Task Force +Health Care
Dutch platform for the life sciences & health sector

Netherlands Enterprise Agency

Denmark

Market study 2021

Matching Dutch Solutions to Nordic Challenges for Future-Proof Healthcare

EXECUTIVE SUMMARY

The Danish healthcare system has public universalized healthcare access, with options for private coverage. The healthcare expenditure was in 2018 10.07% of its GDP.

In Denmark, there are three levels of administration involved in healthcare; national, regional and municipal. The five regions are responsible for financing and managing specialized care. The regions own and manage hospitals, prenatal care centres, and psychiatric care centres. The states remains the authority over the planning of medical specialities and the financing of the health care sector. 98 municipalities have responsibility over, for example, nursing homes and social psychiatry. The Danish healthcare system is publicly financed with a limited private market. Although the contribution of voluntary private insurances to the total of healthcare financing is small, the number of people with private insurance has risen.

By 2020, the health care infrastructure is undergoing a rapid transformation to meet patients' changing needs. The Future Hospital Programme of the Danish Ministry of Health aims to establish infrastructure that supports the patient-centric future healthcare system. Digitalization and new technology, often driven by artificial intelligence and robotics, are believed to be critical enablers for the success of the future hospitals. In the future there will be fewer, but larger hospitals that are more highly specialized with stronger focus on the patient. Besides, hospitals are greening and becoming more sustainable, which has opportunities for Dutch solutions.

Denmark was among the first countries in the EU to declare national measures on the spread of the coronavirus. Therefore, the deaths attributable to the virus have remained relatively low, but the government has been criticized for overreaching. During the pandemic, the healthcare sector gaind more public attraction. The public and private parties in the country increased their collaborations, which was a practice widely done. Also, the outbreak of COVID-19 has accelerated the move towards digitalization both in treatment options and data collection.

Denmark is an excellent starting point for Dutch companies that want to enter the Nordic markets. Its open business culture is similar to the Dutch one. Procurement in hospitals is largely based on directives of the EU and procurement bidding is centralized on the national and regional levels

Opportunities for Dutch companies are there in several subsectors. In the field of mobility and vitality, digitalization is expanding. Assisted-technology is under development, and provides opportunities for Dutch solutions. Private investment in the sector is rising and elderly more often invest in their own care. Dementia research and care is a top priority of the Danish government. In the field of Biopharma and Biotech, there is a great access to clinical trials. The funding opportunities in research, availability of data, and ease of conducting clinical trials presents a significant opportunity for Dutch public health researchers. Innovation is important for the Danish LSH sector and thus new innovations are adopted relatively fast.

Denmark has a long history of digitalization the healthcare sector and a well-functioning digital infrastructure is in place. In the field of eHealth, there are opportunities in further extending the use of electronic patient data. Also, Denmark was one of the first countries to adopt a strategy for cyber and information security of health data.

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I. TOP 10 REASONS – WHY DENMARK IS INTERESTING FOR THE DUTCH LIFE SCIENCES AND HEALTH SECTOR

1. COVID-19 related changes: During the COVID-19 pandemic, the healthcare sector has naturally gained political attention. The public and private parties in the country have increased their collaborations, which was a practice already widely done. Also, the outbreak of COVID-19 has accelerated the move towards digitalization both in treatment options and data collection. See Section 2.7 and Section 4.5.
2. Supporting infrastructure for foreign actors: Organizations such as Invest in Denmark, Copenhagen Capacity, Welfare Tech, and Medicon Valley Alliance provide local market entry support and networking opportunities for companies new to Denmark. See Chapter 4.
3. Digitalization in elderly care: Assistive devices in the personal living environment rose in popularity and implementation, in order to let elderly live (semi-)independently for as long as possible. Assisted-technology is still under development, and provides opportunities for Dutch solutions. Private investment in the sector is rising and the elderly are increasingly investing in their own care. See Section 4.1.
4. Centralized decision making and purchasing in healthcare: From national hospital plans to national telemedicine initiatives, decision-making in Denmark is centralised. National planning makes it easy for companies to identify opportunities in Denmark. Procurement bidding is through centralized procedures, on both the national and regional levels. Yet, this also makes that there are only five regions to which you must present your product. See Chapter 3.
5. Dementia research and care: Dementia care and research is one of the top priorities of the national health strategy of Denmark. There are extra efforts in the fields of housing, diagnostics and reducing medicine consumption. These strengths align with Dutch experiences in dementia care and research. See Section 4.1.
6. Fast adoption of innovations: From clinical trials to test beds, innovation in Denmark is a focal point of the life science sector. Hospitals, companies, and research institutes are open to international collaboration. These opportunities provide a platform for Dutch companies to establish a network for market entry. See Chapter 4.
7. Green transitioning in hospitals: In Denmark, hospitals are required to contribute to the green agenda and all hospitals have been asked to become zero-emissions entities by 2050. Hospitals have based their purchasing strategies on these long-term goals. See Section 4.3.
8. Extensive digital health infrastructure: Denmark has a long history of digitalization in the healthcare sector and a well-functioning digital infrastructure is in place, including the Shared Medicine Care. In the coming years, the use of electronic patient data is further extended. Additionally, Denmark was the first country to adopt a strategy on cyber and information security in the healthcare sector. See Section 4.2.
9. Access to clinical trials: In 2019, Denmark was number one in the world for number of clinical trials per capita and strives to take the lead internationally in early phase clinical research. The funding opportunities in research, availability of data, and ease of conducting clinical trials present significant opportunities for Dutch (public) health researchers. See Section 4.4.
10. Stepping stone to The Nordics: With a strategic geographical position in mainland Europe and cultural similarities with Sweden and Norway, Denmark is a potential bridge for Dutch companies looking to break into the Nordic healthcare market. Denmark is a good point of entry, as the, often informal, business culture has similarities to the Dutch. See Chapter 3.

II. SNAPSHOT: DENMARK COMPARED TO SWEDEN AND NORWAY

Denmark, Sweden, and Norway are similar in many ways, including shared cultures, similar languages, and societal structures based on a welfare state. To understand the nuanced differences between these Scandinavian countries, this section provides a comparative snapshot of the healthcare markets and opportunities (see also **Table 1**). To learn more on communication in this region, review the document provided by the Embassies of the Netherlands in the Nordics.

What Makes Denmark Different? Compared to Sweden and Norway, Denmark is the smallest country and has the highest population density with 145 people per square kilometer. The relatively high population density of Denmark has contributed to the Danish national hospital plan that aimed to relocate, merge, and specialise 16 hospital. Most of the budgets for the construction projects have been allocated, but the regions can apply for a loan to invest in energy efficient solutions. Additionally, the hospital build sector is focusing on greening and sustainability, as hospitals have committed to becoming zero-emmission entities by 2050. The design of healing environments is also in demand.

Unique Opportunities in Denmark: Denmark has a long history of digitalization the healthcare sector and a well-functioning digital infrastructure is in place. The Shared Medicine Card is used throughout the whole healthsystem and electronic patient records are being further expanded. Denmark was one of the first countries to adopt a strategy on cyber and health information security. Furthermore, a general National Strategy for Artificial Intelligence was adopted, of which healthcare is a priority area. Under this strategy, the government will launch a number of signature projects within health, including funding from Investment Fund Denmark. With a relatively small market, Denmark can be approached as an entry point for Dutch companies looking to expand to Sweden and Norway.

Cooperation as Market Strategy: All three Nordic countries are eager to adopt new innovative solutions and share sophisticated ecosystems for research and innovation. Municipalities are willing to act as test beds for pilot projects and universities in the Nordics are strong international collaborators. The life science sector in Denmark is strong. For example, Medicon Valley Alliance in the greater Copenhagen region is one of the largest life science cluster in the Nordics. Rather than competing with these structures, Dutch companies should consider building partnerships, fostering collaborations, and seeking guidance from organizations such as Invest in Denmark, Business in Denmark, Copenhagen Capacity, Danish Life Sciences Cluster, and Medicon Valley Alliance.

The Clichés (are always true): Dutch companies looking to enter Denmark should establish a long-term strategy, network with local partners, master the language, and understand the business culture. While this will take considerable effort, once established, Dutch companies can procure large, national or regional contracts to supply large shares of the healthcare sector.

COVID-19: The Scandinavian response to COVID-19 has revealed two differing approaches. Denmark and Norway decided to take preventive measures at a very early stage to stop the virus from spreading in their countries. Sweden, on the other hand, took a much less restrictive approach and neither imposed widespread lockdown measures on the population nor closed shops and public places (Marin, 2020). During the COVID-19 pandemic, the healthcare sector has naturally gained political attention and public-private partnerships increased. The pandemic has accelerated the move towards digitalization both in treatment options and data collection in Denmark.

III. COUNTRY COMPARISON

	Denmark	Norway	Sweden	Netherlands
Land area (km²) (2018)	40,000	365,107.8	407,310	33,670
Population (2019)	5,818,553	5,347,896	10,285,453	17,332,850
annual growth (% (2019))	0.4	0.7	1.1	0.6
Population density (people per sq. km of land) (2018)	145	15	25	512
65 years and older (%) (2019)	20	17	20	20
expected in 2050 (%)	24.4	23.6	24.4	27.7
Maternal Mortality Rate (per 100 000 births) (2016)	3	3	3	3
Life Expectancy at Birth (2018)	81	83	83	82
Healthy Life Expectancy (years, 2019)	71.0	71.4	71.9	71.4
Probability of dying between 15-60 years (per 1.000) (2017)	71	58	54	58
Life Expectancy Global Rank	34	13	17	25
Economic Context				
GDP total (2019, USD millions)	350,104	403,336	530,884	907,051
annual growth rate (%) (2019)	2.8	1.2	1.3	1.7
GDP per capita (2020. USD)	60,413	63,293	54,848	59,335
projected growth rate (%) (2022)	2.9	3.7	2.4	3.7
(Health) Business Context				
Ease of Doing Business Rank (2019)	4	9	10	42
Projected pharmaceutical Market 2021 (USD mln)	3.1	3,190	4,950	6,660
expected annual growth 2016-2021 in USD (%)	0.4	2.9	3.0	0.2
Projected Medical Device Market 2020 (USD mln)	1,674.6	1,593.6	2,836.3	3,952.1
expected annual growth 2016-2021 in USD (%)	2.9	4.5	4.5	2.8

Medical Device Import from the Netherlands (2019. USD millions)	493	84	775	-
Medical Device Export to the Netherlands (2019, USD millions)	117	88	367	-
Health System				
Type of Health System	Public decentralized UHC system with private options	Public decentralized UHC system with private options	Public decentralized UHC system with private options	Dual-level system with universal social health insurance
HAQ-score (2016)	92.1	96.6	95.5	96.1
Health Expenditure % of GDP (2018)	10.07	10.05	10.90	9.97
per Capita (USD) (2018)	6,216.77	8,239.10	5,981.71	5,306.53
Private health expenditure as % of total HE (2018)	16.12	14.68	14.91	35.06
Out-of-pocket expenditure as % of total HE (2018)	13.77	14.31	13.78	10.80
Domestic general government as % of total HE (2018)	83.88	85.32	85.09	64.92
Hospital beds per 1 000 population (2018)	2.4	3.5	2.1	3.2
Physicians per 1 000 population (2016)	4.0	2.7	4.0	3.5
Nurses and Midwives per 1 000 (2016)	10.3	18.0	11.8	10.9
Responsible entity for specialized care	Regions	Regions	Regions	
Responsible entity for primary care	Municipalities	Municipalities	Regions	
Responsible entity for long-term care	Municipalities	Municipalities	Municipalities	

Table 1. *Country Comparison. Accumulated data from: World Bank Data, BMI Medical Devices reports (2017), UN Comtrade Data, OECD Health at a Glance 2017 Report.*

IV. GLOSSARY OF TERMS

EU	European Union
GDP	Gross Domestic Product
SME	Small and Medium Enterprises
TFHC	Task Force Health Care
LSH	Life Science and Health
RBD	Regional Business Development team, Nordic and Baltic countries

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1. INTRODUCTION

1.1. An Introduction to Denmark

The Kingdom of Denmark is a high income country in Northern Europe. Denmark is a constitutional monarchy with parliamentary democracy. The prime minister holds the executive authority. The parliament consists of members elected through proportional representation of political parties. The market economy is primarily driven by exports of pharmaceuticals, pig meat, and electric generating sets (Observatory of Economic Complexity (OEC), 2017).

The population of Denmark is 5.8 million. **Figure 1** shows the population distribution in Denmark in 2021. **Table 2** presents population statistics for Denmark, Sweden, and Norway. The population of Denmark was annualy growing by 0.4% in 2020. As seen in **Table 2**, Denmark has a large aging population that is expected to grow in the coming decade. Since 2010, fertility rates have declined from 1.8 children per woman to 1.6 children per woman in 2020. On average, life expectancy at birth for men is 79 years and for women is 83 (World Bank, 2021). Almost 60,000 people immigrated to Denmark in 2020. Immigration is expected to stabilize in the coming ten to twenty years (Statisics Denmark, 2021).

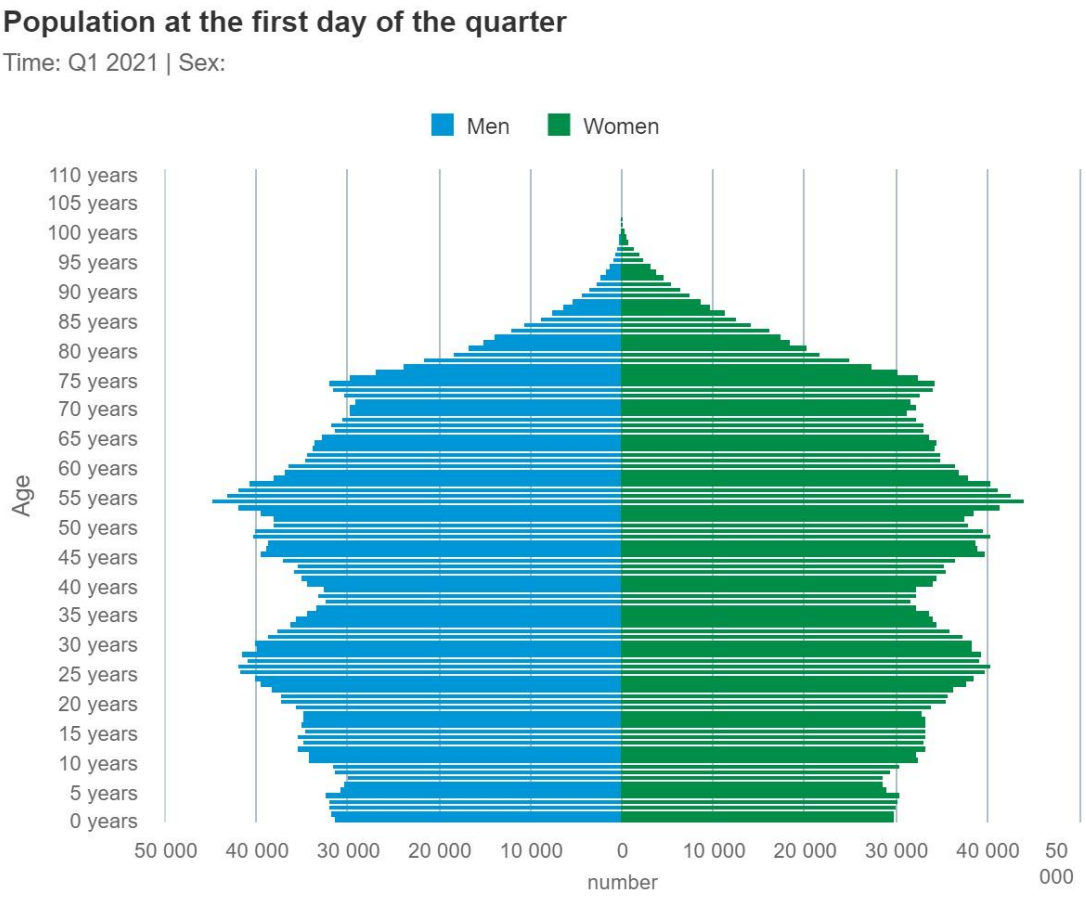

Figure 1. *Population distribution in Denmark, 2021 (Statisics Denmark, 2021).*

	Denmark	Norway	Sweden
Total Population, 2019	5,818,553	5,347,896	10,285,453
Population growth (annual %) 2019	0.4	0.7	1.1
Population density (people per sq. km of land area)	145	15	25
Population ages 0-14 (% of total) 2019	16	17	18
Population ages 15-64 (% of total) 2019	64	65	62
Population age 65 and above (% of total) 2019	20	17	20
Urban population (% of total) 2019	88	83	88

Table 2. *Population statistics for Denmark, Sweden and Norway (The World Bank, 2019).*

1.2. About this study

This report was prepared by Task Force Health Care (TFHC) for the Regional Business Development team (RBD) for the Nordic and Baltic countries on behalf of the Netherlands Entreprise Agency and the Ministry of Foreign Affairs. The report is an updated version of the study published in 2017 by TFHC on the LSH sector in Denmark and reflects the current reality, including the effect of COVID-19 and the scientific insights obtained from the pandemic. This report highlights priorities, opportunities, and challenges of the Danish healthcare market. In addition, the study provides information on trends, financial considerations, and practical information for companies interested in the Danish market.

