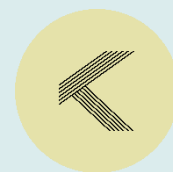


Chordate Medical

Initial take



2024-01-24

Chordate Medical AB ("Chordate" or the "Company") is active in the medical technology industry, and the company has developed a unique and patented treatment method for chronic migraine and chronic rhinitis. The company's treatment Ozilia ("Ozilia®") for chronic migraine uses neuromodulation, a non-invasive and drug-free technique that is safe for the patient and associated with minimal side effects.

Gigantic market

It is estimated that 110 to 170 million people worldwide suffer from chronic migraine, making the disease one of the most widespread globally. A significant proportion of patients are underdiagnosed, and it is estimated that more than 60 % of those with chronic migraine have not been properly diagnosed. Current treatment strategies are far from optimal, characterized by limited efficacy and significant side effects, underlining the need for new, effective treatment options.

Plan for exit

Chordate has a clearly communicated vision of eventually selling the company to a major player in the medical technology or pharmaceutical industry. Our assessment is that such a transaction could happen within a few years' time, and that it would create significant value for shareholders.

Clear strategy

As part of the preparations for a possible sale, the company has implemented a clear action plan. First and foremost, the company has built up a broad patent portfolio to protect its innovations from infringement by competitors. Furthermore, the company focuses on demonstrating the effectiveness of the treatment method through clinical studies. Finally, the company intends to highlight the business value through targeted sales efforts in selected key markets.

(MSEK)	Year 1	Year 3	Year 5	Year 8	Year 10
Treated patients (k)	17	110	169	273	332
% y-o-y	-	88,3	15,9	15,5	11,1
Revenues	332	2 194	3 390	5 451	6 647
FCF	66	439	678	1 090	1 329
TV					2 712
PV FCF	44	130	89	43	23
TV					47
EV: SEK 760.3 million					

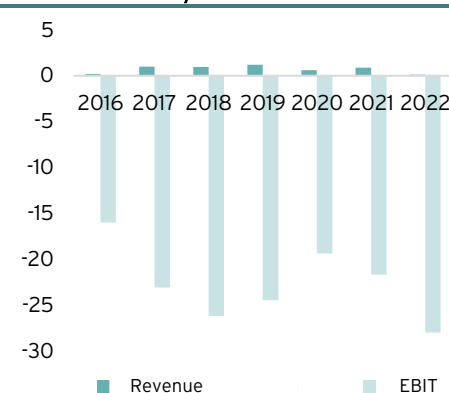
Potential purchase price: SEK 760.3 million

- The sum of Ozilia's future discounted cash flows in the hands of the buying company

Facts

CEO	Anders Weilandt
List	First North
Ticker	CMH
Share price (SEK)	0,1348
NOSH (M)	232,4
Market cap (MSEK)	31,3
Net cash (MSEK)	-16,4
EV (MSEK)	14,9
Insider ownership	17,14%
Next report	2024-03-22

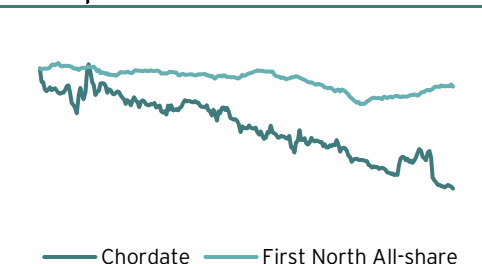
Financial history



Analyst

Jakob Fritz
jakob.fritz@kalqyl.se

Share price 12 months



Share price %	1m	3m	12m
	-48,5	-46,9	-76,3

Key Insights



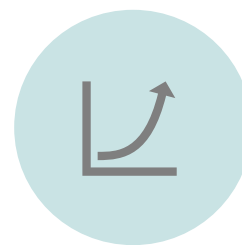
Strong patent portfolio

Chordate's current patent portfolio is broad and consists of 74 approved patents. In addition, the company has two pending patent applications. The patents are divided into nine different patent families, which together cover 24 countries.



Clinical evidence

The clinical benefit of Ozilia for chronic rhinitis is proven and well-substantiated in research. Regarding migraine, the research situation is very promising, and in the company's flagship study PM007, Ozilia showed as good or better efficacy than drug-based alternatives for migraine.



High upside if acquired

We believe that a potential buyer of Chordate will focus on the value of the company's technology. We believe that Ozilia, in the hands of an established player, has the potential to generate significant free cash flows over an extended period. Given today's share price, we see a significant upside if the company is acquired.

"In 2024, we will continue to work in our focus markets. The list of customer prospects is growing, and we are getting closer to goals on several points."

- CEO Anders Weilandt

Investment case

- Innovative technology with strong patent protection
- Positive results in clinical studies
- Experienced and competent management team
- High insider ownership
- Great market potential
- Clear exit strategy
- High potential upside if acquired

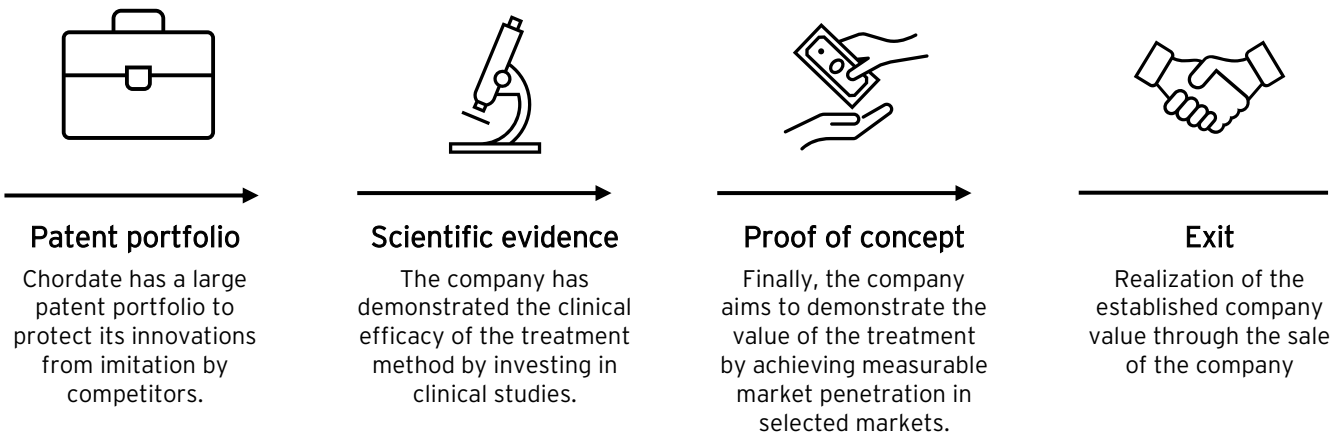
Company description

Chordate Medical is a medical technology company that has developed, patented, and sold a unique treatment method, Ozilia (formerly K.O.S) for chronic migraine and chronic rhinitis. The product portfolio consists of two CE-marked products, with the indications chronic migraine and chronic rhinitis. The company currently has 74 approved patents, and the effectiveness of the treatment for both migraine and rhinitis has been documented in several clinical studies. In addition, market introduction and sales are currently conducted through market experts and distributors in selected geographic markets in the EU and the Middle East. The company has three employees, and the other positions are staffed by consultants.

Strategy and marketing plan

Chordate has an explicit exit strategy, where the goal is to demonstrate the value of the technology in order to eventually sell the company to a larger player active in the medical technology or pharmaceutical industry. The company value is built on the basis of the patent portfolio, demonstrated clinical efficacy of the treatment in clinical studies, and through sales successes in selected geographic markets. The company's main focus is to execute in line with the marketing plan for chronic migraine due to its widespread nature and high level of underdiagnosed patients, societal cost of care, drugs and loss of production, but some resources are also allocated to the indication of rhinitis.

Chordate's strategy for a sale of the company is based on a marketing plan that includes three concrete parts: an extensive patent portfolio, scientific evidence, and Proof of Concept.



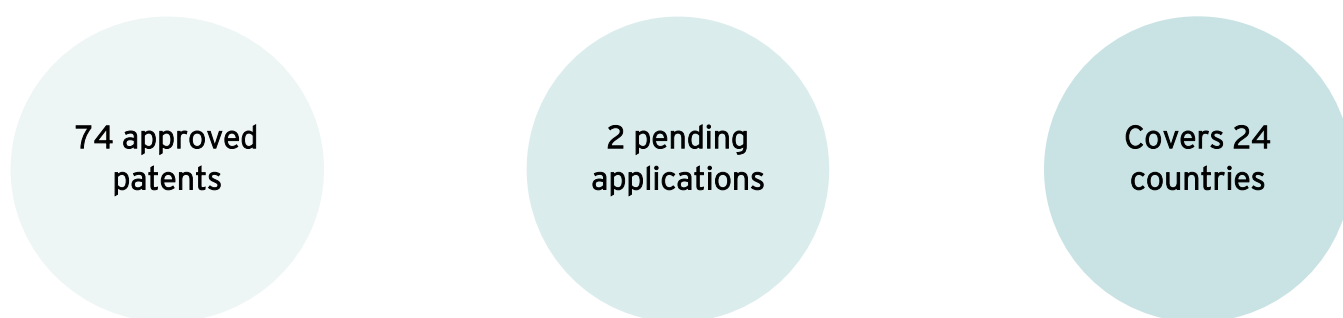
The strategy to focus on a sale of Chordate is based on the sector's development over time, where consolidation in the industry has increased. This development is mainly due to the fact that larger medical device and pharmaceutical companies often have access to large amounts of funds, but also that they are more risk averse. Research and development of new technologies and treatments is resource-intensive, and the outcomes are often binary. From a capital allocation perspective, it may therefore be more rational for large medical device and pharmaceutical companies to acquire smaller companies that have already developed and proven new technologies. Chordate's goal is to be such a project.

Chordate communicated publicly for the first time in the fall of 2019 that the company's underlying strategy is to build up the value of the business to sell the company. Since then, the company has

executed in line with the marketing plan and come a long way on the journey, but since the work is ongoing, there are further milestones to complete. Below we have compiled the current state and future of the patent portfolio, the scientific evidence for the efficacy of the treatment and proof of concept in selected geographic sales markets.

Patents

Chordate's current patent portfolio is broad and consists of 74 approved patents. In addition, the company has two pending patent applications. The patents are divided into nine different patent families, which together cover 24 countries. These are designed to protect the innovations that form the basis of the company's Ozilia treatment for migraine and rhinitis. The patents include, for example, the unit for vibration and vibration patterns during treatment.



The current patent protection extends from 2028 to 2033, depending on the country and patent family. According to the company, a less important patent in Sweden has the shortest remaining maturity, while a more important patent in the US has the longest remaining maturity. The trademark "Chordate" is registered in both the UK and the EU in classes 5, 9, 10, 36, 41, 42 and 44. Chordate is also registered as the holder of certain domain names. Ozilia® is registered as an EU trademark in Classes 09 and 10.

As an external observer, it is complicated to fully evaluate a patent portfolio like Chordate's. This is due, for example, to the complexity of the technologies patented and the legal complexity of patent law, which can vary considerably from country to country. In addition, it can be challenging to assess how well patents protect the core technology and whether they provide a real competitive advantage in the market. A further complication is that patent portfolios are often dynamic, with new applications, approvals, and possible expirations of older patents.

Current situation and outlook

Our assessment is that the company has a solid patent portfolio that offers broad protection. According to CEO Anders Weilandt, the company does not plan to submit additional patent applications at this time, which indicates that Chordate is satisfied with the current patent portfolio after ongoing patent applications have been approved. We therefore believe that Chordate's patent portfolio should be sufficient to minimize the risk of technological mimicry from competitors. We believe that it is of great importance that Chordate's technology is well patented, as it gives a potential buyer of the company exclusive rights to use, sell or license the technology, which creates a competitive advantage and enables a more controlled and predictable commercialization.

Scientific evidence

The second component of the company's strategy to achieve a sale of the company is to build a strong scientific foundation for the clinical effect and patient benefit for the migraine indication. The company has already conducted several scientific studies and has several ongoing and planned.

Migraine

In addition to existing research, the company has conducted its own study, PM007, with the aim of demonstrating the effect of the Ozilia treatment on migraine. The study showed significant results, with an average reduction in headache and migraine days by approximately 3.5 days per month in the patient group receiving active treatment, an effect that persisted over a four-week follow-up period.

Completed study

Study	Description	Results
PM007	The study was conducted to evaluate the efficacy of intranasal treatment with Ozilia, for the preventive treatment of chronic migraine. 132 patients with chronic migraine were randomized to receive intranasal stimulation with Ozilia, or placebo stimulation (lower pressure and without vibration) once weekly for 10 minutes per nostril for a period of 6 weeks ⁵ .	Patients who received active Ozilia treatment reduced their headache and migraine days by an average of 3.5 days per month. This effect was sustained for a 4-week follow-up period. The active treatment group had significantly better results than the placebo group, and the study reported no serious adverse events ⁵ .

A reduction in monthly headache and migraine days through Chordate's Ozilia treatment has a positive impact, both by increasing patients' quality of life and by reducing societal costs such as healthcare visits and lost work capacity.

