



Ministry of Foreign Affairs

# *Market Study: Opportunities for the Dutch Life Sciences & Health sector in Singapore*

*Commissioned by the Netherlands Enterprise Agency*

*>> Sustainable. Agricultural. Innovative.  
International.*



# SINGAPORE

## Market Study

Opportunities for the Dutch Life Sciences & Health sector in Singapore



# PREFACE

May 2019

Singapore's high quality and affordable health system is a global healthcare frontrunner. The country has one of the highest (healthy) life expectancies in the world, but is also ageing rapidly. In 2030, the percentage of the population above 65 years old will have doubled. Together with an increasing burden of non-communicable (chronic) diseases, this creates a shift and sharp increase in health demands, putting pressure on Singapore's health system.

The '3 Beyonds-Policy' has been designed by the Ministry of Health of Singapore to keep healthcare both good and affordable into the future. It focuses on improved prevention (*Beyond Healthcare to Health*), avoiding frequent hospital admissions by appropriate care at the community-level or at home (*Beyond Hospital to Community*), and improved focus on cost-effectiveness (*Beyond Quality to Value*).

Singapore's decision-makers in healthcare have an open approach to achieve the 3 Beyonds-plan by proactively studying international health systems, such as that in the Netherlands, and welcome foreign expert organisations to test and apply solutions for Singapore's healthcare challenges within the country.

Singapore functions as an entry point for the broader ASEAN market. Solutions which work in the Singaporean health system are picked up by other countries in the region. The country furthermore has an excellent business climate.

This report was commissioned by the [Netherlands Enterprise Agency \(RVO.nl\)](https://www.rvo.nl) and is produced by the [Task Force Health Care \(TFHC\)](#) in cooperation with the [Embassy of the Kingdom of the Netherlands in Singapore](#). It aims to align the respective Life Sciences & Health sectors of the Netherlands and Singapore in an effort to increase mutual understanding and inspire collaboration between these countries. This report provides useful insights into the Singaporean health system and sector and identifies potential areas of opportunity.





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# OUR APPROACH

# TASK FORCE HEALTH

## IMPROVING HEALTHCARE 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 healthcare 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 healthcare 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

> A Sustainable and Long-Term Approach

> Demand-Driven & Context Specific

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# TOP REASONS – WHY SINGAPORE IS INTERESTING FOR THE DUTCH HEALTH SECTOR



## GROWTH MARKET

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Singapore's government has invested in the development of its health infrastructure and by 2020 is expected to have reached a total of 6 200 day care places, 10 000 home care places, and 17 000 nursing home beds.

See [section 4.6](#)



## INNOVATIVE APPROACH

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Health stakeholders in Singapore, spearheaded by the Ministry of Health, are very open to innovative concepts and solutions. A 'co-creation approach' with (foreign) providers of expertise and technologies is commonly preferred.

See [section 5](#)



## AGEING

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Singapore has one of the longest (healthy) life expectancies in the world and a declining fertility rate, resulting in a rapidly ageing population. The government is actively looking for solutions around the globe to help Singaporeans to age healthy and improve the quality and efficiency of care that needs to be delivered.

See [section 3.3](#), [section 4.6](#) & [section 6.1](#)



## GATEWAY TO ASEAN

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Singapore is considered the benchmark of the South East Asian region, with neighbouring countries looking to Singapore to set the standard for smart health care solutions and guidance. Achieving success in the Singapore market provides a good indicator of potential success in the ASEAN region as a whole.

See [section 5](#)



## HOME CARE

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Singapore decision-makers are moving healthcare 'Beyond Hospitals' by placing the home environment and community as central points of delivery for prevention, treatment and rehabilitation.

See [section 4.5](#) & [section 6.1](#)



## COLLABORATION

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Singapore's excellent and prestigious knowledge institutes and universities, such as the National University Hospital (NUH), are active in many research areas and are known to be open for collaboration.

See [section 6.5](#)



## TOWARDS VALUE-BASED HEALTH CARE

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The Value-Based Health Care model is still in its infancy but is already changing the way in which physicians and hospitals provide care. Singapore is fully engaged to provide a team-oriented approach to patient care by sharing patient data such that care is coordinated, and outcomes easily measured.

See [section 6.3](#)



## HEALTH PROMOTION

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Singapore recognises that the most effective way to decrease the burden associated with inactive and unhealthy lifestyles is to address the root cause, human behaviour. To achieve this, stakeholders such as the Health Promotion Board, health providers and civil society have initiated a large number of projects to improve the health of the Singaporean population.

See [section 6.1](#)



## OPEN MARKET

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Singapore has one of the most liberal and transparent markets in the world, with light regulatory requirements and easy access to connect with potential business partners.

See [section 5](#)



## UNITY

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Singaporean health decision-makers are interested in the workings of the Netherland's health system to inspire transformation of the Singaporean health system.

# HOW DOES SINGAPORE COMPARE?

Table 1: Geographic, Demographic, Economic, Business, and Health context in Singapore.

	Netherlands	Malaysia	Singapore	Thailand	Vietnam
<b>Geography &amp; Demographics</b>					
Land Size (km <sup>2</sup> )	42 058	329 847	721.5	513 120	331 212
Population (2019)	17 109 189	31 600 000	5 838 861	69 410 868	95 540 000
<i>% expected annual growth rate</i>	0.27	1.23	0.74	0.08	0.88
65 years and older (2019) (%)	20	7	15	13	8
<i>expected in 2050 (%)</i>	28	16	34	29	22
Maternal Mortality Rate (100 000 births)	7	40	10	20	54
Life Expectancy at Birth	82	76	83	76	77
Life Expectancy Global Rank (2017)	19	89	4	91	70
<b>Economic Context</b>					
GDP PPP (in bln USD) (2017)	826.2	933.28	528.14	1 236.35	648.74
<i>expected growth (2020)</i>	2%	4.8%	2.7%	3.7%	6.5%
GDP per capita (2017)	48 223	29 144	94 104	17 893	6 927
<i>annual growth rate (%)</i>	2.5	4.4	3.5	3.7	5.7
<b>(Health) Business Context</b>					
Ease of Doing Business Rank	32	15	2	27	69
Logistics Index	6	41	7	32	39
Pharmaceutical Market (mln USD-2016)	6 000	3000	903	4562	4720
<i>expected growth 2016-2021 (%)</i>	0-0.5	9.5%	5.0%	7.7%	10%
Medical Device Market (mln USD - 2016)	3 486.1	1 233.1	539.4	1 183.2	981.4
<i>projected CAGR 2016-2021 (%)</i>	5.0	9.7	12.3	9.6	9.4
Medical Device Import from the Netherlands 000s USD (%)	n/a	18 208 (1.6%)	32 039 (1.0%)	23 755 (3.2%)	10 113 (1.2%)
<i>Ranking</i>	n/a	11	12	8	16
Medical Device Export to the Netherlands 000s USD (%)	n/a	90 178 (4.4%)	283 767 (4.8%)	8 362 (1.0%)	16 736 (2.7%)
<i>Ranking</i>	n/a	7	4	15	11
<b>Health Context</b>					
Health Expenditure (2016, bln USD)	81.7	13.2	17	25.3	14.9
Health Expenditure as % of GDP	10.69	4.4	6.1	6,2	7.3
Health Expenditure per Capita (USD)	4 746	422.7	2980.6	371	157.8
Public Health Share of HE	86.7	55.4	46.2	86.8	55.2
Type of Health System	Social Health Insurance	Universal Healthcare System	Universal Healthcare System	Universal Healthcare System	Universal Healthcare System

Accumulated data from: World Bank Data (2018), World Health Organisation (2018), Healthdata.org (2019), BMI Medical Devices reports, IMS Market Prognosis (2016), international trade administration (2016).



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## GLOSSARY OF TERMS

A*STAR	Agency for Science, Technology & Research
AEM	Asian Economic Ministers
AIC	Agency for Integrated Care
AMDD	ASEAN Medical Device Directive
B2B	Business to Business
CD's	Communicable Diseases
COPD	Chronic Obstructive Pulmonary Disease
CPF	Singapore's Central Provident Fund
DALY	Disability-Adjusted Life Year
DDG	Deputy Director General
DHSS	Demographic and Health Surveillance System
EDB	Economic Development Board
EEN	Enterprise Europe Network
ETP	Economic Transformation Programme
FDW	Foreign Domestic Worker
G2G	Government to Government
GDP	Gross Domestic Product
GDP (PPP)	Gross Domestic Product (Purchasing Power Parity)
GPO	Group Purchasing Office
HDI	Human Development Index
HSA	Health Sciences Authority
IHIS	Integrated Health Information Systems
IMH	Institute of Mental Health
ISP	Integrated Shield Plans
K2K	Knowledge to Knowledge
LSH	Life Sciences & Health
MOH	Ministry of Health
MOHE	Ministry of Higher Education
MOHT	Ministry of Healthcare Transformation
MUCHP	Monash University Community Health Project
NCD	Non-Communicable Disease
NEHR	National Electronic Health Record
NHG	National Health Group
NIC	National Innovation Challenges
NKEA	National Key Economic Areas
NSP-NCD	National Strategic Plan for Non-Communicable Diseases
NUH	National University Hospital
NUHS	National University Health System
OECD	The Organisation for Economic Co-operation and Development
OOP	Out-of-pocket
PCN	Primary Care Network
PHC	Primary Health Care
PHI	Private Health Insurance
R&D	Research and Development
RCPsych UK	Royal College of Psychiatrists United Kingdom
REMEDI	Refugee Medical Insurance Scheme
RHI	Resilient Health Infrastructure
RHS	Regional Health Systems
RVO	Netherlands Enterprise Agency
SMDR	Singapore Medical Device Register
TFHC	Task Force Health Care
UN	United Nations
VPRS	Voluntary Product Registration Scheme

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# 1 ABOUT THIS REPORT

## Background & Purpose

### Aligning the interests and strengths of the Dutch Life Sciences & Health sector with the health sector dynamics and interests of Singapore

This market report was commissioned by the Netherlands Enterprise Agency (RVO.nl) in The Netherlands. It is delivered by Task Force Health Care (TFHC), in close cooperation with the Netherlands Embassy in Singapore. It provides an analysis of the Singapore healthcare sector, business opportunities for organisations active in the Dutch Life Sciences and Health sector, and recommendations for the organisations in The Netherlands that see opportunities in working in Singapore and that consider it a potential growth market for their organisation.

## Methodology

### Step 1: Identifying and mapping Dutch interest in the Singapore health sector and the barriers they perceive

In order to obtain a better understanding of the interests of the Dutch Life Sciences & Health sector in Singapore, historical data, Dutch representation in Singapore, and results of a survey were referenced. The survey was sent out to over 1 200 Dutch actors within the Life Sciences & Health sector to share their activities, ambitions, and perceived opportunities and barriers in relation to Singapore. Data was classified into type of organisation, strength (e.g. Medical Devices or eHealth), current or past activity in Singapore, and their perception of Singapore in terms of market growth. The results are presented in [Chapter 2](#) and are used to guide the report towards aligning challenges and opportunities in Singapore with Dutch expertise and solutions.

### Step 2: Desk Research

In order to obtain a better understanding of the Singaporean health sector and its dynamics, a literature review was conducted. A range of documentation was perused, including government documents, academic articles, and reports from various organisations and federations. The information gathered was synthesised in order to provide a thorough overview of the Singaporean sector.

### Step 3: Fact finding visit to Singapore

An important element of the study was the fact-finding visit to Singapore, whereby a delegation from TFHC, accompanied by representatives of the Netherlands Embassy in Singapore, gained insights from key stakeholders in the Singaporean health sector. The fact-finding visit took place over a period of one week and included 9 meetings and 3 round table discussions with representatives from the public and private sector, operating at the national, regional and local level. The list of interviewees is presented in [Annex 1](#).

These meetings and discussions enabled the collection of information with regards to additional sources and provided valuable insights into the sector. The data from these interviews allowed for cross-checking of data that had previously been obtained, resulting in the development of an objective and realistic report. These meetings also raised awareness in terms of the expertise and smart solutions offered by the Dutch Life Sciences & Health sector. The visit has resulted in the strengthening of existing relationships in Singapore, and initiation of new relationships that will benefit from follow-up activities.

## 2 MAPPING DUTCH INTEREST IN SINGAPORE

In order to gauge the degree to which the Dutch are interested in the Singaporean market, an online survey was sent out to 1 200 unique Life Sciences & Health organisations and companies in the Netherlands. The survey was also shared with multiple network and cluster organisations in order to extend its reach. Combined data from the survey, Task Force Health Care, and the Netherlands representation in Singapore identified 52 unique organisations with activity and interest in Singapore. Past experience suggests that the number of identified organisations that are active and interested in Singapore will grow over time.

Figures 1- 5 below shows the current data available by 'type of organisation', 'strength', 'activity in Singapore', and 'potential growth market'. The dominant perceived barriers derived from qualitative inquiry are listed in Table 2.

**Interest by Type of Organisation**

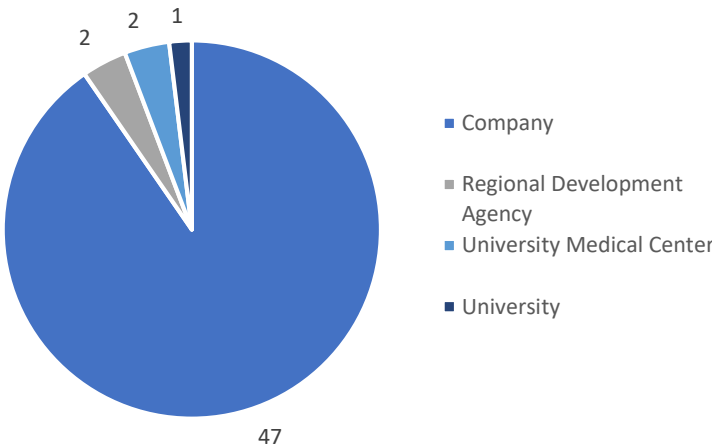


Figure 1: Interest by Type of Organisation

**Interest by Strength**

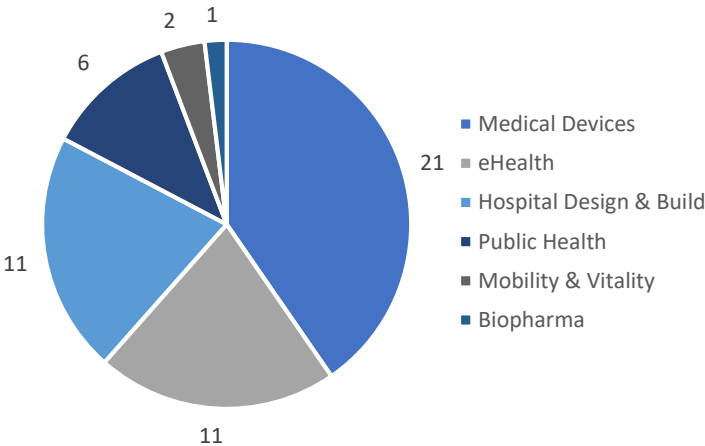


Figure 2: Interest by Strength



**Are (or were) you active in Singapore?**  
*in terms of export, research, projects or otherwise*

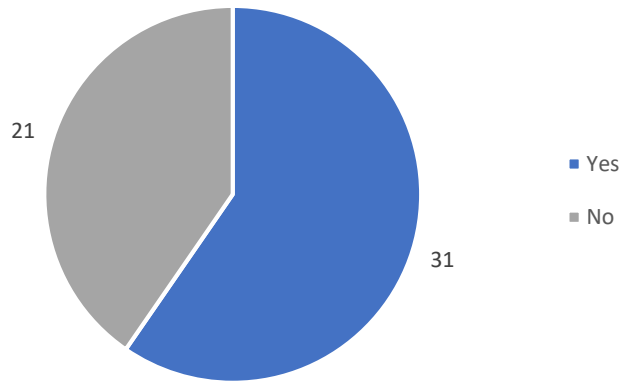


Figure 3: Dutch Activity in Singapore

**Is Singapore a (potential) growth market for your organisation?**

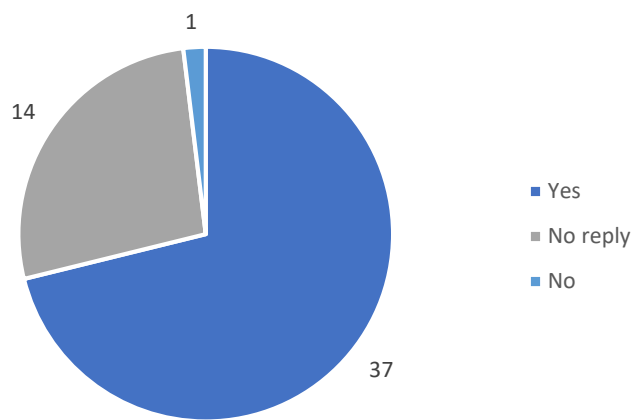


Figure 4: Is Singapore a growth market for your organisation?

**Do you experience or foresee barriers in becoming active in Singapore?**

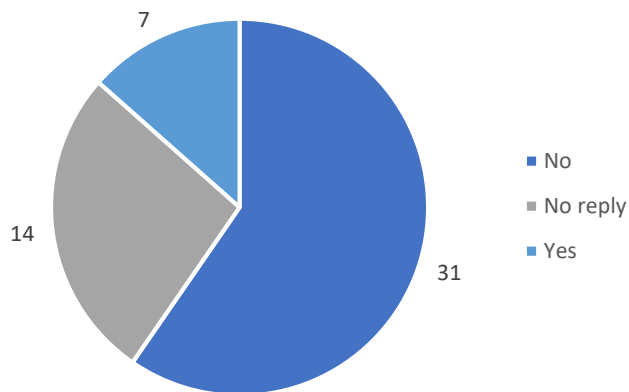


Figure 5: Do you experience or foresee barriers in becoming active in Singapore?

**Main barriers in becoming active in Singapore**

*Experienced or predicted*

Table 2: Main barriers experienced or predicted by the Dutch LSH-sector

- 1 Knowledge on market entry (local regulations, import duties, etc.)
- 2 Barriers to engage with key decisionmakers
- 3 Preference for solutions with (a touch of) Singaporean content

## 3 INTRODUCING SINGAPORE

### 3.1 History & Geography

The Republic of Singapore is an island city-state in Southeast Asia. After Malaysia gained independence from the British Empire in 1957, Singapore established the island as an independent sovereign republic in 1965. Singapore consists of a main island called Pulau Ujong, and 62 smaller islands. The total landmass of these islands has grown through land reclamation from 580 km<sup>2</sup> to 719 km<sup>2</sup>, with the majority of the population living on the main island.

The full population of Singapore is considered urbanised, compared to 91.5% of the Dutch population. Singapore's climate is classed as tropical, with two main monsoon seasons during December-March in the Northeast and another in June-September in the Southwest area (Central Intelligence Agency, 2019).

On the World Risk Index, Singapore scores 158<sup>th</sup> place, which is indicative of a low exposure and vulnerability to natural disasters whilst simultaneously possessing enough resources to cope with natural disasters (Bündnis Entwicklung Hilft, 2018).

Table 3: Surface area, urbanisation, climate and risk index for Singapore and the Netherlands.

Geographical indicator	Singapore	Netherlands
Surface (km <sup>2</sup> )	721.5	42 058
Urbanisation (%)	100	91.5
Climate	Tropical	Temperate
Risk index	158	50

### 3.2 Economy

Singapore has a stable economy and is one of the fastest growing advanced economies in the ASEAN region. Singapore's GDP of USD 556.2 billion is roughly 40% lower than the Netherlands. However, when comparing Singapore's productivity, the GDP per capita (PPP) in Singapore is much higher. While the cost of living in Singapore is much higher than in the Netherlands, the nation's average disposable income is comparable to other industrialised countries (International Monetary Fund, 2018).

Singapore has a relative high Gini Coefficient of 45.9 (ranked 35 of 157) compared to the Netherlands 30.2 (ranked 133 of 157) (CIA, 2017). This is indicative of a relatively unequal distribution of income amongst the population. However, since overall incomes are higher, the average Singaporean fares well. Singapore's placement in the Human Development Index (ranked 9 of 189 countries) is also indicative of good life expectancy, education and per capita income. The Netherlands is ranked 10<sup>th</sup> placed in this index (United Nations Development Programme, 2018).

Table 4: Economic Indicators for Singapore (source: International Monetary Fund, 2018)

	Netherlands	Singapore					
	2018	2016	2017	2018*	2019*	2020*	2023*
GDP PPP (bn USD)	972.45	500.19	528.14	556.22	582.55	609.85	698.35
<i>real growth (%)</i>	2.8	2.4	3.6	2.9	2.5	2.7	2.6
<i>per capita PPP (000)</i>	56.57	89.20	94.10	98.26	102.02	105.89	118.20
Inflation rate (%)	1.4	-0.5	0.6	1.0	1.4	1.4	1.3
Unemployment (%)	3.9	2.1	2.2	2.0	1.9	1.9	1.9
Government net lending/ borrowing (% of GDP)	0.6	3.3	5.7	2.3	1.6	1.6	1.8
Government gross debt (% of GDP)	53.1	106.8	111.1	112.9	114.3	115.0	116.7

### 3.3 Socio-demographic Trend

Singapore has a relatively small population size of 5.8 million people. However, due to its small surface area it is considered one of the most densely populated countries in the world. Singapore’s high life expectancy and low fertility rate has resulted in the country being one of the more rapidly ageing countries in the world with a projection that more than 20% of the population will be over the age of 65 by the year 2030 (United Nations, 2017). [Department of Statistics Singapore](#) reports actual population statistics and states that the size of this group of citizens doubled from 220,000 in 2000 to 440,000 today, and is expected to increase to 900,000 by 2030.

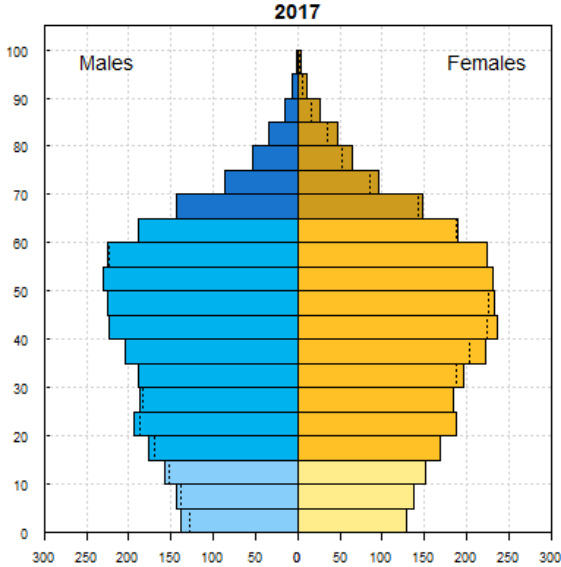


Figure 6: Singapore Population Pyramid for 2017

Table 5: Key Demographic indicators for Singapore.

	Singapore				Netherlands			
	2017	*2020	*2025	*2030	2017	*2020	*2025	*2030
Population (million)	5.8	5.9	6.1	6.3	17.0	17.1	17.4	17.6
Growth (%)	1.4	0.7	0.6	0.4	0.3	0.3	0.2	0.11
65 years or older (%)	11.7	15.0	19.2	23.2	17.9	20.0	22.1	24.5
Life Expectancy at birth	83.3	84.1	84.8	85.5	82.1	82.9	83.6	84.4
Crude birth rate per 1 000	8.7	8.3	7.9	7.5	10.6	10.6	10.5	10.3
Infant mortality per 1 000	2.0	2.0	2.0	1.0	3.0	2.0	2.0	2.0

Source: United Nations, 2017

### 3.4 Health Status and Burden of Disease

The WHO estimates that the average Singaporean lives a longer and healthier life than the average Dutchman with an average life expectancy of 83.3 and healthy life expectancy (estimated years of life in good health) of 76.2 compared to 82.1 and 72.1 in the Netherlands. This can be mainly attributed to the burdens of non-communicable diseases. Statistically speaking, the risk of an adult (aged between 30-70 years) dying prematurely of an NCD of is 9% in Singapore, compared to 13% in the Netherlands (World Health Organization, 2018). [Annex 2](#) provides detailed information regarding the leading causes of death in Singapore.

This difference is primarily caused by differences in lifestyle behaviours. Singaporeans consume less alcohol, 2 litres annually compared to 9 in the Netherlands, smoke less with 16% of the population above 15 years old smoking compared to 25% in the Netherlands and are less obese with 7% of the population above 18 years old being obese

compared to 23% in the Netherlands (World Health Organization, 2018). The Dutch do have a more active lifestyle with 29% of the population being estimated to be physically inactive compared to 38% in Singapore.

Authorities however signal that lifestyle related NCDs are on the rise in Singapore, with increased diagnoses of cancer and cardio vascular diseases (Tai, 2016; Lai, 2016). The International Diabetes Federation furthermore, in 2015, has labelled Singapore as having the 2<sup>nd</sup> highest proportion of diabetes in the developed world. Diabetes remains a key health challenge in 2019.

Although Singapore is classified as a tropical country, instances of communicable diseases (CDs) are relatively low. Data from 2016 show that 12% of all deaths in Singapore were caused by Communicable Disease (World Health Organization, 2018). During this same period, 18.5% and 4.6% of deaths were caused by Communicable Diseases in Malaysia (also a tropical country) and The Netherlands respectively. Singapore's relatively low incidence is likely achieved through a high immunisation rate, proactive and vigilant control and the fact that Singapore is urbanised. Singapore periodically monitors communicable diseases in a [Communicable Diseases Surveillance Report](#).

Table 6: Key indicators on Singapore's disease burden in 2017.

<b>Disease Burden (2017)</b>	<b>Singapore</b>	<b>Netherlands</b>
% of death by NCD	74	90
Risk of premature death (between 30-70)	9	11
NCD burden		
<i>Cardiovascular diseases (%)</i>	29	26
<i>Cancers (%)</i>	30	32
<i>Other NCDs (%)</i>	11	23
<i>Chronic Respiratory diseases (%)</i>	3	7
<i>Diabetes (%)</i>	1	2
Suicide per 1 000	0.10	0.13
Total CD burden in DALY's (per 1 000)		
<i>Infectious and parasitic diseases</i>	11.6	5.9
<i>Neonatal conditions</i>	8.0	53.6
<i>Respiratory Infectious</i>	92.4	88.1
<i>Nutritional deficiencies</i>	6.7	15.7
<i>Maternal conditions</i>	4.0	1.3

Source: (World Health Organization, 2017) (World Health Organization, 2018) (United Nations Development Programme, 2018) (Institute for Health Metrics and Evaluation, 2018)



# 4 THE SINGAPOREAN HEALTH SYSTEM

## 4.1 Historical Background

In the 1980's the Singaporean government laid the foundations of the current health system by devolving greater autonomy to the country's public hospitals (Haseltine, 2013). By 1993 a white paper on "Affordable Health Care" was developed, which formed the blueprint of the health system as it functions today. The Singaporean health system functions as a mix of public and private responsibility and management, similar to the Dutch health system.

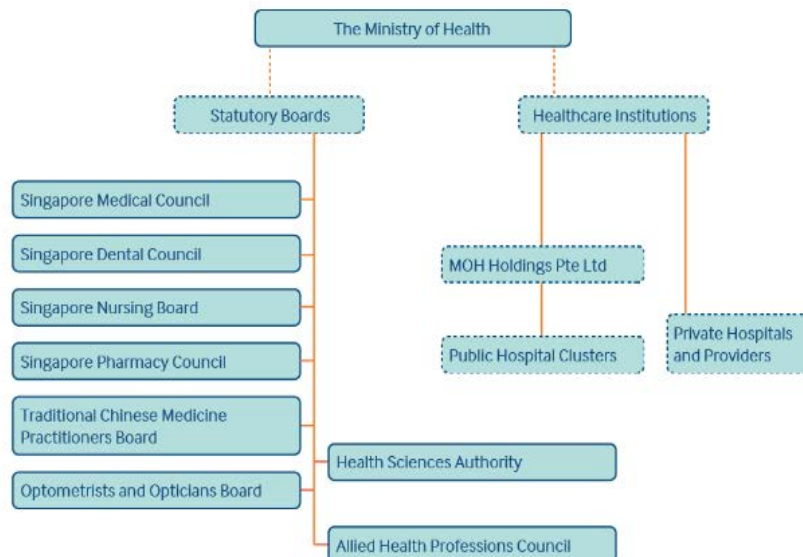
Text box 1: **Five key principles of the Singaporean health system** (Haseltine, 2013)

1. Become a healthy nation by promoting good health;
2. Promote individual responsibility for one's own health and avoid overreliance on state welfare or third-party medical insurance;
3. Ensure good and affordable basic medical services for all Singaporeans;
4. Engage competition and market forces to improve service and raise efficiency;
5. Intervene directly in the healthcare sector when necessary, where the market fails to keep healthcare costs down.

## 4.2 Governance

The MOH regulates the Singapore health care system through legislation and enforcement. Core regulatory functions are licensing health care institutions under the Private Hospitals and Medical Clinics Act and conducting regular inspections and audits. Beneath the MOH in the organisational structure are Statutory Boards which include the Singapore Medical Council, Singapore Dental Council, Singapore Nursing Board, and Singapore Pharmacy Council ([Annex 7](#)). These professional bodies regulate professionals through practice guidelines and codes of ethics and conduct. The MOH also engages these bodies to assist with the explanation of policy rationale and garner support for certain initiatives. In terms of the manufacture, import, supply, presentation, and advertisement of health products (this includes conventional pharmaceuticals, complementary medicines, cosmetic products, medical devices, tobacco products, and medicinal products for clinical trials), the Health Sciences Authority is the regulating body (Commonwealth Fund, 2019).

Figure 7: Organisation of the Singaporean Health System (World Health Organisation, 2018)



## 4.3 Health System

### Managed Competition: Rules of The Game

The public sector is the main health provider in Singapore. The government manages public hospitals through [MOH Holdings Pte Ltd](#), which is the holding company for Singapore's healthcare institutions. The government regulates these public hospitals by setting the maximum prices for services provided within these institutions and controlling the quality of services provided (Commonwealth Fund, 2019).

When patients want to make use of services provided by these institutions, they can make use of multiple schemes to access these services. Eligibility of use of these different types of schemes depend on the class of service a patient wishes to use. Public hospitals offer different types of wards ranging from basic (Standard Ward Class C) to more well-appointed (Standard Ward Class A). As the ward type becomes more luxurious, the subsidy decreases. Standard Ward Class A and B1 receive zero subsidy, whilst Standard Ward Class C receives the highest at 85% (SingHealth, 2019). The table below shows the various costs and features of the different ward types.

Table 7: Example of ward-classification and subsidy rates in Singapore based on SingHealth

Ward type	Room types	Rates (SGD)	Subsidy
Standard Ward Class C	9-bedded room	From S\$35 per day	Up to 85%
Standard Ward Class B2	5 or 6-bedded room semi-automated electric bed.	From S\$79 per day	Up to 65%
Standard Ward Class B1	4-bedded room	From S\$251.45 per day	None
Standard Ward Class A	Single room	From S\$466.52 per day	None

Source: (SingHealth, 2019)

Patients tend to choose ward type A or B1 for many reasons, but an important benefit is the freedom to choose one's own medical specialists. The hospital itself also benefits from these patients as they are able to charge higher rates, with potential budget surpluses accrued being reinvested in research, teaching and asset replacement.

### Singapore's private sector

80% of Singapore's primary healthcare providers consist of smaller private clinics. On the secondary and tertiary level Singapore has a relatively small private health sector. Prominent private healthcare providers are the Mount Elizabeth Hospital, Gleneagles Hospital and Parkway East Hospital operated by Parkway Pantai Limited, part of Malaysia's IHH Healthcare Berhad Group ([Annex 4](#)). Another prominent provider is the Raffles Medical Group (RMG). The Group owns and operates a network of family medicine clinics, a tertiary care private hospital, insurance services and a consumer healthcare division.

## 4.4 Health Expenditure and Financing

For more than a decade the annual health budget, announced by the Singaporean government at the start of each fiscal year (1 April – 31 March) has shown steady growth (Singapore Budget, 2018). However, in the latest 2018 – 2019 budget, the government announced for the first time an estimated decline in growth (Singapore Budget, 2018). This is reportedly due to a lower projected development expenditure for the year. Of the \$10.23 billion total expenditure of the MOH for 2018, \$8.95 billion or 87.5% is for operating expenses and \$1.28 billion or 12.5% is for development expenses.

Table 8: Total health expenditure (THE) between 2015-2018 in Singapore and the Netherlands.

Total expenditure & budgets	Singapore	Netherlands
	2017	2017
THE 2015	15.5 billion	92.9 billion
<i>Gov budget</i>	6.8 billion	16.7 billion
THE 2016	17 billion	95.5 billion
<i>Gov budget</i>	7.8 billion	16.7 billion
THE 2017	-	97.5 billion
<i>Gov budget</i>	10.2 billion	16.4 billion
THE 2018 *estimated	-	-
<i>Gov budget</i>	11.7 billion	17.3 billion

Source: (Statistics Netherlands, 2017) (Nederlandse Vereniging van Ziekenhuizen, 2018) (BMI, 2017) (Singapore Budget, 2018)

### The 3M's: Medisave, Medishield Life & Medifund

Although the public sector is the main provider of health services in Singapore, a large portion of private health expenditure is private (BMI, 2017). This is due to the core principle of the Singaporean health system, which emphasises personal responsibility of one's own health leading to a co-payment structure in which the Singaporean government subsidises use of the health system by citizens. Singapore has implemented progressive elements into its health system. As a result, all Singaporeans have access to health care, no matter their financial standing. The finance system used to provide these subsidies is known as the 3M system: Medisave, Medishield and Medifund.

- **Medisave** is part of Singapore's Central Provident Fund (CPF), a compulsory comprehensive savings plan for working Singaporeans and permanent residents. Medisave is primarily used to fund this portion of the population's retirement, healthcare, and housing needs. During its latest measurement in September 2018, the CPF counted 3.9 million members (excluding children and retired individuals) with positive balances (Ministry of Manpower, 2019). Every time a working Singaporean citizen or permanent resident makes use of a health service, this savings account is used as a first source of funding. It is estimated that once the average Singaporean reaches the age of 56-60 years, they will have accumulated sufficient funds in their Medisave account to cover up to ten hospitalisations. However, if one's Medisave account does not contain sufficient funds to cover medical costs, citizens may use accounts of family members. If this still does not cover the medical costs, a citizen will be granted access to Medishield Life to cover the costs.
- **Medishield Life** provides lifelong universal protection against large hospital bills, specifically long-term care costs. Currently around 90% of the Singaporean population is insured and pays relatively low monthly premiums into Medishield, which increases as a citizen grows older. Medishield can be used indefinitely but does set ceilings on pay-outs for every given bill. If a citizen cannot afford the private co-payment required by Medishield Life, they can make use of Medifund, a government endowment fund which works as a safety net.
- **Medifund** uses its investment returns to buy health delivery from specific approved institutions. MediFund Silver and MediFund Junior are carved out from MediFund to provide more targeted assistance for the needy elderly and the young respectively.

The actual amount of assistance applicants can receive depends on the medical bill incurred, one's financial, health and social circumstances, as well as the circumstances of one's family. Aside from public healthcare, a portion of the Singapore population makes use of private health insurance products, which are often offered as benefits from employers. A common public-private hybrid are Integrated Shield Plans (ISP). These plans combine the benefits of Medishield Life with specific benefits for private insurance packages (Ministry of Manpower, 2019).

The 3 M's and especially Medisave and Medishield Life see a large increase in use indicating an increase in the health demand of the Singaporean population. Between 2010 and 2017 the total net amount withdrawn increased with more than 700 mn S\$.

Table 9: Net Amount Withdrawn under Medisave Scheme, MediShield/MediShield Life from 2010 – 2016.

Year	Net amount withdrawn (SGD)
2010	1,236,100,000
2011	1,362,300,000
2012	1,393,800,000
2013	1,563,500,000
2014	1,735,200,000
2015	1,845,100,000
2016	1,995,400,000

Source: (Statistics Netherlands, 2017) (Nederlandse Vereniging van Ziekenhuizen, 2018) (BMI, 2017)

The Singapore Ministry of Health currently provides an insurance scheme for people with severe disabilities called Eldershield. All Singapore citizens and permanent residents who reach the age of 40 are automatically covered for disabilities under Eldershield, which are especially prominent during old age. However, the MOH is rolling out a new disability insurance scheme called CareShield Life in 2020, which is set to replace the Eldershield. CareShield Life has higher pay outs that increase over time with no cap on pay out duration, to provide better protection against the uncertainty of long-term care costs should one become severely disabled (MOH, 2018). For more information on health funding schemes view [Annex 3](#).

#### 4.5 The future of Singapore’s health system: the 3 Beyonds

To make healthcare affordable in the future, without negatively impacting healthcare quality, Singapore’s MOH has devised the 3 Beyonds initiative which laid out three action lines:

**Beyond healthcare to health:** A healthier nation requires less of the healthcare system. This is the thought behind the 1st of the 3 beyonds which focuses on preventive measures through for example campaigns, initiatives and subsidies for screenings for non-communicable diseases, healthier nutrition, more active lifestyles, etc.

**Beyond hospital to community:** For patients, the community and home in many cases are the best environments to heal. To keep patients out of the hospital as often and long as possible and so increase quality while saving on expensive hospitalisations, the MOH seeks to bring healthcare closer to home through outreach programmes, post-discharge visits and innovative technologies and concepts.

**Beyond quality to value:** Echoing the principles of value based healthcare, Singapore aims to increase the value of its health system for every patient while lowering the costs. To achieve this, Singapore’s MOH looks to make informed decisions regarding the diagnosis, treatment and rehabilitation of patients. through developing and implementing health information technology and health technology assessment tools.



Figure 8: Outline of 3 Beyonds (MOH, 2017)



## 4.6 Health Infrastructure

In 2018 Singapore's public healthcare sector was reorganised from 6 regional health systems to 3 integrated clusters: [National University Health System](#) in the west, [National Healthcare Group](#) in central Singapore and [Singapore Health Services](#) in the east. Each cluster offers a full range of services encompassing acute hospital care, primary care and community care. [Annex 4](#) provides an comprehensive overview of the integrated clusters. In line with their affordable health care principles, Singapore has integrated a form of managed competition between and within the clusters to increase the efficiency of its health provision.

Primary health services in Singapore are mainly delivered through approximately 2 100 private general practitioners and 20 polyclinics of which roughly 80% belong to the private sector. The polyclinics function as one-stop healthcare centres and deliver subsidised primary health services. The average Singaporean does not make optimal use of primary health services and prefer to consult specialists for their healthcare needs. The government is looking for ideas and strategies to stimulate the use of primary health care services (MOH, 2018). One initiative which was set-up by the MOH in 2017 is the [Primary Care Networks](#)-scheme, which encourages GP's to band together to enable them to supply more complete health services within a group.

Acute secondary and tertiary healthcare are mostly provided by the public sector which operates 11 general hospitals and 12 specialist hospitals and institutions in Singapore. These facilities meet the highest international standards and have access to excellent staff and equipment. Prominent private providers of secondary and tertiary care are the Mount Elizabeth Hospital, Gleneagles Hospital and Parkway East Hospital operated by Parkway Pantai Limited, part of Malaysia's IHH Healthcare Berhad Group. Another prominent provider is the Raffles Medical Group.

For non-complicated medical procedures, rehabilitation and geriatric care, Singaporeans have access to 12 community hospitals and health facilities. Community hospitals are semi-public hospitals typically managed by charities and faith-based organisations (MOH, 2017).

Table 10: Health Facilities in Singapore and the Netherlands.

	Singapore 2017	Netherlands 2016
General/specialist hospitals	23	84
<i>Hospital locations</i>	23	103
<i>Public</i>	9	-
<i>Not-for-profit</i>	1	-
<i>Private</i>	8	-
<i>Polyclinics</i>	20	130
General practitioner clinics	2 102	7 917
Nursing homes	73	913
Pharmacies	243	1 994
Dental clinics	1 111	8 650

Source: (Statistics Netherlands, 2017) (Nederlandse Vereniging van Ziekenhuizen, 2018) (BMI, 2017) (Singapore Budget, 2018)

The number of beds in Singapore's health facilities has steadily grown over the last 5 years leading to relative short waiting times (Singapore's MOH shows actual measurements of waiting time [here](#)). Current figures and reports however indicate that the capacity growth of Singapore's health infrastructure lags behind the growth of health demands in Singapore. This phenomenon in Singapore is described as the "[bed crunch](#)" (ValuePenguin, 2018). Although public hospitals in Singapore are being expanded some reports predict these may not be sufficient to sustain growing hospital admission rates, specifically for geriatric patients.

## Elderly care: nursing homes and long-term care facilities

Long-term care services in Singapore are delivered through a network of government nursing homes, eldercare centers, daycare centers and home care places. The private sector is also a prominent provider of healthcare to Singapore's elderly population and includes both large voluntary (faith-based) welfare and aged care service providers and for profit providers. Find actual figures [here](#) (MOH, 2018; Rashith & Khalik, 2018).

Singapore has set the goal to reach large expansions of long-term care services in 2020 (Table 12). Singapore is on track to realise this ambition (SBR, 2018).

Foreign domestic workers play a prominent role in homecare services ([Section 4.7](#)).

Table 11: Summary of long-term care services in Singapore

Setting	Background	Services
<b>Residential</b>		
<i>Residential Services/hospitals</i>	Stay-in facilities for seniors which cannot be cared for in their own homes.	Nursing homes
<b>Non-Residential</b>		
<i>Home-based services</i>	Home-based services provided within the homes of frail and home-bound elderly.	Home medical care Home nursing care Home personal care Home therapy Home palliative care Meals-on-Wheels Transport/escort services
<i>Centre-based services</i>	Centre-based healthcare services cater to older persons who require care services during the day, usually on a regular basis, while their family caregivers are at work.	Rehabilitation services Dementia day care services Day care services Nursing services

Source: (MHLW,2014)

Table 12: Development of places for elderly care

Type	2011	2014	Targeted (2020)
<b>Home Healthcare Places</b>	3 800	6 500	10 000
<b>Home Palliative Care</b>	3 800	5 000	6 000
<b>Eldercare Centres</b>	2 100	3 100	6 200
<b>Nursing Home Care</b>	8 800	9 800	17 000

Source: (MHLW,2014)

## 4.7 Health Professionals

One of Singapore's major challenges are shortages in its health workforce (Rashith & Khalik, 2018).

### Doctors and Nurses

Singstat 2018 reports around 13 386 doctors (8 573 in the public sector and 4 107 non-public) to be active in Singapore in 2017. This was a growth of roughly 2 000 doctors compared to 2014. Around 32 672 registered nurses and 8 631 were active in 2017, showing a growth of around 4 000 and 300 since 2014. [Annex 5](#) provides a comprehensive overview of Singapore's health workforce.

The MOH has reported that it needs another 30 000 more healthcare workers to cater to an increased health demand and supply in 2020. The tension is that this demand in healthcare practitioners comes amid a tight labour market. There are increasingly fewer young workers to replace those who retire, and families are becoming smaller as fertility rates drop. Meanwhile the number of aged Singaporeans continue to grow. In order to develop a new healthcare workforce, the Singapore government is encouraging citizens across all ages and experience levels to join the healthcare sector. This includes the SkillsFuture Initiative and the provision of scholarships (Khalik, 2016).

## Foreign Domestic Workers

Traditionally, foreign domestic workers play a prominent role in providing homecare by taking care of Singapore's families, specifically children, the elderly and persons with special needs. HelperChoice reported around 240 000 foreign domestic workers in Singapore, which equates to around one in five households having a live-in helper (HelperChoice, 2016).

Most foreign carers lack the training to be able to care for the increasingly complex needs of the aged. The Agency for Integrated Care (AIC), amongst other institutions, now provides training courses for helpers to educate them on special health needs of vulnerable persons (Lai, 2016). However, as the home countries of the helpers develop, the cost of living in Singapore increases, and the wages for helpers in other countries such as Hong Kong increase, the flow of foreign domestic workers to Singapore is expected to decrease.

## 4.8 Further Reading

If you would like to expand your understanding of the Singaporean health system, the following publications provide excellent overviews.

- [Affordable Excellence: The Singapore Healthcare Story](#)
- [The Healthy Living Master Plan](#) was formed in September 2014 to look into making healthy living accessible, natural, and effortless for all Singaporeans.
- [Singapore Healthcare Masterplan 2012-2020](#) showing the development of Singapore's health system and infrastructure
- [Lien Foundation publications](#) provide insight in Singapore's elderly care, long term care, workforce etc.
- [Ministry of Healthcare Transformation programmes](#) give Singapore's outlook on healthcare through the 3 Beyonds-Policy
- [Ministry of Health's response to the citizens' jury for the war on diabetes](#)

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## 5 MARKET STRUCTURE

With one of the most transparent Life Sciences and Health (LSH) markets in the world, conducting business in Singapore is considered relatively straightforward. Singaporean decision-makers aim to develop Singapore such that it becomes an all-round hub of excellence in all areas. To accomplish this goal, Singapore proactively looks to partner with foreign organisations. In a highly competitive market, Singapore critically selects potential partners for cooperation, with parties who are able to show long-term commitment being favoured. If parties are able to meet these requirements, the potential returns are great as Singapore is often referenced as a benchmark for countries in the region. In addition, many companies use Singapore as a base in to expand into rest of the ASEAN region.

### 5.1. Business Climate

Singapore is ranked in 2<sup>nd</sup> place in the World Bank Ease of Doing Business Index, scoring higher than other countries in the region such as Malaysia (15<sup>th</sup>), Thailand (27<sup>th</sup>), and Vietnam (69<sup>th</sup>). The Netherlands is ranked 36<sup>th</sup> place in this index. Since Singapore is a small country, it is heavily dependent on imports. More than 99% of all Singapore imports enter the country duty-free (Export.gov, 2018). In order to enable easy access for the import of goods and services, Singapore has one of the most liberal, stable and transparent tax and trade regimes in the world. Combined with top international rankings for their infrastructure and human capital, Singapore has created a favourable environment for foreign businesses and investments.

In terms of medical equipment and pharmaceuticals, Singapore is used to rely on imports and tends to source the very best products available on the market. However, significant competition among foreign suppliers and thorough selection procedures can make conducting business in Singapore challenging. A key stakeholder is [MOH Holdings](#), that is responsible for the public procurement systems and organisation of health challenges to identify and select potential suppliers and partners to co-create more new solutions that fit the Singaporean context. Another popular route to market is to access the health system from the bottom-up, that is, by working with doctors and innovation managers from the public hospital clusters.

Market access is usually obtained by appointing a sales agent or distributor. Given the small market size of the island state, most potential distributors request exclusive rights to sell the product. It is not uncommon that they will also ask for distribution rights for additional South East Asian countries, since Singapore serves as a gateway into the region. Careful selection of a distributor's organisational culture, product range, and network in Singapore and other South-East Asian countries is therefore important to consider.

For innovative technologies which need piloting within the Singaporean health system, close proximity to the Singaporean market is key. To get closer to the Singaporean market LSH organisations can look into establishing an ongoing presence in Singapore through a Singaporean subsidiary or a branch office.

#### Text box 2: Key Characteristics of Singaporean Business Culture and Market

- Generally open-minded, pragmatic, and action-oriented market.
- Thorough and selective approach towards new solutions.
- Preference for suppliers with long-term commitment to Singapore.
- Preference for co-created solutions resulting in (a touch of) Singaporean content.
- Quality is the number one consideration.
- Strong relationships and personal trust are of utmost importance when doing business.
- After-sale support is extremely important.
- Once recognized and approved, new medical technology tends to be adopted quick in Singapore.
- It is important to understand Singapore's before asking questions and starting discussions.
- Social and target driven health system (principle of affordable excellence).

## 5.2. Singapore's health industries

As is the case in the Netherlands, Singapore as an advanced market, is a relative small but growing Medtech and Pharma hub, geared towards global and regional exports while its domestic markets are mainly supplied by foreign companies (MI, 2017). Especially R&D activities in Singapore's health industries are ramping up as the government invests in the business climate for LSH-start-ups and multinationals move R&D facilities to Singapore. Local established and emerging players in Singapore's health industry are located at the [JTC Medtech Hub](#). In manufacturing medical and pharmaceutical industries show a positive outlook after a dip in 2017 (Kitano & Geddie, 2018). The Economic Development Board Singapore provides an [comprehensive overview](#) on local operating Life Sciences & Health industries.

## 5.3. Market Access

### Local Registrant: In-Country Representative

Medical device products are regulated by the Medical Device Branch of the Health Sciences Authority (HSA). Before a device can be sold on the Singaporean market, it must pass pre-market assessments, as well as manufacturing control and post-market vigilance tests. All foreign medical device manufacturers must appoint a registrant who will submit their device application and present them to the [HSA](#). The registrant needs to be a Singapore-based company, registered with the HSA, with local staff. The registrant thus plays a crucial role in device registration and one should therefore select a registrant with utmost care. Importantly, registration can only be transferred from one registrant to another if the current registrant agrees to relinquish it. International consultants are permitted to act as in-country representatives. For more information connect with the [Health Sciences Authority](#).

### Product Registration & Reimbursement

In 2012 the Singapore HSA enacted the Health Products (Medical Devices) (Amendment) Regulations. These were developed after extensive reviews of European, American, Canadian, and Australian frameworks. Singapore's online customs system, [TradeNet](#), classifies medical devices for import permit applications. Unless exempted from product registration, all medical devices, including Class A and B medical devices, that are imported and supplied must be listed on the Singapore Medical Device Register (SMDR). The SMDR is a database of all medical devices registered for use on humans under the Health Product Act. The register also includes medical devices registered with HSA before 31 March 2007 under the Voluntary Product Registration Scheme (VPRS) and is evaluated in accordance to VPRS requirements.

In 2014 the Asian Economic Ministers (AEM) commended the completion of the ASEAN Medical Device Directive (AMDD). Although no timeline was set, the goal of the AMDD is to have all 10 member states, i.e. Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam, adopt the same framework for medical devices. This will enable easier access to medical devices in the ASEAN region.

### Co-creating Solutions

Health solutions offer maximum benefit when they can be implemented seamlessly into health systems and health infrastructure. In order to achieve this in Singapore, it is important to explore models of co-creation where hospitals work directly with suppliers, and solutions are tailored to meet contextual requirements. The Singaporean MOH encourages co-creation activities and invites suppliers to discuss piloting solutions. For example, in the sphere of telehealth solutions, the MOH has set-up a 'regulatory sandbox' in which carefully selected companies are permitted to pilot their solutions. If solutions are still in the developmental stage, the MOH and hospitals invite companies to move their R&D to Singapore in order to grow solutions within the Singaporean health system.

### Useful Organisations for Market Entry and Further Information

Useful organisations to explore and enter the Singaporean health system and market are listed in [Annex 7](#). Key events are listed in [Annex 8](#).

- The [Embassy of the Kingdom of the Netherlands in Singapore](#) , promotes and supports cooperation between Singapore and the Netherlands.
- The [Netherlands Enterprise Agency](#) (RVO.nl) encourages entrepreneurs in sustainable, agrarian, innovative and international business. It helps with grants, finding business partners, know-how and compliance with laws and regulations.
- The central organisation to engage with in order to introduce and pilot innovative solutions in healthcare in Singapore is the [Ministry of Healthcare Transformation](#) (MOHT). MOHT has a mandate to take an experimental and evidence-based approach to redesigning healthcare in Singapore.
- [Economic Development Board of Singapore \(EDB\)](#) EDB helps Dutch entrepreneurs and investors to access opportunities in Singapore and Asia. EDB has opened an office in Amsterdam.
- The [Enterprise Europe Network Singapore \(EEN Singapore\)](#) , provides information and support for SMEs in the fields of international business cooperation, innovation, knowledge and technology transfer and cooperation in EU programmes.

#### 5.4. Medical Supply Chain & Procurement

Medical facilities generally procure equipment and pharmaceuticals at the cluster level through group purchasing organisations like the National University Health System (NUHS) Group Purchasing Office (GPO), Universal Health Services GPO, [Singhealth GPO](#), and National Health Group (NHG) GPO. For Community Care Institutions, the [Agency of Integrated Care](#) has set-up a shared procurement programme. Many of the clusters make use of an eProcurement System via the Ariba Discovery / Network such as the [NUHS procurement portal](#).

#### 5.5. Singapore Trade and Investment Agreements

The European Union and Singapore have a Free Trade Agreement, as well as an Investment Protection Agreement. These agreements aim to:

- The EU-Singapore trade and investment agreements were signed on 19 October 2018. Following the European Parliament's consent to the agreements on 13 February 2019, the agreements will now continue their ratification process in line with the procedures foreseen in the EU Treaties to allow for their entry into force.
- In 2018 the Enterprise Singapore and the Netherlands Enterprise Agency signed a [MOU](#) to set a two-year agreement to create more opportunities for Singapore and Dutch companies to "collaborate in the area of innovation and market access, thereby expanding each other's capabilities and markets in Europe and Asia'.



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## 6 ALIGNING DUTCH STRENGTHS WITH SINGAPOREAN OPPORTUNITIES

Whilst [Chapter 2](#) of this report shows the interest of the Dutch Life Sciences and Health sector in Singapore, Chapter 6 aligns Dutch strengths in the sector with Singaporean opportunities.

### 6.1. Mobility & Vitality

Mobility & Vitality encompasses solutions which help people live and age healthily. Dutch organisations within this strength offer solutions in areas such as community care concepts, (tele)monitoring systems, and mobility aids and typically partner with organisations which deliver elderly care, primary health care, rehabilitation services and care to vulnerable groups, such as mental health and special needs patients.

#### Trends

Singaporeans have one of the highest average life expectancies (83.0) and healthy life expectancies (76.2) in the world. They tend to be very health literate and have access to a well-performing health system. However, Singapore is confronted with three important trends that impact the market for solutions in the domain of 'mobility & vitality':

- **A rapidly ageing society:** The number of Singaporeans of over 65 years old double from 220 000 in 2000 to 440 000 today, and is expected to increase to 900 000 by 2030. On a population of only 5.8 million, such growth in the older segments of society is bound to have significant effects on the utilisation of Singapore's health infrastructure. Singapore therefore expanded geriatric services in acute hospitals and grew the long-term care infrastructure ([Section 4.6](#)). To provide easier access to this steadily growing long-term care infrastructure and services, Singapore introduced and restructured insurance schemes such as [ElderShield](#), [CareShield Life](#) and the [Merdeka Generation Package](#).
- **An increasing burden of non-communicable diseases:** Although the burden of NCD's is lower in Singapore than most OECD-nations, authorities have observed a sharp rise in the diagnoses of diabetes, cancers and cardio vascular diseases that can be attributed to lifestyle and behaviour risk factors. Government bodies such as the 'Ministerial Committee on Ageing' and the 'Health Promotion Board' launched actions plans such as [the Healthy Living Master Plan](#), the [Action Plan for Successful Ageing](#), and the [War on Diabetes](#), which are co-designed with academia, industry, unions, civil society and welfare organisations such as the [Lien Foundation](#). These large scale initiatives are characterised by a 'holistic approach' towards healthy and active living and ageing, including aspects like education and awareness, healthy employment, environment, and social protection and inclusion.
- **Addressing the neglected burden of mental disorders:** In order to reduce the stigma attached in seeking mental health care services, the [National Council for Social Services](#) launched the '[Beyond The Label](#)' campaign (National Council of Social Services, 2019). In 2017, the MOH launched a [five-year Community Mental Health master plan](#) together with an additional S\$ 160 million in spending. Targeting 2021, the plan focuses on early identification, development of mental health and dementia services in 50% of the polyclinics, strengthening integrated health and social care services in the community via community outreach teams, and improved 'after-care' support (Institute of Mental Health, 2015).

### Text box 3: 'Nursing Homes of the Future'

In 2020, two new nursing homes for dementia patients with a total of 570 beds will be opened in Bukit Batok (Bukit Batok Care Home) and Bukit Panjang (Senja Care Home). Both homes have been designed to create more dementia-friendly spaces and more comfortable environments without compromising the affordability of care. [Read more.](#)

Under the pilot "Nursing Homes of the Future", Singapore's MOH experiments with new nursing home designs and technologies to improve long-term care services. [Learn more.](#)

## Opportunities

Areas in which Singapore is open to cooperate are:

- enabling ageing and healing at home and within the community. Singapore looks at technologies that facilitate telemedicine, telemonitoring, personal health management, prevention, and patient engagement.
- improving the quality and efficiency of elderly care.
- implementing solutions to increase the coordination between and integration amongst different care workers.
- solutions in the field of chronic disease management and multimorbidity.
- e-Mental health solutions, including telemedicine and telemonitoring of mental conditions.

## Market Entry Considerations

- Although being very selective, Singaporean health stakeholders tend to be very open, innovation-minded and accessible when it comes to exposing themselves to (proven) concepts and solutions in the field of healthy ageing, long-term and senior care. Examples of important stakeholders to engage with are:
  - [Ministry of Health](#)
  - [Ministry of Health Transformation](#)
  - [Agency for Integrated Care](#)
  - [Health Promotion Board](#)
  - [Lien Foundation](#)
  - Faith-based welfare and aged care service providers, such as [Catholic Welfare Services Singapore](#)
  - [Jaga-Me Home Care Services](#)
- 'Co-creation' seems to be key in Singapore, both in the public and private sector. New solutions need to be optimised for and integrated in the Singaporean context. Long-term commitments and local presence tend to be important considerations before Singaporeans engage in co-development or pilot projects.
- The MOH offers the opportunity for (regulatory) '[sandbox](#)' initiatives in which new and innovative models and services can be developed and refined in a safe and controlled environment.
- [National Innovation Challenges](#) (NIC) offer state-sponsored R&D grants via call for proposals. The [National Innovation Challenge on Active and Confident Ageing](#) is organised by the [National Medical Research Council](#) and although many calls are already closed, funded projects might provide interesting entry points to (Singaporean) stakeholders working on the same type of solutions.
- The [Agency for Integrated Care](#) has designed a [Shared Procurement Programme](#) to help community care institutions, including nursing homes, community hospitals and hospices, with the procurement of medical supplies. [Section 5.4. Medical Supply Chain & Procurement](#) provides more insights on general procurement.
- The [National Health Innovation Centre Singapore](#) provides publicly-funded clinical research with translation funding and strategic guidance to accelerate healthcare innovation. Multiple projects in [medtech](#) and [biopharma](#) focus on working towards market-ready solutions for the growing burden of NCDs.

- The [Institute of Mental Health](#) is Singapore's leader in mental health, operating a 2 000 acute bed tertiary psychiatric hospital, making use of a growing number of e-consultations, and driving change via various (training) programmes for GP (e.g. the [Mental Health GP Partnership Programme](#)) and community outreach teams to identify and manage mental health conditions.

## 6.2 Medical Devices

The strength 'Medical Devices & Supplies' encompasses solutions which improve health delivery. Organisations within this strength offer solutions for diagnostics, treatment and related processes, and typically partner with providers of primary, secondary and tertiary care services and/or intermediate organisations.

### