TFHC Market Study

Aligning Dutch Smart Solutions to Danish Opportunities

April
2017

Commissioned by:

Ministry of Foreign Affairs

In collaboration with:

ACCESS
health international

Table of Contents

I. Top 10 Reasons:
Why Denmark is Interesting for the Dutch Health Sector

1. **Easy Market Access - European Union Standards:** Denmark is a member of the European Union. This makes it easier for Dutch companies to navigate procurement processes and medical device certification. See **Section 4.3.** and **Section 5.4.**

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. **Highly Qualified Workforce:** Denmark has one of the highest rates of doctoral level education per capita and master' equivalent degrees. This workforce provides support to Dutch companies looking to establish operations in Denmark. 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 centralized. National planning make it easy for companies to identify opportunities in Denmark. Procurement bidding is through centralized on the national and regional levels. See **Section 4.3.** and **Chapter 5.**

5. **Large Hospital Projects need Medical Supplies:** The Danish national hospital plan will centralize and specialize care. Hospital construction and medical supply procurement is ongoing in more than 16 specialized hospitals until 2025. See **Section 5.3.** and **Section 5.6.**

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 **Section 5.2.** and **Section 5.4.**

7. **Optimal and Intelligent Just-In-Time Solutions:** The 16 new specialized hospitals are looking to optimize their logistics including patient flows, laboratory tests, and sterile goods tracking. Dutch smart solutions should target this rapidly growing market segment. See **Section 5.3.**

8. **Research Collaboration Opportunities:** In 2015, Denmark was ranked number one in the world for the number of clinical trials per capita (1). See **Section 5.5.** National health registers can be linked with other national registries to create unique epidemiological studies. This data and studies provide many research opportunities.

9. **Dutch Solutions gain Traction:** Denmark has adopted Dutch solutions in the healthcare sector. In 2016, the first 'dementia village' opened in Denmark having adapted Dutch practices in dementia care (2). Newly constructed hospitals in Denmark have been inspired by Dutch hospital design (3). These examples highlight the willingness of the Danes to integrate Dutch solutions into their healthcare systems. See **Section 5.1.** and **Section 5.3.**

10. **Denmark as a 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. See **Section 4.2.**

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 134.4 people per square kilometer (4). The relatively high population density of Denmark has contributed to the Danish national hospital plan that aims to relocate, merge, and specialize 16 hospitals in the coming ten years. In the hospital reforms, high quality, specialized care is prioritized over the proximity to a hospital. Through this plan, the Danish national government and regions have invested over 5.5 billion euros to renovate hospitals and procure medical supplies.

Unique Opportunities in Denmark: To ease proximity constraints, Denmark is focused on efficiency using helicopters, ambulances, and telemedicine. National action plans in digitalization aim to nationalize telemedicine tools, to minimize pressure in hospitals and primary care. In Danish eHealth systems, interoperability issues and IT fragmentation between different levels of care present ample opportunities for Dutch smart solutions. 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, Copenhagen Capacity, Welfare Tech, 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.

Table 1. *Key comparison indicators between Denmark, Sweden, and Norway*

	Denmark	Sweden	Norway
Country Overview			
Population 2017	5 748 769	10 027 167	5 213 985
Land area sq. km	42 262	407 310	365 245
Population density (people per sq. km of land area) 2015	134.4	24.0	14.2
Life expectancy at birth for Males, 2016	78.5	80.2	80.2
Life expectancy at birth for females, 2016	82.7	83.8	83.9
Population over 65 years of age (% of total population), 2015	18.9	19.9	16.3
Economy			
GDP (total) 2015	278 billion	427 billion	365 billion
GDP annual growth 2014-2015 (%)	0.988	4.124	1.611
GDP per capita (€) 2015	57 138	47 122	69 315
Administrative Divisions			
Number of regions	5	21	4
Number of municipalities	98	290	434
Healthcare Structure			
Responsible entity for specialized care	Regions	Regions	Regions
Responsible entity for primary care	Regions	Regions	Municipalities
Responsible entity for long-term care	Municipalities	Municipalities	Municipalities
Healthcare Expenditure			
Total healthcare expenditure (€), 2015*	28.7 billion	56.2 billion	36.5 billion
Healthcare spending as share of GDP (%)	11	12	10
Private health expenditure as % of total health expenditure	15	16	15
Out-of-pocket expenditure as % of total health expenditure	13	14	14
Healthcare spending per capita (€)	6 021	6 342	8 871
Healthcare Infrastructure			
Number of physicians (per 1000 people)	3.4	3.9	4.2
Number of nurses and midwives (per 1000 people)	16.7	11.6	17.2
Number of hospital beds (per 1000 people)	3.5	2.7	3.3

*Estimated based on 2015 GDP and healthcare expenditure as a share of GDP

Sources: World Health Organization, The World Bank, Statistics Norway, Statistics Sweden, Statistics Denmark

III.   Glossary of Terms

|	
EU	European Union
GDP	Gross Domestic Product
SME	Small and Medium Enterprises
TFHC	Task Force Health Care

IV.   List of Figures and Tables

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 (5).

The population of Denmark is 5.7 million (6). **Figure 1** shows the population distribution in Denmark in 2016. **Table 2** presents population statistics for Denmark, Sweden, and Norway. By 2060, the population is projected to grow by 12% (6). As seen in Table 2, Denmark has a large aging population that is expected to grow in the coming decade (7). Since 2010, fertility rates have declined from 1.8 children per woman to 1.7 children per woman (8). On average, life expectancy at birth for men is 78.8 years and for women is 82.8 (6). Over 90.000 people immigrated to Denmark in 2016 (6). With new regulations, immigration is expected to decline in the coming ten to twenty years (6).

Figure 1. *Population distribution in Denmark, 2016*
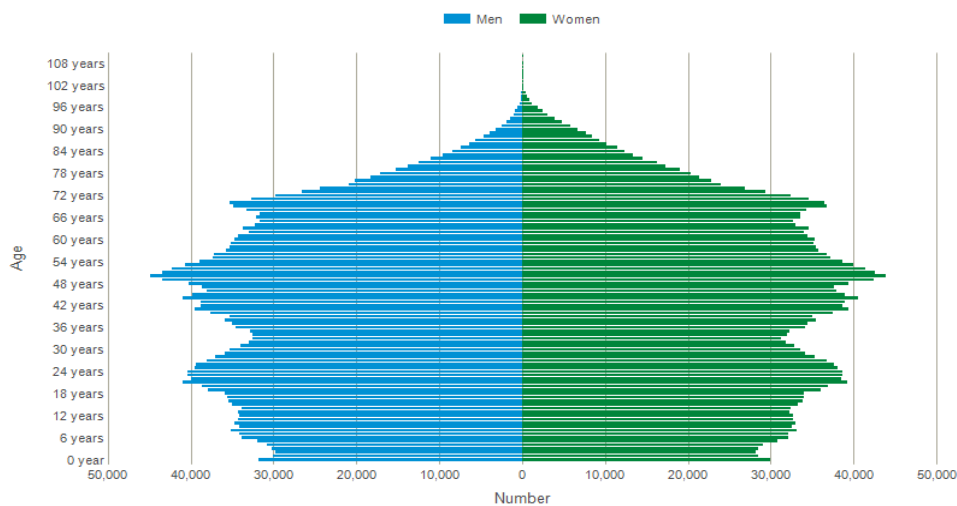
Source: Statistics Denmark (6)

Table 2. *Population statistics for Denmark, Sweden, and Norway*

	Denmark	**Sweden**	**Norway**
Total Population, 2017	5 748 769	10 027 167	5 213 985
Population growth (annual %) 2014-2015	0.575	1.045	1.13
Population density (people per sq. km of land area)	134.4	24.0	14.2
Population ages 0-14 (% of total) 2015	16.8	17.2	17.9
Population ages 15-64 (% of total) 2015	64.1	62.7	65.7
Population age 65 and above (% of total) 2015	18.9	19.9	16.3
Urban population (% of total) 2015	87.6	85.8	80.4

Sources: The World Bank, Statistics Norway, Statistics Sweden, Statistics Denmark

1.2.   About this Market Study

This market study was prepared by Task Force Health Care (TFHC) and ACCESS Health International for the Regional Economic Envoy for the Nordic and Baltic Countries on behalf of the Ministry of Foreign Affairs in the Netherlands. By providing an overview of the healthcare system, healthcare market, and healthcare infrastructure in Denmark, this study highlights priorities, opportunities, and challenges of the Danish healthcare market. In addition, the market study provides information on historical and current trends, financial considerations, and practical information for companies interested in the Danish market.