The company has started two additional studies. PM009 evaluates the efficacy of Ozilia treatment in the approximately 30-40 percent of patients who do not respond to CGRP inhibitors, which is a new and very costly type of drug used to treat and prevent migraine. These medicines are mainly prescribed to patients who do not respond to traditional migraine treatments⁹⁴. The study will thus show if the Ozilia treatment can be effective for patients who do not respond to other treatments, which would be very positive for Chordate and those patients who do not respond to other treatment options.

Ongoing studies

Study	Description	Status
PM009	PM009 is an open-label pilot study to evaluate the efficacy of Ozilia as a preventive treatment of chronic migraine in subjects who do not respond to treatment with CGRP inhibitors (drugs). The study is being conducted at King's College London and aims to include 25-30 patients ⁶ .	Started in the fourth quarter of 2023.
PM010	PM010 is an open-label, post-market surveillance study aimed at studying the long-term outcome and safety of Ozilia treatment in patients with chronic migraine. The study is planned to be conducted at approximately 15 clinics in 3-4 European countries and aims to include 200 patients ⁶ .	Started in the fourth quarter of 2023.

PM010 is a post-market surveillance study, which is a study conducted after a medical product or drug has been launched. The study aims to monitor the safety, efficiency, and possible long-term side effects of the treatment in a broader patient population. The study includes 200 patients, which will give Chordate insight into how often the patient wants to use the Ozilia treatment. It will give the company insight into patients' preferences and treatment patterns, which can be crucial for tailoring treatment protocols and for understanding how the product will be used in a real clinical setting.



Other research

Furthermore, research has been conducted to investigate the impact of the Ozilia treatment on the central nervous system (CNS). The causes of migraine are not fully understood, but research has shown that the autonomic nervous system, which includes the nerves of the face and nose, is often involved in the beginning of a migraine attack. In a study by Jerling et al. (2018), researchers examined how the Ozilia treatment affects the variability of heart rhythm (HRV) in 12 healthy people. They measured HRV before, during, and after treatment, and 3.5 hours later.

The results showed that the treatment led to a significant reduction in HRV. This change was consistent across all participants and started quickly, but also quickly returned to normal after treatment. Heart rate, or the number of heartbeats per minute, remained largely unchanged throughout study⁷. The results indicate that the Ozilia treatment has an impact on the central nervous system, which could explain its effectiveness against migraine.

Case study

At the German Migraine and Headache Association's conference in Berlin in June 2023, a case study from a patient included in the migraine study PM007 was presented. The report concerned a 45-year-old woman who had migraines 18 days per month. After receiving Ozilia treatment, her migraine days drastically decreased to only 8 days per month, and this improvement lasted for four months.

The researchers from the University Medical Center in Rostock, who wrote the case study, explained that the woman had other medical problems that prevented her from taking regular migraine medication. Despite this, she had no side effects from the Ozilia treatment, and the positive effect lasted for several months. Thus, for patients who have migraine and are unable or unwilling to take regular medication, Ozilia may be an effective and long-lasting option according to this study¹⁷.

Rhinitis

Chordate's Ozilia treatment for rhinitis has undergone several scientific studies that have demonstrated the effectiveness and safety of the treatment. According to Di Rienzo Businco et al. (2023), Ozilia treatment significantly reduces symptoms such as nasal congestion and runny nose compared to a standard treatment. This is especially important because these symptoms are often the most noticeable for people with rhinitis⁸.

A study by Saninio et al. (2023) compared the Ozilia treatment with traditional treatment methods. The results showed that the Ozilia treatment was effective in the short term, and also had fewer side effects than traditional treatment methods⁹. This can be an important benefit for patients who are concerned about potential side effects of other treatment methods.

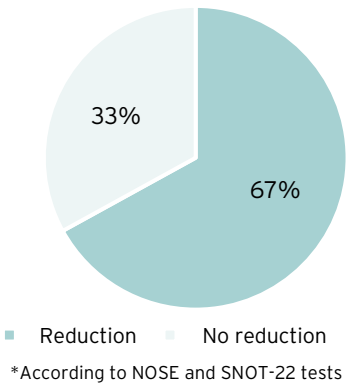
The Ozilia treatment has also been shown to have a long-term effect. According to Tortorella et al. (2022), the positive effects of treatment persisted for up to 6 months after the treatment period¹⁰. This is an important indicator that Ozilia treatment is not just providing temporary relief, but can be part of a long-term treatment plan.

Furthermore, Monti et al. (2022) concluded that the Ozilia treatment can improve the quality of life for patients with chronic rhinitis. This included improvements in sleep quality and general daily activities, which are important factors for patients' well-being¹¹.

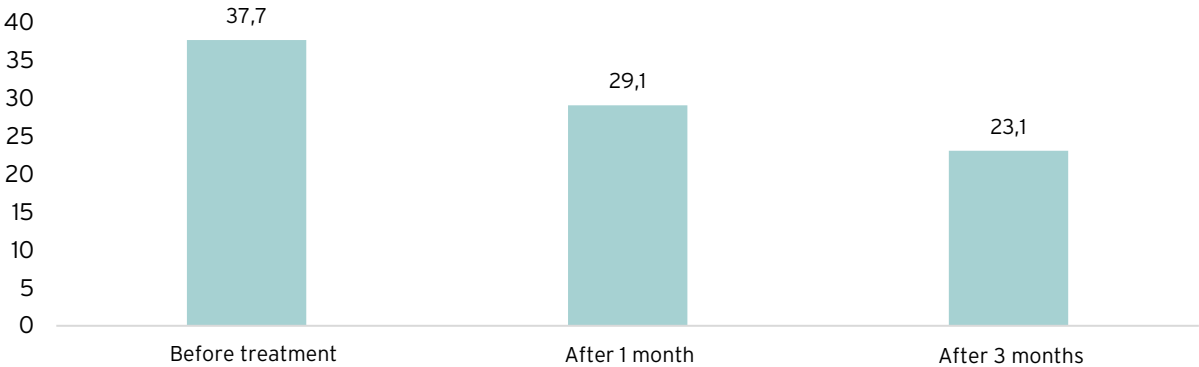
Finally, Avdeeva et al. (2020) concluded that a single Ozilia treatment can reduce symptoms compared to placebo after 4 weeks. There was also a significant reduction in nasal spray use among those treated with Ozilia¹². This may be particularly relevant for patients seeking alternatives to drug-based treatments and their potential side effects.

In conclusion, several sponsored and independent studies have confirmed that Ozilia treatment not only relieves symptoms such as nasal congestion and runny nose, but also improves the quality of life for patients with this condition.

Patients who experienced symptom reduction after K.O.S⁹



Average scores on the SNOT test after K.O.S treatment⁹



**The Sino-Nasal Outcome Test (SNOT) is a self-reported questionnaire used to measure symptom severity and quality of life in patients with various types of nasal and sinus diseases. Lower scores mean less perceived symptoms and vice versa. The highest possible score is 110.*

Current situation and outlook

In conclusion, we believe that the clinical evidence for Ozilia in the treatment of migraine is promising, but that additional research is needed to further strengthen the evidential value, while that for rhinitis is well substantiated. Given that migraine is the largest market for the Ozilia treatment, we expect that the company will focus its resources on further supporting the clinical evidence for migraine treatment going forward. The results from the PM007 study are very promising, but we believe that it is likely that at least one or two additional studies of similar scope will be required for the treatment to be considered effective against migraine. The PM009 and PM010 studies are important milestones, but we expect that they will be complemented by more extensive studies like PM007 in the future.

Proof of concept

The third and final part of Chordate's marketing plan is to achieve proof of concept. This means that the company is focusing on achieving sales success in selected markets. By achieving measurable market penetration in these markets, the company can demonstrate the value and commercial potential of the treatments to a potential buyer.

Strategy

The company is currently focusing on selected markets, primarily in the EU and the Middle East. Currently, the company's focus markets are Finland, Germany, the UK, Italy, Saudi Arabia and the United Arab Emirates¹³. The company aims to expand its presence in several profitable markets over time.

The company's strategy for processing new markets is based on several different elements. Initially, they focus on working with so-called Key Opinion Leaders (KOLs) and "early adopters" to ensure that information about the product reaches the most influential individuals in the market, as well as the players who are likely to use the technology early. This is followed by a sales effort, which hopefully will allow the company to quickly gain a foothold in the market. In order to build strong and long-lasting relationships, the company invests in building networks with relevant players. Part of this is to participate in congresses and fairs to spread knowledge and create awareness about the treatment. The company's products are CE-marked, which means market authorization throughout the EU. For other markets the company obtains a national permit based on the CE-marking.



The last and perhaps most important part of the strategy is to ensure reimbursement in order to promote the rapid introduction of products to the market. The reimbursement models in the healthcare systems vary in the different markets in which Chordate is active. It is a deliberate strategy on the part of the company to seek access to different reimbursement systems in each market - there may be different private care insurance policies in parallel with public health insurance. Before the company receives insurance reimbursement, it is usually the patients themselves who are responsible for the cost of the treatments, or actively seek reimbursement from their health insurance.

How are the markets processed?

Finland	Dedicated part-time marketing consultant
United Kingdom	Dedicated part-time marketing consultant
Germany	Dedicated part-time marketing consultants
Italy	Ve.Di.Se Hospital S.P.A is the distributor
Saudi Arabia	Employed general manager of the area. Janin Medical is a distributor
UAE	Dedicated Marketing Consultant/Distributor

Current situation and outlook

Chordate has initiated the market introduction of its migraine product Ozilia®™ Migraine in several countries, including Italy, the UK, Finland, Germany, Saudi Arabia and the United Arab Emirates. Initially, they are focusing on introducing the treatment to prominent neurologists, primarily in private care, and exploring opportunities for early insurance reimbursement. Our belief is that in the future the company will put extra resources into migraine rather than rhinitis, as the market potential is by far the greatest.

Chordate's prioritized markets for the treatment of rhinitis include Italy and Saudi Arabia. In Italy, the Ozilia treatment for rhinitis is offered through the company's Italian distributor Ve.Di.Se Hospital S.P.A at eleven clinics around the country. Ve.Di.Se is a well-established player in the Italian market with extensive experience in supplying medical devices to public hospitals and private clinics¹⁴. During the COVID pandemic, the roll-out in Italy lost momentum for obvious reasons but is now back on the right track. The company's plan is to further expand the number of clinics in 2024.

Saudi Arabia is also a prioritized market for the company's rhinitis product. Chronic rhinitis is a major health problem in the country and throughout the Gulf region due to, among other things, dry hot air and air pollution in major cities. Chordate's distributor Janin Medical is authorized to offer the Ozilia treatment for chronic rhinitis to both private and public hospitals in the country¹⁵. Earlier this year, Chordate received a first order for equipment and consumables from Janin Medical, and the end customer was a private healthcare company that operates six hospitals in the country's second largest city, Jeddah.

Recently, Chordate announced that they are starting the launch of Ozilia in the United Arab Emirates for both the migraine and rhinitis indications, and they see great opportunities in the Gulf region based on the previous successes and experiences gained in Saudi Arabia, and the company therefore sees an investment in the United Arab Emirates as a logical next step⁹⁰.

In addition to the above-mentioned sales efforts, Chordate, together with the joint venture company Chagyong Medical Technology Co., has applied for product registration for the Ozilia treatment in China.

Our belief is that Chordate's sales efforts for rhinitis will continue to be focused on the prioritized markets, Italy and Saudi Arabia, in order to maximize its market penetration and thus its company value for a potential future sale.

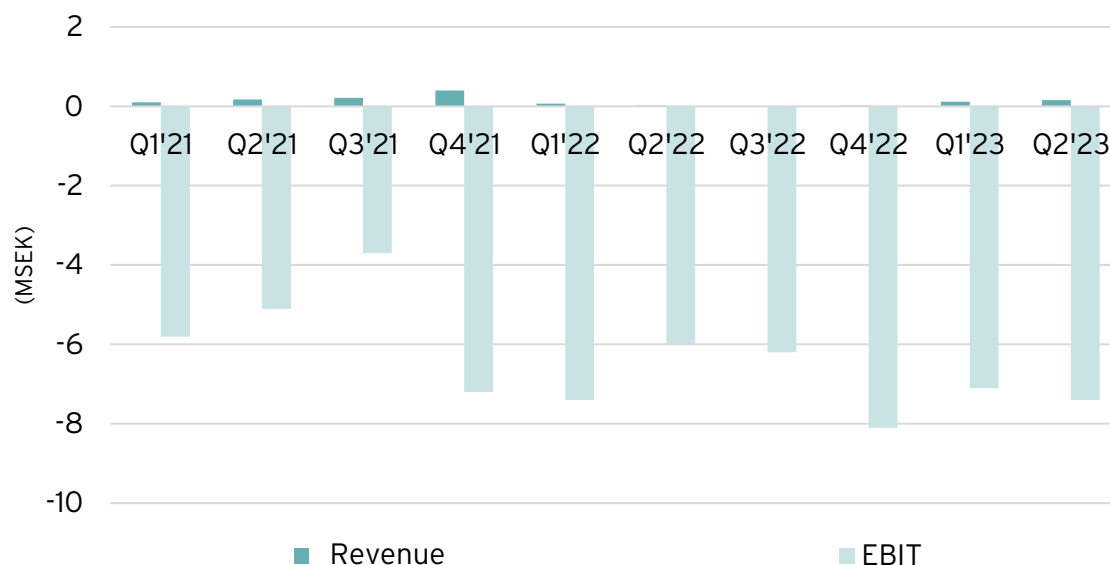
In Italy, where Chordate already has a strong distributor, we expect the company to focus on expanding the number of clinics offering their treatment. In addition to strengthening the market position in the Italian market, it would also create a strong reference point for expansion into other European countries. When it comes to Saudi Arabia, where chronic rhinitis is a widespread problem, we expect that Chordate will use its first order from Janin Medical as a springboard, and that further orders will follow.