Parallel to this updated report for Denmark, similar updates of the 2017 reports have been completed for Norway and Sweden. The snapshot included in this report gives a brief overview and comparison of the healthcare sector in all three countries. The complete reports for Norway and Sweden are also available upon request.

1.3. Methodology

In order to make this report as complete and relevant as possible for the Dutch Life Sciences & Health sector, information was obtained through different sources including desk study and expert interviews. This methodology was applied for every updated report, i.e. for Norway, Denmark and Sweden.

Desk research

The study uses secondary data including government documents, reports, and academic articles. For the statistics mentioned in the report, the latest available data have been used. The information obtained through this desk research was validated at the meetings during the expert interviews.

Expert interviews

Due to the situation regarding travel restrictions and the COVID-19 pandemic at the time of preparing this report, in person meetings were not possible. Instead expert interviews were conducted to gather valuable information. The meetings were used to cross check previously obtained data to provide a report that is as objective and realistic as possible.

2. THE DANISH HEALTHCARE SECTOR

The following chapter will describe the historical background of the Danish health care sector and elaborate on the health care system and its financing and expenditure. Afterwards, its draws attention to the healthcare infrastructure in Denmark, including its professional workforce and health outcomes. To conclude, it discusses how Denmark dealt with the COVID-19 pandemic and the results thereof.

2.1. Historical Background

Denmark has a long tradition of decentralized management of public welfare. Public relief for the poor was introduced in Denmark in the 18th century. The 19th century brought an increased role of the Danish state in healthcare with public health boards and standardized training of physicians. Towns and counties financed public hospitals through property taxes. Danish hospitals in the 19th century were primarily used by the poor. Health insurance funds were organized by various associations, artisan groups, and labor unions (Olejaz, et al., 2012).

In the 20th century, hospitals were subsidized by the Danish state and managed by the county councils. Three additional universities established medical training programmes. By 1930, there were more doctors per 1,000 inhabitants than in any other Nordic country. Throughout the 1900s the health funds covered more and more of the population eventually covering over 90%. By 1973, healthcare was mostly financed by taxes and the need for insurance funds was thereby abolished.

The 1970s marked the transition to the Danish single payer system. Counties held the responsibility for the National Health Security System which covered general practitioners, specialists, and medical expenses (European Observatory on Health Systems and Policies, 2016). The administrative structure of Denmark underwent significant changes. The number of counties and municipalities was reduced and counties were given primary responsibility over the healthcare sector.

Several policies in the 1990s aimed at reducing waiting times for treatment by introducing competition among public hospitals. The act on free choice of hospital was introduced in 1993. In 1998, diagnosis-related groups were introduced and hospitals are reimbursed based on these groupings. In 2002, an extended free choice and a waiting time guarantee were introduced and included several private clinics as well as hospitals abroad in Sweden and Germany (European Observatory on Health Systems and Policies, 2016).

Denmark reformed its healthcare system in 2007. Most of the structural changes emerged in dialogue between the central government and the regional authorities. The reforms reduced the number of municipalities to 98, who are responsible for a number of primary healthcare service as well as for elderly care. Five regions were created with the responsibility of providing hospital and outpatient care and were responsible for the general practioners (GPs) and for psychiatric care. Healthcare financing became the responsibility of the central government, instead of the municipal government. This was the centrepiece of the reform. The state holds the overall regulatory and supervisory functions in health and elderly care. According to the Danish Healthcare System Consensus Report:

The regions play a crucial role in organizing and delivering specialized curative healthcare services, while the municipalities oversee most public health, rehabilitation and long term care services. The central government sets the formal framework legislation and finances healthcare (Pedersen, Bech, & Vrangbaek).

Alongside the restructuring in 2007, the Danish government announced their investment in new hospital projects and hospital modernization. By 2020, the health care infrastructure was undergoing a rapid

transformation to meet patients' changing needs. The Future Hospital Programme of the Danish Ministry of Health aims to establish infrastructure that supports the patient-centric future healthcare system. Digitalization and new technology, often driven by artificial intelligence and robotics, are believed to be critical enablers for the success of the future hospitals. Approximately 6.5 billion euros are being invested in 16 new "super hospitals". In the future there will be fewer, but larger hospitals that are more highly specialized with stronger focus on the patient (Healthcare Denmark, 2020).

2.2. The Danish Healthcare System

The foundation of the Danish healthcare system is universal access as described in Denmark's Health Law. Principles such as freedom of choice, the right to high quality care, and access to information are critical (Vrangbaek, 2020). The Danish Health Law decentralizes and divides the responsibility of healthcare between the state, the regions, and the municipalities (Olejaz, et al., 2012). According to the OECD, the Danish healthcare system is classified as a National Health Service.

The national government is responsible for regulatory frameworks for health services as well as general planning and supervision . The Ministry of Health (Sundheds- Og Ældringministeriet) recommends legislation. Financial targets for the health sector are established annually by the Ministry of Health, the Ministry of Finance, Danish Regions (regional council) and Local Government Denmark (municipal councils). Nine agencies are subordinate to the Ministry of Health. **Appendix A** lists the agencies working under this Ministry. The Danish Health Authority (Sundhedsstyrelsen - also called the National Board of Health) provides expert advice to the Ministry of Health, regional, and municipal governments. The Danish Health Authority works in: finance, healthcare planning, health promotion, radiation protection, elderly and dementia care, evidence/education/emergency services. **Figure 2** presents a schematic overview of the Danish healthcare system.

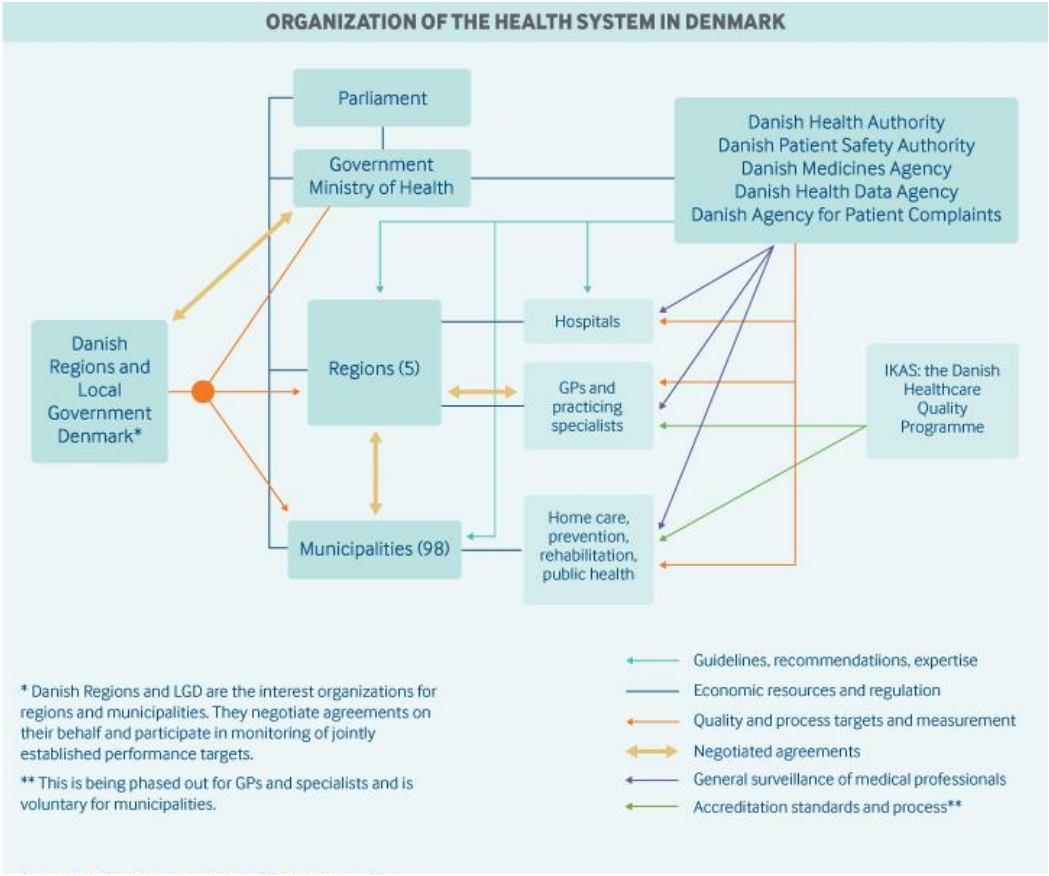

Figure 2. *Overview of Danish healthcare system on national, regional and municipal levels*

The 2007 healthcare reforms divided Denmark into 5 administrative regions. The regions are North Denmark Region (Region Nordjylland), Central Denmark Region (Region Midtjylland), Region of Southern Denmark (Region Syddanmark), Region Zealand (Region Sjælland), and Capital Region of Denmark (Region Hovedstaden). A map of the regions is presented in **Figure 3**. With the structural reform of the regions, the number of counties and municipalities drastically decreased. The reform was carried out in a decentralized environment and replaced the major part of reimbursement schemes with general state grants (Ministry of the Interior and Housing Denmark, sd)

Figure 3. *Map of the regions in Denmark*

The five regions are responsible for financing and managing specialized care. The regions own and manage hospitals, prenatal care centres, and psychiatric care centres. The states remains the authority over the planning of medical specialities and the financing of the health care sector. Under a national hospital plan, major hospital reforms and restructuring have been ongoing since 2008. More on the hospital plan and hospital construction is presented in Section 4.3. With the reforms many hospitals are undergoing management changes or being closed. Appendix B provides an overview of the changed hospital structure from 2007 to 2020.

Regions also finance general practitioners, specialists, physiotherapists, dentists, and pharmaceuticals. The regions have authorithy over the health insurances. Salaries of healthcare practitioners are determined by negotiations with Danish Regions (Danske Regioner) and professional organizations, such as the Danish Medical Association. The interests of the regions are represented by Danish Regions on the national level. Danish Regions is run by a board of elected regional politicians who represent the five regions for four-year periods (Olejaz, et al., 2012).

98 municipalities have responsibility over social psychiatry, health and alcohol programmes, nursing homes, home visiting nurses, dental care for children, school based healthcare, and rehabilitation (Vrangbaek, 2020; Gjedring, 2005). Local Government Denmark is the interest organization of the municipalities in Denmark. Salaries of these healthcare practitioners are negotiated by Local Government Denmark and professional organizations. Municipalities are encouraged to care for their citizens rather than sending them to regional care providers. Municipalities pay a fee every time one of their citizens use regional healthcare services. The lawmakers incentivize municipalities to use resources in the municipalities rather than turning to regional services. The aim is to prevent repeated hospitalizations by strengthening home aid, home nursing, and patient organizations for the chronically ill.

For patients, freedom of choice is a key principle in the Danish healthcare system. Nearly all Danish residents are registered with a general practitioner of their choosing. Patients do not need referrals from general practitioners to visit emergency wards, dentists, chiropractors, ear, nose, and throat specialists, or ophthalmologists. Referrals are required for other specialists including physiotherapy and hospital treatment (Olejaz, et al., 2012). There are many patient groups in Denmark that support patients with specific diseases such as arthritis, heart disease, and cancer. An overview of all Patient Organizations in the Nordic Countries

can be found here. Danish Patients (Danske Patienter) is an umbrella organization for 102 patients and relatives associations in Denmark. Their primary work consists of drafting policy to shape the health system to support the interests of their patient organizations and thus, patients in Denmark (Danske Patienter, 2017). Like Sweden and Norway, patient groups and medical practitioner associations are influential actors in the Danish healthcare sector. Appendix C presents a list of important healthcare organizations in Denmark.

Although recently there has been some reporting about further regional reform, this has been met with some resistance, mainly against the initiatives to transfer the authority over healthcare to the government and centralize this responsiblity. Moreover, the way the COVID-19 pandemic has been handled in Denmark changed public opinion of the healthcare system. During the pandemic, the Danish healthcare system has been compared extensively to other European systems. This showed for the most part a system that is agile and resilient. For example, Denmark was quite quick in producing digital systems to monitor the pandemic and the health situation and developed COVID-passports and vaccine planning applications in a relatively timely manner. More information on COVID-19 in Denmark can be found in Section 2.7.

2.3. Healthcare Expenditure and Financing

In 2018, total health care expenditure amounted to 10% of the GDP of Denmark. Per capita expenditure was estimated at 6,216 euros. 84% of healthcare expenditure came from public sources. **Table 3** presents an overview of Danish healthcare expenditure compared to expenditure in Norway and Sweden.

	Denmark	Norway	Sweden
Total Healthcare Expenditure per capita (USD) 2018	6,216.77	8,239.10	5,981.71
Total Healthcare Expenditure (% of GDP) 2018	10.07	10.05	10.90
Domestic general government expenditure on health (% of total HE) 2018	83.88	85.32	85.09
Private expenditure on health (% of total HE) 2018	16.12	14.68	13.78
Out-of-pocket payments (% of total HE) 2018	13.77	14.31	13.78

Table 3. *Danish, Norwegian and Swedish healthcare expenditure, 2018 (The World Bank, 2019)*

Health care is financed through a progressive national income tax. The national health tax is decreased to 6% of the income tax in 2013. State financing for the health sector consists mainly of block grants and subsidies designated for specific activities, and in addition to this, the municipalities help finance specific activities every time citizens come into contact with the health services and the mental health services. Regional development is financed through state block grants and municipal development contributions. Within social health the municipalities pay for their own citizens at the region's institutions. The block grant accounts for about 81 % of financing, the state subsidy for specific activities accounts for about 1% and the activity contribution for the municipalities is about 16% (Tosun, sd).

Block grants are allocated to the regions and municipalities, which finances approximately 77% of regional healthcare activities. The remaining regional expenses are financed through activity-based payments from local taxes or local block grants (Vrangbaek, 2020).

Healthcare in Denmark is largely free at the point of use for registered residents. The universal healthcare covers primary care, specialist care, hospital stays, preventative care, mental health services, and long-term care. Dental care is covered for children below the age of eighteen. Additional services like outpatient prescription drugs, dental care for adults, physiotherapy, and optometrist services are subsidized. However, out-of-pocket costs do occur. Out-of-pocket payments amount to 14% of the total health expenditure (The World Bank, 2019). These payments are mostly spent on outpatient drugs, corrective lenses, hearing aids, and dental care.

Drugs prescribed by general practitioners outside of a hospital are paid by the individual. A cap on out-of-pocket costs for individuals is determined by their accumulative personal assets and special cases. Medicines are reimbursed on a progressive basis, the more a patient spends, the more it gets reimbursed. Specific threshold and regulations can be found at the Danish Medicine Agency. An overview of the financial flows from national, regional, municipal, and out-of-pocket financing can be found in **Figure 4**.

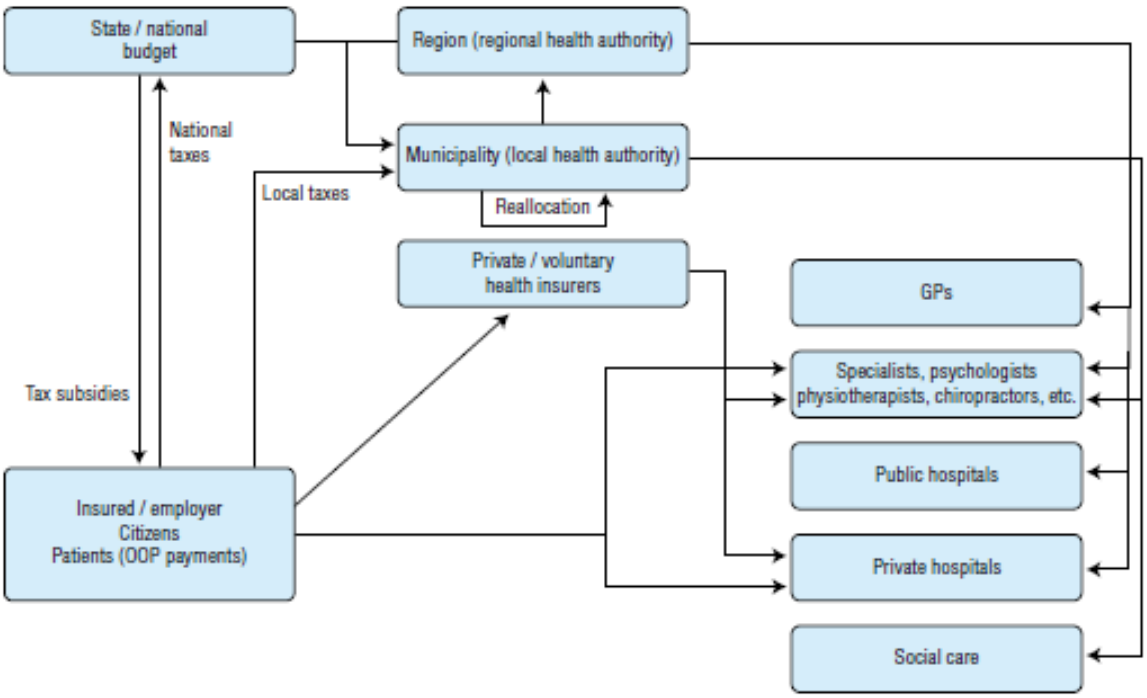

Figure 4. *Overview of the financial flows in the Danish healthcare system (Olejaz, et al., 2012)*

To minimize out-of-pocket costs, Danish residents pay, on average, 775 euros per capita per year for a voluntary private health insurance to cover costs related to dental care and medications (OECD, 2019). There are approximately seven for profit insurers in Denmark. Although the contribution of voluntary private insurances to the total of healthcare financing is small, the number of people with private insurance has risen rapidly. Approximately 42% have complementary private insurance and 30% have duplicate private insurance, as can be seen in **Figure 5** (Vrangbaek, 2020). 90% are group policies purchased by employers (Liina-Kaisa Tynkkynen, 2018).

There are an estimated 45 private healthcare providers in Denmark. The largest private hospital operator in Denmark is Aleris (Business Monitor International, 2016). Aleris is headquartered in Stockholm, Sweden.

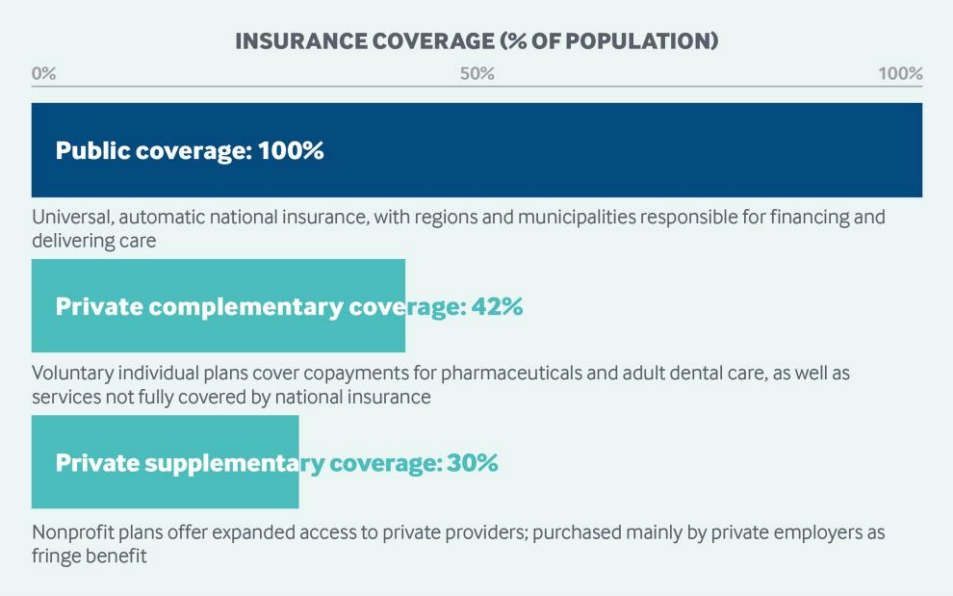

Figure 5. *Insurance coverage (% of Danish population) (Vrangbaek, 2020)*

2.4. Healthcare Infrastructure

The number of hospital beds in Denmark has been decreasing since the 1980s (NOMESCO, 2015). **Table 4** presents the trends in bed numbers per 1,000 of people. As of 2019, Denmark has approximately 2.6 beds per 1,000 inhabitants (World Bank, 2019). Denmark had in total 15,000 hospital beds in 2019 (Statista, 2021). The average length of stay in hospital was 5.4 days in 2019 (OECD, 2019). Along with the other Scandinavian countries, Denmark ranks among the lowest of OECD countries in the length of stay at hospitals.

The private healthcare market in Denmark is small. There are a few private health care clinics, which are mainly in the specializations of plastic surgery and knee surgeries. Growth in the private sector is minimal. General Practioners are private enterprises, byt they jointly negotiate their terms with the regions. Although the private sector is small, the healthcare system in Denmark is highly innovative, as the public sector does not alck the drive to innovate.

Denmark is in the process of building 16 new highly specialized hospitals designed to take into account the changing role of hospitals in the future healthcare system. These infrastructure developments have been initiated and funded by the Danish government. Healthcare services are increasingly transferred to primary care centres and the role of the hospital in the system is changing. Hospitalization will be replaced with outpatient treatment, and a rise of 50% in outpatient treatments is expected. This was expected to result in 20% decrease of bed days, however a combination of different initiatives has seen bed days decrease even further (Healthcare Denmark, sd). The plans are discussed in more detail in Section 4.3.

The regional hospitals, general practitioners, and providers of municipal institutional and home based services share the responsibility for long-term care and most of the services are locally organized and funded through the municipailities. Most long-term care administered by the municipalities is offered at home. Home nursing is free of charge with a medical referral. Municipalities implemented preventative measures, of which home visits for elderly populations are part. Rehabilitation is also part of the home help service (Kvist, 2018). Both private and public providers offer long-term nursing services and individuals can choose freely between different care providers.

Health care professional shortages

A shortage of experienced, skilled nurses in Denmark is impacting quality care delivery, resulting in negative consequences for patients (Michel, 2020). Therefore, from a strategic pointof view it is preferred to take care of patients in their home environments for as long as possible. Besides, Denmark has successfully worked on lowering the time of average length of hospital days to reduce the workload for healthcare professionals.

2.5. Healthcare Professionals

Denmark had approximately four physicians per 1,000 people in 2016 (The World Bank, 2020). According to the Danish Medical Association, in 2019 there were over 31,135 registered doctors in Denmark (Lægeforeningen, 2019). Like Sweden and Norway, associations for medical professionals are strong and influential. In Denmark, nearly all physicians are members of the Danish Medical Association (Lægeforeningen, 2019). General practitioners are fairly distributed throughout the country. Specialists are primarily found in the capital and other urban areas. All general practitioners are self employed and paid via capitation by the administrative regions and fee for service. Most residents in Denmark (98%) are registered with one general practitioner who functions as a gateway to the healthcare system. 90% of all medical cases are handled by the GPs.

	2000	2005	2009	2015	2019
Total number of hospital beds per 1.000 people	4.3	3.9	3.5	2.5	2.6

Table 4*. Total number of hospital beds per 1.000 people in Denmark, 2000-2019 (World Bank, 2019)*

As Denmark is facing an increase in chronic diseases that will continue to grow in the future, there is a need for efficient primary care management outside of the hospitals. As an example, since 2018 local Danish primary care physicians and GPs have been more intensily involved with type 2-diabetes and COPD as well as control of certain cancer diseases. This has been established through initiatives between the different local care providers and regional hospitals (Healthcare Denmark, sd).

Denmark had approximately 10.3 nurses per 1,000 people in 2016 (The World Bank, 2021). Nurses and assistant nurses are represented by the Danish Nurses Organization (Dansk Sygeplejeråd). The Danish Nurses' Association has over 79,000 members and covers approximately 87% of practicing nurses in Denmark (Danish Nurses Organization, 2020).

Shared Medicine Card

In Denmark, all health records, from GP to the dentists and social care, are fully digitalized. All institutions have access to a stored and shared medical record: the Shared Medicine Card (FMK). The system enables all care providers to share the same set of medical data across all health care instutitons. The Shared Medicine Card was born out of a need as there were adverse events in finding the right medication for people, for example elderly in an emergency. Patients themselves also have access to their electronic prescriptions and medicine purchases. It took around 10 years before the project was put into action. The Danish Health Data Authority runs and oversees the central database. There is a lot of openness and trust in this the electronic system and patients are generally not hesitant to provide and share their informations.

In addition, there are five large life science universities in Denmark (Copenhagen Capacity, 2017). These universities include the University of Copenhagen, Technical University of Denmark, Aarhus University, Aalborg University, and University of Southern Denmark.The life science industry in Denmark employs more than 47,000 people. Denmark ranks highest in biotech R&D and the number of clinical trials per capita in Europe (Copenhagen Capacity, 2018).

Medicon Valley

Medicon Valley is the leading international life-sciences cluster spanning the Greater Copenhagen region of eastern Denmark and southern Sweden. The cluster is home to 9 life sciences universities, producing 5,742 PhDs every year. There are hosted 28 hospitals of which 11 are university hospitals. The region has a presence of more than 580 life science companies. There are 212 LSH projects in the pipeline including 60 within oncology. The region is an example of knowledge transfer between the public and private sector with 14,600 public researchers in 2018 (Copenhagen Capacity, 2018). Section 4.4 will elaborate further on the easy access to clinical trials.

2.6. Health Outcomes

As presented in **Table 1**, Denmark has a slightly lower life expectancy at birth than Sweden and Norway with an average of 81 years against 83 years in the latter two countries. Although a smaller difference, the healthy live expectancy is somewhat smaller in Denmark with 71.0 years of healthy living on average, against 71.4 in Norway and 71.9 in Sweden (World Bank, 2019). As for many countries, there is a gap in life expectancy between people with the highest and lowest level of education. In 2017, this difference in years was 5.6 for men and 3.9 for women (OECD, 2020).

Like Sweden and Norway, the disease profile of Denmark is dominated by non-communicable diseases. Due to changing demographics, including a growing elderly population, the prevalence of chronic diseases in Denmark is rising. One third of Danes have one or more chronic disease(s). Several initiatives have been developed to enable early detection of chronic diseases in order to avoid extensive treatment and high costs. Home monitoring solutions for patients with diabetes, arthritis or COPD is a priority for the Danish government and the first implementations in national scale will be ready during 2021 (Healthcare Denmark, sd).

The leading causes of death in Denmark are coronary heart diseases, stroke, lung cancer and Chronic Obstructive Pulmonary Disease (COPD) (GBD 2019 Diseases and Injuries Collaborators, 2020). The top 10 causes of total numbers of death in 2019 and a comparison to 2009 can be found in **Figure 6**.

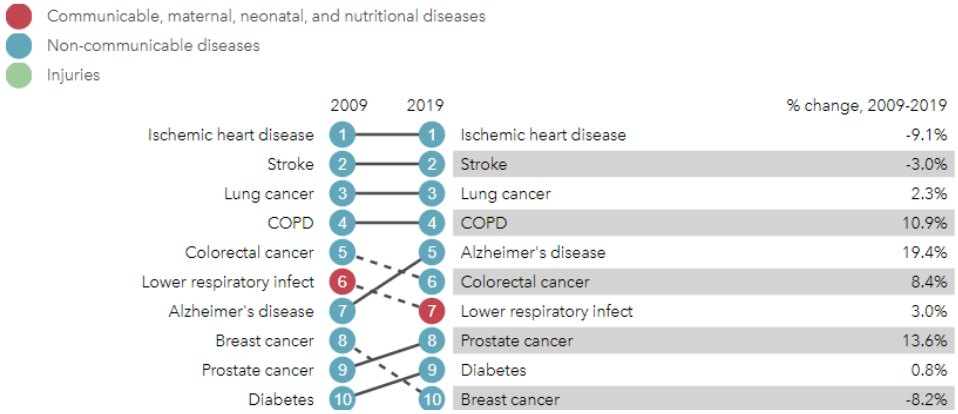

***Figure 6**. Top 10 causes of total number of deaths in 2018 and percent change 2009-2019, all ages combined (IHME, 2019)*

The leading risk factors that cause for most deaths and disabilities in Denmark are tobacco use, high blood pressure, alcohol use and dietary risks. The top 10 risk factors that contributed to a total number of Disability Adjusted Life Years (DALYS) in 2019 a comparison to 2009 can be found in **Figure 7** (GBD 2019 Risk Factors Collaborators, 2020).

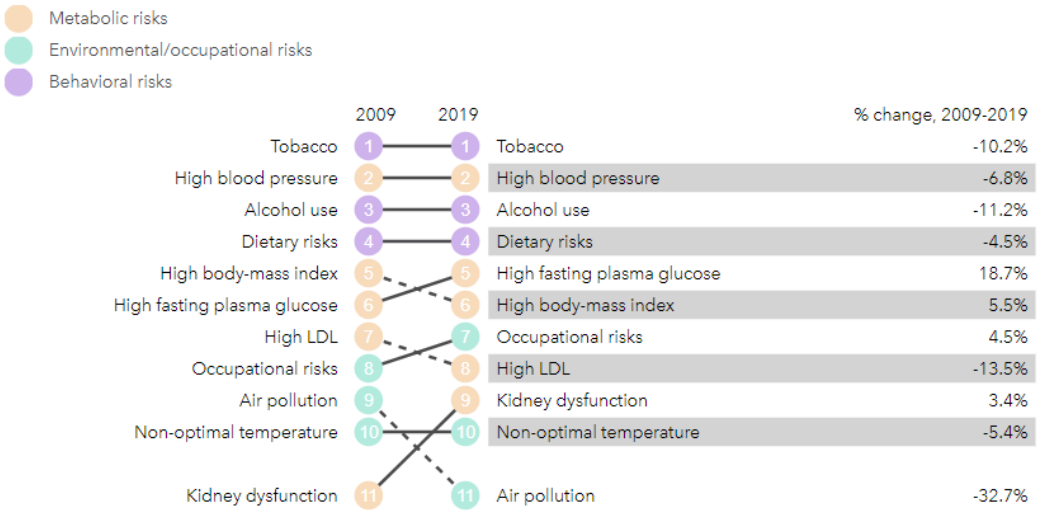

Figure 7. *Top 10 risks contributing to total number of DALYs in 2019 and percent change 2009–2019, all ages combined (IHME, 2019)*

Dementia care and research is a focal point of the national health strategy of Denmark. Along with the ageing population, which is a risk factor for the incidence of dementia, the number of Danes with dementia is increasing. Dementia care in Denmark is focused on dignity, safety and maintaining the quality of life for people with dementia and their families. In 2017 Denmark adopted the National Action Plan on Dementia 2025, which has launched a number of initiatives to strengthen Denmark as a dementia friendly society (Smetana, 2018) . Also, a National Research Strategy on Dementia 2025 was adopted in 2018 to improve the standard of knowledge and competeny, also through international and EU projects. 900,000 euros have been earmarked to strengthen research (Danish Health Authority, 2018).

National Action Plan on Dementia 2025

In 2017, the National Action Plan on Dementia 2025 was launched with a broad support and a funding of 63 million euros from 2017-2019. The plan aims to have 98 dementia friendly municipalities, improve the diagnostic rate to 80% and reduce the consumption of medicines amongs people with dementia with 50% by 2025 (Waldemar, 2018). The focus areas of the action plan are:

1. Early detection and better quality in examination and in treatment
2. Improved quality of care, nursing and rehabilitation
3. Support and guidance for the relatives of people with dementia
4. Dementia friendly communities and housing
5. Increasing knowledge and professional skills.

Mental health

The government of Denmark is investing in new initiatives surrounding the prevention, (early) detection and treatment of mental illness. Reducing the taboo and stigmatization on psychological illness is part of these plans. Currently, there is being drafted a new 10 year plan for psychiatry. There have been efforts for over 20 years to decline suicide rates in the country. The new psychiatric hospital in Vejle in the Region of Southern Denmark was inaugurated in 2017 as the first public-private psychiatric hospital construction in Denmark. In the Centre for Telepsychiatry in Odense new technologies for mental health are tested.

2.7. COVID-19 development and outcomes

Denmark was among the first countries in the EU to declare national measures on the spread of the coronavirus on 13 March 2020. In Denmark the death toll was lower than in Sweden, but the government has also faced harsh criticism for over-reaching (Marin, Europe Versus Coronavirus - Putting the Danish Model to the Test, 2020). Denmark had a high number of tests performed and test capacity was significanly higher than in most EU countries. COVID measures such as the closure of public spaces and primary and secondary schools have been in place in Denmark.

When the Danish health care system was hit by the first wave of the COVID-19 crisis, its response was to adapt quickly. This is a relatively positive result in a country with universal access to health care. In hospitals, dedicated units were set up in each facility and additional resuscitation beds were provided. Danish hospital services did not become overburdened, which might otherwise have been a concern given the relatively low number of hospital beds (Marin, Europe Versus Coronavirus - Putting the Danish Model to the Test, 2020).

The outbreak of COVID-19 has accelerated the move towards digitalization both in treatment options and data collection.The Danish Health Data Authority has, together with the regions and other state agencies, led the way in providing digital solutions and is a respected source of health data in the country by both patients and care providers. Pre-existing technologies have been strengthened in order to create a stronger data infrastructure in which a high influx of COVID test results can be accurately recorded. The cybersecurity of the system is highly valued and maintained. As such, the vaccination database that was used to record childhood vaccinations expanded its capacity and began used to register the results of SARS-COV-2 field tests (Sprong, COVID-19's influence on digital healthcare in Denmark, 2021).

Moving forward, the following topics will be emphasized as topics-of-interest for healthcare stakeholders in the post-COVID era (Henriksen & Grønbæk, 2020) (Sprong, COVID-19's influence on digital healthcare in Denmark, 2021):

- Ensuring continued security of patient data.
- Increase in tech solutions such as telemedicine, remote monitoring and disease (self) management that allow healthcare to be provided at home.
- Education and training of staff to implement and work with the newest digital solutions.
- Assisted clinical decision-making (artificial intelligence).

3. MARKET STRUCTURE

The following chapter will describe the business climate, market entry opportunities, and procurement procedures in Denmark. Insight will be presented on the business culture, the use of the English language, and the tax climate for businesses. For sector-specific opportunities, see **Chapter 4** of this report.

3.1. Business Climate

Denmark is ranked 4th in The World Bank's Ease of Doing Business index in 2019 and is ranked 7th in Forbes' Best Countries for Business list in 2018 (World Bank, 2019; Forbes, 2018). Denmark is a member of the European Union (EU). As such, many regulations of the Danish market fall under EU directives. Much like Sweden and Norway, Danish business culture is non-hierarchical. According to Transparency International, Denmark was the least corrupt country in the world in 2020. (Transparency International, 2020). Openness and autonomy are core values. Like the other Scandinavian cultures, having a work-life balance is very important to the Danes.

Denmark has a favorable tax climate for businesses with a corporate tax rate of 22%, placing Denmark below the average OECD and EU level. There is no double taxation for Danish companies with branches abroahd, which is unique among the Nordic countries (Copenhagen Capacity, sd). A special taxation scheme is available for high salaried expats, which enabales high salaried expats to decue income tax with 27% for up to 7 years. Other tax incentives include full deduction of patents and expertise in the year of acquisition and deduction of R&D expenses when such expenses are incurred (Invest in Denmark, sd). For an overview on the tax system by the Danish Customs and Tax Administration (SKAT) review the document, updated in February 2021, Tax in Denmark – an introduction to the Danish tax system for non-Danish speakers.

Much like Sweden and Norway, Denmark has a highly skilled and educated workforce that works comfortably in English. According to the English Proficiency Index, Denmark ranks 2nd in the world for English proficiency (Education First, 2020).

3.2. Market Entry

Although English is widely used in Danish business, it is always beneficial to have a local contact to increase the ease of doing business. Most contracts are administered in Danish and many tenders are floated in Danish. There is a close business relationship between the Nordic countries because the Scandinavian languages and cultures resemble one another. Given the geographical location of Denmark and the cultural similarities with Sweden and Norway, Denmark can act as a stepping stone to the greater Nordic market.

It is strongly advised to have a local representative in Denmark to conduct business. There are many similarities between Denmark and the Netherlands. However, business ventures in Denmark are slower to progress. Dutch companies should be prepared to put in a few years of activity in Denmark before seeing returns. Relationships are developed over a longer period of time and building such a relationship costs time. On the other hand, these relationships are valuable and reliable.

There is a limited presence of Dutch companies in Denmark. Philips Healthcare has a strong presence and cooperates with the public sector in healthcare innovation projects. Medig also has a strong presence in the country. Nemo Healthcare, a medtech company with new technology for monitoring unborn children, set up a partnership with several Danish regions (Innovation Origins, 2021). Dutch influences in the ageing sector are apparent, such as nursing homes in Svendborg, Denmark, that have been modeled after the Dutch Hogerweyk model since opening in 2016. Community care models such as the Dutch Buurtzorg model have been adopted

in Denmark since 2020. Lokalpleje Danmark has partnered with Buurtzorg to provide integrated health and homecare based on self-organizing teams (Lokalpleje Denmark, 2020).

Useful organizations for market entry and information

Business in Denmark operates under the Danish Business Authority. The organization is the government's contact point for foreign businesses from the EU/EEA. Business in Denmark provide services and answer questions free of charge. Business in Denmark provides guidelines and information on Danish rules for business and registration in Denmark. The information provided is coordinated with the Danish tax authorities, the Ministry of Employment, and the Danish Working Environment authority. The rules for conducting business in Denmark differ depending on if the business is temporary or permanent. Business in Denmark should be the first point of entry in determining how to register and establish a business in the country. Business in Denmark also provides entrance to Virk, Virk is the digital entrance to the public sector for Danish businesses. If your business is registered in Denmark, you can log in to Virk to access your shortcuts and see upcoming deadlines.

Invest in Denmark is the official investment and business opportunity branch of the Ministry of Foreign Affairs of Denmark. Invest in Denmark should be considered the preliminary contact point for entry into the Danish markets. The organization supports foreign companies in establishment, research, and finding opportunities. Their services are free of charge and fully confidential. Invest in Denmark has offices throughout Europe including Oslo, London, Paris, Barcelona and Munich. Key life science sectors such as pharmaceuticals, biotech, medical technology, and eHealth are focal points for Invest in Denmark. This highlights the importance of these sectors to the Danish markets.

Another source for entry into Denmark is Copenhagen Capacity – the official organization for investment promotion and economic development in Greater Copenhagen. Copenhagen Capacity works in partnership with Invest in Denmark under the Ministry of Foreign Affairs. Copenhagen Capacity supports foreign companies in identifying opportunities in Greater Copenhagen and focuses on biotech, pharmaceutical development, clinical testing, and medical technology development (Copenhagen Capacity, 2017). Together with the Skåne-region of Southern Sweden, Greater Copenhagen represents the bi-national life science cluster called Medicon Valley.

Useful organizations that for market entry and information on the Dutch side include RVO (Netherlands Enterprise Agency) and Regional Business Developers based in Denmark and Sweden. In addition, the Dutch Embassy in Copenhagen provides a good point of entry. Also, Task Force Health Care's relevant contacts and activities within the country can help you to expand your knowledge, network and business.

Like Sweden and Norway, patient associations and medical professional associations have a strong role in the healthcare sector. To reach these groups Dutch companies should consider attending conferences and trade shows in Scandinavia. A list of these events is presented in **Appendix D.**

Report: Communicate and negotiate in the Nordics

The embassies of the Netherlands in the Nordic countries (Denmark, Sweden, Norway and Finland) published a guide on how to communicate and negotiate in business cultures of the Nordic countries. The guide was published in 2016, but provides relevant up to date tips.

3.3. Procurement

Public procurement in Denmark complies with EU directives. The Danish Competition and Consumer Authority takes part in EU cooperation in drafting new legislation and ensures the EU procurement rules are implemented in Danish law. The rules ensure that private companies can bid on tenders in an open and transparent process. Besides, the Authority cooperates with the procurement authorities in other Nordic countries (Danish Competiton and Consumer Authority, 2021).

On January 1st, 2016 the Danish Public Procurement Act entered into force to regulate public procurement procedures in Denmark. The law requires all contracting authorities to announce procurement of supplies and services in accordance with the Danish Tender Act (*Tillbudsloven*) (Udbud, 2017). The Tender Act regulates the awarding of public works below the threshold (Danish Competition and Consumer Authority , 2021) Every year the Danish public sectors spends approximately 40 billion euros on the procurement of goods and services.

The Danish Competition and Consumer Authority (Konkurrence- Og Forbrugerstyrelsen) has oversight of public procurement with the primary role of ensuring fair competition and investigating complaints. The Danish Competition and Consumer Authority runs the e-notification portal for public procurement. The e-notification portal for public procurement is called Udbud. The announcement of procurement of supplies and services is required on www.udbud.dk in accordance to the Danish Public Procurement Act. The website is available in English. Udbud has effective search functions that allow suppliers to find relevant tenders. In accordance with the Danish Tender Act, tenders for goods and services over 400,000 euros are required to be published online. Any tenders between 40,000 euros and 400,000 euros fall under less formal procurement procedures in Denmark. Less formal procurement procedures are regulated by the Ministry of Finance, which entails that tenders generally follow public procurement procedures and are published on Udbud.

Informal bidding

Dutch companies interested in selling goods or services to Danish municipalities should be involved in discussions early on in the process. Companies should showcase their products at conferences and trade fairs to increase awareness about the products and possibilities. An overview of important trade fairs and events can be found in **Appendix D.** Likewise finding a local partner and building a network in Denmark is very important.

Tenders that fall under EU procurement procedures will link the user directly to Ted: Tenders Electronic Daily, which is the EU portal for announcing procurement. According to EU regulations, all goods and services more than 139,000 euros and 5,350,000 euros for construction contracts must be published online (Your Europe, 2020). Even on Ted, many Danish tenders are described in Danish. Again, this highlights the importance of having local support to access these opportunities.

Procurement of goods and services is primarily the responsibility of municipalities. Danish regions and the central government procure significantly less than municipalities (European Commission, 2016). To increase chances of winning municipal tenders, Dutch companies should consider partnering with local companies or packaging Dutch smart solutions with other solutions. Municipalities are slow to purchase new devices and equipment. Therefore, another procurement strategy is to package new devices with service tenders.

The National and Municipal Purchasing Service (Staten og Kommunernes Indkøbsservice) is a publicly owned company with the primary role as central purchasing body (European Commission, 2016). The National and Municipal Purchasing Service aims to achieve more effective procurement results by aggregating demand. Their primary clients are municipalities. Entry to the aggregated municipal market may be simplified through this centralized purchasing body in Denmark. The regional purchasing entity is called Regionernes Fælles

Indkøb and is responsible for joint regional procurement for the five regions. Each year regional procurement of goods and services amounts to over DKK30 billion (around 4 million euros) (Regionernes Fælles Indkøb, 2021). Regionernes Fælles Indkøb work closely with the regional purchasing teams and the Health Innovation team at Danish Regions. Overall, the centralized procurement bodies in Denmark make it easier for Dutch companies to identify opportunities and to enter the market.

Dynamic procurement systems

Many predict that dynamic procurement systems as a form of procurement in the public sector will become more widespread in the coming years. This is a procedure available for contracts for works, services and goods commonly available on the market. As a procurement tool, it has some aspects that are similar to an electronic framework agreement, but where new suppliers can join at any time. The form of purchase is more flexible and SME-friendly.

Dynamic purchasing systems already exist in several areas, such as IT software, AV equipment, cars, playgrounds and canteen operations. Nevertheless, there are still many who have not tried their hand at a dynamic purchasing system with both contracting authorities and suppliers.

4. ALIGNING DUTCH SMART SOLUTIONS TO DANISH OPPORTUNITIES

The following chapter presents information and opportunities in specific healthcare sectors in Denmark, including the areas of: healthy living & ageing, digital transformation, hospital design and build, public health and innovative MedTech solutions. Below, you will find a brief summary of the Dutch strengths per healthcare sector. A more extensive analysis can be found in Appendix E.

4.1. Healthy Living and Healthy Ageing

The strengths of the Dutch Mobility & Vitality subsector can be categorized as follows:

- **Promoting independence through self-management**: solutions that enable people to live longer independently in their home environment include care robots and tools that increase physical mobility and help regain function and freedom or aid with medication.
- **Social inclusion & mental care**: through solutions that foster physical and mental interaction or digital solutions that (re-)connect people to relatives.
- **Nutrition & active lifestyle**: special diets, nutrition and specialized exercise areas for elderly or people with a physical or mental impairment.
- **Long-term and senior care models**: care models in the Netherlands are process-based and manage long-term and senior care by reducing the costs of care, while ensuring the quality of care for patients.
- **Research and education**: in the Netherlands, high-level research is conducted in the field of healthy ageing and elderly care.

