in development, allowing for less invasive implantation procedures. These miniaturized devices offer improved patient comfort, reduced scarring, and potentially fewer post-operative complications. As these devices become available, we can expect an increase in patient acceptance and adoption of DBS therapy.

Closed-Loop DBS Systems

Closed loop or adaptive DBS systems represent a significant advancement in DBS technology. These systems use real-time data feedback to adjust stimulation parameters automatically based on a patient's specific needs. By providing dynamic,

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patient-centered therapy, closed-loop DBS systems have the potential to enhance symptom control and reduce side effects. Expectations are high for the adoption of closed-loop DBS systems as they become more refined and widely available.

Patient-Centered Outcomes and Quality of Life

As the focus on patient-centered care continues to grow, the DBS market will increasingly emphasize patient-reported outcomes and quality of life measures. Beyond just symptom management, healthcare providers will aim to improve the overall well-being and satisfaction of patients undergoing DBS therapy. This trend aligns with the broader shift towards holistic healthcare approaches that prioritize the patient's experience and outcomes.

Segmental Insights

Product Insights

Based on the category of Product, the dual-channel system dominated the market. High-frequency Deep Brain Stimulation (DBS) has emerged as a widely adopted approach for managing severe movement disorders when medical treatments no longer yield improvements. This procedure is known for its safety, bilaterality, and reversibility, involving the insertion of leads into target areas on both sides of the brain. The increasing acceptance of double-channel DBS for addressing various neurological conditions like Parkinson's disease, dystonia, Alzheimer's disease, and epilepsy is a significant driver of growth in this segment.

Besides, advancements in technology and the introduction of new products are also contributing to the segment's expansion. For example, in January 2020, Abbott's Infinity DBS system gained FDA approval for treating Parkinson's disease, allowing precise targeting of the brain's internal Globus Pallidus (GPi) associated with Parkinson's symptoms. Notable offerings in this segment include Boston Scientific's Vercise, Vercise PC, and Vercise Gevia DBS systems, Medtronic's Activa PC and Activa RC, and Abbott's Infinity.

The single-channel segment is expected to experience the most rapid growth in the foreseeable future. Deep Brain Stimulator (DBS) devices, also known as brain pacemakers, have been used clinically for 25 years to treat Parkinson's disease. Single-channel DBS systems are employed in patients with only one lead implanted. Healthcare professionals prefer single-channel systems because they offer neurologists

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more programming flexibility and deliver better motor outcomes.

Factors such as the increasing elderly population, which is more susceptible to Parkinson's disease, and greater awareness of neurological movement disorders among patients are expected to drive growth in this segment. For instance, the World Ageing 2019 report estimated that there were approximately 703 million individuals aged 65 or older globally in 2019. Additionally, the Brain & Spine Foundation (BSF) and Neurological Alliance launched 'Brain Awareness Week' in March 2018, a global campaign aimed at raising awareness about advancements in the diagnosis, treatment, and prevention of neurological conditions. One of the noteworthy products in this segment is Medtronic's Activa SC, a single-channel DBS approved for Parkinson's disease treatment.

Regional Insights

The North-East region of the United States is poised to assert its dominance in the Deep Brain Stimulation (DBS) market for Parkinson's Disease treatment due to a combination of key factors. Firstly, this region is home to some of the nation's most prestigious medical institutions and research centers, where groundbreaking innovations in neurology and DBS technology are consistently developed. These institutions attract top-tier talent and foster a culture of medical excellence, ensuring that cutting-edge treatments like DBS are readily available and widely adopted. Additionally, the North-East region boasts a dense population of elderly individuals, who are more prone to Parkinson's disease, creating a substantial patient base for DBS procedures. Lastly, the region's strong healthcare infrastructure and a well-informed populace contribute to a high level of awareness and demand for advanced treatments like DBS. All these factors combined make the North-East region a formidable force in shaping the future of the DBS market for Parkinson's Disease within the United States.

Key Market Players

Boston Scientific Corporation

Abbott Laboratories Inc

Medtronic plc

Functional Neuromodulation Inc

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Nuvectra Corp

Aleva Neurotherapeutics SA

Report Scope:

In this report, the United States Deep Brain Stimulation In Parkinson’s Disease Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

United States Deep Brain Stimulation In Parkinson’s Disease Market, By Product:

Single-channel

Dual-channel

United States Deep Brain Stimulation In Parkinson’s Disease Market, By Region:

North-East

Mid-West

West

South

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the United States Deep Brain Stimulation In Parkinson’s Disease Market.

Available Customizations:

United States Deep Brain Stimulation In Parkinson’s Disease market report with the given market data, Tech Sci Research offers customizations according to a company's

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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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