Financial history

Chordate has focused its efforts towards investing in the business and validating the effectiveness of its treatments, which has resulted in limited sales historically. The company has sold systems and treatments, but not in sufficient quantities to achieve a break-even result. However, it is important to point out that it is not the company's goal, but rather to demonstrate the technology and treatment to a potential buyer, and that the product can be sold in specific markets.



Since 2016, annual sales have varied from SEK 0.1 - 1.2 million, while the operating loss has varied between SEK -16.0 - 28.0 million. The development looks similar on a quarterly basis, and the company has historically made an operating loss of between SEK -3.7 - -8.1 million per quarter.



Product and business model

Treatment and product

The treatment that Chordate provides is called Ozilia and it uses oscillating vibrations to stimulate the nerves in the mucous membranes of the nose. This technique aims to reduce inflammation and pain by using the body's natural biological response for pain relief and healing. The treatment is non-invasive, which means it does not require surgical intervention. It is also drug-free, and all in all, this makes the treatment safe for the patient and associated with minimal side effects.

The treatment is performed by inserting a balloon catheter into one nostril at a time, inflating the balloon and allowing it to vibrate at a specific frequency. This goes on for ten minutes per nostril. In practice, the process for the patient looks like the following:

Ozilia treatment in practice	
1. Introduction	A balloon catheter is inserted into the patient's nose, connected to a treatment unit.
2. Stimulation	The treatment unit is activated, the balloon is inflated, and the probe vibrates to stimulate nasal tissue and nerve endings
3. Conclusion	The feeding tube is removed, and the patient can return to normal activities right away.
4. Follow-up	After the treatment series, an evaluation is made to see when further treatment is needed.

The treatment may feel a little uncomfortable the first time, but it is largely painless. The full effect is usually achieved within a few days for those patients who respond well to treatment. In terms of differences between the treatment of chronic migraine and chronic rhinitis, vibration frequency and balloon pressure are optimized for each condition. Treatment regimens also differ: for rhinitis, at least one repetition per year is recommended after two initial treatments one month apart. For migraine, patients typically start with 3-6 weekly treatments, followed by an individually tailored plan. This means that the number of treatments per year for migraine patients can be 3-5 times more than for those with rhinitis.

The company offers a range of CE-marked treatment devices, which are approved for the preventive treatment of chronic migraine and chronic rhinitis and are intended for use in patients who are 18 years of age or older. In conjunction with the International Headache Congress in Seoul, Chordate Medical introduced the new brand Ozilia®™ Migraine for the company's migraine treatment. The brand replaced K.O.S as a brand in all markets where Chordate is active. The devices are manufactured in Sweden by a certified subcontractor according to the medical device quality and manufacturing standard ISO 13485.

The catheter used in the treatment is the same for both rhinitis and migraine and it is a non-sterile disposable product. The catheter is replaced between each treatment and manufactured in a controlled environment, also called a clean room, by a Swedish subcontractor.

Chordate ensures quality through regular audits of both the end-subcontractor and suppliers of critical components, according to the company's own quality management system.

All forms of product development and any changes in the product are carefully managed and monitored by Chordate before they are implemented in the actual production.



Catheter
Single-use product



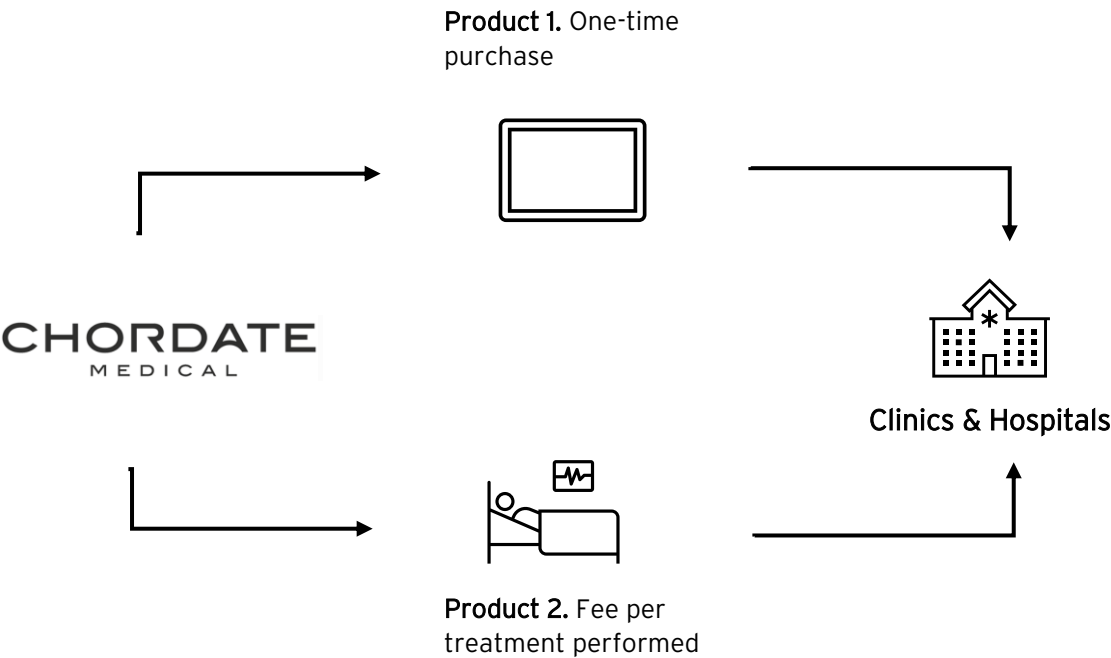
Controller
Controls treatment and ensures that valid treatment codes are used



Fixture
Holder for convenient catheter application

Business & Revenue Model

Chordate markets and sells its treatment system through distributors to selected clinics and hospitals. The revenue model is two-part and consists of sales of the system itself, as well as a fee per treatment performed, which also includes disposable items. To ensure control over usage, Chordate uses an electronic "pay-per-treatment" model. Each system is programmed with a predetermined number of treatments, which can be topped up by the customer entering a unique code. Without this code, the system will not work.



Indications

Chordate's Ozilia treatment is used for two indications, migraine, and rhinitis. The company received CE-marking for rhinitis treatment in 2011, and in May 2021, the CE-mark was expanded to include the treatment of chronic migraine.

Chronic migraine

Is a neurological disease characterized by recurrent severe headache attacks. The condition often has a strong negative impact on the patient's quality of life

Chronic rhinitis

Is a long-term inflammation of the nasal mucosa that has lasted for more than a year. This inflammation leads to a series of unpleasant symptoms that, like migraines, can have a negative impact on the patient's quality of life

According to Chordate's assessment, the migraine market represents the greatest potential for the company's treatment. This is an assessment we share, and we have therefore chosen to focus on migraine and its market potential.

Migraine - a public health issue

Migraine is a form of acute, throbbing headache that manifests itself in intense attacks that can last for 1/2 - 3 days or more. The headache is classified as a neurological disease and is the second most common form of headache after tension headache¹⁸. Migraines usually begin during adolescence or in their 20s, but also occur in children. The disease can be chronic in some cases, but there are treatments to alleviate the symptoms¹⁸.

The cause of migraine is not fully understood, but heredity is a known cause. In about two-thirds of cases, migraine is also present in a close relative. Stress is a common trigger for migraines, but it can also involve other types of physical or mental exertion. Migraines can also be triggered by, for example, hormonal changes and certain foods.

Example factors that can trigger migraines

• Tension headaches	• Sleep	• Hormonal changes
• Physical and mental stress	• Strong sensory impressions	• Hunger
• Overuse of pain-relieving drugs	• Substances in, for example, chocolate, cheese, and alcohol	

Usually, migraines are divided into two different types: migraine without aura and migraine with aura. Aura is a precursor to headache and can cause symptoms that affect vision, touch, hearing and speech¹⁸. Migraine attacks are also often associated with sensitivity to light, sound and movement, nausea, and vomiting, as well as tingling and numbness in various parts of the body¹⁹. These physical problems lead to a lower quality of life for patients and have a significant impact on the health economy for society, as migraine often leads to absenteeism from work and reduced productivity. Migraines have a negative impact on relationships due to, among other things, lethargy and deteriorating mood related to pain, poor sleep and decreased appetite²⁰. Approximately 90 % of migraine patients experience moderate or severe pain, 75 % have reduced functional capacity during attacks, and 33 % become bedridden during attacks¹⁹. It is estimated that around 40 % of migraine sufferers could benefit from seizure prevention treatment, but only 3-13 % use it²¹. The disease is more common in women⁹¹. It has been observed that up to 70 % of sufferers are women of childbearing age. Furthermore, it is worth noting that diseases that primarily affect women have generally often been

overlooked in healthcare. This has led to a growing political and industrial commitment to address this, which can be seen as an opportunity for a potential buyer.

Examples of symptoms

Severe headache attacks

Recurrent severe headache attacks with a throbbing pain, often on one side of the head.

Nausea and vomiting

May aggravate the headache and make it difficult for the patient to eat and drink.

Sensitivity to light and sound

Makes it difficult for the patient to perform normal activities such as being outdoors or in a noisy environment.

A migraine attack affects blood vessels and nerves in the head - the pain may be due to rapid changes in the blood vessels. The vessels adjacent to the brain and meninges first constrict, and when they dilate again, you experience severe pain. At the same time, various chemical substances are released. Sometimes the function of the brain is affected in a way that temporarily affects the sight and touch. Migraine seems to mean that the brain has a harder time filtering sensory impressions. Therefore, patients often become extra sensitive to light and sound during a migraine attack.

Burden of disease

According to the Global Burden of Disease Project (GBD, 2019), which includes estimates and data from a total of 195 countries, headache disorders are among the most common and disabling conditions globally. Migraine accounted for the majority of the burden of headache disorders and accounted for as much as 88.2 percent of the total burden of headache disorders²⁴.

The extent of the disease burden for migraine is seen in, among other things, disability-adjusted life years (DALYs). DALY has been developed with the aim of being able to quantify disease burden at the population level and is a time-based measure that combines YLL and YLD^{22 25}. In the case of migraines, the YLL is zero, as migraines do not cause mortality. This means that DALY and YLD give the same numbers/data.

Definitions

DALY	Disability-adjusted life years	Time-based measure that combines years of life lost due to premature mortality. $YLL + YLD = DALY$
YLL	Years of life lost	Years of life lost due to premature mortality
YLD	Years lived with disability	Years of life lost due to time spent in a state of impaired health or years of healthy life lost due to disability

Headache disorders were ranked as the 14th most common cause of DALY globally (all ages, both sexes) in the Global Burden of Disease Project²¹. The number of DALYs, and thus YLDs, for migraine amounted to 42.1 million²⁴. Among young women (15-49 years), migraine was even the most common cause of DALY (4.9 percent)²³. The high YLD figure means that migraine accounted for 4.8 percent of total YLDs across all conditions²⁴. This is a very high number, which shows the high disease burden that migraine entails. Some argue that YLD is not a comprehensive enough measure of migraine, and that the numbers for YLD for migraine are likely even higher than what is actually reported²⁶.

Quality of life and migraine

Another outcome measure used in migraine research and in health economics is quality of life-adjusted life years (QALYs).

Definitions		
QALY	Quality-adjusted life years	Measures that combine years of life and quality of life (QoL) with a certain state of health. One QALY is equivalent to one year in full health. QALY is calculated by multiplying a life year by the quality of life during the life year. The quality of life is between 0 and 1, with 1 corresponding to full health and 0 corresponding to death. A person who lives five years in full health has the equivalent of 5 QALYs, while a person who lives five years with 60 percent quality of life weight has 3 QALYs ($0.6 \times 5 = 3$) ^{26,27} .
QoL	Quality of Life	Translated in Swedish as quality of life. Used to describe and measure the general perception of how good or fulfilling a person's life is ^{26,27} .

All available research in the field shows that migraine has a negative impact on quality of life and thus QALYs. In a Swedish study, the researchers showed that the average loss in QALYs per person per year increased with the number of migraine days per month and ranged from 0.02 to 0.26. The overall mean loss in QALYs per person per year was 0.1 and significantly higher for participants with chronic migraine compared to participants with episodic migraine (0.23 vs 0.06, $p < 0.001$). Furthermore, both the number of headache and migraine days had a statistically significant impact on the loss in QALYs per person per year. The difference in reported quality of life (QoL) between a day with and without migraine was 0.36 ($p < 0.001$)^{30,31}.

The number of days with migraine is thus strongly linked to impaired quality of life. Research shows that treatment options that relieve or reduce migraine frequency and intensity also help improve the quality of life of people living with migraine²⁹.