Parallel to this market study for Denmark, similar studies were elaborated for Norway and Sweden. The snapshot included in this document gives a brief overview and comparison of the healthcare sector in all three countries. The complete market studies for Norway and Sweden are also available upon request.

1.3.   Methodology

In order to make this market study as complete and relevant as possible for the Dutch Life Sciences & Health sector, information was obtained through different sources including a survey, a desk study, and a fact-finding visit. This methodology was applied for every study, i.e. for Norway, Denmark and Sweden.

Survey amongst the Dutch Life Sciences & Health sector
A survey among Dutch organizations active within the Life Sciences & Health sector was conducted to identify the interest and perceived opportunities and challenges in the healthcare markets in Norway, Denmark, and Sweden. The responses have been an important guidance for the desk study and shaping of the agenda during the fact-finding visits. The responses also confirmed the increasing interest of Dutch Life Sciences & Health organizations in the Nordic countries. For a summary of the responses, please see **Appendix A.**

Desk study
The study used secondary data including government documents, reports, and academic articles. For the statistics mentioned in the market study, the latest available data have been used. The information obtained through this desk study was ascertained at the meetings during the fact-finding visit.

Fact-finding visit
In addition to the interest survey and the desk study, a fact-finding visit was conducted by a delegation from TFHC and ACCESS Health to each country to gain insights directly from key stakeholders in the healthcare sector. Next to the fact that valuable information was gathered, the meetings were used to cross check previously obtained data to provide a market study as objective -and realistic- as possible. In addition, an introduction of the Dutch Life Sciences & Health sector was given to create more awareness of the available Dutch smart solutions within the healthcare sector. **Appendix B** presents a list of meetings held during the fact-finding visit in Denmark.

2.   The Danish Healthcare Sector

The following chapter will describe the current Danish healthcare system. Insight will be presented on the healthcare expenditure, financing, and infrastructure. An historical background of the healthcare system is provided, as well as more information on the healthcare professionals and healthcare outcomes in Denmark.

2.1.   Historical Background

Denmark has a long tradition of decentralized management of public welfare (9). Public relief for the poor was introduced in Denmark in the 18th century (9). The 19th century brought an increased role of the Danish state in healthcare with public health boards and standardized training of physicians (9). Towns and counties financed public hospitals through property taxes (9). Danish hospitals in the 19th century were primarily used by the poor (9). Health insurance funds were organized by various associations, artisan groups, and labor unions (9).

In the 20th century, hospitals were subsidized by the Danish state and managed by the county councils (9). Three additional universities established medical training programs (9). By 1930, there were more doctors per 1,000 inhabitants than in any other Nordic country (9). 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 (10). Counties held the responsibility for the National Health Security System which covered general practitioners, specialists, and medical expenses (10). 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 (9).

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 (9). 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 (10).

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 municipalities (9). Five regions were created with the responsibility of providing hospital and outpatient care (9). Healthcare financing became the responsibility of the central government, instead of the municipal government. This was the centerpiece of the reform. 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* (11).

Alongside the restructuring, the Danish government announced the investment of three billion euros to new hospital projects and hospital modernization (10). A panel of experts determined which hospitals were most in need of renovation. By 2010, the regions agreed to contribute to the hospital projects bringing the total hospital investments to 5 billion euros.

2.2.   The Danish Healthcare System

The foundation of the Danish healthcare system is universal access as described in Denmark's Health Law (7). Principles such as freedom of choice, the right to high quality care, and access to information are critical (7). The Danish Health Law decentralizes and divides the responsibility of healthcare between the state, the regions, and the municipalities (9). According to the OECD, the Danish healthcare system is classified as a National Health Service (12).

The national government is responsible for regulatory frameworks for health services as well as general planning and supervision (7). 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). Eleven agencies are subordinate to the Ministry of Health. **Appendix C** 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*
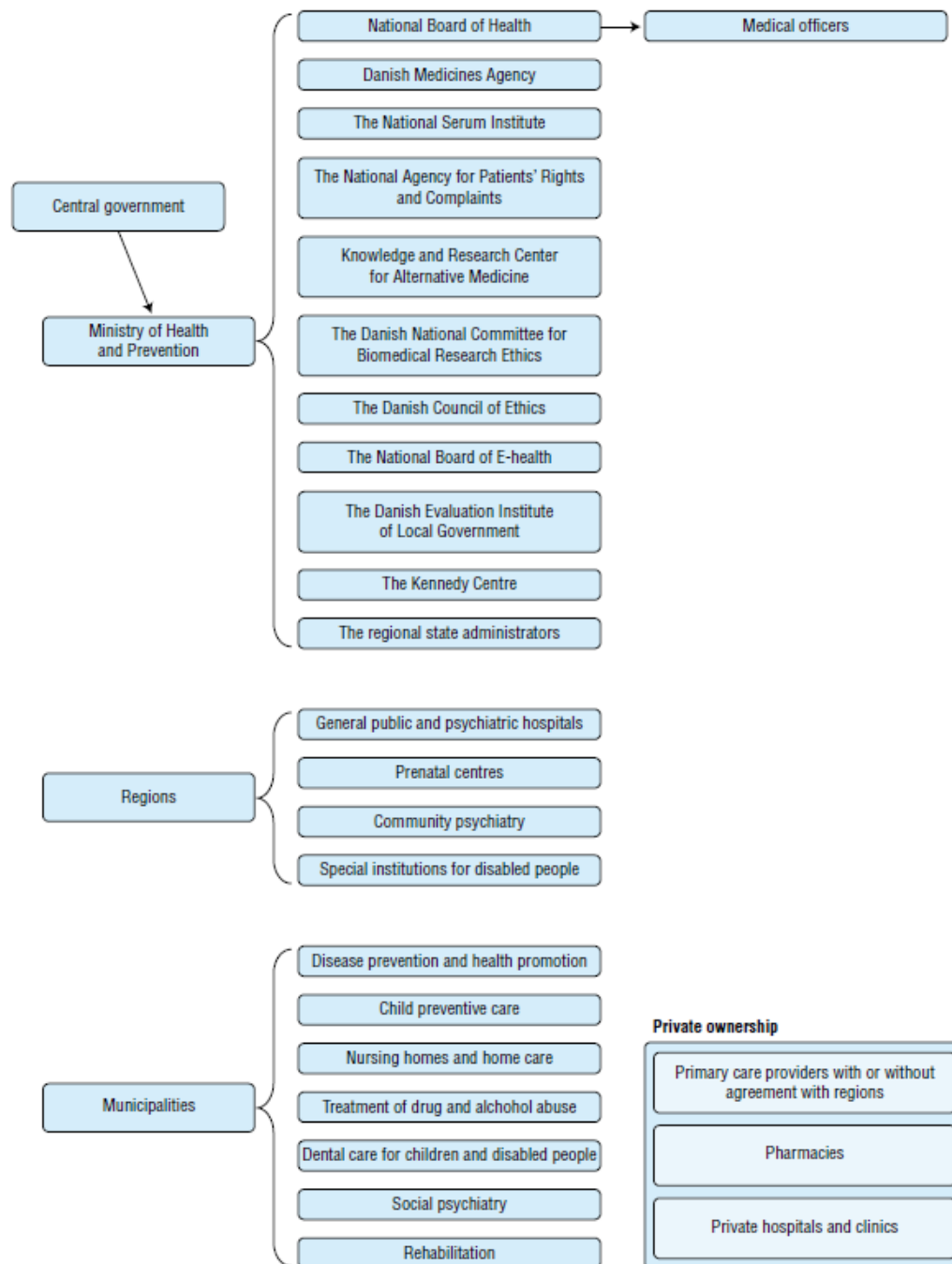
Source: Olejaz et al.