Opportunities in Health Ageing and Healthy Living

Like many developed countries, Denmark has an ageing population. The percentage of people aged over 65 will rise from 20% in 2019 to 24.4% in 2025. On the other hand, the workforce that can provide care for the Danish elderly is shrinking. Therefore, the country is looking for new smart solutions to improve quality of care and control, especially in homecare.

Digitalization in elderly care

The elderly care strategy in Denmark, like in Sweden and Norway, focuses on the elderly living in their own homes for as long as possible. This strategy helps to lower the pressure on the limited professional workforce. Assistive devices in the personal living environment rose in popularity and implementation, in order to let elderly live in their own environments (semi-)independently for as long as possible.

Assisted-technology is still under development. Municipalities are the responsible entity to invest in such technologies, as they are providing for the long term and elderly care. However, municipalities receive less and less money for care, whilst the elderly generation is the wealthiest generation in the country. Because of

this, elderly start investing in their own care. Chains and pharmacies have responded to this trend, and have started selling technologies such as GPS trackers. This development is relatively new.

Electronic Citizen Record

One third of the Danish municipalities have implemented an electronic citizen record called Columna Cura Care, operated by the Danish company Systematic. This solution meets home care professionals' needs for mobile support and engages citizens in their own treatment. Home care professionals and citizens collaborate on the platform by registering information about the ongoing care and treatment, which gives professionals more time for actual care, while citizens are both empowered and more involved in their own health and treatment (Healthcare Denmark, 2021)

The elderly care landscape has become rapidly more digitalized to lower pressure on the shrinking workforce. Today, there is a tendency to shift this point of departure. Implementation of technologies that are directly given to elderly patients is questioned and there have been discussions about the added value of such technologies for the quality of life of the elderly. Instead, there is a belief that nurses and (informal) care workers should be equipped with better assistive technologies.

Shortfall of care workers

A great focus in the area of healthy living and ageing is management of the shortfall of elderly care workers. Employees are lacking and attracting new care workers is difficult. There is a focus on attracting and encouraging care workers to stay in the elderly care sector. Also, new technologies and solutions should help overcome the challenges of professional shortages, think for example of person lifts and hoists. There is a broad agreement that cold technology should support warm care. Besides, there is room for opportunities that help training professionals on how to work with these technologies.

Focus on dementia research and care

As the number of Danes with dementia is increasing, dementia care and research is a focal point of the national health strategy of Denmark. The National Action Plan on Dementia 2025 was adopted in Denmark in 2017. The plan focuses on improving the diagnostic rate of dementia and reducing the consumption of medicines among dementia patients. As such, there are opportunities for solutions that focus on early detection, dementia friendly communities and housing and support for relatives. Part of the aforementioned plan is the National Research Strategy on Dementia, which opens up opportunities for research and knowledge exchange. For example, the University of Southern Denmark (SDU) has a Danish Ageing Research Center.

Political agreement on the Good Elderly Life 2020

In December 2020, the Danish parliament adopted a political agreement on the implementation of DKK 56.1 million (~7,5 million euro) until 2022 for the benefit of The Good Elderly Life (Det Gode Ældreliv). The agreement contains a number of initiatives to support relatives of frail older people, create elderly communities and fight loneliness. In addition, the agreement gives elderly the right to indicate that they do not want to be resuscitated in the event of cardiac arrest at an advanced age.

Privatization of elderly care

A general trend in Denmark is that private investments in nursing homes and private hospitals are growing, although the private healthcare sector remains only a few percent of its total. Elderly can decide whether they

request healthcare services in the public (at their municipality) or in the private sector. In case they chose for the private sector, their municipality will offer equivalent reimbursement.

The elderly care market in the Netherlands is based on insurance provided health care, and therefore has developed more standalone solutions for elderly and home care which have to be adapted to enter the Danish market. Yet, the entry level for new technological solutions in healthcare is relatively high and high standards are demanded.

Danish Life Sciences Cluster

The Danish Life Sciences Cluster works to translate the Danish research and knowledge within life science and welfare technology into commercial solutions for the benefit of companies, healthcare, municipalities and citizens throughout Denmark. The organization has many different members that include companies, knowledge institutions, municipalities, regions and other public organizations and network and industry organizations. The Danish Life Sciences Cluster was established in May 2021 and is a merger of BioPeople, Copenhagen Health Cluster, MedTech Innovation Consortium and Welfare Tech. These four organizations have been transformed to regional hubs.

4.2. Accelerating digital transformation: Connected Care and Artificial Intelligence

Within the subcategory Connected Care, there are several strengths and focus areas:

- **Remote care applications**: the major aspect is the exchange of data between and amongst patients, healthcare professionals and (informal) caregivers.
- **Safe, secure and interoperable apps and platforms**: many information systems, devices and applications need to connect within and across organizations, including Electronic Health Records and Hospital Information Management Systems. Dutch solutions enable access, exchange, integration and organise safe use of health data within and across organizational and national boundaries.
- **Research on patient empowerment:** Dutch research has focused on self-management of patients.

Strengths and focus areas within the subcategory Analytical & Artificial Intelligence include:

- **Improving efficiency**: by collecting and analyzing data, workflows, processes and teamwork among nursing staff, doctors, or other healthcare providers can be improved.
- **Clinical decision support solutions**: this includes solutions that are used for gathering and analyzing (actionable) data, automating tasks, providing insights and guidance for health professionals.

Opportunities in Connected care and eHealth

The digitalization of the healthcare sector in Denmark is very developed. Denmark has nearly 20 years of experience with eHealth, as in 2004 electronic medical records were mandated in primary care facilities to make it more efficient to view patient medication lists, clinical notes, diagnostic images, and laboratory results. Denmark is widely recognized as a world leader in eHealth adoption and application (Kierkegaard, 2013).

Strategy for Digital Health 2018-2022

In 2018, Denmark adopted a new Digital Health Strategy 2018-2022. The strategy will ensure the continued momentum towards a more holistic effort to enable hospitals, municipal health services, the GP's and other public and private participants throughout the health system to co-operate in an integrated network focused around patients. As Denmark is one of the countries with the most digitalized healthcare system, it wants to build further on this achievement.

The use of electronic patient data is extended within the strategy, which requires a higher confidence of Danish citizens in the authorities that use their data. The strategy also includes an increased focus on assisted living technology to help elderly people stay healthy in their own homes and increase their quality of life. The 5 focus areas of the strategy are;

1. The patient as an active partner; decision support tools, patient recorded outcomes
2. Knowledge and time; better digital communication, safer medication, digital workflows at GPs
3. Prevention; digital support for chronic patients and pregnant women, follow-up after screening
4. Trustworthy and secure data; improved digital security and better patient control over data
5. Progress and common building blocks; the long term vision

The complete strategy in English can be found here.

Danish Health Data Initiative: Health in the Future

In 2019, with the Danish Health Data Initiative, the government has earmarked around 3,35 million euros to ensure better data quality and data bases and to strengthen cross-sectoral cooperation on health data.

There is one central electronical health record; the Shared Medicine Card. The Shared Medicine Card (FMK) is a central database at the Danish Health Data Authority holding data on all Danish citizens' electronic prescriptions and medicine purchases over the preceding two years and an updated list of citizens' current medicine prescriptions. Due to this, there is many data available for the usage of AI or other digital solutions. On the website of Danish health data, you can find a database with all datasets available. However, for the implementation of new innovative ideas, a system is needed that ensures that health data is made more readily available and used to enable patients to get better treatment, while also not forgetting to take data security into account.

Strategy for cyber and information security in the healthcare sector

Denmark was the first country in the world that has adopted a national strategy on cyber- and information security in the healthcare sector. The Collective Cyber and Information Security Strategy for Healthcare 2019-2022 wants to further strengthen joint and coordinated efforts towards more resilient and trusted services as the complexity of healthcare systems increases and with it the vulnerabilities to cyber attacks. The strategy highlights 6 different vulnerable areas in healthcare systems, being;

1. A large staff community
2. A large and complex IT landscape
3. Dependence on joint digital infrastructure
4. Legacy systems and IoT devices
5. Large data collections
6. Heterogeneous sector

The strategy is divided into four tracks (Predict, Prevent, Detect, and Respond) with the aim to strengthen the healthcare sector's capacity to predict, prevent, detect, and respond to cyber and information security incidents. A number of specific initiatives have been assigned for each track, and the actors in the sector will work together to implement them. The strategy in English can be found here.

Opportunities in Artificial Intelligence

National Strategy for Artificial Intelligence

As Denmark is a highly digitalized country, it has a high potential for solutions based on artificial intelligence (AI). Besides, there is many health data available for usage. Denmark also faces challenges such as securing a responsible and ethical foundation for AI, better access to data, increased knowledge and competences, and increased investment in AI. In March 2019, a general National Strategy for Artificial Intelligence was adopted, of which healthcare was a priority area, along energy and utilities, agriculture and transport. As there is a lack of experience in use of artificial intelligence in the public sector, the government will launch a number of signature projects within health, including funding from Investment Fund Denmark. The complete National Strategy for AI can be found here.

There is a focus on the potential that AI in healthcare has in Denmark, however there are little joint initiatives on projects covering the practice in healthcare. Therefore, projects are independently funded. In the area of imaging analysis, the usage of AI did progress extensively.

Automating processes with AI

A trend that involves the usage of AI is the automation of processes not directly related to the patients. These processes include for example workflows in hospitals. With AI, new opportunities arise for managing the logistics behind patient treatment more efficiently and accurately. These are in demand at hospitals, at it reduces workload and offers more time for patient contact.

Danish Health Data Authority and COVID-19

The Danish Health Data Authority was a highly respected and important source of health data in Denmark during the pandemic. In the wake of the outbreak, the agency has been repurposing their pre-existing technologies in order to create a stronger data infrastructure in which a high influx of COVID test results can be accurately recorded. They have one of the most robust data collection and sharing platforms in the world and possess the knowledge and expertise in cyber security to keep this data safe. For example, the database that is used to record childhood vaccinations was expanded and used to register COVID-19 test outcomes.

Wide usage of health applications

The Danish government has officially approved a number of different health applications. Appendix F provides an overview of these apps and their functions. More information and the applications can be found here.

4.3. Hospital Design and Build

The strengths of the Dutch Hospital Design and Build subsector can be categorized as follows:

- **Turn-key projects;** total projects, reaching from planning, architecture and design, to building, furnishing and operations.
- **Design, architecture & engineering;** planning, feasibility, design, architecture' of health care facilities.
- **Sub-construction & (integrated) parts;** components integrated in the construction or bigger detachable parts.
- **Furnishing, equipping & operations;** furniture, smaller equipment and solutions needed to manage health care facilities.

Opportunities in Hospital Design and Build

2007 Quality Fund Investments – Super Hospital Programme

Denmark is investing in a major structural and organizational reform of the Danish healthcare sector to establish a sustainable healthcare sector, where the hospitals are an integral part of a coherent health care system that supports patients as active partners in their treatment and at the same time meets the health care requirements of the future. This is called the Super Hospital Programme. In 2007, the Danish government announced the investment of 5.5 billion euros into The Quality Fund (Kvalitetsfonden).

In 2021, six projects are fully complete and in operation, while several other hospitals are in partial operation. The last project in the programme is expected to be completed in 2025. Although most of the budgets for the construction projects have been allocated, the regions can apply for a loan to invest in energy efficient solutions. More information on the status of the projects, the timeline, financing and success stories can be found in the short 2021 English publication of the Ministry of Health: The Danish Super Hospital Programme.

Logistic solutions

Optimal and smart logistics in the hospital environment is of key priority to the Danish hospital sector. Since 2003, the hospital sector has focused on increased productivity (Healthcare DENMARK, 2017). This includes for example automated laboratories, better patient flows, and other just-in-time concepts. Efforts to reduce patients' length of stay and to coordinate patient flows are helped by the use of data for novel technologies, such as robots and artificial intelligence.

Robots as logistic solution

Novel technologies such as robotics and AI are becoming increasingly important for an optimal planning of logistics in Danish hospitals. At the Hospital of Southern Jutland, an autonomous mobile robot with AI features improves robotic traffic and ensures internal logistics run as planned. An MiR100 robot from Mobile Industrial Robots delivers food and returns dishes four times a day in the hospital. This solution provides benefits and comfort for both management and employees (Healthcare Denmark, 2020).

In the Odense municipality, where the Hospital of Southern Jutland is based, exists a strong national robotics cluster, which includes more than 130 companies and focuses on internationalization and provides an extensive network of global partners.

Sustainable hospitals and green transitioning

In Denmark, hospitals are required to contribute to the green agenda, and therefore new hospital projects are launching eco-friendly initiatives and environmentally friendly practices to the design, building and management of facilities, in order to reduce their carbon footprint and improve patient care. All hospitals have been asked to be zero-emission entities by 2050, which is a major challenge. Hospitals are changing their purchasing policies based on these goals. Therefore, circular economy policies will be required of those companies wanting to participate in tenders for hospital projects. It is expected that this change towards zero emission will trickle down from the hospital towards the municipalities, which are responsible for the elderly and long term care.

Healing architecture and environment

Healing architecture is one of the new initiatives in hospital design aimed at helping patients to faster recovery, supported by innovative solutions that optimize the patient flow and shorten patients' length of stay. With many new hospitals being built in Denmark over the last decade, the concept of healing architecture has reached a higher level as it has become an integral part of architectural design. The Danish healthcare system is focused on further improvement and on creating even better hospitals. As Denmark wants to achieve excellent results using both outstanding clinical practices and well-planned, well-designed buildings, there are opportunities in this area of expertise.

4.4. Biotech and Biopharma

Organizations within this strength offer solutions in areas such as drug development, diagnostics, vaccines and therapies tailored to the needs of the patient. The Netherlands is particularly strong in the following fields:

- **Oncology**
- **Neurology**
- **Infectious diseases**

Opportunities in Biotech & Biopharma

Personalized care

In Denmark, the demand for personalized care and medicines is growing. The digitalization of healthcare leaves possibilities to provide care in a more personalized way. In 2017, the National Strategy for Personalised Medicine 2017-2020 was adopted. The strategy was updated in 2021 to a 2021-2022 version. The strategy (in English) can be found here. The strategy will be implemented in different areas through three phases:

1. Initial use of the infrastructure for whole genome sequencing
2. Research infrastructure for personalised medicine
3. Further development of personalised medicine and inclusion of several data sources

In 2018, the National Genome Center opened in Denmark. Its primary task is to lay the foundation for the development of better diagnostics and more targeted treatments for patients using whole-genome sequencing (WGS). The center is open to international collaboration and exchange of knowledge and data.

Monitoring side effects

There is a growing need to monitor side effects and the effects of pharmaceuticals. Therefore, more accurate and effective tools are demanded to manage these tasks.

Medicon Valley - Biopharma

Medicon Valley is the leading international life-sciences cluster spanning the Greater Copenhagen region of eastern Denmark and southern Sweden. There are 350+ biotech, medtech and pharma companies with local R&D in the valley, and 4 Global R&D pharmaceutical companies; Ferring, McNeil, Novo Nordisk, Lundbeck and LEO Pharma. The research strengths of Medicon Valley include:

- Bacteriology
- Cancer research
- Food & fermentation
- Metabolism & diabetes
- Protein Research and bioinformatics

Thanks to collaborations, innovative research and strong pipelines, Medicon Valley is a hotbed for groundbreaking biotech and pharmaceutical solutions. The life sciences experts at the organization can provide more information on the projects that are in the pipeline. For more information consult the website of Medicon Valley.

Abundance of data and clinical trials

Denmark has electronic healthcare data, which goes back more than 40 years in time and includes more than with data from a vast database of 5.8 million Danes. The Danish National Biobank contains more than 10 million samples in more than 170 clinical databases. Denmark's social security number system makes it possible to combine unique patient data for research bio samples across an array of diagnostic categories and links over 25 million bio samples in Danish biobanks, providing unique research opportunities. Statens Serum Institut works under the Danish Ministry of Health. The primary responsibility of the institute is to ensure preparedness against infectious diseases and biological threats (Statens Serum Institut, 2017).

In 2019, Denmark was number one in the world for number of clinical trials per capita, according to ClinicalTrials.gov. Denmark wants to be in the lead in early phase clinical research. Generally, Danish citizens are willing to enroll in clinical trials. The funding opportunities in research, availability of data, and ease of conducting clinical trials presents a significant opportunity for Dutch public health researchers. The country is experienced with development of new trial designs, complex clinical trials of medicines related to rare diseases or individual medication, as well as in research in the early development phases, including first in human (FIH) trials. This is primarily owing to Denmark's skillful and specialized researchers as well as Denmark's many technological opportunities.

4.5. Public Health

Dutch organizations are focused on translating policy into practice. The strength Public Health consists of the following expertises:

- **System Management;** entails 'organizations involved in changing the foundations of health systems'.
- **Capacity Building**; consist of 'organizations that help to enhance the competences and capabilities of actors in the health care system',

Opportunities for Public Health

Public-Private partnerships

During the COVID-19 pandemic, the healthcare sector has naturally gained political attention. The public and private parties in the country increased their collaborations, which was already widely practiced. Although already present on larger scale, public-private partnerships have increased and strengthened during and most likely after the pandemic.

Increasing resilience and flexibility

As a result of the pandemic, resiliency and flexibility of (public) healthcare institutions is demanded. There is an increasing interest in knowledge about transformation of the healthcare system, in order for it to become more flexible and able to cope with different exogeneous factors, such as a pandemic. An integral part of this knowledge is proper supply chain management.

Cooperation between regional and municipal care providers

An area of improvement in the Danish healthcare system is the cooperation between regional and municipal care providers, for example the hospitals and primary, long term of elderly care institutions. Their approaches are fragmented, and communication can be increased.

For example, a patient can leave a hospital with a wheelchair borrowed form the hospital, but needs to bring this wheelchair back after a few days and request a new chair at their municipality. Another example is the reimbursement of medical products; some of them are reimbursed at the regional level, but not at the municipal level. The cooperation between region and municipality should be established in a way that it unburdens the patient.

There is a healthcare reform expected in 2022, which has been delayed because of the COVID-19 pandemic. The reform should overcome these fragmentations and change the structure of the healthcare system.

4.6. Innovative MedTech solutions to improve quality, accessibility and affordability

Dutch solutions contribute to the quality, accessibility and affordability of healthcare services in the following medical specialties:

- **Mother-child care;**
- **Oncology;**
- **Orthopedics:** orthopedic rehabilitation;
- **Neurology:** neurological rehabilitation.
- **Assistive technologies**: technology and tools to increase, maintain or improve the functional capabilities of the work force.
- **Research on non-invasive diagnostics**: developing rapid and low-cost diagnostics using biochips, to detect cancer and other medical conditions.

In general, research is done on techniques that reduce the demand for care by developing technology that lower costs and the deployment of care personnel.

Opportunities in Medical Technology

HealthTech Nordic Project

The HealthTech Nordic project a membership organization that is aiming to accelerate the international scaling of Nordic startups. HealthTech Nordic is currently one of the top 3 world's largest communities, representing a fast-growing community of 270+ high-potential Nordic startups offering a variety of empowering healthtech solutions. Half of their members sells internationally, in 22 countries, reaching more than 2.5 million users and 75.000 paying customers.

Medicon Valley - MedTech

Medicon Valley is not only a hotspot for biopharma, the valley also is a important and fast growing area for medtech with many companies conducting both R&D and production within the cluster, e.g. Atos Medical, Baxter, Coloplast, Hemocue, McNeil, Immunovia, and Radiometer. The area is particularly advanced in diagnostics and health technology, which has been further strengthened by the Copenhagen Healthtech Cluster. This specialized cluster connects initiatives to deliver innovative healthtech solutions that address the health challenges of a modern society.

Reliance on import

Denmark relies on imports for medical devices. In 2016, two thirds of the imported devices came from EU-28 countries. The top three countries importing medical devices to Denmark are Germany, The Netherlands, and Sweden (Business Monitor International, 2016). Medical device manufacturing in Denmark is limited. Most local production consists of consumables and patient aids. Most medical devices produced in Denmark, are hearing aids. The country manufactures 40% of the worldwide hearing aid market. Due to this on-sided production of medical devices, there are possibilities in the medical devices market in the country.

Product design and testing

In product design, the Danish design sector often collaborates with the medical device and medical technology developers to create unique healthcare products (Invest in Denmark, 2016). Under the EU Directive 93/68/EEC, products certified (CE) in Denmark can be sold on the market in any other EU country.

For product testing, many university hospitals and regions have in-house innovation departments, such as the Health Innovation Centre of Southern Denmark. These units collaborate with private partners, researchers, and medical professionals to test innovative products in their hospitals. Danish hospitals are very open to international collaboration. An example is the Centre for Innovative Medical Technology (CIMT), being the research and innovation centre of Odense University Hospital and the University of Southern Denmark. Municipalities are also open to piloting innovative products. Likewise, several organizations help companies develop healthcare technologies such as Copenhagen Living Lab.

4.7 General trends for opportunities

The next section highlights general trends for opportunities in the healthcare landscape that are harder to place under one of the strengths.

Sustainability

Both the Danish and Dutch healthcare market are increasingly looking for solutions to make healthcare more sustainable. This differs from sustainable designed hospitals, to the management of waste inside hospitals. In the Netherlands, there has been signed a Green Deal on sustainable healthcare in 2018. This Green Deal

has the goal to accelerate a transition to a sustainable healthcare sector. In Denmark, the Nordic Center for Sustainable Healthcare works with projects, trainings and events on sharing knowledge to make healthcare more sustainable. This is a cross-sectoral arena and network involving stakeholders, organizations, projects and expertise in the area of sustainable healthcare,

Patient-centered approach

A general trend in the Danish healthcare system is the increased focus on personalized care and a patient-centered approach. Hospitals value the input of patients more and more, and cocreate together with the patient their pathway in the healthcare services. The digitalization of healthcare leaves possibilities to provide care in a more personalized way.

Where to go from now?

Below, you can find a list of useful organizations that can help you to further identify and utilize your opportunities in the Danish life sciences and health sector.

Mobility and Vitality

- Danish Ageing Research Center

eHealth

- Danish Health Data Authority

Hospital design and build

- Nordic Center for Sustainable Healthcare

Biotech and Biopharma

- Statens Serum Institut
- National Genome Center

Public Health

- Danish National Biobank

MedTech

- Health Innovation Centre of Southern Denmark
- Centre for Innovative Medical Technology (CIMT)
- Copenhagen Living Lab
- Copenhagen Healthtech Cluster

General

- Invest in Denmark
- Business in Denmark
- Copenhagen Capacity

5. CONCLUSIONS

This report has highlighted the Top 10 Reasons for Dutch companies to be interested in the Danish healthcare market. The report has also presented concrete information and opportunities in six specific healthcare sectors in Denmark, including the areas of: healthy living & ageing, digital transformation, hospital design and build, biotechnology and biopharma, public health and innovative MedTech solutions.

In mobility and vitality, it is clear that a growing aging population shapes the Danish national agenda to improve welfare technology and telemedicine. The elderly care landscape has become rapidly more digitalized to lower pressure on the shrinking workforce. Technologiies that are assistive to the nurses and (informal) care workers are gaingin traction. Also, in the area of mobility and vitality, dementia care and research is high on the Danish agenda.

With over 20 years of experience in eHealth, Denmark is a frontrunner in eHealth solutions. A well-functioning digital infrastructure is in place, including the Shared Medicine Care. In the coming years, the use of electronic patient data is further extended. Besides, Denmark was the first country to adopt a strategy on cyber and information security in the healthcare sector. Due to wide usage of healthcare online solutions and good general databeses, there are opportunities for soliutions working with AI.

The projects under the 2007 Quality Fund Investments – Super Hospital Programme are almost all completed. The hospital sector has an increased interest in sustainabile hospital build, as hospitals have committed to being zero-emmission entities in 2050. Hospitals have altered their procurement process to fulfill this demand. Also, there is an interest in building a green and healing environments in hospitals.

There are significant opportunities in public health research in Denmark. With government funds being funneled into research, an established tradition of clinical trials, and a wealth of data in registers, opportunities for Dutch researchers are tremendous. In the field of public health, there is an increased interest on making the healthcare system more resilient and responsive towards challenges such as the COVID-19 pandemic. Besides, public-private partnerships are increasing.

In the field of Biopharma and Biotech, there is an increasing interest and activity in personalized medicine. Besides, Denmark was in 2019 number one in the world for number of clinical trials per capita. There is many funding and data available for conducting such trials, and the Danish population is generally open to collaborate.

The Top 10 Reasons clarify the broader case of Denmark. Being an EU country, Danish regulations and procurement processs are standardized, just like they are in the Netherlands. The supportive infrastructure through organizations like Invest in Denmark and Danish Life Sciences Cluster among others, encourage market entry. As mentioned, Denmark is also a possible gateway to Scandinavian markets. With a strategic position in mainland Europe and cultural similarities with Sweden and Norway, Denmark is a potential bridge for Dutch companies looking to break into the Nordic healthcare market. The Danish business mentality is similar to the Dutch one, and the market is open towards international companies.

Dutch companies should be prepared to invest between 3 to 5 years in Denmark with a longer-term perspective in mind. It is vital to establish a local network through cluster organizations such as Medicon Valley or the Danish Life Sciences Cluster to gain a foothold in the market.

Next Steps

This report marks an important step to strengthen the bilateral healthcare relation between Denmark and The Netherlands. Together with the RBD team and the Netherlands Embassy in Copenhagen, future steps and activities will be identified to connect Danish and Dutch healthcare stakeholders and build towards sustainable healthcare relationships. Please get in touch with TFHC or the RBD team.

For information about the programmatic approach to the Nordics and Baltics region and interest in joint cooperation with groups of like-minded companies:

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OUR APPROACH

TASK FORCE HEALTH CARE

IMPROVING HEALTH CARE TOGETHER

Established in 1996, Task Force Health Care (TFHC) is a public-private not-for-profit platform that represents and supports the Dutch Life Sciences & Health (LSH) sector. Our platform has a reach of 1,200 LSH organisations in the Netherlands, with 130 dedicated and diverse partners. Our partners include government, industry, knowledge institutes, NGOs, and healthcare providers.

Our core mission is to improve health care and well-being internationally and in a sustainable and demand-driven manner, with the use of Dutch expertise. We are currently actively engaged with over 20 countries to stimulate and facilitate relationships on government-, knowledge- and business levels. Our partners are active around the world and provide innovative and sustainable solutions relevant to both global and local health care challenges.

A PROGRAMMATIC APPROACH

- Bridging Knowledge, Aligning Interests and Identifying Opportunities
- Fostering and Strengthening Networks
- Facilitating Dialogues on Health Themes and Opportunities to Collaborate

OUR FOCUS

- Mutual Interests and Benefits
- Developing Sustainable and Long-Term Approaches
- Demand-Driven and Context Specific

REFERENCES

Aarhus University. (2017). *Danish workplace culture*. Retrieved 2017, from Collaboration: http://www.au.dk/en/interresource/danishworkplaceculture/

Böhm, K., Schmid, A., Götze, R., Landwehr, C., & Rothgang, H. (2012). Classifying OECD Healthcare Systems: A deductive Approach. *165*.

Business Monitor International. (2016). *Denmark Medical Devices Report.* London: BMI Research.

Copenhagen Capacity. (2017). *Copenhagen: Life Science Companies*. Retrieved from Life Science: http://www.copcap.com/key-sectors-map/life-science/top-lifescience-companies

Copenhagen Capacity. (2017). *Life sciences in Greater Copenhagen*. Retrieved from Set up a business: http://www.copcap.com/set-up-a-business/key-sectors/life-sciences

Copenhagen Capacity. (2018). *Life sciences in Greater Copenhagen*. Retrieved from Copenhagen Capacity: https://www.copcap.com/set-up-a-business/key-sectors/life-sciences

Copenhagen Capacity. (n.d.). *Taxation in Denmark*. Retrieved 2021, from https://www.copcap.com/set-up-a-business/taxation

Danish Competition and Consumer Authority . (2021). *Procurement rules*. Retrieved from https://www.en.kfst.dk/public-procurement/procurement-rules/

Danish Competiton and Consumer Authority. (2021). *International Cooperation*. Retrieved 2017, from https://www.en.kfst.dk/public-procurement/the-competition-and-consumer-authority-s-tasks-in-the-public-procurement-area/international-cooperation/

Danish Health Authority. (2018). *National Research Strategy on Dementia 2025.* Copenhagen: Danish Health Authority. Retrieved from https://www.sst.dk/-/media/Udgivelser/2018/National-Research-Strategy-on-Dementia-2025_Final.ashx

Danish Hospital Construction. (2016). *Frequently asked questions*. Retrieved 2017, from Construction projects: http://www.danishhospitalconstruction.com/Goals-and-management/Frequently%20asked%20questions.aspx

Danish Hospital Construction. (n.d.). *Why are the regions building new hospitals?* Retrieved 2017, from Construction projects: http://www.danishhospitalconstruction.com/sitecore/content/danishhospitalsconstruction,-d-,com/Goals-and-management/The%20hospital%20construction%20projects%20in%20brief/Why%20are%20the%20regions%20building%20new%20hospitals.aspx

Danish Ministry of Health. (2021). *The Danish Super Hospital Programme.* Retrieved from https://sum.dk/Media/0/2/TheDanishSuperHospitalProgramme2021.pdf

Danish Nurses Organization. (2020). *Annual report DSR.* Dansk Sygeplejerad. Retrieved 2021, from Om DNO: https://dsr.dk/sites/default/files/241/dsr_aarsrapport_2020_komprimeret.pdf

Danish Regions Hospital Construction. (2017). The New Hospital Structure In Denmark. Copenhagen: Christina Carlsen.

Danske Patienter. (2017). *About Danish Patients*. Retrieved 2017, from Danske Patienter: https://www.danskepatienter.dk/about-danish-patients

Education First. (2020). *The world's largest ranking of countries by English skills*. Retrieved March 2017, from EF EPI: http://www.ef.se/epi/

European Commission. (2014). *Hospital beds by type of care 2014*. Retrieved 2017, from Eurostat: http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Hospital_beds_by_type_of_care,_2014.png

European Commission. (2016). *Denmark Country Profiel: Public Procurement - Study on administrative capacity in the EU.* European Comission. Retrieved from http://ec.europa.eu/regional_policy/sources/policy/how/improving-investment/public-procurement/study/country_profile/dk.pdf

European Commission. (2019). *State of Health in the EU: Denmark Country Health Profile 2019*.

European Observatory on Health Systems and Policies. (2016). *Health Systems in Transition (HiT) profile of Denmark*. Retrieved 2017, from The Health Systems and Policy Monitor: http://www.hspm.org/countries/denmark27012013/livinghit.aspx?Section=4.1%20Physical%20resources&Type=Section

Forbes. (2018). *Best Countries for Business*. Retrieved 2017, from https://www.forbes.com/best-countries-for-business/list/

GBD 2019 Diseases and Injuries Collaborators. (2020). *Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019.* The Lancet. doi:https://doi.org/10.1016/S0140-6736(20)30925-9

GBD 2019 Risk Factors Collaborators. (2020). *Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019.* The Lancet. doi:https://doi.org/10.1016/S0140-6736(20)30752-2

Gjedring, A. N. (2005). The Danish structural reform of government. *Mimeo*.

Healthcare DENMARK. (2016). *Denmark's first demential village inaugurated* . Retrieved 2017, from News: http://healthcaredenmark.dk/news/denmark%E2%80%99s-first-dementia-village-inaugurated.aspx

Healthcare DENMARK. (2017). *Homecare*. Retrieved 2017, from http://healthcaredenmark.dk/the-case-of-denmark/homecare.aspx

Healthcare DENMARK. (2017). Sustainable Hospitals: Hospital Logistics.

Healthcare Denmark. (2020). *New Hospital Construction - Future Hospitals in Denmark. White Paper.* Odense: Healthcare Denmark. Retrieved from https://www.healthcaredenmark.dk/media/trchcof1/hcd-whitepaper-future-hospitals-v1-2020.pdf

Healthcare Denmark. (2021). *Elderly Care*. Retrieved from https://www.healthcaredenmark.dk/the-case-of-denmark/integrated-care-and-coherence/elderly-care/

Healthcare Denmark. (n.d.). *Chronic Diseases*. Retrieved 2021, from Healthcare Denmark: https://www.healthcaredenmark.dk/the-case-of-denmark/population-health-and-prevention/chronic-diseases/

Healthcare Denmark. (n.d.). *Hospitals of the future*. Retrieved 2021, from https://www.healthcaredenmark.dk/the-case-of-denmark/sustainable-hospitals/hospitals-of-the-future/

Healthcare Denmark. (n.d.). *The role of the GP*. Retrieved 2021, from Healthcare Denmark: https://www.healthcaredenmark.dk/the-case-of-denmark/population-health-and-prevention/the-role-of-the-gp/

Henriksen, H. E., & Grønbæk, J. (2020). *Innovation-Drive Responses to the COVID-19 Crisis.*

IHME. (2019). *Denmark*. Retrieved from Institute for Health Metrics and Evaluation : http://www.healthdata.org/denmark

Innovation Origins. (2021, March 25). *Danish hospitals choose Dutch technology to monitor unborn babies at home*. Retrieved from Brainport Eindhoven: https://brainporteindhoven.com/en/news/danish-hospitals-choose-dutch-technology-to-monitor-unborn-babies-at-home

Institute for Health Metrics and Evaluation. (2015). *Denmark*. Retrieved 2017, from Country Profiles: http://www.healthdata.org/denmark

Invest in Denmark. (2016). *Start with Denmark: The heart of life sciences for research and business.* Copenhagen: Ministry of Foreign Affairs of Denmark. Retrieved from http://www.investindk.com/~/media/Files/Reports/StartWithDenmark2016.ashx

Invest in Denmark. (2017). *Taxation in Denmark*. Retrieved 2017, from Establishing a business: http://www.investindk.com/Establishing-a-business-in-Denmark/Taxation-in-Denmark

Invest in Denmark. (n.d.). *Taxation in Denmark*. Retrieved 2021, from Ministry of Foreign Affairs of Denmark: https://investindk.com/our-services/taxation-in-denmark

Kierkegaard, P. (2013). eHealth in Denmark: A Case Study. *37*.

Kromann Reumert. (2016). *Procurement Law: New Danish Public Procurement Act as of 1 January 2016*. Retrieved 2017, from News: https://en.kromannreumert.com/News/2016/01/Procurement-law-New-Danish-Public-Procurement-Act-as-of-1-january-2016

Kvist, J. (2018, February). *ESPN Thematic Report on Challenges in long-term care Denmark.* European Commission. Retrieved from file:///C:/Users/Sterre/Downloads/DK_ESPN_thematic%20report%20on%20LTC%20(1).pdf

Lægeforeningen. (2019). *About the Danish medical Association*. Retrieved from Lægeforeningen: https://www.laeger.dk/about-the-danish-medical-association

Larsen, D. (2021). *Population in Denmark*. Retrieved from Statistics Denmark: https://www.dst.dk/en/Statistik/emner/befolkning-og-valg/befolkning-og-befolkningsfremskrivning/folketal

Liina-Kaisa Tynkkynen, N. A. (2018). Development of voluntary private health insurance in Nordic countries – An exploratory study on country-specific contextual factors. *Health Policy*, 485-492.

Lokalpleje Denmark. (2020, June 2). *Lokalpleje Danmark launches health and homecare service, and partners with Buurtzorg*. Retrieved from https://lokalpleje.dk/lokalpleje-danmark-launches-health-and-homecare-service-and-partners-with-buurtzorg/

Marin, C. (2020, May 12). *Europe Versus Coronavirus - Putting the Danish Model to the Test*. Retrieved from Institute Montaigne: https://www.institutmontaigne.org/en/blog/europe-versus-coronavirus-putting-danish-model-test

Marin, C. (2020, May 12). *Europe Versus Coronavirus - Putting the Danish Model to the Test*. Retrieved from Institut Montaigne: https://www.institutmontaigne.org/en/blog/europe-versus-coronavirus-putting-danish-model-test

Michel, J. E. (2020). The shortage of skilled workers in Europe: its impact on geriatric medicine. *Eur Geriatr Med 11*, 345–347. doi:https://doi.org/10.1007/s41999-020-00323-0

Minister for Helath and the Elderly. (2016). *Statusrapport på Demensområdet i Danmark.* Copenhagen: Sundheds- og Ældreministeriet. Retrieved from http://www.welfaretech.dk/media/4608/2016-05-09-statusrapport-paa-demensomraadet-i-dkashx.pdf

Ministry of Health. (2017). *Healthcare in Denmark: An overview.* Copenhagen. Retrieved from https://www.healthcaredenmark.dk/media/ykedbhsl/healthcare-dk.pdf

Ministry of the Interior and Housing Denmark. (n.d.). *Structural Reform*. Retrieved 2021, from https://english.im.dk/responsibilities-of-the-ministry/economics-of-municipalities-and-regions/structural-reform

NOMESCO. (2015). *Health Statistics for the Nordic Countries 2015.* Copenhagen: Nordic Medico-Statistical Committee. Retrieved from http://norden.diva-portal.org/smash/get/diva2:874109/FULLTEXT01.pdf

Norwegian Office of the Auditor General. (2011). *Investigation into property management in health trusts and regional health authorities.* Oslo: The Office of the Auditor General. Retrieved from https://www.riksrevisjonen.no/Rapporter/Documents/2010-2011/Dokument%203/Dokumentbase_3_11_2010_2011.pdf

Observatory of Economic Complexity (OEC). (2017). *Denmark*. Retrieved 2017, from Exports and Imports: http://atlas.media.mit.edu/en/profile/country/dnk/

OECD. (2011). *Denmark: Help wanted? Providing and Paying for Long-Term Care.* Paris: OECD. Retrieved from http://www.oecd.org/els/health-systems/47877588.pdf

OECD. (2015). *Length of hospital stay*. Retrieved 2017, from OECD Data: https://data.oecd.org/healthcare/length-of-hospital-stay.htm

OECD. (2016). *Fertility Rates*. Retrieved 2017, from OECD Data: https://data.oecd.org/pop/fertility-rates.htm#indicator-chart

OECD. (2019). *Average length of stay in hospitals*. Retrieved from Health at Glance 2019: https://www.oecd-ilibrary.org/sites/0d8bb30a-en/index.html?itemId=/content/component/0d8bb30a-en

OECD. (2019). *Health Spending*. Retrieved from OECD Library: https://www.oecd-ilibrary.org/social-issues-migration-health/health-spending/indicator/english_8643de7e-en

OECD. (2020). *Health at a Glance: Europe 2020 : State of Health in the EU Cycle.* OECD. Retrieved from https://www.oecd-ilibrary.org/sites/a920746c-en/index.html?itemId=/content/component/a920746c-en

Olejaz, M., Nielsen, A. J., Rudkjøbing, A., Birk, H. O., Krasnik, A., & Hernández-Quevedo, C. (2012). *Denmark: Health system review.* Denmark: Health Systems in Transition .

Pedersen, K. M., Bech, M., & Vrangbaek, K. (n.d.). *The Danish Health Care System: An analysis of strengths, weaknesses, opportunities and threats.* Copenhagen: Copenhagen Consensus Center.

Regionernes Fælles Indkøb. (2021). *Om Regionernes Fælles Indkøb*. Retrieved from https://www.regioner.dk/rfi/om-rfi

Ringard, Å., Sagan, A., Saunes, I. S., & Lindahl, A. K. (2013). *Norway: Health system review.* Health Systems in Transition.

Rudkjøbing, A., Olejaz, M., Birk, H. O., Nielsen, A. J., Hernandez-Quevedo, C., & Krasnik, A. (2012). Integrated care: a Danish perspective. *345*.

Smetana, A. (2018). *Denmark - a dementia friendly society | White Paper.* Healthcare Denmark. Retrieved from https://www.healthcaredenmark.dk/media/irbbjip3/hcd-dementia-white-paper-v1-single-0318.pdf

Sprong, V. v. (2021, July 8). *COVID-19's influence on digital healthcare in Denmark*. Retrieved from Health Europa: https://www.healtheuropa.eu/covid-and-digital-healthcare-in-denmark/109800/

Sprong, V. v. (2021). *COVID-19's influence on digital healthcare in Denmark*. Retrieved from Health Europa: https://www.healtheuropa.eu/covid-and-digital-healthcare-in-denmark/109800/

Statens Serum Institut. (2017). *About SSI*. Retrieved from Statens Serum Institut: http://www.ssi.dk/English/Service/AboutSSI.aspx

Statisics Denmark. (2021). *Population in Denmark*. Retrieved from Statistics Denmark: https://www.dst.dk/en/Statistik/emner/befolkning-og-valg/befolkning-og-befolkningsfremskrivning/folketal

Statista. (2021). *Number of hospital beds in Denmark from 2000 to 2019*. Retrieved from Statista: https://www.statista.com/statistics/557244/hospital-beds-in-denmark/

Statistics Denmark. (2017). *Population and Elections*. Retrieved 2017, from Find Statistics: http://www.dst.dk/en/Statistik/emner/befolkning-og-valg

The Commonwealth Fund. (2016). *2015 International Profiles of Helath Care Systems.* New York City: The Commonwealth Fund.

The Danish Agency for Digitisation. (2012). *Telemedicine - A key to health services of the future.* Copenhagen. Retrieved from https://www.digst.dk/Servicemenu/English/Policy-and-Strategy/Strategy-for-Digital-Welfare/Telemedicine

The World Bank. (2015). *World Bank Data*. Retrieved February 2017, from World Bank Data: http://data.worldbank.org/

The World Bank. (2017). *Rural Population (% of total population)*. Retrieved from World Bank Open Data: http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS

The World Bank. (2019). *Data for Sweden, Norway, Denmark*. Retrieved from World Bank Data: https://data.worldbank.org/?locations=SE-NO-DK

The World Bank. (2020). *Physicians (per 1,000 people)*. Retrieved from World Bank Open Data: http://data.worldbank.org/indicator/SH.MED.PHYS.ZS

The World Bank. (2021). *Nurses and midwives (per 1,000 people)*. Retrieved from World Bank Open Data: http://data.worldbank.org/indicator/SH.MED.NUMW.P3

Thygesen, L. C., Daasnes, C., Thaulow, I., & Bronnum-Hansen, H. (2011). Introduction to Danish (nationwide) registers on health and social issues: Structure, access, legislation, and archiving. *39*.

Tosun, S. (n.d.). *The regions budget and finances*. Retrieved 2021, from The Capital Region of Denmark: https://www.regionh.dk/english/about-the-capital-region/Finance/Pages/The-regions-budget-and-finances.aspx

Transparency International. (2020, January). *Corruption Perceptions Index 2020*. Retrieved March 2017, from https://www.transparency.org/en/countries/denmark

Udbud. (2017). *About udbud.dk.* Copenhagen: Danish Competition and Consermer Authority. Retrieved from http://www.udbud.dk/Pages/Content/About

Vallgårda, S., Krasnik, A., & Vrangbaek, K. (2001). *Denmark.* Copenhagen: Health Care Systems in Transition.

Vrangbaek, K. (2020, June 5). *International Health Care System Profiles: Denmark*. Retrieved from The Commonwealth Fund: https://www.commonwealthfund.org/international-health-policy-center/countries/denmark#:~:text=National%20health%20care%20system.&text=Mostly%20national%20income%20taxes%3B%2020,taxes%20and%20state%20block%20grants.&text=42%25%20purchase%20complementary%20

Waldemar, G. (2018, February 3). *National action plan for Dementia in Denmark*. Retrieved from EAN pages: https://www.eanpages.org/2018/02/03/national-action-plan-for-dementia-in-denmark/

World Bank. (2019). *Ease of doing business*. Retrieved 2017, from World Bank Data: https://data.worldbank.org/indicator/IC.BUS.EASE.XQ

World Bank. (2019). *Life Expectancy at Birth - total (years)*. Retrieved from World Bank Data: https://data.worldbank.org/indicator/SP.DYN.LE00.IN

World Bank. (2019). *Total hospital beds per 1.000 people*. Retrieved from World Bank Data: https://data.worldbank.org/indicator/SH.MED.BEDS.ZS?locations=DK

World Bank. (2021, April 21). *Life expectancy at birth male and female (years)*. Retrieved from World Bank Data: https://data.worldbank.org/indicator/SP.DYN.LE00.MA.IN?locations=DK

Your Europe. (2020, September 25). *Public tendering rules*. Retrieved from https://europa.eu/youreurope/business/selling-in-eu/public-contracts/public-tendering-rules/index_en.htm

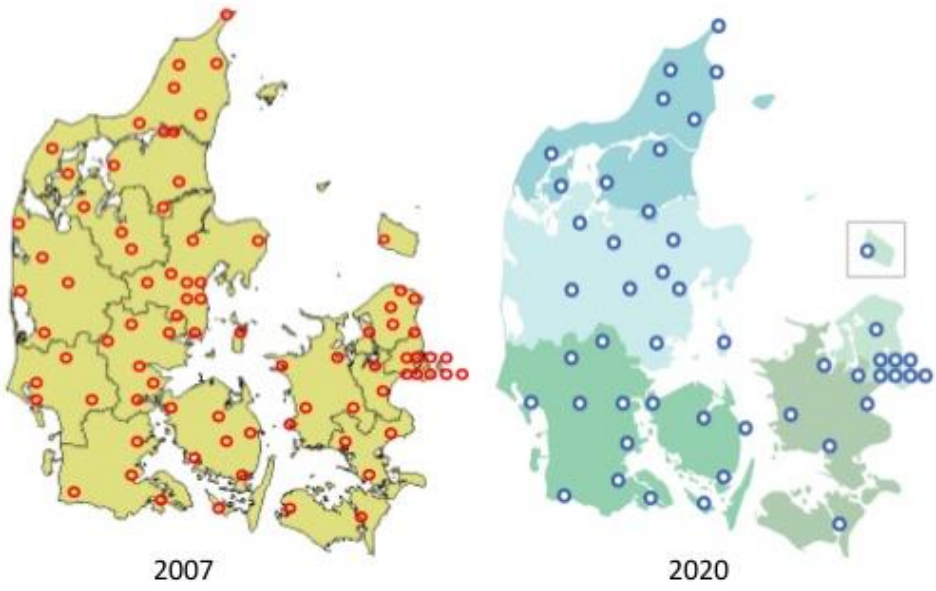
APPENDICES

Appendix A : Agencies under the Ministry of Health

- Danish Health Authority
- Danish Medicines Agency
- Danish Patient Safety Authority
- The Danish Health Data Authority
- Statens Serum Institut
- The Danish Council on Ethics
- The National Committee on Health Research Ethics

Source: Ministry of Health.

Appendix B: Hospital reform and Denmark's new hospital spread



Source: Adam Wolf, Healthcare Denmark.

Appendix C. List of important organizations

- Alzheimerforeningen Danmark
- Danske Patienter
- Nationalt Videnscentre for Demens
- MedCom
- Danish Regions
- Medicoindustrien
- Medicon Valley Alliance
- The Danish IT Industry Association
- Copenhagen Capacity
- Copenhagen Healthtech Cluster
- Statens Serum Institute
- Danish Nurses Organization
- Danish Medical Association
- The Danish Dutch Business Club
- Benelux Business Club Scandinavia

Appendix D: List of relevant trade fairs and events

- Health & Rehab Scandinavia
- WHINN: Week of Health and INNovation
- Nordic Life Science Days
- VITALIS: The Largest eHealth event in Scandinavia

Appendix E: Overview of Dutch strengths per healthcare sector

Healthy Living and Healthy Ageing

The Netherlands is active in several areas to foster healthy living and ageing. Dutch organizations are active in healthy ageing, but also mobility & vitality, prevention and lifestyle solutions that help people live and age healthily are present. Elderly play a significant role in the Netherlands and have therefore drawn attention from many research institutes, companies and government. The life expectancy in the Netherlands is one of the highest in the world and continues to increase every year. Demographic developments have forced the Netherlands to become engaged in mental care and wellbeing, with a specific expertise in dementia.

The strengths of the Dutch Mobility & Vitality subsector can be categorized as follows:

- **Promoting independence through self-management**: solutions that enable people to live longer independently in their home environment include care robots and tools that increase physical mobility and help regain function and freedom or aid with medication.
- **Social inclusion & mental care**: through solutions that foster physical and mental interaction or digital solutions that (re-)connect people to relatives
- **Nutrition & active lifestyle**: special diets, nutrition and specialized exercise areas for elderly or people with a physical or mental impairment.
- **Long-term and senior care models**: care models in the Netherlands are process-based and manage long-term and senior care by reducing the costs of care, while ensuring the quality of care for patients.
- **Research and education**: in the Netherlands, high-level research is conducted in the field of healthy ageing and elderly care.

Accelerating digital transformation: Connected Care and Artificial Intelligence

Dutch solutions relevant for the digital transformation in healthcare have several unique characteristics. They are renowned for their simplicity, consistency, and flexibility, while being developed through shared decision-making. The solutions have a patient-centered view. There are two subcategories in eHealth in the Dutch landscape: Connected Care and Artificial Intelligence.

Within the subcategory Connected Care, there are several strengths and focus areas:

- **Remote care applications**: the major aspect is the exchange of data between and amongst patients, healthcare professionals and (informal) caregivers.
- **Safe, secure and interoperable apps and platforms**: many information systems, devices and applications need to connect within and across organizations, including Electronic Health Records and Hospital Information Management Systems. Dutch solutions enable access, exchange, integration and organise safe use of health data within and across organizational and national boundaries.
- **Research on patient empowerment:** Dutch research has focused on self-management of patients.

Strengths and focus areas within the subcategory Analytical & Artificial Intelligence include:

- **Improving efficiency**: by collecting and analyzing data, workflows, processes and teamwork among nursing staff, doctors, or other healthcare providers can be improved.
- **Clinical decision support solutions**: this includes solutions that are used for gathering and analyzing (actionable) data, automating tasks, providing insights and guidance for health professionals

Hospital Design and Build

The Netherlands has expertise ranging from the initial design phase to the eventual maintenance and operations phase, with organizations having executed projects all around the globe. Dutch organizations

widely acknowledge that all these hospital's components are connected, and therefore have experience along the whole trajectory. Special expertise is centred around offering turnkey projects, thereby offering total solutions that unburden customers in the complexity of creating health care facilities.

The strengths of the Dutch Hospital Design and Build subsector can be categorized as follows:

- **Turn-key projects;** total projects, reaching from planning, architecture and design, to building, furnishing and operations.
- **Design, architecture & engineering;** planning, feasibility, design, architecture' of health care facilities.
- **Sub-construction & (integrated) parts;** components integrated in the construction or bigger detachable parts.
- **Furnishing, equipping & operations;** furniture, smaller equipment and solutions needed to manage health care facilities.

Biotech and Biopharma

Biotech & Biopharma encompasses a broad area of pharmaceutical and biotech innovations and solutions to prevent and treat diseases in an early stage in order to boost a healthy, sustainable and prosperous future. Organizations within this strength offer solutions in areas such as drug development, diagnostics, vaccines and therapies tailored to the needs of the patient. According to the Dutch Life Sciences Trend Analysis 2020, there are currently 469 Biotech companies and 42 BioPharma companies active within the Dutch Life Science industry.

The Netherlands is particularly strong in the following fields:

- **Oncology**
- **Neurology**
- **Infectious diseases**

Public Health

Dutch organizations are focused on translating policy into practice. This also relates to the experimental and innovative nature of the Netherlands, what is often needed to induce real change in health systems. The Netherlands and its organizations are engaged in a broad area of Public Health. However, there are specific areas in which the Dutch have developed an international reputation, like multi-drug and antibiotic resistance, and sexual & reproductive health rights. The Dutch feel strongly about shared values like the principle of equality, which is manifested in the Netherlands through gender equality.

The strength Public Health consists of the following expertises:

- **System Management;** entails 'organizations involved in changing the foundations of health systems'.
- **Capacity Building**; consist of 'organizations that help to enhance the competences and capabilities of actors in the health care system'.

Innovative MedTech solutions to improve quality, accessibility & affordability

Dutch medical devices are developed in the Netherlands' managed competition health system, a system in which high quality and cost-effectiveness are fostered. These medical devices are the product of human-centred design, which leads to cutting-edge innovation which add value to the quality of care and patient experience and lower the cost of healthcare services.

Dutch solutions contribute to the quality, accessibility and affordability of healthcare services in the following medical specialties:

- **Mother-child care;**
- **Oncology;**

- **Orthopedics:** orthopedic rehabilitation;
- **Neurology:** neurological rehabilitation.
- **Assistive technologies**: technology and tools to increase, maintain or improve the functional capabilities of the work force.
- **Research on non-invasive diagnostics**: developing rapid and low-cost diagnostics using biochips, to detect cancer and other medical conditions.

In general, research is done on techniques that reduce the demand for care by developing technology that lower costs and the deployment of care personnel.

Appendix F: List of nationally approved eHealth applications

App	Functions
Akuthjælp	With Akuthjaelp, you can quickly get an overview of all emergency rooms, emergency rooms, emergency clinics, etc. in Denmark. The app is operated by the Danish Regions.
Apoteket	This app is operated by the Danish Pharmacists' Association and provides users with an overview of their medicines, see the stock status at the nearest pharmacies, make a permanent order and get help to remember to take it.
Bone@BC	The app Bone @ BC is a support and information tool for women who have had breast cancer. The app is used in Region Hovedstaden (Capital Region).
Doktor-Børnehospital	With Doktor, children can play at home through the various procedures on a mobile phone / tablet prior to the consultation. The app is used in Regionshospital Viborg.
E-kvit	E-kvit is a mobile and free help to get rid of cigarettes - or to reduce consumption of nicotine.
Find behandler	Sundhed.dk's app gathers some of the most useful information from the popular function 'Find behandler'. With the app you can find addresses and opening hours of all therapists or nearest therapist in relation to where you are right now, call and transfer numbers to your phonebook. You can also use the app to check dentist prices and see waiting times at specialists.
HC And - Del 1	HC Duck is for children aged 4-7 years and aims to reduce insecurity in children. In the app, the children can meet HC And, who with sound and animation tells about examinations and treatments at the hospital. The app is operated for H.C. Andersen Børne- og Ungehospital.
Medicinkortet	The Danish Health and Medicines Authority operates this app. With the app, users can see your current medicine, which is registered on the Common Medicine Card by a doctor. You can also see your open prescriptions, as well as the medicine you have already been given at the pharmacy. You can ask your GP for renewal of the prescription via the app.
Medicintjek	In this app, users can search for a product and get access to information about e.g. product name, active ingredient, storage, indications, recommended dosage, strength, price, package leaflet and possibly risks of concomitant use.
Min Læge	With the app My Laege, you can easily and via mobile get in touch with your own doctor. In the first version you will find the following options: The GP Organization manages the app.
Min Medicin	This app contains information about all medicines marketed in Denmark, including information about reimbursement and dispensing rules.

MinSundhed	MinSundhed gives a chronological overview of your health information and easy access to the healthcare system. In the app you can see test results, hospital records and your medical allergies. The app is used by sundhed.dk, the official portal for Danish health services.
Min Sundhedsplatform	This app is for patients of hospitals in Region Hovedstaden (Capital Region) or Region Sjealland. It provides an overview of your appointments at the hospital.
Mit Sygehus	This app is for patients of hospitals in Region Syddenmark (Southern Denmark). It provides an overview of your appointments at the hospital.
Samspil	An app for new or expecting parents that helps to promote the communication in a new family. The app is operated by Region Midtjylland.
Patienthåndbogen	This app contains over 3,000 disease articles and over 2,000 illustrations in the form of drawings, x-rays, photos, animations and videos. The app is operated by the Danish Regions.
Smitte|stop	An app to prevent the spread of COVID-19, similar to the Coronamelder-app that is operated in the Netherlands. The app is operated by the Ministry of Health.
Steps fertilitetsværktøj	An informative app about fertility treatment in which you can follow your personal course at a clinic. The app is used by fertility clinics in the Capital Region.
TarmTjek	An app for patients who have undergone a binocular examination of the intestine (colonoscopy) at Herlev Hospital.
TrænSmertenVæk	Application with information and exercises for hip, knee, back, neck an shoulder pain. Exercises are guided by a physiotherapist.
UV-indeks	UV indeks gives today's UV index for home and abroad, five-day forecasts and the opportunity to ring an alarm if the UV index is too high at your place of stay.
Viden om demens	The app focuses on observations of people with dementia, offers knowledge about symptoms and diseases, challenges your knowledge of dementia and provides good advice on collaboration and communication.
VideoKonsultation	With this app, patients can meet their psychologist, dentist, physiotherapist, podiatrist and chiropractor from home and have a consultation over video. The app is operated by sundhed.dk and the Danish Regions.

Appendix G. Overview of Danish Hospital Build Projects under The Quality Fund, 2011- Present

Region	Project Title	Type of Project	Investment (in euros)	Project Start Date
North Denmark Region				
	New University Hospital Aalborg	New Build	551 million	2013
Central Denmark Region				
	New Regional Hospital West Jutland	New Build	423 million	2012
	Regions Hospital Viborg	Extension	154 million	TBA
	New University Hospital in Aarhus	New Build	853 million	2012
Region of Southern Denmark				
	Hospital Kolding	Extension	122 million	2008
	Hospital Sonderjylland	Extension	168 million	2012
	New Odense University Hospital	New Build	847 million	2015
Region Zealand				
	University Hospital Koge	New Build	537 million	TBA
	Slagelse Hospital	New Emergency Ward	40 million	2011
	New Psychiatric Hospital Slagelse	New Build	141 million	2012
Capital Region of Denmark				
	New Hospital North Zealand	New Build	511 million	2017
	New Hospital Bispebierg	Extension	396 million	2014
	New Rigshospitalet	Extension	248 million	2014
	New Hospital Herlev	Extension	302 million	2014
	New Hospital Hvidovre	Extension	195 million	2016
	New Mental Health Centre Sct. Hans	Extension	73 million	2014

Source: Adapted from Danish Hospital Construction

Appendix H. List of national health registers in Denmark

- National Patient Register
- National Prescription Register
- Danish Cancer Register
- Medical Birth Register
- Cause of Death Register
- Danish National Biobank
- Danish Vaccination Register
- National Health Service Register
- The Psychiatric Central Research Register
- The National Diabetes Register
- The Multiple Sclerosis Registry
- The Cytogenetic Register
- The Pathology Register
- The Breast Cancer Cooperative Group
- The Danish Hearth Register
- The Colorectal Cancer Database
- The Hysterectomy Database

Appendix I. National and multinational medical product companies in Denmark

National companies with manufacturing in Denmark

- Ambu
- Coloplast
- GN ReSound
- Guldmann
- Novo Nordisk
- Widex
- William Demant

Multinational companies with manufacturing in Denmark

- Analogic Corporation
- Angiotec / Argon Medical
- ConvaTec
- Cook Medical
- Danaher Corporation
- GE Healthcare
- Philips

Multinational companies *without* manufacturing in Denmark

- B. Braun
- Becton Dickinson
- Boston Scientific
- Fresenius Medical Care
- Johnson & Johnson
- Medtronic
- Siemens Healthineers
- Smith & Nephew
- Stryker

Appendix J. Top 50 Life Science Companies in Medicon Valley

1. 7TM Pharma A/S
2. Advalight
3. ALK-Abello A/S
4. Ambu A/S
5. Bavarian Nordic A/S
6. Biogen Idec Manufacturing
7. B-K Medical ApS
8. Chr. Hansen A/S
9. Citoxlab Scantox A/S
10. CMC Biologics A/S
11. Coloplast A/S
12. Continence Care ApS
13. CP Kelco ApS
14. Dako A/S
15. Dako Denmark A/S
16. Dansac A/S
17. Egalet A/S
18. Exiqon A/S
19. Ferring Pharmaceuticals A/S
20. Ferrosan A?S
21. Ferrosan Medical Devices A/S
22. Gambro Danmark
23. Genmab A/S
24. GN Otometrics A/S
25. GN ReSound A/S
26. H. Lundbeck A/S
27. LEO Pharma A/S
28. MSD Danmark ApS
29. Novo Nordisk A/S
30. Novozymes A/S
31. Nunc A/S
32. Origio A/S
33. Oticon A/S
34. Pfizer ApS
35. Philips Healthcare
36. Phonak Danmark A/S
37. Radiometer Medical ApS
38. Roche A/S, Medicinalvarer
39. Roche Diagnostics A/S
40. Santaris Pharma A/S
41. Sonion A/S
42. Statens Serum Institiute
43. Symphogen A/S
44. Syntese A/S
45. Unomedical A/S
46. Widex A/S
47. William Cook Europe ApS
48. Xellia Pharmaceuticals ApS
49. Zealand Care A/S
50. Zealand Pharma A/S

Appendix K. List of Distributors

- Agito Medical
- Apgar A/S
- Ambu A/S
- Bard Medical
- Bureau Veritas
- Curatec Aps
- Glorious Enterprises
- Ingenioerfirmaet Lytzen A/S
- Mermaid Medical A/S
- STT Condigi Group
- Syntax A/S
- Vicare Medical A/S