Costs of migraines

Migraine not only leads to a reduced quality of life for a large number of people, but also causes a significant socioeconomic burden in the form of healthcare costs and reduced workforce. To put the costs in perspective, we present data from two Swedish studies, which were conducted on 630 and 454 people with migraine, respectively.

The first study showed that the total cost per patient per year increased with the number of headache days per month ($p < 0.001$) and ranged from approximately €5000 for those with fewer than 3 migraine days per month to €24,000 per year for those with 21-28 migraine days per month. The average total cost per patient per year for all respondents was €10 790. The average total cost per patient per year for participants with chronic migraine (defined as at least 15 headache days per month, of which at least 8 days with migraine) was almost three times higher compared to the average total cost per patient per year for participants with episodic migraine (€21 782 vs. €7 598, $p < 0.001$). Reduced work capacity accounted for the largest share of costs, at around 80 %³¹. In the second study, it was shown that the total cost was even slightly higher. They found that total annual costs ranged from €6 221 in patients with 0-4 headache days per month to €57 832 in patients with 25-31 headache days³⁰.

In conclusion, migraine carries significant societal costs and loss of quality of life. The number of migraine days per month has a significant correlation with lower quality of life and increased socioeconomic costs. According to several studies, there is a clear need and great potential for both cost

savings and improvements in quality of life linked to treatment options that can reduce the number of migraine days^{30 31}.

Summary		
	Hansson-Hedblom et al., 2020	Hjälte et. Al, 2019
Participant	n=630	n=454
Total cost per patient per year	€5,000 - €24,000	€6,221 - €57,832
Reduced work capacity as % of cost	80%	82%
Correlation between high number of migraine days per month and high costs and poorer quality of life	Yes	Yes

Prevalence and incidence

Prevalence refers to the proportion of individuals in a population who have a specific disease or condition at a given time and is a measure of how widespread the condition is. In the GDB project (2019), the prevalence amounted to 1 130 million people with migraine globally, which means that approximately 14 107 people per 100 000 suffer from migraine. This is an increase of 12.3 percent compared to 2010. It should be added, however, that there are divided opinions in the research community as to whether the increase is so high, or whether the diagnosis is increasing. Women were overrepresented in the statistics, making up 714 million and men 414 million. The incidence was 87.6 million for both sexes, of which 54.5 million were women and 33.2 million were men³².

GBD 2019: Prevalence, incidence, deaths/YLL, YLDs and DALYs²⁸

	Prevalence		Incidence		Deaths/YLLs		YLDs		DALYs	
	Number (millions)	Prevalence (per 100)	Number (millions)	Prevalence (per 100)	Number (millions)	Prevalence (per 100)	Number (millions)	Prevalence (per 100)	Number (millions)	Prevalence (per 100)
Completely	1 130 (980-1300)	14,1 (12,3-16,3)	87,6 (76,6-98,7)	1,1 (1,0-1,3)	-	-	42,1 (6,4-95,6)	0,5 (0,1-1,2)	42,1 (6,4-95,6)	0,5 (0,1-1,2)
Women	714 (622-820)	17,9 (15,6-20,5)	54,5 (47,9-61,2)	1,4 (1,3-1,6)	-	-	26,4 (3,8-60,5)	0,7 (0,1-1,5)	26,4 (3,8-60,5)	0,7 (0,1-1,5)
Men	414 (358-480)	10,3 (8,9-12,0)	33,2 (28,7-37,6)	0,9 (0,7-1,0)	-	-	15,6 (2,6-35,0)	0,4 (0,1-0,9)	15,6 (2,6-35,0)	0,4 (0,1-0,9)
Percentage change 2010 vs. 2019										
Completely	12,3% (10,8-13,8)	1,0% (0,0-2,1)	8,7% (7,5-9,9)	0,8% (0,0-1,6)	-	-	12,1% (10,6-14,1)	0,7% (-1,3-1,7)	12,1% (10,6-14,1)	0,7% (-1,3-1,7)
Women	11,8% (9,9-13,7)	0,4% (-1,1-2,0)	8,1% (6,7-9,4)	0,2% (-0,8-1,3)	-	-	11,6% (9,6-13,8)	0,1% (-1,8-1,4)	11,6% (9,6-13,8)	0,1% (-1,8-1,4)
Men	13,2% (11,2-15,2)	2,0% (0,5-3,6)	9,6% (8,2-11,2)	1,7% (0,6-2,9)	-	-	13,1% (11,3-15,2)	1,7% (-0,8-3,3)	13,1% (11,3-15,2)	1,7% (-0,8-3,3)

Numbers in parentheses are 95% uncertainty intervals.

The prevalence figure in the study is 14.1 percent overall, with women having a prevalence of 17.9 percent and men 10.3 percent²⁸. This is consistent with previous studies on the prevalence of migraine where the prevalence is stated to be 11-15 percent^{33,34,35,36,37}. The table clearly shows that the prevalence is higher among women than men, which is consistent with previous research. Women are reported to make up 60-65 % of the total and are twice as likely to suffer from migraines^{10 14}. Prevalence rates differ not only by gender, but also by geography where developing countries report a

lower prevalence. This may be because the underdiagnosis is higher in these countries related to a less developed healthcare system.

Prevalence by geography ¹⁴	
Africa	10,4 %
Asia	10,1 %
Europe	11,4 %
North America	9,7 %
Central and South America	16,4 %

Incidence describes the number of new cases of a disease that occur in a population during a certain period of time and gives an idea of the risk of developing the disease. The global incidence of migraine is estimated at 87.6 million (95% CI: 76.6-98.7), an increase of 8.7 % compared to 2010³² and 40.1 % compared to 1990³⁸. India, China, the United States and Indonesia had the highest incidence rates, accounting for 43.6 % of the incidence worldwide³⁸. Women experienced a higher incidence than men, which is also consistent with the prevalence. The highest incidence was observed in the 10-14 age group, although there was a gradual shift in the age distribution of incidence from adolescents to middle-aged people³⁸.

Rhinitis – an overlooked epidemic

Chronic rhinitis is a long-term inflammation or irritation of the nasal mucosa that lasts for several weeks or months. Unlike acute rhinitis, which is often caused by viral infections or occasional exposure to irritants, chronic rhinitis tends to have more complex causes. It can be related to various forms of allergens, environmental factors, or even hormonal changes. Its chronic nature often makes the indication difficult to treat⁵¹.

Examples of symptoms		
Nasal congestion	Nasal discharge	Sneezing
One of the most noticeable symptoms, which can be especially problematic at night, thus interfering with sleep.	Excessive amount of nasal mucus that can be both annoying and embarrassing in social situations.	Frequent sneezing is common and can be disruptive to everyday activities.

Allergic rhinitis is considered to be the most common chronic disease in our society and is included in chronic rhinitis. In Sweden alone, it is estimated that around three million Swedes are affected⁶², and the burden of disease is considerable. Allergic rhinitis remains both an underdiagnosed and under-treated disease^{63 64}.

Burden of disease and impact on quality of life

The physical symptoms of chronic rhinitis vary in extent and severity. Although at first glance the symptoms do not appear to be very severe, several patients report a greatly reduced quality of life as a result of chronic rhinitis. They often report reduced productivity in the workplace and at school, which has an economic impact not only on the individual but also on society as a whole⁵².

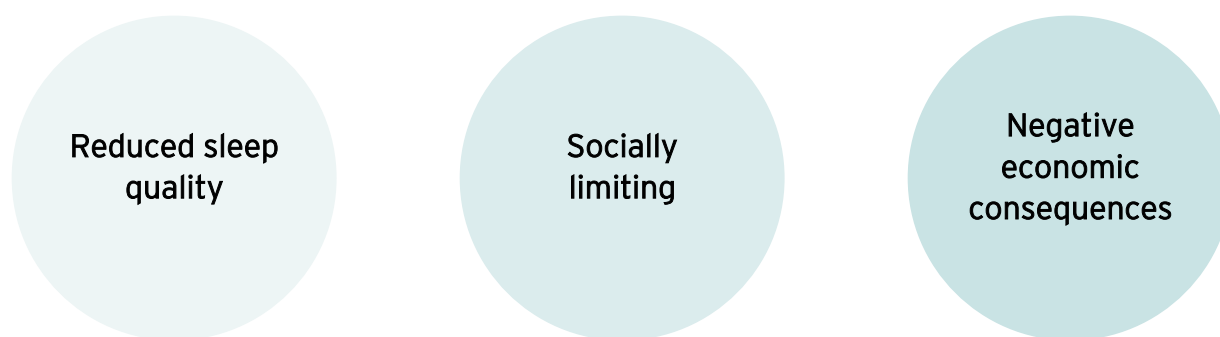
In a study by Meltzer et al. (2015), researchers found that chronic rhinitis has a significant negative effect on sleep quality. Symptoms such as nasal congestion and nasal discharge can make it difficult to sleep properly, which in turn affects daily functioning and mental well-being⁵⁴. A study by Small et al. (2018), examined how quality of life affected people with allergic rhinitis. They found that symptoms

such as persistent nasal congestion, sneezing and itching can impair sleep quality and increase levels of stress and anxiety, which in turn can lead to a deterioration in mental health⁵³.

Socially, chronic rhinitis can also be stressful. Stull et al. (2007), noted that people with chronic rhinitis often feel socially restricted and be less likely to participate in social activities that can trigger symptoms. This can lead to isolation and even reduced quality of life⁵⁶.

Another important aspect of the burden of disease is the effect on labour productivity. A study by Vandenplas et al. (2018) concluded that chronic rhinitis leads to significant loss of work⁵⁴. Affected individuals report reduced productivity and increased absenteeism, which negatively affects both patients, employers, and society at large. Not only does this have financial implications, but it also affects individuals' career prospects and opportunities for personal development⁵⁸.

Another aspect is the financial impact on people suffering from chronic rhinitis. According to a study by Schoenwetter et al. (2004), affected individuals spend significant sums on medications, doctor's visits, and other health care-related expenses⁵⁷.



Prevalence and incidence

Chronic rhinitis affects a significant portion of the population. The disease is particularly prevalent in developed countries, where prevalence and incidence have been observed to be on the rise. According to a study by Smith et al. (2018), chronic rhinitis affects up to 30-40 % of the population in some industrialized countries, indicating that the disease is a public health problem⁵⁹.

Chronic rhinitis is common in all age groups, but especially among older individuals. With an aging population in large parts of the world, it is therefore likely that the incidence will continue to increase as a result. Furthermore, the incidence seems to be increasing among children and young adults. This trend is worrying as it may indicate that related diseases such as asthma and sinusitis may also increase in the future⁶⁰.

In a study by Pawankar et al. (2011), it was found that the incidence of chronic rhinitis is particularly high in areas with high population density and air pollution, indicating that environmental factors are an important component in the development of the disease. As urbanisation and unfortunately environmental pollution only look set to increase in the future, it is possible that chronic rhinitis will also increase as a result⁶¹.

Market

Migraine

The market for migraine treatment includes drugs and various treatment methods. The market is expected to grow at a CAGR in the range of 3.65-9.90 percent. The mean and median market CAGR are expected to be 6.69 and 6.45 percent, respectively. The market is thus predicted to have relatively strong underlying growth in the coming years.

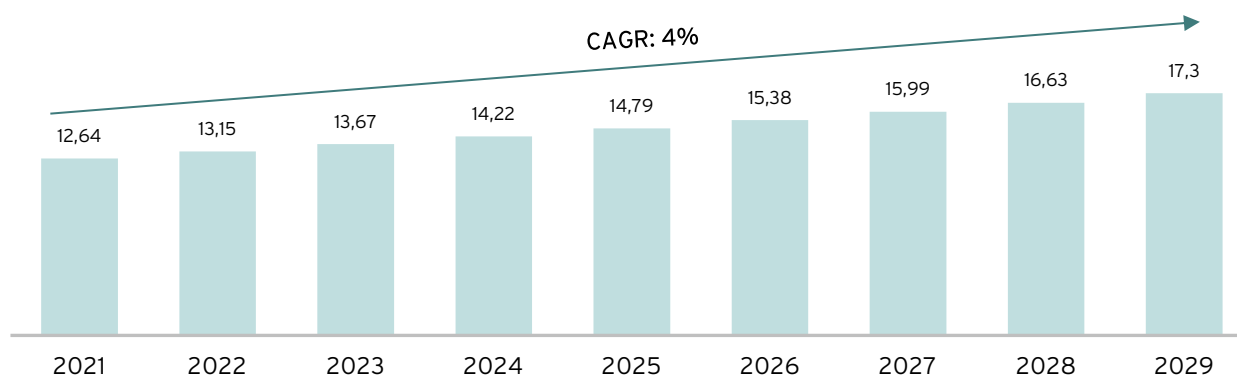
	Period	Market size - Start	Market Size - End	CAGR
Polaris Market Research ³⁹	2022-2030	\$4.34 BN (2021)	\$8.79BN (2030)	8,50%
Global Data ⁴⁰	2021-2025	\$4.6 BN (2020)	\$7.07 BN (2025)	9,00%
Market Research Future ⁴¹	2023-2032	\$5.1 BN (2022)	\$7.04 BN (2032)	3,65%
Market Data Forecast ⁴²	2023-2028	\$4.65 (2023)	\$5.9 BN (2028)	4,87%
Mordor Intelligence ⁴³	2023-2028	\$5.77 (2023)	\$8.03 BN (2028)	6,84%
Future Market Insights ⁴⁴	2023-2033	\$3.2 BN (2023)	\$4.74 BN (2033)	4,00%
Databridge Market Research ⁴⁵	2022-2029	\$2.38 BN (2021)	\$4.67 BN (2029)	8,80%
iMarc Group ⁴⁶	2023-2028	\$4.0 BN (2022)	\$5.4 BN (2028)	4,50%
iHealthcare Analyst ⁴⁷	2023-2029	-	\$15.6 BN (2029)	9,90%
Coherent Market Insights ⁴⁸	2022-2028	\$4.79 BN (2021)	\$8.98 BN (2028)	9,50%
Reports and Data ⁴⁹	2022-2032	\$6.7 BN (2022)	\$10.9 BN (2032)	4,70%
Technavio ⁵⁰	2023-2027	-	-	6,05%
Mean		\$4.1 BN	\$7.9 BN	6,69%
Median		\$4.6 BN	\$7.5 BN	6,45%

Rhinitis

The market size for non-allergic rhinitis is not fully understood, which is partly due to a lack of international consensus on diagnostic criteria. In a study by Hellings et al. (2017), researchers estimate that more than 200 million people suffer from the disease globally. Chordate focuses primarily on idiopathic rhinitis, which is estimated to account for about half of these cases⁷². The main growth driver for the market is increased prevalence.