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**.

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 centers, and psychiatric care centers (9). 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 5.3**. With the reforms many hospitals are undergoing management changes or being closed. A map of ongoing hospital construction projects is presented in **Appendix D**.

Regions also finance general practitioners, specialists, physiotherapists, dentists, and pharmaceuticals (9). Salaries of these 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 (9).

98 municipalities have responsibility for nursing homes, visiting nurses, dental care for children, school based healthcare, and rehabilitation (7). Local Government Denmark is the interest organization of the municipalities in Denmark (9). Salaries of these healthcare practitioners are negotiated by Local Government Denmark and professional organizations (9). 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 (9). 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 (9). There are hundreds of patient groups in Denmark that support patients with specific diseases such as arthritis, heart disease, and cancer. Danish Patients (Danske Patienter) is an umbrella organization of nearly 77 of these patient organizations. 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 (13). Like Sweden and Norway, patient groups and medical practitioner

associations are influential actors in the Danish healthcare sector. **Appendix E** presents a list of important healthcare organizations in Denmark.

2.3.   Healthcare Expenditure and Financing

In 2015, total health expenditure in Denmark accounted for 11% of total gross domestic product (GDP) (4). Total expenditure on healthcare was approximately 28.7 billion euros. Per capita expenditure was estimated at 6,021 euros. 84.7% of healthcare expenditure came from public sources (4). **Table 3** presents an overview of Danish healthcare expenditure.

**Table 3.** *Danish healthcare expenditure, 2015*

Expenditure	2015
Total healthcare expenditure (€)	28.7 billion
Total Healthcare Expenditure per capita (€)	6,021
Total Healthcare Expenditure (% of GDP)	11
Public expenditure on health (% of Total)	84.7
Private expenditure on health (% of Total)	14.8
Out-of-pocket payments (% of total health expenditure)	13.3

Source: The World Bank (4)

The national health tax finances healthcare services in Denmark. The national health tax is 8% of income tax in Denmark. Block grants are allocated to the regions and municipalities, which finances 77% of regional healthcare activities (7). The remaining regional expenses are financed through activity-based payments from local taxes or local block grants (7).

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 dental care for adults, physiotherapy, and optometrist services are subsidized. However out-of-pocket costs do occur. Out-of-pocket payments amount to 13% of the total health expenditure. These payments are mostly spent on outpatient drugs, corrective lenses, hearing aids, and dental care (7). 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. Persons with high drug utilization can apply for reimbursement after spending 450 euros (Health systems and policy monitor). Individuals with chronic diseases or those in their last stage of life can apply for full reimbursements above 474 euros (7). 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 financial flows in the Danish healthcare system*

Source: Olejaz et al.
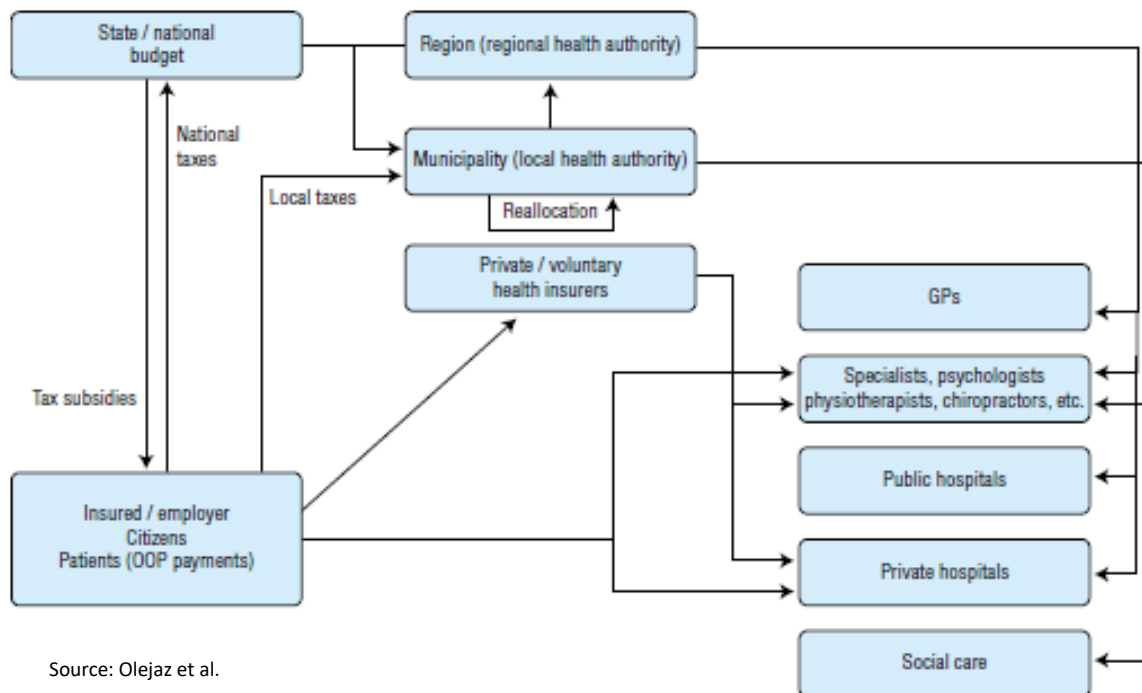
To minimize out-of-pocket costs, some 2.2 million Danish residents pay for a private health insurance to cover costs related to dental care and medications. There are approximately seven for profit insurers in Denmark. With supplemental private insurance, approximately 1.5 million Danes have access to private providers (7). There are an estimated 45 private healthcare providers in Denmark (14). The largest private hospital operator in Denmark is Aleris (14). Aleris is headquartered in Stockholm, Sweden.

2.4.   Healthcare Infrastructure

The number of hospital beds in Denmark has been decreasing since the 1900s (15). **Table 4** presents the trends in bed numbers in different areas of care from 1990 to 2015. As of 2016, Denmark has approximately 270 beds per 100,000 inhabitants (16; 14). According to Business Monitor International, Denmark has a total of 15,497 hospital beds (14). The average length of stay in hospital was 3.8 days (15).

Table 4. *Trends in Danish hospital beds per 100,000 inhabitants, 2000 - 2015*

	2000	2005	2009	2015
Total number of hospital beds	430	390	350	268
Acute care beds	350	320	290	n/a
Psychiatric hospital beds	80	70	60	n/a
Nursing and older home beds	860	820	840	n/a

Source (16; 9)

Approximately 2.5% of all hospital beds in Denmark are privately owned (9). Privatization is a topic of debate in Denmark. Some argue that private hospitals fill gaps in the public sector and encourage innovation. Others argue that private hospitals threaten equality principals because access to private care is unequal (9). Growth in the private healthcare market in Denmark is minimal.

With ongoing hospital reforms, hospital infrastructure and equipment are being updated in all regions in Denmark. With this reform, Denmark will merge and specialize hospitals. In 2015, Denmark had 54 public somatic and psychiatric hospitals (14). By 2025, the hospital reforms aim to reduce the number of hospitals to 16 specialized hospitals. Some hospitals will be located in more than one building, but the management will be merged. The Danish hospital plan prioritizes improving the quality of specialized care rather than the proximity of care. These mergers and construction of the hospital infrastructure is currently ongoing with an investment of over 5.5 billion euros from the Danish government. The plans are further discussed in **Section 5.3.**

The regional hospitals, general practitioners, and providers of municipal institutional and home based services share the responsibility for long-term care. Most long-term care administered by the municipalities is offered at home. Home nursing is free of charge with a medical referral. Both private and public providers offer long-term nursing services and individuals can choose freely between different care providers. Alternatively, relatives with seriously ill relatives have the right to take nine months paid leave to care for sick family members.

2.5.   Healthcare Professionals

Denmark has approximately 3.5 physicians per 1,000 people (17). According to the Danish Medical Association, in 2015 there were over 27,600 registered doctors in Denmark (18). Like Sweden and Norway, associations for medical professionals are strong and influential. In Denmark, nearly all physicians are members of the Danish Medical Association (18). General practitioners are fairly distributed throughout the country. Specialists are primarily found in the capital and other urban areas. Physicians training takes for six years in Denmark. 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 gate keeper and refer patients to specialist care.

Denmark has approximately 16.7 nurses per 1,000 people (19). Nurses and assistant nurses are represented by the Danish Nurses Organization (Dansk Sygeplejeråd). The Danish Nurses' Association has over 75,000 members and cover approximately 87% of practicing nurses in Denmark (20). Nurses education in Denmark takes 3.5 years.

In addition, there are five large life science universities in Denmark (1). These universities include the University of Copenhagen, Technical University of Denmark, Aarhus University, Aalborg University, and University of Southern Denmark. Each year approximately 2,000 PhDs graduate in the life sciences sector (1).

2.6.   Health Outcomes

As presented in **Table 1**, Denmark has lower life expectancies than Sweden and Norway. On average men live to the age of 78.5 years and women live to the age of 82.7 years. Like Sweden and Norway, the disease profile of Denmark is dominated by non-communicable diseases. The leading causes of death in Denmark are cardiovascular diseases, Alzheimer disease, and cancer (21). The leading risk factors in Denmark are tobacco use, dietary risks, and alcohol and drug use (21).

Leading Causes of Death in Denmark

1. Ischemic heart disease
2. Cerebrovascular disease
3. Alzheimer disease
4. COPD
5. Lung cancer
6. Lower respiratory infection
7. Colorectal cancer
8. Breast cancer
9. Diabetes
10. Prostate cancer
Source (21)

Leading Risk Factors in Denmark

1. Tobacco use
2. Dietary risks
3. High systolic blood pressure
4. Alcohol and drug use
5. High body-mass index
6. High fasting plasma glucose
7. High total cholesterol
8. Occupational risks
9. Low glomerular filtration rate
10. Air pollution
Source (21)

Dementia is a focal point in national health strategy in Denmark (22). In September 2016, the Danish Ministry for Health and Aging launched a national strategy with the aim of making Denmark a dementia friendly country (22). The initiative will invest 63 million euros into activities by 2020. The activities will develop person centered treatment and care (22). The local authorities purchase services, and develop new care models in this area. The strategy also aims to improve dementia prevention and early intervention (22). Care homes increasingly use technology to stimulate memory, encourage exercise, and offer residents social connections.

Links to the Dutch: Dementia Care

More and more 'dementia villages' or similar are opening in Denmark. In 2016 the first care home modeled after De Hogeweyk model in The Netherlands opened in Svendborg, Denmark. The Dutch influences in the aging sector are apparent.

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 5 of this market study.

3.1. Business Climate

Denmark is ranked 3rd in The World Bank's Ease of Doing Business index and is ranked 6th in Forbes' Best Countries for Business list (23; 24). 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 is the least corrupt country in the world (25). Openness and autonomy are core values (26). 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%. Key employees and researchers from abroad pay lower taxes for the first five years (27). High salaried expats may qualify for a special taxation scheme that enables a lowered income tax rate for up to five years (27). For an overview on the tax system by the Danish Customs and Tax Administration (SKAT) review the document *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 (28).

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.

Useful organizations for market entry and information
To enter the Danish market, advice can be sought from the Netherlands Embassy in Copenhagen. The Economic Department of the Embassy is in contact with several Danish healthcare related organizations, such as the ones stated below.

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.

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 London, Paris, 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 focusses on biotech, pharmaceutical development, clinical testing, and medical technology development (1). Together with the Skåne-region of Southern Sweden, Greater Copenhagen represents the bi-national life science cluster called Medicon Valley.

Tip: See the **Report** on how to communicate and negotiate in the Nordics by the Dutch Embassies

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 F.**

There is a limited presence of Dutch Life Sciences & Health companies in Denmark. Philips Healthcare has a strong presence and cooperates with the public sector in healthcare innovation projects. During several meetings, TFHC and ACCESS Health were advised of the importance of having representative in Denmark to conduct business. Many stakeholders emphasized the 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.

Philips:

"Philips is delighted to be partnering with Danish Regions to help realize their aim of developing innovative solutions for the Danish healthcare system. Collaboration is an important step for Philips and we see Denmark as a key partner country in relation to developing leading-edge innovative solutions for future healthcare systems."- Invest in Denmark (35)

As authors of this market study, TFHC and ACCESS Health are available for Dutch companies and organizations interested in the Danish healthcare sector to provide additional information, contacts and further guidance. In addition, the Netherlands Enterprise Agency (RVO) can be consulted for information.

3.3.   Procurement

Public procurement in Denmark complies with EU directives. The rules ensure that private companies can bid on tenders in an open and transparent process (29). On January 1st, 2016 the Danish Public Procurement Act entered into law to regulate public procurement procedures in Denmark (30). The law requires all contracting authorities to announce procurement of supplies and services in accordance with the Danish Tender Act (*Tillbudsloven*) (31). Every year the Danish public sectors spends approximately 40 billion euros on the procurement of goods and services (29).

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.

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 135,000 euros must be published online. 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 (32). 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.

> *Tip: Informal Bidding*
> Dutch companies interested in selling goods or services to Danish municipalities should be in discussions early on. Companies should showcase their products at conferences and trade fairs to increase awareness about the products and possibilities. Likewise finding a local partner and building a network in Denmark is very important.

The National and Municipal Purchasing Service (Staten og Kommunernes Indkøbsservice) is a publicly owned company with the primary role as central purchasing body (32). 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 5 billion euros. 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.

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: Mobility and Vitality, eHealth, Hospital Build, Product Development, Public Health, and Medical Devices.

4.1. Mobility and Vitality

> *Smart solutions which stimulate, enable, and facilitate disabled, less abled and vital citizens to be and to stay active and mobile participants/contributors in society – TFHC*

With a growing aging population, Denmark is looking for new smart solutions to improve quality of care and control, especially in homecare. The frail elderly and people with disabilities have the right to homecare, home help, home adaptation, and assistive devices. Eligibility is based on a needs assessment done by the local municipality (33). Like Sweden and Norway, Denmark aims for citizens to remain in their own homes for as long as possible. Generally, elderly citizens in Denmark are willing to adopt new solutions if they improve their day to day life (34).

One company that focuses on developing technology for mobility and vitality is Welfare Tech. Welfare Tech is a national Danish cluster for innovation and business development in healthcare, homecare, and social services. Their members are private companies, research institutes, and public organizations. One third of the Danish municipalities are members of Welfare Tech. Welfare Tech focuses on developing assistive technology, telemedicine, and ICT for healthy aging innovation. Becoming a member of Welfare Tech may be a helpful entry point into the Danish mobility and vitality market.

Telemedicine Initiatives
National Telemedicine Action Plan

Initiative 1: Clinically Integrated Home Monitoring

Initiative 2: Home monitoring for COPD patients in North Denmark Region

Initiative 3: Demonstration and dissemination of tele psychiatry

Source (36)

Telemedicine solutions are a priority area in the Danish mobility and vitality sector. A national large scale roll out of telemedicine has been implemented as a part of the National Telemedicine Action Plan (35; 36). These solutions are sought after to improve rehabilitation and chronic care, to lower costs, and to allow citizens to monitor progress and recover in their own homes. However, the ability of municipalities to adopt telemedicine solutions is unclear. Many municipalities are open to pilot innovative solutions and telemedicine solutions. When it comes to implementation, municipalities cannot always afford full scale implementations of the solutions. The National Telemedicine Action Plan 2012 -2015 aims to improve adoption of telemedicine beginning with the rollout of three national telemedicine solutions (35; 36). After successful pilot initiatives in telemedicine, Denmark will invest

approximately 11 million euros to implement telemedicine solutions to achieve telemedicine and eHealth goals by 2020 (36).

In 2016 the first care home modeled after De Hogeweyk model in The Netherlands opened in Svendborg, Denmark (2). The village has integrated aspects from the dementia care homes in the Netherlands. The home in Svendborg can accommodate 225 residents. With the national dementia strategy, more 'dementia villages' are expected to open in Denmark. A priority in these care homes is safety (2). Dutch companies working with improving safety and security in mobility and vitality should consider opportunities in the Danish market.

4.2.   eHealth

Smart solutions which (seamlessly) brings care and cure to patients and citizens and substantially increases the efficiency and functionality of care provision – TFHC

Denmark has over twenty years of experience with eHealth. As such, Denmark is widely recognized as a world leader in eHealth adoption and application (37). The Danish government established a National IT Strategy with the purpose of digitizing healthcare services to improve patient safety, quality of care, and cost savings in a seamless manner (37). Both primary care and hospitals have adopted eHealth systems into their practices. eHealth and IT solutions that are used in healthcare are approved by MedCom. MedCom is a publicly funded non-profit tasked with setting standards on the exchange of healthcare data throughout the Danish healthcare system.

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 (37). By 2011, MedCom reported sixteen different electronic medical record systems were being used in primary care. In 2013, MedCom reported that fifteen different electronic medical record systems were being used by hospitals throughout Denmark. **Table 5** provides an overview of existing eHealth platforms with information on the features and the intended users. This information can be used by Dutch companies to identify gaps in Danish eHealth services.

While many of the portals presented in **Table 5** have been positively received, some have faced criticism due to compatibility issues. According to one paper on integrated care in Denmark, *"…healthcare professionals often still do not have access to all the information they need to make clinical decisions, especially in emergency care or out of hours. Developing exchange of information between sectors is still slow, costly, and difficult because of the many different systems combined with technical, organizational, and professional challenges,"* (38).

Table 5. *Danish eHealth platforms*

Platform	Primary users	Functions
Sundhed.dk	Patients; Healthcare Professionals	- Provides information about health services - Communication platform for patients and care practitioners - Patients can access medical records, book appointments, renew prescriptions - Healthcare professionals use the platform to view records and laboratory results
Danish National Health Data Network (SDN)	Healthcare Professionals	- Facilitates electronic data interchange communication between general practitioners, hospitals, pharmacies, homecare providers, and specialists.
The National Prescription Server (Receptserveren)	Patients; Healthcare Professionals	- Enables patients and healthcare professionals to access their prescriptions at any pharmacy through the sundhed.dk portal
The Shared Medication Record	Healthcare Professionals	- Provides information overviews of current medications and patient medical records from the previous two years - Developed to address some of the incompatibility between primary care and hospital electronic medical record systems
The National Service Platform	IT Support/ Administrators	- Central communication for national ICT services - Enables access to national health services, health registries, and health registration solutions - All national systems adhere to standards set by the National Service Platform
E-Journal	Hospital Clinicians	- Extracts information from hospital EMR systems from all regions providing an overview of medical records during hospital visits - Only for hospital care providers

Source: *Adapted from Kierkegaard (37)*

There have been two major failures by the Danish National government in attempts to address incompatibility in the various eHealth systems. The first attempt was abandoned in 2006 after trying to launch the G-EPJ project. The G-EPJ project aimed to develop specifications for all electronic medical record systems that would facilitate clinical exchanges of information (37). The project failed because the requirements were too complicated to integrate into all the existing systems and the project was abandoned. The second attempt was the National Patient Index that aimed to link all health-related information systems including electronic medical records, public registries, and medication records (37). After the investment of over 2.6 billion euros the project was abandoned after it was determined to be infeasible.

In terms of integration and healthcare delivery services, the Danish eHealth system is regarded as one of the leading systems in the world (37). However, there are eHealth incompatibility issues and IT fragmentation that affect the integration and quality of care from the municipalities to the regions. There are far too many incompatible electronic medical record systems, which results in out-of-date patient data (37; 38). The Danish Regions are trying to reduce the number of electronic medical record systems (37). In the process to reduce the number of systems, there may be opportunities for Dutch IT and eHealth companies with experience in systems integration, interoperability, and standardization.

4.3. Hospital Build

> *Smart solutions which modernize, optimize, and increase access to the provision of quality healthcare – TFHC*

There are opportunities for Dutch companies in hospital construction and renovation in Denmark. In 2007, the Danish government announced the investment of 5.5 billion euros into The Quality Fund (Kvalitetsfonden). The Quality Fund is a fund for the improvement of quality care. 60% of the fund comes from the national government and 40% of the fund is from regional governments. 16 hospital project are covered under Kvalitetsfonden. All 16 projects are expected to be completed within 10-15 years. The aim of the hospital construction projects is to "build future-proof and flexible hospitals that support the desired level of quality and focus on the patient," (3).

Figure 5 presents a schematic timeline of the hospital construction projects in Denmark. As of 2017, under The Quality Fund, at least three projects have upcoming tenders including the Viborg Regional Hospital and DNV-Gødstrup. For updates on the upcoming tenders for The Quality Fund projects can be followed on the Danish Hospital Construction website.

Hospital Build Priorities
Danish Hospital Construction
Higher quality
Greater efficiency
Greater flexibility

Figure 5. *Schematic timeline of the Danish hospital construction projects*
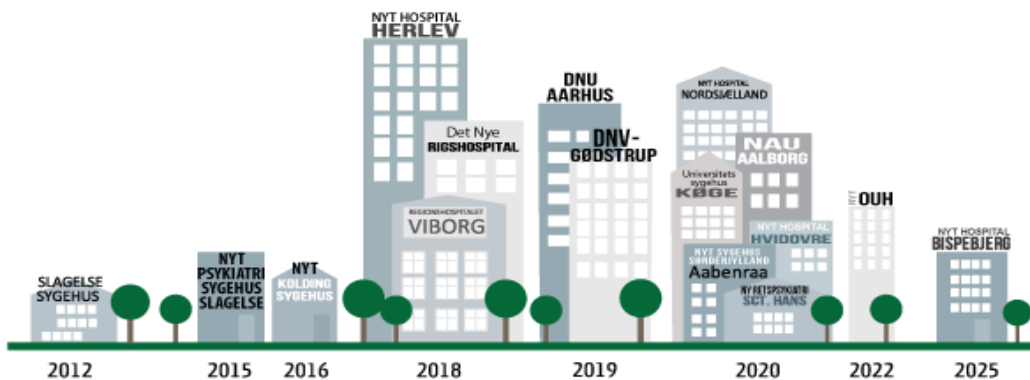
Source: Danish Hospital Construction (48)

Many of these hospital projects are already underway and contracts have been distributed. The 16 hospital projects, investments, and project start dates are presented in **Appendix G**. Some Dutch companies have been involved with Danish hospital construction and refurbishment. Most tenders in the Danish hospital build sector are published internationally under EU procurement directives. The details of the contracts are generally described in Danish.

The project budgets are locked to the grants awarded in 2008 by the national government. This mechanism is in place to control costs, but has resulted in tight budgets and fewer bids from multinational companies. Some hospitals conduct several small procurements, rather than relying on

Danish Hospital Construction, Dutch Design

Drawing inspiration from Dutch Hospital Design, the Danish hospital projects emphasize principles of flexibility. The regions will build hospitals with a high degree of generality allowing rooms to quickly change from one function to another (47). Given the Dutch expertise in principles of flexibility, the hospital construction projects offer an important opportunity for Dutch companies to enter the market. In addition to the hospitals under The Quality Fund, many regions are financing the construction of specialist health and psychiatry clinics independently (3).

one large contract for a hospital construction project. This can deter international companies from entering the procurement process. Some of the largest companies involved with Danish hospital construction include NCC (Sweden), MT Højgaard (Denmark), Hoffman (USA), and Max Bögl (Germany).

Based on the current reform process, opportunities in the hospital build sector are limited in Denmark since most construction projects are underway already. However, some hospital build opportunities exists in regions that are financing their own hospital build projects. For example, the Regional Horsens Hospital is a new hospital construction project financed entirely by the region. The project is estimated at 103 million euros. Tenders for this project will be published online. Another upcoming hospital project financed by a region is Sønderborg Hospital. An investment of 35 million euros is expected. Tenders for this project will be published online in 2018. For more information on regional hospital build projects contact Danish Hospital Construction. Many of the newly built hospitals need to procure medical equipment and supplies. More on these opportunities are discussed in **Section 5.6.** of this market study.

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 (39). This includes automated laboratories, better patient flows, and other just-in-time concepts. This is a trend that is likely to continue, according to predictions by Healthcare Denmark. All 16 new specialized hospitals focus on intelligent logistics and planning systems (39). This is an area we recommend Dutch companies to explore further as mentioned in the Top 10 Reasons in this study.

4.4.   Product Development

> *Offering smart solutions that accelerate, enable, upgrade or optimize the development and production of meaningful, affordable and high quality products – TFHC*

Medical device manufacturing in Denmark is limited. Most local production consists of consumables and patient aids. In 2016, nearly 45% of Danish medical device manufacturing was hearing aids (14). Denmark manufacturers 40% of the global hearing aid market (1). The hearing aid sector in Denmark presents intense competition. Although on-site medical device manufacturing is weak, Denmark is a contributor to medical device design and development. **Appendix I** presents a non-exhaustive list of national and multinational medical product companies in Denmark. See **Section 5.6.** for more on the import market for medical devices.

In the Greater Copenhagen region, Medicon Valley provides opportunities for collaboration with leading universities and product designers. The life science industry in Greater Copenhagen is a global leader in research and development spending. Medicon Valley has 4 life science universities with over 50,000 students and 11 university hospitals (1). These resources offer immediate access to researchers and a highly-educated workforce.

Health Innovation Stakeholders in Denmark

− Medicon Valley Association
− Copenhagen Healthcare Cluster
− Welfare Tech
− Experience Lab - University of Copenhagen
− Idemolab
− Copenhagen Living Lab
− CoLab Denmark

In product design, the Danish design sector often collaborates with the medical device and medical technology developers to create unique healthcare products (35). 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 and CoLab Denmark.

There is an established industry for development in Denmark that utilizes Danish design to produce unique medical products. In addition, pursuing product development in Denmark often opens opportunities in the Scandinavian market (14).

4.5. Public Health

> *Smart solutions to create sustainable health policy systems in order to increase healthcare capacity, accessibility, affordability and quality – TFHC*

Population-wide data on health outcomes and social issues have been collected since the 1800s. **Appendix H** presents a list of national health registers collected in Denmark (39). All Danish residents are assigned unique personal identification numbers (39). These numbers make it possible to link health data to other national registers. For example, the Department of Education has registers on school performance that can be studied alongside various health outcomes from the health registers.

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 (40). The institute works to control congenital disorders. The institute also houses the Danish National Biobank which holds over 22 million biological samples (40). The Biobank is used by researchers and are often linked to national health registers. In addition, Statens Serum Institut is responsible for the purchase and supply of vaccines for the Danish national vaccination program (40).

The national government aims to increase public-sector investment in research and will ensure that 1% of GDP is spent on research (35). Private sector spending in research contributes 2% of GDP to research (35). Denmark also ranks number one in the world for number of clinical trials per capita (1). 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.

> **Danish National Institute of Public Health Research Centers**
> - Center for Intervention Research in Health Promotion and Disease Prevention
> - Center for Public Sector Services
> - Center for Education
> - Center for Arctic Public Health Research

4.6. Medical Devices

> *Smart solutions which increase the quality, comfort and efficiency of care and decrease the costs, pain and treatment time – TFHC*

Denmark relies on imports for medical devices. The top three countries importing medical devices to Denmark are Germany, The Netherlands, and Sweden (14). **Appendix I** presents a non-exhaustive list of national and multinational medical product companies in Denmark. Some of these companies also manufacture goods in Denmark (14).

According to Invest in Denmark, there are over 250 dedicated medical device companies operating in Denmark (35). The 20 largest companies are estimated to account for over 75% of the industry revenue (14). In 2014, the medical device industry in Denmark had a turnover estimated at 7.4 billion euros (35). The trade association for companies working with medical devices in Denmark is called Medicoindustrien.

The capital of medical technology in Denmark is Medicon Valley. Medicon Valley includes the Greater Copenhagen Region and Skåne in the southern Sweden. Medicon valley is home to over 200 medical technology companies and over 150 biotech companies (41). There are an estimated 44,000 private sector employees in Medicon Valley (41). **Appendix J** presents the top life science companies in Medicon Valley. In 2010, the medical technology sector in greater Copenhagen had over 6.7 billion euros in turnover (41).

Outside of Medicon Valley, opportunities can develop from The Quality Fund – the national grant that finances the 16 regional hospital construction projects in Denmark. Approximately 20% of each hospital grant from The Quality Fund is earmarked for medical devices and IT. While most of the hospital construction is underway, the procurement of medical devices and IT is still in the pipeline. To achieve the merger and specialization of the National Hospital Plan, Denmark will become reliant on helicopter transport, ambulances, and telemedicine. In 2016, the largest areas for medical supply purchases in Denmark was consumables such as bandages, syringes, and needles (315 million euros), and other devices such as wheelchairs, hospital beds, and medical sterilisers (360 million euros) (14). These may present opportunities for the Dutch medical device and supply sector as procurement in these sectors begin.

The procurement processes of medical devices and supplies are managed by each hospital independently. **Appendix K** presents a non-exhaustive list of medical device and supply distributors in Denmark. Since many of these distributors also work in Sweden and Norway, they may provide entry into the greater Nordic healthcare market.

> *5 Largest Hospital Investments in Each Danish Region*
>
> - University Hospital Aalborg – 551 million euros
> - University Hospital in Aarhus – 853 million euros
> - Odense University Hospital – 847 million euros
> - University Hospital Koge – 537 million euros
> - Hospital North Zealand – 511 million

5.   Conclusions

This market study has highlighted the Top 10 Reasons for Dutch companies to be interested in the Danish healthcare market. The study has also spelled out concrete opportunities in six areas: mobility and vitality, eHealth, hospital construction, product development, public health, and medical devices.

In mobility and vitality, it is clear that a growing aging population shapes the Danish national agenda to improve welfare technology and telemedicine. These sectors plan significant investments in mobility and vitality solutions in the coming five years. They have already adopted Dutch solutions and look to the Netherlands in this area.

With over 20 years of experience in eHealth, Denmark is a frontrunner in eHealth solutions. However, their own systems face major incompatibility and integration issues between different levels of care. As outlined in the study, this core challenge provides many opportunities for Dutch smart solutions.

The government has invested heavily in the hospital construction sector. Many national investments for the larger hospital projects have been allotted. Regional investments provide some opportunities to enter the Danish hospital construction sector. In addition, the 16 new specialized hospitals search for intelligent logistics solutions that optimize patient flows, laboratory tests, and sterile equipment. Dutch solutions can potentially help Danish hospitals to render their operations more productive.

Domestic product development is strong, with competing actors. The ecosystem of development and research offer entry points, mainly through collaborative efforts. Danish product design provides a unique component to healthcare products created in Denmark. In product testing, Danish municipalities are willing to pilot innovative solutions. Also, manufacturing in Denmark is arguably weaker.

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.

The comprehensive hospital reforms and reconstructions have opened doors for hospitals to procure new medical supplies and devices. Approximately 25% of the national funds for hospital construction are earmarked for purchasing new devices. These tenders have not been published in full. They can present entry points for Dutch medical device companies.

The Top 10 Reasons clarify the broader case of Denmark. Being an EU country, Danish regulations and procurement processes are standardized, just like they are in the Netherlands. The supportive infrastructure through organizations like Invest in Denmark and Welfare Tech, among others, encourage market entry. The skilled workforce and the research environment, combined with an interest in innovation strengthens the case for Denmark. The Danes plan hospital construction in a coordinated manner, envied by many other Northern European countries. This should, at least in theory, give foreign companies, a better insight into the ongoing construction projects. The 16 new specialized hospitals now need to procure medical devices along with intelligent logistics solutions. 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. Dutch solutions have already been adopted in areas such as mobility and vitality.

In summary, the Danish healthcare sector can be strengthened by Dutch smart solutions. Previous failures by Dutch companies to sell products or services in Denmark suggest that there is a learning curve in the business climate. Companies must understand specific sector demands and the local business climate before entering the market. 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 Alliance or Welfare Tech to gain a foothold in the market. Companies should also understand the local competition in each of the sectors, as outlined in this study.

Appendix L presents strengths, weaknesses, opportunities, and threats analysis of the Danish healthcare market.
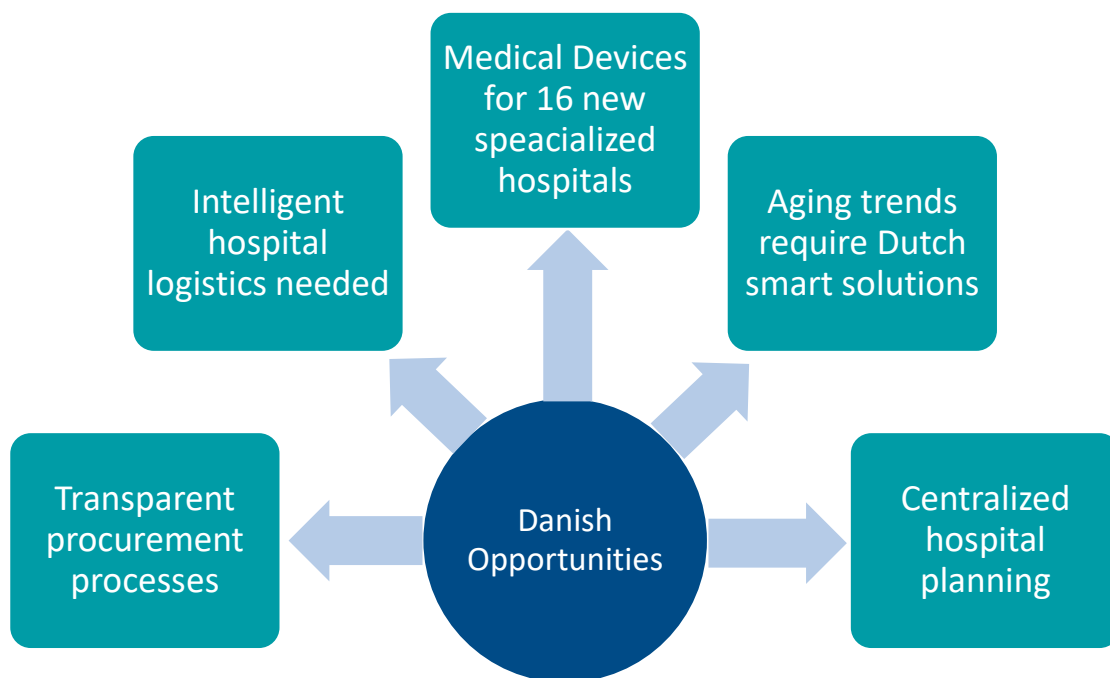
Next Steps

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

References

1. Copenhagen Capacity. Life sciences in Greater Copenhagen. *Set up a business.* [Online] 2017.
http://www.copcap.com/set-up-a-business/key-sectors/life-sciences.

2. Healthcare DENMARK. Denmark's first demential village inaugurated . *News.* [Online] 2016.
http://healthcaredenmark.dk/news/denmark%E2%80%99s-first-dementia-village-inaugurated.aspx

3. Danish Hospital Construction. Why are the regions building new hospitals? *Construction projects.*
[Online]
http://www.danishhospitalconstruction.com/sitecore/content/danishhospitalsconstruction,-d-
,com/Goals-and-
management/The%20hospital%20construction%20projects%20in%20brief/Why%20are%20the%20re
gions%20building%20new%20hospitals.aspx

4. The World Bank. World Bank Data. *World Bank Data.* [Online] 2015.
http://data.worldbank.org/

5. OEC. Denmark. *Exports and Imports.* [Online] 2017.
http://atlas.media.mit.edu/en/profile/country/dnk/

6. Statistics Denmark. Population and Elections. *Find Statistics.* [Online] 2017.
http://www.dst.dk/en/Statistik/emner/befolkning-og-valg

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

8. OECD. Fertility Rates. *OECD Data.* [Online] 2016.
https://data.oecd.org/pop/fertility-rates.htm#indicator-chart.

9. Olejaz, Maria, et al. *Denmark: Health system review.* Denmark : Health Systems in Transition,
2012. ISSN 1817 – 6127.

10. European Observatory on Health Systems and Policies. Health Systems in Transition (HiT) profile
of Denmark. *The Health Systems and Policy Monitor.* [Online] 2016.
http://www.hspm.org/countries/denmark27012013/livinghit.aspx?Section=4.1%20Physical%20resou
rces&Type=Section

11. Pedersen, Kjeld Møller, Bech, Mickael and Vrangbaek, Karsten. *The Danish Health Care System:
An analysis of strengths, weaknesses, opportunities and threats.* Copenhagen : Copenhagen
Consensus Center. ISBN - 978-87-92795-00-7.

12. *Classifying OECD Healthcare Systems: A deductive Approach.* **Böhm, Katharina, et al.** Bremen:
TranState Working Papers, 2012, Vol. 165.

13. Danske Patienter. About Danish Patients. *Danske Patienter.* [Online] 2017.
https://www.danskepatienter.dk/about-danish-patients

14. Business Monitor International. *Denmark Medical Devices Report.* London : BMI Research, 2016.
ISSN 2053-8162.

15. NOMESCO. *Health Statistics for the Nordic Countries 2015.* Copenhagen : Nordic Medico-Statistical Committee, 2015.

16. European Commission. Hospital beds by type of care 2014. *Eurostat.* [Online] 2014. http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Hospital_beds_by_type_of_care,_2014.png

17. The World Bank. Physicians (per 1,000 people). *World Bank Open Data.* [Online] 2017. http://data.worldbank.org/indicator/SH.MED.PHYS.ZS

18. Lægeforeningen. About the Danish medical Association. *Lægeforeningen.* [Online] 2017. https://www.laeger.dk/about-the-danish-medical-association

19. The World Bank. Nurses and midwives (per 1,000 people). *World Bank Open Data.* [Online] 2017. http://data.worldbank.org/indicator/SH.MED.NUMW.P3

20. Danish Nurses Organization. Welcome to DNO. *Om DNO.* [Online] 2017. https://dsr.dk/om-dsr/kontakt-dsr/welcome-to-dno

21. Institute for Health Metrics and Evaluation. Denmark. *Country Profiles.* [Online] 2015. http://www.healthdata.org/denmark

22. Minister for Helath and the Elderly. *Statusrapport på Demensområdet i Danmark.* Copenhagen : Sundheds- og Ældreministeriet, 2016. ISBN: 978-87- 7601-362-2.

23. The World Bank. *Doing Business.* [Online] 2017. http://www.doingbusiness.org

24. Forbes. Best Countries for Business. [Online] 2016. https://www.forbes.com/best-countries-for-business/list/#tab:overall.

25. Transparency International. Corruption Perceptions Index 2016. *Surveys.* [Online] January 2017. http://www.transparency.org/news/feature/corruption_perceptions_index_2016#table

26. Aarhus University. Danish workplace culture. *Collaboration.* [Online] 2017. http://www.au.dk/en/interresource/danishworkplaceculture/

27. Invest in Denmark. Taxation in Denmark. *Establishing a business.* [Online] 2017. http://www.investindk.com/Establishing-a-business-in-Denmark/Taxation-in-Denmark

28. Education First. The world's largest ranking of countries by English skills. *EF EPI.* [Online] 2016. http://www.ef.se/epi/

29. Staten og Kommunernes Indkøbsservice. Facts about SKI. *Public Procurement.* [Online] 2017. http://www.ski.dk/Viden/Sider/Facts-about-SKI.aspx

30. Kromann Reumert. Procurement Law: New Danish Public Procurement Act as of 1 January 2016. *News.* [Online] 2016. https://en.kromannreumert.com/News/2016/01/Procurement-law-New-Danish-Public-Procurement-Act-as-of-1-january-2016

31. Udbud. *About udbud.dk.* Copenhagen : Danish Competition and Consermer Authority, 2017.

32. European Commission. *Denmark Country Profiel: Public Procurement - Study on administrative capacity in the EU.* s.l. : European Comission, 2016.

33. OECD. *Denmark: Help wanted? Providing and Paying for Long-Term Care.* Paris : OECD, 2011.

34. Healthcare DENMARK. Homecare. [Online] 2017.
http://healthcaredenmark.dk/the-case-of-denmark/homecare.aspx

35. Invest in Denmark. *Start with Denmark: The heart of life sciences for research and business.*
Copenhagen : Ministry of Foreign Affairs of Denmark, 2016.

36. The Danish Agency for Digitisation. *Telemedicine - A key to health services of the future.*
Copenhagen : s.n., 2012.

37. *eHealth in Denmark: A Case Study.* **Kierkegaard, Patrick.** s.l. : Journal of Medical Systems, 2013,
Vol. 37. DOI 10.1007/s10916-013-9991-y.

38. *Integrated care: a Danish perspective.* **Rudkjøbing, Andreas, et al.** s.l. : BMJ, 2012, Vol. 345. doi:
10.1136/bmj.e4451 .

39. *Sustainable Hospitals: Hospital Logistics.* **Healthcare DENMARK.** Odense : Healthcare Denmark
White Papers, 2017.

40. *Introduction to Danish (nationwide) registers on health and social issues: Structure, access,
legislation, and archiving.* **Thygesen, Lau Caspar, et al.** s.l. : Scandinavian Journal of Public Health,
2011, Vol. 39. DOI: 10.1177/1403494811399956.

41. Statens Serum Institut. About SSI. *Statens Serum Institut.* [Online] 2017.
http://www.ssi.dk/English/Service/AboutSSI.aspx

42. Copenhagen Capacity. Copenhagen: Life Science Companies. *Life Science.* [Online] 2017.
http://www.copcap.com/key-sectors-map/life-science/top-lifescience-companies

43. OECD. Length of hospital stay. *OECD Data.* [Online] 2015.
https://data.oecd.org/healthcare/length-of-hospital-stay.htm

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

45. Vallgårda, Signild, Krasnik, Allan and Vrangbaek, Karsten. *Denmark.* Copenhagen : Health Care
Systems in Transition, 2001. ISSN 1020-9077.

46. Norwegian Office of the Auditor General. *Investigation into property management in health
trusts and regional health authorities.* Oslo : The Office of the Auditor General, 2011. ISBN 978-82-
8229-140-8.

47. Ringard, Ånen, et al. *Norway: Health system review.* s.l. : Health Systems in Transition, 2013.
Vol. 15. No. 8.

48. **Danish Hospital Construction.** Frequently asked questions. *Construction projects.* [Online] 2016.
http://www.danishhospitalconstruction.com/Goals-and-
management/Frequently%20asked%20questions.aspx

49. *The New Hospital Structure In Denmark.* **Danish Regions Hospital Construction.** Copenhagen :
Christina Carlsen, 2017.

Appendices

A.   Results from Survey amongst the Dutch Life Sciences & Health Sector

As part of this market study a survey was conducted amongst Dutch organizations active in the Life Sciences & Health sector to identify the interest in the healthcare markets in Norway, Denmark, and Sweden. The results show that 61% of the Dutch organizations (N=51) are already active in one or two of these countries. Most of them are active in Denmark (43%), followed by Sweden (39%) and Norway (29%). Of all survey respondents, 90% indicated to consider Scandinavia as potential growth market for the coming years. Finland was also mentioned in some of the responses, although this country was not included in the scope of this study.

The respondents in The Netherlands are mainly active in the field of Medical Devices (measurement devices, hospital supply kits, such as medical tapes, wash facility for hospital beds, and suturing tools), eHealth (healthcare integration, telemedicine, mobile alarm systems, online trainings for healthcare professional), Hospital Build (modular medical buildings, contamination control, flooring systems, doors, chutes), Mobility & Vitality (neurological rehabilitation, variety of ergometric and orthopaedic products), Product Development (embedded systems, system suppliers) and BioPharma (clinical analyses, diagnostics, healthcare data and research between Universities). It is within these areas why they see Denmark, Norway and Sweden as target market.

General barriers experienced by the respondents range from the native language, the relatively small size of the population, distances to and within the countries, high costs of transportation, competition on local and international level (from the Nordic and Baltic region and/or multinationals) to market protectionism and local preference. For Sweden, the complex regulation (for example on the sharing of information) and the relatively low pricing due to tender procurement were specifically mentioned. Some obstruction by local authorities or companies was perceived in Denmark. For Norway, the non-EU regulations were indicated as possible barrier. For all countries, insufficient knowledge of the healthcare sector as well as the lack of contacts to find a business partner and/or distributor were perceived as major challenges.

B. Meetings during Fact-Finding Visit to Denmark 2017

- The Capital Region of Denmark is the purchasing body of healthcare in Copenhagen
- Copenhagen Capacity helps companies enter the Danish markets
- Danish Hospital Construction handles hospital construction in Denmark
- Danish Regions is an employer organization for all Danish healthcare payors
- Hvidovre Hospital is a large hospital near Copenhagen
- Innovation Unit at Odense University Hospital is an in-house innovation unit at Odense University Hospital
- Welfare Tech is a cluster of healthcare companies in Odense
- Netherlands Embassy in Copenhagen

C.   Agencies under the Ministry of Health

- Danish Health Authority
- Danish Medicines Agency
- The National Serum Agency
- The National Agency for Patients' Rights and Complaints
- Knowledge and Research Center for Alternative Medicine
- The Danish National Committee for Biomedical Research Ethics
- The Danish Council of Ethics
- The National Board of eHealth
- The Danish Evaluation Institute of Local Government
- The Kennedy Center
- The Regional State Administrators

D.   Geographic Spread of Hospitals under Construction in Denmark

Source: Danish Hospital Construction

E.   List of Important Healthcare Organizations

- Alzheimerforeningen Danmark
- Danske Patienter
- Nationalt Videnscenter for Demens
- MedCom
- Danish Regions
- Medicoindustrien
- Medicon Valley Alliance
- The Danish IT Industry Association
- Welfare Tech
- Copenhagen Capacity
- Copenhagen Healthtech Cluster
- Statens Serum Institute
- Danish Nurses Organization
- Danish Medical Association

F.　　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

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

Region	Project Title	Type of Project	Investment (€)	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 Center Sct. Hans	Extension	73 million	2014

Source: Adapted from Danish Hospital Construction

H.   List of National Health Registers in Denmark **(39)**

- 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

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

J.   Top 50 Life Science Companies in Medicon Valley (41)

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

K. List of Distributors in Denmark

- 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

L.   SWOT Analysis of the Danish Healthcare Market

Strengths	Weaknesses
- High GDP per capita - High accountability and transparency standards - Low levels of corruption - High level of health expenditure - Life science hub in Medicon Valley - Highly educated life science workforce - Healthcare system is transparent - Danish citizens report high satisfaction with care - Large proportion of medical supplies and equipment imported	- Incompatibility in eHealth systems - Innovation for healthy aging - Limited resources in the municipalities - Gaps in care coordination - Slow economic growth - Small population limits market size - Few multinational companies with manufacturing facilities in country - Danish municipalities are slow to integrate innovation on large scale
Opportunities	**Threats**
- Healthcare needs to be met for a growing aging population - Testing innovation in collaboration with hospital, regions, and medical professions - Product development opportunities with Danish product design - Denmark opens doors to Scandinavian market - Hospitals looking to procure updated medical devices and equipment	- Close business relations with Scandinavian SMEs - Competition in life science sector - Declining workforce of healthcare professionals - Government is looking to contain costs of medical supplies and devices

Task Force Health Care

Task Force Health Care (TFHC) is a public-private platform founded in 1996. The TFHC network consist of partners from industry, knowledge institutes, NGO's, healthcare providers and the government, all active in the Dutch Life Sciences & Health sector. The partners provide innovative and sustainable solutions to global (and local) healthcare challenges and are active all over the world.

TFHC stimulates cooperation and knowledge-sharing in order to combine forces within the Dutch healthcare sector, and; Present and position The Netherlands abroad in order to be involved in the global and local healthcare challenges.

For more information visit: www.tfhc.nl

Agenda

For more information on upcoming activities:
www.tfhc.nl/agenda/

Publication