One analyst estimates that the market was worth USD 12.64 billion in 2021, and that it is expected to grow to USD 17.30 billion in 2029, which would represent a CAGR of approximately 4.0 %.

Global rhinitis market, 2021-2032 (BNUSD)



Neuromodulation

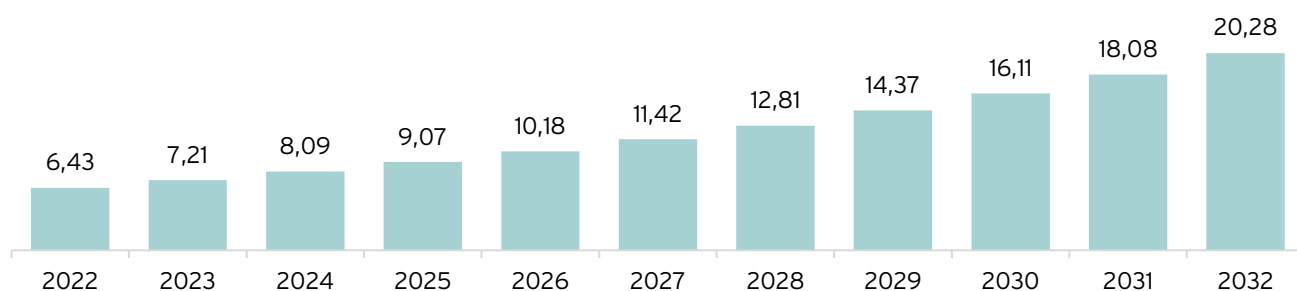
According to market analysts, the neuromodulation market is expected to grow in the range of 9.3-12.2 % in CAGR in the coming years. North America is the single largest market, accounting for approximately 45% of the total. The market includes a variety of product segments such as: deep brain stimulation (DBS), spinal cord stimulation (SCS) devices, vagus nerve stimulation (VNS) devices, transcutaneous magnetic stimulation devices and sacral nerve stimulation devices³. In addition to this, both invasive treatments and non-invasive treatment methods such as Chordate's are included in the market analyses.

Thus, the market is not limited to migraine, but includes a wide variety of different therapies. The largest product segment is spinal cord stimulation (SCS), which accounts for 41.0 % of the market.

Global market for neuromodulation				
	Period	Start	End	CAGR
Globe Newswire ⁶⁵	2021-2030	6,1 (2021)	14,2 (2030)	9,3%
Grandview Research ⁶⁶	2022-2030	4,0 (2022)	8,2 (2030)	9,5%
Markets and Markets ⁶⁷	2022-2027	6,0 (2022)	10,4 (2027)	11,8%
Fortune Business Insights ⁶⁸	2018-2026	4,5 (2018)	9,3 (2026)	9,5%
Polaris Market Research ⁶⁹	2022-2030	5,6 (2021)	14,6 (2030)	11,9%
iMarc Group ⁷⁰	2023-2028	6,7 (2022)	12,5 (2028)	10,4%
Precedence Research ⁷¹	2023-2032	6,4 (2022)	20,3 (2032)	12,2%
Mean		5,6	12,8	10,7%
Median		6,0	12,5	10,4%

Precedence Research is the market research house that estimates the longest time interval (2022-2032) and expects the highest CAGR (12.2 percent) in the coming years from the compiled market reports. According to their estimates, the market for neuromodulation will reach approximately \$20.3 billion by 2032.

Global market for neuromodulation, 2022-2032 (BNUSD)



The growth factors are primarily expected to be an increasing population and longer life expectancy and thus an increased prevalence of neurological diseases. Additional growth factors are expected to be an increased acceptance of neuromodulation treatments and an increase in the popularity of minimally invasive procedures⁷¹.

Market potential for Ozilia

In order to assess how large a share of the extensive migraine market that Ozilia can realistically be expected to take part of, we have chosen to use treatment with Botox® (OnabotulinumtoxinA) as a comparison basis⁹³. Botox treatment involves injections into specific areas of the head, face, and neck. Although the exact mechanism behind Botox's effectiveness for migraine treatment is not fully understood, it is believed that it works by blocking nerve signals that play a role in pain transmission. Botox is an important part of the treatment arsenal for migraines, especially for patients with severe symptoms who do not respond to other treatment methods.

We believe Botox is a relevant benchmark for Ozilia for several reasons. First, scientific studies have shown that Ozilia has a treatment and response effect that is equal to or better than Botox. Secondly, it is important to note that both Ozilia and Botox are administered in-clinic by qualified medical professionals, with about the same frequency. Our belief is that Ozilia has the potential to replace Botox to some extent as a preferred treatment method, and there are several reasons for this. The main argument is that the Ozilia treatment is often perceived as less unpleasant by patients, as Botox treatment requires between 31 and 39 needle sticks in the face and head. In addition, Botox is a neurotoxin, making it less attractive to a significant subset of patients who prefer natural treatment methods. Finally, Botox is also consistent with a range of common side effects, including headaches, migraine than and worsening migraine, facial muscle weakness, drooping eyelids, skin rashes, itching, neck pain, muscle pain, muscle cramps, muscle stiffness, muscle tension, muscle weakness and injection site pain⁹². At the same time, Ozilia treatment has no reported unexpected side effects.

In conclusion, given that both Ozilia and Botox exhibit comparable efficacy, require clinic visits for administration, and that Ozilia is perceived as less unpleasant with a milder side effect profile, we believe that Ozilia is well placed to become the preferred treatment option for many current Botox patients.

Ozilia	Botox
Treatment time per session: ~20 minutes.	Treatment time per session: ~20 minutes
Staff requirements: Usually performed by a nurse.	Staff requirements: Performed by specialist doctors.
Treatment and response effect: Equal to or better than Botox.	Side effects: Headache, migraine and worsening migraine, facial muscle weakness, drooping eyelids, rash, itching, neck pain, muscle pain, muscle cramps, muscle stiffness, muscle tension, muscle weakness, pain at the injection site.
Side effects: No unexpected side effects, can be experienced as a little uncomfortable the first time.	

To estimate the market potential of Ozilia, we will start from a study by Hansson-Hedblom et al. (2020), which focuses on the economic aspects of migraine with a focus on Botox treatment in Sweden and Norway. We will focus exclusively on the Swedish market and will make several simplifications in our assumptions. For example, we will not consider indirect costs such as lost work.

Cost of Botox Treatment*74	
Cost of Botox per treatment	4 100 SEK
Cost of Neurologist Consultation by Treatment	3 297 SEK
Total cost per treatment	7397 SEK
Number of treatments per year	4
Annual cost	29 588 SEK

*The calculations are based on a EUR/SEK exchange rate of 11.82.

To calculate the average annual cost for a Botox patient, we have taken into account the Botox PSP (Pharmacy Selling Price) which is 4 100 SEK in Sweden, and that the treatment must be carried out by a neurologist, where a consultation costs 3,297 SEK. Botox treatment is carried out every three months according to the prescription text in FASS. If we assume that a patient needs a neurologist consultation in connection with each Botox treatment, the annual cost would be SEK 29 588 per year. This is in line with estimates from other sources, and in a study by Kim et al. (2014), the annual cost of the Botox treatment was estimated to be 27 000 SEK⁷⁶.

Example 1: Market share and economic potential

- Estimated number of individuals suffering from chronic migraine in Sweden: 208 000⁷⁵.
- Estimated market share Botox: 7-10 %.

The estimate of how many patients suffer from chronic migraine in Sweden varies, but if we assume a prevalence of 2.0 % as in the rest of the analysis, there are just over 208 000 who suffer from chronic migraine in Sweden alone. If we assume that Botox has a market share of 8.5 %, which is in the middle of the estimated range, that would mean 17 680 patients using Botox treatment for migraine in Sweden. If we further assume that Ozilia can attract 25% of these users, it would result in 4 420 patients in Sweden. With a treatment cost of SEK 29 588 per patient, this would mean an annual treatment value and a potential market of just over SEK 131 million/year in Sweden alone.

Addressable market Sweden	
Converted Botox Patients	Annual treatment value (MSEK)
10%	52
20%	105
25%	131
30%	157
40%	209

Estimated number of Botox patients in Sweden: 17,680 (8.5% market share)

Annual cost per patient (SEK): 29,588

Example 2: Financial savings

In addition to patient comfort, the Ozilia treatment has several economic advantages in comparison to Botox. Firstly, the treatment can be carried out by a nurse, which is economically advantageous compared to using a specialist doctor. Secondly, the cost of each individual treatment is lower, mainly because Ozilia does not require any substances, and Botox is relatively costly.

Cost per treatment*74		
	Ozilia	Botox
Cost per treatment	2 700 SEK**	4 100 SEK
Cost of Healthcare Consultation	1 017 SEK	3 297 SEK
Total cost per treatment	3 717 SEK	7397 SEK
Number of treatments per year	4	4
Annual cost	14 868 SEK	29 588 SEK

*Some costs are in EUR, and they are converted at a EUR/SEK exchange rate of 11.82.

**Estimated cost based on previous orders from Jeddah

Chordate has not specified what the treatment costs, other than that it is cheaper than traditional methods. In May this year, the company received an order for equipment and consumables from the company's distributor in Saudi Arabia. According to CEO Anders Weilandt, it can be roughly estimated that each patient in Saudi Arabia generates an annual average income of around SEK 10 800, which we have assumed in our calculations. Since Chordate sells the systems through distributors, the entire revenue does not go to Chordate, something we have not taken into account because it does not affect the cost for the patient, the healthcare system and society at large. The combined effect of lower treatment cost and having a nurse perform the procedure, means that the Ozilia treatment is significantly more cost-effective than Botox on an annual basis.

Competing treatment methods

Migraine

There are a number of different approved treatment methods for migraines, and it can be easy to consider these as competing. In reality, however, these methods are often complementary rather than exclusive. This becomes particularly clear when considering the so-called "treatment ladder" used in migraine care.

Treatment options	Description	Benefits	Cons
Over-the-counter painkillers	These drugs often have aspirin, paracetamol, or ibuprofen as active ingredients. Famous brand names include Treo, Advil and Ipren.	Generics (low cost, proven effectiveness, high availability). Relatively safe to use.	Relieves symptoms only. There is a risk of drug-induced headaches with high use.
Anti-inflammatory drugs	Reduces the production of prostaglandins, which are formed in inflammatory conditions, and are suitable for short-term treatment. The active ingredients in these products include naproxen, diclofenac, or ketoprofen, and they are available under brand names such as Naproxen and Voltaren (which are over the counter), as well as Orudis (which require a prescription).	Generics. Effective if taken in the beginning of a migraine attack.	May irritate the gastric mucosa and cause gastritis/ulcers.
Triptans	A group of drugs that help with migraines by constricting the blood vessels in the head. This is good because migraines often begin when the blood vessels dilate. There are different kinds of triptans, and one of them is sumatriptan, which is also available in a cheaper generic variety.	Generics. Effective if taken at the beginning of a migraine attack.	There is a risk of drug-induced headaches with high use.
Beta-blockers	Most commonly known as heart medications, but they are also used to treat migraines. They work by blocking certain receptors that respond to stress hormones. This has a calming effect on the sympathetic nervous system, which in turn lowers heart rate and blood pressure. As a result, this can also relieve symptoms of migraines.	Used as a preventive treatment.	Several side effects.
CGRP Drugs	A new group of drugs developed specifically for migraine. CGRP is a substance that is released during migraine attacks. The drugs work by blocking the CGRP receptor, which blocks the pain signals to the brain. They are used preventively with a monthly or quarterly injection.	Used as a preventive treatment.	Costly. The cost of one year of treatment can be between \$6 000 and \$7 000 per year.
Botox	OnabotulinumtoxinA (Botox) is a muscle relaxant that is administered by injecting the drug under the skin in several places on the head and neck. The treatment usually takes half an hour and is carried out every three months.	Used as a preventative treatment.	Expensive and can be perceived as uncomfortable by the patient.
Ozilia	Reduces symptoms of migraine by stimulating nerve cells and nerve centers around the nasal cavity, which in turn affects the autonomic nervous system	Well tolerated with no unexpected side effects, can be used as a preventative treatment and is cost-effective	The treatment can only be carried out by qualified personnel after medical examination.

The treatment ladder usually starts with simpler painkillers, such as paracetamol or ibuprofen, before moving on to more potent, prescription alternatives such as triptans. If these do not produce the desired effect, the patient can move on to preventive medications such as beta-blockers or antiepileptic drugs, or to Botox treatment. However, it is important to note that patients often move up and down this staircase depending on the severity of symptoms, the effectiveness of ongoing treatment, and any side effects.

In addition, there is a significant group of patients who are either unable or unwilling to use drug-based treatment methods. It could be due to allergies, other medical conditions, or a desire to avoid pharmaceutical preparations.

All in all, this underscores the importance of having a multifaceted treatment portfolio. In our opinion, this does not necessarily mean that Ozilia competes with established methods. Rather, Ozilia is a supplement that fills an important gap in the overall treatment spectrum. It gives doctors and patients more choice, which ultimately increases the likelihood of a successful treatment,

Rhinitis

When it comes to treating chronic nasal congestion, nasal sprays and surgery are the most common options, but are often associated with limited effectiveness and potential side effects. Chordate stands out from the crowd by offering a unique treatment method.

Treatment options	Description	Benefits	Cons
Nasal sprays	Most often, the first step for rhinitis patients is to use over-the-counter nasal sprays. These may contain either cortisone, which effectively reduces mucosal swelling and runny nose, or antihistamines, which are more common in allergy treatment.	Short Term Symptom reduction. Easily accessible. Easy to use.	Poor/short-term effect. Risk of drug-induced Rhinitis if overused and drug dependence
Capsaicin	The substance that causes the burning sensation in spicy plants such as chili is also used as a component of some nasal sprays. This substance has been shown to be effective for patients with idiopathic rhinitis who have not had success with other drugs, and its effect can be long-lasting, up to several months.	Cheap. Free from side effects. May have a long-lasting effect.	Does not work for all patients. Painful treatment.
Surgery	Surgery is one of the most lasting treatments for rhinitis and focuses on reducing mucosal thickness. There are different methods, and the procedures are quick and performed under local anesthesia	Long-lasting. Effective.	The effect wears off over time. Risk of losing your sense of smell. Limitations on the number of treatments. Risk of infection.
Ozilia	Ozilia is based on neuromodulation and uses a low frequency vibrating nasal catheter to stimulate the autonomic nervous system, which in turn improves and lengthens the airflow in the nose	No unexpected Side effects.	Administered only by qualified healthcare professionals.

In our opinion, Ozilia is an interesting addition to the existing range of treatment methods for rhinitis. Ozilia fills an important niche in the treatment spectrum, mainly for those patients who do not respond to traditional treatment methods. This means that, as in the treatment of migraine, Ozilia does not necessarily compete with established methods, but rather complements them. This diversifies treatment options and increases the likelihood of successful treatment.

Management

**Anders Weilandt, CEO**

Weilandt has been CEO since 2017 and is also active through board assignments in various companies. He has previously been CEO of Diabetes Tools Sweden and Ascendia MedTech. Furthermore, he has been CEO and board member of Stille.

Holdings: 1 000 000 shares and 4 500 000 warrants

**Niklas Lindecrantz, CFO**

Lindecrantz has been CFO since 2017 and is also active as a business controller for Energiföretagen Sverige - Swedenergy. He has previous experience as CFO and finance manager in several different companies.

Holdings: 175,306 shares and 500 000 warrants

**Jan Hermansson, Clinical Research and Medical Director**

Hermansson has been Clinical Research and Medical Director since 2012. He has over 25 years of experience in the pharmaceutical industry and has previously been head of department and held additional senior positions within AstraZeneca.

Holdings: 500 000 shares and 1 500 000 warrants

**Jan Lindberg, CTO**

Lindberg has been R&D, Production and Quality Manager since 2012. He has extensive experience in the pharmaceutical industry from St. Jude Medical, where he worked as head of the hardware development department.

Holdings: 49 577 shares and 1 500 000 warrants

**Linda Lindberg, Director of Quality Assurance & Regulatory Affairs**

Since 2023, Lindberg has been responsible for compliance with the regulations that govern the market. She has many years of experience in product development and has previously worked at Sedana Medical, Astra Zeneca, GE Healthcare and Cepheid.

Holdings: 0 shares and warrants

**Fredrik Lindgren, Process owner, Catheter**

Lindgren has been responsible for the process of the catheter since 2023. He has many years of experience in the medical device industry on a consultancy basis, with longer assignments with, among others, AstraZeneca and Masimo Sweden.

Holdings: 0 shares and 500 000 warrants

Board of Directors



Henrik Rammer, Chairman of the Board

Rammer has been Chairman of the Board since 2014 and is also active as a private investor in a number of other companies. He has many years of experience in private equity and has previously worked at Axcel Management and Triton Advisers.

Holdings: 6 664 798 shares and 350 000 warrants

Dependent position on the Board of Directors through his shareholding.



Otto Skolling, Vice Chairman of the Board

Skolling has been Vice Chairman of the Board since 2023 and is also operationally active in the companies Nanexa, Asarina Pharma and Pharmor. He also serves on the boards of Respinor and Lipidor. Overall, Skolling has over 30 years of experience in the pharmaceutical and medical device industries.

Holdings: 0 shares and 350 000 warrants

Dependent position on the Board of Directors through his warrants.



Tommy Hedberg, Member of the Board

Hedberg has been a member of the Board of Directors since 2014 and also has board assignments in life science. He has previously been CEO of Atos Medical and worked with sales and marketing at Medscand and Janssen Pharma.

Holdings: 12 399 852 shares (including related parties) and 225 000 warrants

Independent position on the Board of Directors.



Gunilla Lundmark, Member of the Board

Lundmark has been a board member since 2017 and is also active as CEO of Uppsala University's holding company UU Invest. She has been active in leading positions in the life science sector for over 25 years, including CEO of Pharmanest and Deputy CEO of Q-Med.

Holdings: 0 shares and 350 000 warrants

Independent position on the Board of Directors.



Caroline Lundgren Brandberg, Member of the Board

Lundgren has been a board member since 2017 and is also active as Global Sales Director at the climate tech company Deedster. In addition, she also has a number of different board assignments and advisory board assignments, including within Stockholm University. Lundgren has previously held senior roles in sales and marketing at Ericsson.

Holdings: 7 420 271 shares and 225 000 warrants

Dependent position on the Board of Directors through his shareholding.

Ownership


Outstanding shares	Share price	Market capitalization
232 416 507	0,1348 SEK	31,3 MSEK
Number of shareholders	Insider ownership	Free float
4 444	17.98 % of the capital	71,0 %

The largest shareholders in Chordate are HAWOC Investment AB, which in addition to its ownership in Chordate owns shares in the environmental technology company Insplorion. In second place we find Lars Ingvarsson through Sifonen AB, which has previously participated in new share issues. In third and fourth place we find Brandeberg AB with related parties and Tommy Hedberg with related parties, both of whom are represented on Chordate's Board of Directors. In addition, we find two other privately owned companies, Henrik Rammer, who is the Chairman of the Board, and pension funds.

Owner	Number of shares	Value (MSEK)	Capital	Votes
HAWOC Investment AB	28 050 000	6 171 000	12,1%	12,1%
Sifonen AB	21 113 723	4 645 019	9,1%	9,1%
Isac Brandeberg AB and related parties	19 043 519	4 189 574	8,2%	8,2%
Tommy Hedberg and his family	12 399 852	2 727 967	5,3%	5,3%
Avanza Pension	10 805 173	2 377 138	4,6%	4,6%
Bevaclean AB	10 518 750	2 314 125	4,5%	4,5%
Henrik Rammer	6 664 798	1 466 256	2,9%	2,9%
Nordnet Pensionsförsäkring AB	5 822 945	1 281 048	2,5%	2,5%
Tiven GmbH and related parties	4 759 798	1 047 156	2,0%	2,0%
Carsten Johansen	3 999 996	879 999	1,7%	1,7%

Insider ownership

We find three insiders among the ten largest owners. In total, seven out of ten individuals in management and the board own shares in the company, and insider ownership amounts to a total of 17.1%, and CEO Anders Weilandt owns shares for just over 0.3 MSEK. We like the fact that the majority of insiders own shares as this creates incentives to focus on long-term and sustainable business, which is in the interest of all shareholders. We also like the relatively high Insider ownership, which indicates that the company's key employees strongly believe in a future acquisition.


17,1%

Outstanding warrant programs

The company currently has three outstanding warrant programs.

Warrants	Number	Subscription price	Subscription period	Capital injection	Share capital
TO Series 2021:1	5 500 000	3,13	1–30 Nov 2025	17 215 000,00	1 375 000,00
TO Series 2023/2025:1	4 000 000	0,68	1–30 Nov 2025	2 720 000,00	1 000 000,00
TO Series 2023/2025:2	1 500 000	0,68	1–30 Nov 2025	1 020 000,00	375 000,00
Total	11 000 000			20 955 000	2 750 000

Balance sheet

At the end of Q3'23, Chordate had a cash position of SEK 16.4 million and no interest-bearing liabilities, resulting in a net cash position of SEK 16.4 million.

Financial position	
Cash at the end of Q2'23	SEK 21.7 million
Interest-bearing liabilities at the end of Q2'23	SEK 0 million
Net cash at the end of Q2'23	SEK 21.7 million
Cash at the end of Q3'23	SEK 16.4 million
Interest-bearing liabilities at the end of Q3'23	SEK 0 million
Net cash at the end of Q3'23	SEK 16.4 million

In Q3'23, the free cash flow, which can be compared to the company's burn rate, amounted to SEK -5.3 million. If we assume the same burn rate in the future, it will mean that the company's current cash position is sufficient to finance operating activities for another three quarters. If a takeover has not taken place before then, new capital will need to be raised.

On December 22, 2023, Chordate announced that the Board of Directors has resolved to carry out a Rights Issue, provided that this is approved by an extraordinary general meeting on January 26, 2024. The issue consists of units, where each unit contains two shares and one warrant of series TO 8.

To secure part of the financing, Chordate Medical has already secured subscription commitments of approximately SEK 10.7 million, which constitutes approximately 25.7 percent of the rights issue. In addition, the company has received guarantee commitments of approximately SEK 12.3 million, corresponding to approximately 29.3 percent of the rights issue. In total, these undertakings and guarantees cover approximately 55 percent of the rights issue, corresponding to approximately SEK 23 million. If the Rights Issue is fully subscribed, Chordate Medical will receive approximately SEK 41.8 million before deduction of issue costs⁹⁵.

Risks

Clinical studies

Chordate conducts clinical studies to prove the safety and effectiveness of the treatment. These studies are associated with a high degree of uncertainty and may cause unexpected costs or delays. If the studies fail, it can have a major negative impact on the company's finances. Furthermore, recruitment of patients to the studies, and difficulty in recruiting can have a negative impact on the studies.



Medium

Conservative industry

In general, the healthcare sector is conservative, which can lead to skepticism about newly introduced products. Establishing yourself as a new player and reaching a broad market can therefore be a time-consuming and costly process. The markets need to be addressed, which includes clinical trials, training of healthcare professionals, and not least, building relationships with so-called key opinion leaders in the industry.



Medium

Need for external capital

Chordate has never been profitable, and the company's strategy to achieve a sale of the company is costly. This means that additional financing may be necessary, either from third parties or existing shareholders. New share issues may lead to dilution of existing shareholders' ownership.



High

Small company, large market

Chordate faces potential competition from companies with larger financial resources and similar product portfolios. If new research results or more effective treatment methods emerge, it could threaten Chordate's competitiveness, which could lead to reduced revenues and a weaker financial position.



Medium

Strategy

Chordate's strategy is based on being acquired by a major player in the medical technology or pharmaceutical industry. There is no guarantee that a takeover will actually take place, and if there is interest, negotiations can drag on.



High

Valuation

To value companies, we usually estimate the income statement a few years into the future, and then apply what we consider to be a reasonable multiple, for example, to the company's future profits. In Chordate's case, where the strategy is based on selling the entire company rather than generating profits now, a different approach is required. With this in mind, we have tried to assess the value of the Ozilia technology, taking into account factors such as its market potential, patent protection and so on, in order to estimate what a potential buyer may be willing to pay. The valuation is based on two parts: scenario and peer valuation.

Our belief is that a potential buyer of Chordate is a global player in the medical technology or pharmaceutical industry, or a portfolio-building company that wants to complement its existing product portfolio. We further believe that a potential buyer of Chordate will focus on Ozilia's sales potential, provided that there is a dedicated sales force and an established distribution network, which we assume a potential buyer already has in place. To demonstrate the value of the technology, we will paint a hypothetical scenario with several assumptions. These assumptions will, as far as possible, be based on the facts about the market, prevalence and so on that we have identified so far in the analysis. That being said, several of the assumptions will be speculative, and we would like to emphasize that the valuation of the company is associated with a high degree of uncertainty.

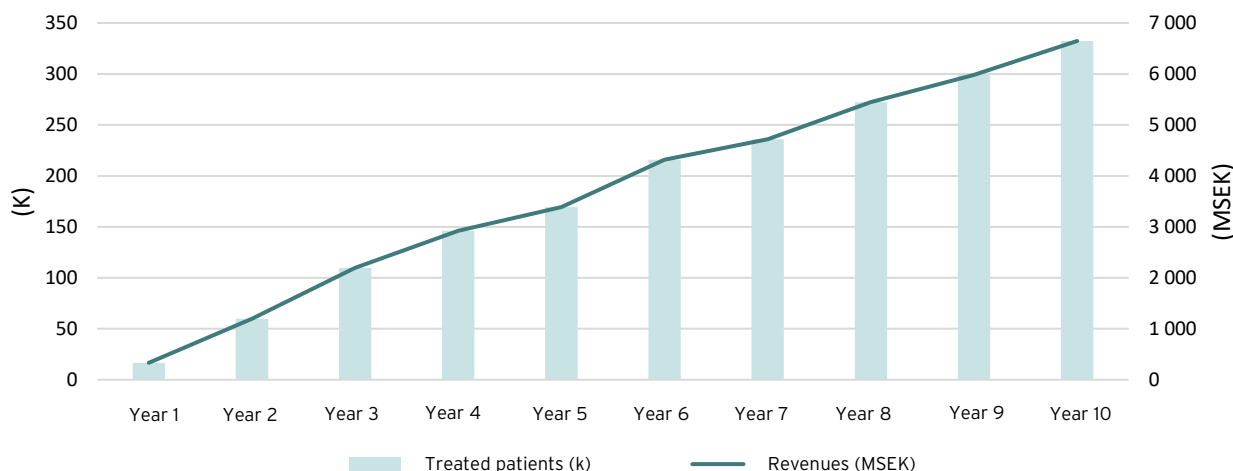
Potential buyout price

To calculate what a potential buyer might pay for Chordate, we start with the market potential for Ozilia. We have chosen to start with the world's seven largest markets (7MM), which are often used to calculate market potential. There are approximately 782 million people living in these countries, and the prevalence of chronic migraine is estimated to be between 1.4 % and 2.2 %⁷⁷. The disease is generally underdiagnosed, especially in developing countries. This means that prevalence in developed countries is likely to be at the higher end of the range. We have therefore assumed a prevalence of 2.0 %, which means that more than 15.6 million individuals in 7MM suffer from chronic migraine.

Based on the arguments presented earlier in the analysis, we believe that it is most likely that Ozilia will be able to gain market share primarily from the Botox treatment. The estimated market share of Botox in the treatment of chronic migraine is generally considered to be between 7-10 %. In this analysis, we have chosen to place ourselves in the middle of the range, with an estimated market share of 8.5 %. Furthermore, as earlier in the analysis, we have estimated that Ozilia succeeds in converting 25 % of existing Botox users over time, which means that the potential annual number of patients treated with Ozilia amounts to 332 350. Year 1 in the analysis represents the first year after a takeover of Chordate. We expect a significant proportion of patients to start treatment in 2024 or 2025, and since Chordate's patent protection extends to 2033, we have chosen to estimate for 10 years. Furthermore, we assume that the number of patients treated will increase gradually, and that the company will achieve an annual treatment volume of 332 350 patients with Ozilia in year 10.

Assumptions			
Population 7MM	782 million	Converted Botox Patients	25%
Prevalence chronic migraine	2,0%	Potential number of patients treated with Ozilia annually	332 350
Prevalence of Individuals	15.6 million	Annual Price Per Ozilia Treatment	20 000
Botox Market Share	8,5%	Annual Revenue Potential	6 647 MSEK
Botox Patients 7MM	1 329 400	EBITDA margin	35 %

We have assumed an annual treatment cost of SEK 10 700, in line with previous illustrative calculations. We also expect a buyer of Chordate to be vertically integrated and sell directly to end customers and assume that such a player can charge significantly higher prices than today, and we therefore expect an annual revenue of SEK 20 000 per patient. Finally, we have assumed that the treatments can be sold at relatively high margins, which is in line with other companies in the medical technology sector. We have assumed an EBITDA margin of 35 %, and that EBITDA follows the free cash flow the company can generate relatively well. We have therefore assumed that the company will succeed in generating a free cash flow conversion rate of 20 %.

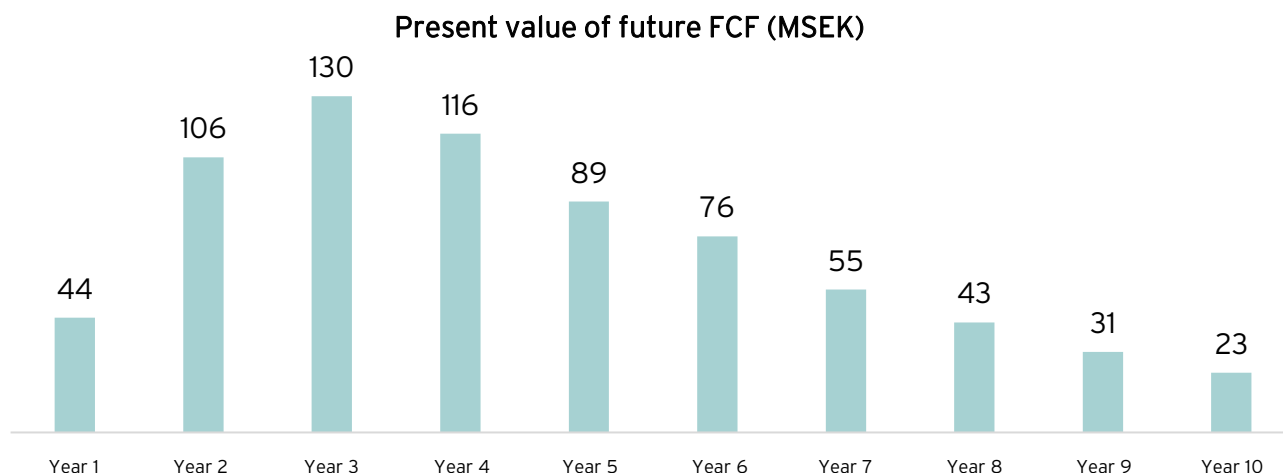


With these assumptions in place, we can now discount the company's future free cash flows, to get a picture of what a potential buyer might be willing to pay for the company.

Year	1	2	3	4	5	6	7	8	9	10
Treated patients (K)	17	60	110	146	169	216	236	273	299	332
Revenues (MSEK)	332	1 196	2 194	2 925	3 390	4 321	4 719	5 451	5 982	6 647
FCF (MSEK)	66	239	439	585	678	864	944	1 090	1 196	1 329
TV (MSEK)										2 712
Present value FCF (MSEK)	44	106	130	116	89	76	55	43	31	23
Present value TV (MSEK)										47

To discount cash flows, we need to determine a reasonable discount rate, and what that is differs depending on who is asked. Aswath Damodaran is considered by many to be one of the world's foremost experts on company valuation, and in a research report he authored, he argues that a reasonable discount rate for a company in such an early phase as Chordate is somewhere around 40-60 %⁷⁸. Since the risk for the buying company in this type of transaction is high, the return requirements are generally very high. We have chosen to use 50 %, which is in the middle of that

range, which we justify with the company's unique market position with a focus on hospitals and a broad patent portfolio. Finally, we have assumed a perpetual growth of 2 %.



With all the assumptions in place, it is now possible to discount the future cash flows and calculate the present value of them. Since the discount rate is so high, the cash flows in the future will be worth less today, as illustrated in the graph above. The sum of the discounted cash flows corresponds to SEK 760.3 million, which can be equated to the price a buyer of the company might be willing to pay for the company and Ozilia. That may sound like a very high amount, considering that the company is currently valued at just over SEK 31 million. However, we note that Chordate previously has been valued at just over SEK 600 million on the stock exchange. However, we would like to be clear once again that this is an illustrative valuation, which is based on a number of assumptions that have a major impact on the outcome in the case of small changes. In the valuation, we have not taken into account potential dilution that may occur as a result of, for example, new share issues or exercise of warrants.

Potential purchase price: SEK 760.3 million

- The sum of Ozilia's future discounted cash flows in the hands of buying companies

Potential return				
	Main scenario		Margin of safety (30%)	
	Factor	Percent	Factor	Percent
When buying	24,27	2326,8%	16,99	1598,8%

A bid for Chordate of SEK 760.3 million would correspond to an upside in the stock of 2326,8 %, and with a safety margin of 30 %, it would correspond to an upside of 1598,8 %.

Unlisted peers

To support our cash flow statement, we have conducted an extensive survey of peers in both unlisted and listed environments. The aim is to get an overall picture of the valuations in the sector, especially in the field of neurostimulation and similar methods of treatment and prevention of migraine. This analysis includes a detailed review of the companies' capital raisings and their current market valuations. The result of this can be found in the table below.

Company name	Product	Type/method of treatment	FDA (YES/NO)	Clinically proven	Latest capital raise (MSEK)	Total capital raise (MSEK)	Valuation lower interval (MSEK)	Valuation higher range (MSEK)
Theranica ⁸³	Nerivio	REN/CPM	YES	YES	472,5	903,1	1890,0	2835,0
eNeura ⁸⁵	SAVI Dual	STMS	YES	YES	178,5	242,6	714,0	1071,0
MI-Helper ⁸⁶	MI-Helper	Neurostimulation	NO	YES	42,0	-	168,0	252,0
Salvia Bioelectronics ⁸⁴		Neurostimulation	NO	NO	320,3	356,3	966,0	1459,5
Nocira ⁸⁷	Nocira	AVPI	YES	YES	99,8	-	630,0	945,0
Capri Medical ⁸⁸	Luna Air Device	Neurostimulation	-	-	32,6	-	126,0	189,0
thync ⁸⁹	FeelZing	Neurostimulation	-	YES	136,5	136,5	546,0	819,0
Median							630,0	945,0
Mean							720,0	1081,5

REN (Remote electrical neuromodulation) - prescribeable wearable device that stimulates peripheral nerves in the upper arm to induce conditioned pain modulation.

CPM (Conditioned pain modulation) - an endogenous pain relief mechanism in which conditioning stimulation inhibits pain in distant body regions.

STMS (Single Pulse Transcranial Magnetic Stimulation) - STMS uses electromagnetic fields to generate a short magnetic pulse that passes painlessly through the skull and into the brain.

AVPI (Automated Variable Pulse Insufflation) - Uses gentle, controlled blasts of air in the ears to treat migraines

These companies offer different products and treatment methods, and what they have in common is the non-invasive treatment of migraine. For each company, we have collected data on their most recent capital raising, total capital raising, as well as their current valuations in both lower and higher ranges. The estimated valuations are taken from services used to value unlisted companies, such as Pitchbook and Dealroom, and are based on the companies' historical capital raising. The data gives an indication of how the market values these companies, which is important to understand Chordate's position in comparison.

When we analyze this data, we find that the median valuation for these unlisted companies is between USD 60.0 and USD 90.0 million, while the average valuation is between USD 68.6 and USD 103.0 million. Converted to SEK, with an exchange rate of 10.5 USD/SEK, this corresponds to an average valuation range of SEK 720.3 - 1 081.5 million. We note that Chordate's current valuation is significantly lower than this range, and lower than the lowest valued peers.

Listed peers

We have tried to identify listed peers that are relevant to compare Chordate with. By studying these, we can get a picture of what the valuations look like in the sector, and how Chordate is valued in relation to these.

BrainCool

Activity

BrainCool is a medical technology company specializing in the development of products for medical cooling of the brain. Their technology is intended for the treatment of serious medical conditions such as stroke, cardiac arrest, concussion, and migraines.

Product

Among other things, the company has developed a product for the treatment of migraine⁸⁰. This product, which is part of a broader product offering, means that we consider the company to be a relevant peer for Chordate.



ElectroCore:

Activity

ElectroCore is a biotechnology company focused on the development of therapeutic techniques for the treatment of conditions in neurology and rheumatology.

Product

ElectroCore has developed gammaCore, a non-invasive and drug-free treatment for migraine and cluster headache⁷⁹.



Nexstim:

Activity

Nexstim is active in the field of non-invasive brain stimulation technologies⁸². Their focus on treating brain-related conditions makes us consider it a potential peer to Chordate.

Product

Nexstim has developed several products that use their technology to treat various brain-related conditions. The company combines Transcranial Magnetic Stimulation (TMS) with 3D brain imaging to offer tailored treatments for brain-related diseases.



We want to be clear that this is not a perfect peer group, as the companies differ in many ways. Several of the companies also have additional business areas that in theory could justify a higher market capitalization.

The average and median valuation for Chordate's listed peers amounts to SEK 355.0 million and SEK 278,2 million, respectively. Braincool is significantly higher valued than that, but also has a broader product portfolio with more indications than Chordate has.

Company (All figures in MSEK)	Market capitalization	EV	Net debt	Cash	OPCF	FCF	Turnover
BrainCool	831,5	789,1	-0,3	42,5	-	-	19,1
electroCore Inc*	350,1	215,5	-6,7	141,3	-163,4	-165,1	140,7
Nexstim**	206,3	195,1	-1,1	52,5	11,8	-5,2	112,6
Chordate Medical	32,2	15,8	-0,6	16,4	-25,9	-26,9	0,5
Median	278,2	205,3	-0,8	47,5	-25,9	-26,9	65,8
Average	355,0	303,9	-2,2	63,2	-44,4	-49,3	68,2

*Calculated using a USD/SEK exchange rate of 10.5

**Calculated using a EUR/SEK exchange rate of 11.8

After conducting an extensive survey of both listed and unlisted peers to Chordate Medical, we have come to some important conclusions:

Firstly, we observe that most of the companies in our comparison are currently more highly valued than Chordate. This applies to both the average and median valuations. Interestingly, the valuations for the unlisted companies are generally higher than for the listed ones. We interpret this as a result of the fact that valuations in the unlisted environment tend to be more sluggish. They are often based on valuations established at the time of the most recent capital raise, which can create a delay in valuation adjustments compared to the more dynamic listed market.

When we analyze Chordate in this context, the company appears to be undervalued in comparison to all companies in our peer group. This is remarkable, especially considering the scientific basis on which Chordate's technology rests, the extensive patent protection, as well as the progress being made in materializing proof of concept in several markets. We find no obvious explanation for this discrepancy in values. Rather, our observations suggest that Chordate may be undervalued relative to its peers.

Furthermore, the higher valuations of both listed and unlisted peers indicate that the market sees significant potential in the migraine market. It seems that investors are willing to invest in early-stage companies, driven by the hope of high future returns. This insight reinforces our view that the migraine market is attractive and that companies like Chordate, which are active in this area, can have a significant potential upside.

Based on our analysis of peers, we believe that it can be argued that the potential purchase price of Chordate of SEK 760.3 million is justifiable. This valuation takes into account the current market situation, Chordate's position in its niche, as well as the general trends and values in the industry.

Sources

1. [Our business case - Chordate](#)
2. [Our patents - Chordate](#)
3. [European Patent Register \(epo.org\)](#)
4. [Delivering growth: M&A in medical technology | McKinsey](#)
5. [American Headache Society 65th Annual Scientific Meeting June 15-18, 2023 Austin, Texas - 2023 - Headache: The Journal of Head and Face Pain - Wiley Online Library](#)
6. [Studies and publications - Chordate](#)
7. [Effects of intranasal kinetic oscillation stimulation on heart rate variability - PMC \(nih.gov\)](#)
8. [Effectiveness of Kinetic Oscillation Stimulation Treatment in Persistent Moderate-severe Allergic Rhinitis Compared to Medical Therapy](#)
9. [The effect of single kinetic oscillation stimulation treatment on nonallergic rhinitis - Sainio - 2023 - Laryngoscope Investigative Otolaryngology - Wiley Online Library](#)
10. [Effectiveness of Kinetic Oscillation Stimulation Treatment in Patients with Non-Allergic Rhinitis Refractory to Conventional Medical Therapies \(centrobusinco.it\)](#)
11. [Clinical Results of Kinetic Oscillation Stimulation \(K.O.S.\) in Non-Allergic Rhinitis](#)
12. [The Effect of Kinetic Oscillation Stimulation on Symptoms of Non-allergic Rhinitis: A Per-protocol Analysis of a Randomized Controlled Trial \(heraldopenaccess.us\)](#)
13. [Chordate Medical: Q2'23](#)
14. [MFN.se > Chordate Medical Holding > 11 Italian clinics now offer the K.O.S. treatment for chronic rhinitis](#)
15. [MFN.se > Chordate Medical Holding > Chordate's market in Saudi Arabia - position and potential](#)
16. [Migraine - 1177](#)
17. [MFN.se > Chordate Medical Holding > Case report from migraine study presented in Berlin: sharp reduction of migraine days using K.O.S](#)
18. <https://www.1177.se/Jonkopings-lan/sjukdomar--besvar/hjarna-och-nerver/huvudvark-och-migran/migran/>
19. <https://headachejournal.onlinelibrary.wiley.com/doi/epdf/10.1046/j.1526-4610.2001.041007638.x>
20. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8904749/>
21. [Migraine prevalence, disease burden, and the need for preventive therapy - PubMed \(nih.gov\)](#)
22. <https://www.healthdata.org/research-analysis/gbd>
23. <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/158>
24. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6459001/>
25. <https://www.thelancet.com/pb-assets/Lancet/gbd/summaries/diseases/migraine.pdf>
26. <https://rib.msb.se/filer/pdf/28890.pdf>
27. <https://www.folkhalsomyndigheten.se/folkhalsorapportering-statistik/halsoekonomi/halsoekonomiska-utvarderingar/>
28. <https://pubmed.ncbi.nlm.nih.gov/17261680/>
29. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8903552/>
30. <https://thejournalofheadacheandpain.biomedcentral.com/articles/10.1186/s10194-020-01162-x>
31. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6734313/>
32. <https://www.thelancet.com/pb-assets/Lancet/gbd/summaries/diseases/migraine.pdf>
33. <https://pubmed.ncbi.nlm.nih.gov/20816407/>
34. <https://pubmed.ncbi.nlm.nih.gov/20473702/>
35. <https://thejournalofheadacheandpain.biomedcentral.com/articles/10.1186/s10194-022-01402-2>
36. <https://n.neurology.org/content/68/5/343>

37. https://n.neurology.org/content/86/16_Supplement/P6.100#:~:text=Pooled%20crude%20migraine%20prevalence%20was%2011.6%20%5Bpercent%5D%20%2895,America%2C%2016.4%20%5Bpercent%5D%20in%20Central%20and%20South%20America.
38. <https://thejournalofheadacheandpain.biomedcentral.com/articles/10.1186/s10194-023-01619-9>
39. <https://www.polarismarketresearch.com/industry-analysis/migraine-drugs-market>
40. <https://www.globaldata.com/store/report/migraine-market-analysis/>
41. <https://www.marketresearchfuture.com/reports/migraine-drugs-market-8379>
42. <https://www.marketdataforecast.com/market-reports/migraine-drug-market>
43. <https://www.mordorintelligence.com/industry-reports/migraine-therapeutics-market>
44. <https://www.futuremarketinsights.com/reports/migraine-treatment-market>
45. <https://www.databridgemarketresearch.com/reports/global-migraine-treatment-market>
46. <https://www.imarcgroup.com/migraine-drugs-market>
47. <https://www.ihealthcareanalyst.com/global-anti-migraine-drugs-market/>
48. <https://www.coherentmarketinsights.com/market-insight/migraine-drugs-market-575>
49. <https://www.reportsanddata.com/report-detail/migraine-drugs-market>
50. <https://www.technavio.com/report/migraine-drugs-market-industry-analysis>
51. [Chronic Rhinitis - an overview | ScienceDirect Topics](#)
52. [Diagnosis of Obstructive Sleep Apnea in Patients with Allergic and Non-Allergic Rhinitis - PMC \(nih.gov\)](#)
53. [Allergic rhinitis | Allergy, Asthma & Clinical Immunology | Full text \(biomedcentral.com\)](#)
54. [Impact of Rhinitis on Work Productivity: A Systematic Review - PubMed \(nih.gov\)](#)
55. [Sleep, quality of life, and productivity impact of nasal symptoms in the United States: findings from the Burden of Rhinitis in America survey - PubMed \(nih.gov\)](#)
56. [Relationship of nasal congestion with sleep, mood, and productivity - PubMed \(nih.gov\)](#)
57. [Economic impact and quality-of-life burden of allergic rhinitis - PubMed \(nih.gov\)](#)
58. [The burden of allergic rhinitis and allergic rhinoconjunctivitis on adolescents: A literature review - PubMed \(nih.gov\)](#)
59. [Medication-related costs of rhinitis in Australia: a NostraData cross-sectional study of pharmacy purchases - PubMed \(nih.gov\)](#)
60. [Allergic Rhinitis and its Impact on Asthma \(ARIA\) 2008* - Bousquet - 2008 - Allergy - Wiley Online Library](#)
61. [WAO-White-Book-on-Allergy_web.pdf \(worldallergy.org\)](#)
62. [DSAS.pdf \(lakartidningen.se\)](#)
63. [Undertreatment of rhinitis symptoms in Europe: findings from a cross-sectional questionnaire survey - PubMed \(nih.gov\)](#)
64. [Allergic rhinitis - PubMed \(nih.gov\)](#)
65. <https://www.globenewswire.com/en/news-release/2022/09/05/2509762/0/en/Neuromodulation-Devices-Market-to-Hit-14-16-Billion-by-2030-Growing-at-a-CAGR-of-10-29.html>
66. <https://www.grandviewresearch.com/industry-analysis/neuromodulation-devices-market-report>
67. <https://www.marketsandmarkets.com/Market-Reports/neurostimulation-devices-market-921.html>
68. <https://www.fortunebusinessinsights.com/industry-reports/neuromodulation-devices-market-100561>
69. <https://www.polarismarketresearch.com/industry-analysis/neuromodulation-market>
70. <https://www.imarcgroup.com/neuromodulation-market>
71. <https://www.precedenceresearch.com/neuromodulation-market>
72. [Non‐allergic rhinitis: Position paper of the European Academy of Allergy and Clinical Immunology \(eaaci.org\)](#)

73. [Rhinitis Market Share, Future Analysis and Industry Size \(databridgemarketresearch.com\)](https://databridgemarketresearch.com)
74. [Economic consequences of migraine in Sweden and implications for the cost-effectiveness of onabotulinumtoxinA \(Botox\) for chronic migraine in Sweden and Norway - PMC \(nih.gov\)](https://pubmed.ncbi.nlm.nih.gov/)
75. [New Recommendations on Chronic Migraines May Mislead Doctors \(lakartidningen.se\)](https://lakartidningen.se)
76. [2014_70 HTA report Botulinum toxin type A for Prophylactic Treatment \(vgregion.se\)](https://vgregion.se)
77. [Chronic Migraine: Epidemiology, Mechanisms, and Treatment | SpringerLinkyounggrowth \(nyu.edu\)](https://www.springerlink.com/)
78. [NHS England » NHS rolls out headache-busting gadget across the country](https://www.nhs.uk)
79. [Regulatory breakthrough in the US for Rhinocill for migraine - BrainCool \(cision.com\)](https://www.cision.com)
80. [Migraine Treatment | Impel Pharmaceuticals](https://www.impelpharm.com)
81. [Nexstim - Alleviating chronic neuropathic pain](https://www.nexstim.com)
82. [Theranica ropes in \\$45M for migraine-modulating bracelet \(fiercebiotech.com\)](https://www.fiercebiotech.com)
83. [Medtech start-up Salvia develops a pacemaker to counter attacks of migraine - IO \(innovationorigins.com\)](https://www.innovationorigins.com)
84. [SAVI Dual™ Migraine Therapy from eNeura | Migraine Treatment & Prevention Without Medication](https://www.e-neura.com)
85. [ObvioHealth to Conduct a Pioneering Decentralized Clinical Trial on The Mi-Helper Device for Treatment of Migraine](https://www.obviohealth.com)
86. [Nocira's migraine treatment device gets FDA breakthrough designation \(medicaldevice-network.com\)](https://www.medicaldevice-network.com)
87. [Irish medtech firm Capri part of new EU project to stop migraine signals reaching the brain | Business Post](https://www.businesspost.ie)
88. [Science of Neurostimulation | Thync - Thync Global, Inc.](https://www.thync.com)
89. [MFN.se > Chordate Medical Holding > Chordate Medical launches Ozilia migraine and rhinitis treatment in the United Arab Emirates](https://www.mfn.se)
90. [Migraine and stress—an exploratory cross-country study of external stress factors | BMC Research Notes | Full text \(biomedcentral.com\)](https://www.biomedcentral.com)
91. [Gender-related differences in migraine - PMC \(nih.gov\)](https://pubmed.ncbi.nlm.nih.gov/)
92. [Botox - FASS General](https://www.fass.com)
93. <https://www.abbviepro.com/se/sv/neuroscience/products/botox/kronisk-migran.html>
94. [What to do with non-responders to CGRP\(r\) monoclonal antibodies: switch to another or move to gepants? - PMC \(nih.gov\)](https://pubmed.ncbi.nlm.nih.gov/)
95. [MFN.se > Chordate Medical Holding > Chordate Medical carry out a rights issue of units of approximately SEK 41.8 million](https://www.mfn.se)

Disclaimer

Kalqyl Analys Norden AB conducts business in the field of company and equity research where information has been compiled based on sources that Kalqyl deems to be reliable. However, Kalqyl cannot guarantee the accuracy of the information, and nothing written in the analysis should or should be considered a recommendation for investment of any kind.

This analysis is a commissioned where the analyzed Company has entered into an agreement with Kalqyl regarding analysis. The analysis is published either on a one-off basis, or on an ongoing basis during the contract period for a customary fee.

The opinions and conclusions contained in the analysis are intended for the recipient only. Kalqyl shall not be held liable for either direct or indirect damages caused by decisions based on information in this analysis.

All investments in financial instruments are associated with financial risk, and past performance is no guarantee of future returns. Kalqyl and all employees in the organization are not allowed to trade securities in client companies from the time the analyst initiates the work with the analysis in question, and until the analysis has been published in 48 hours.

Conflict of interest

Jakob Fritz does not own shares in the analyzed company
This analysis is commissioned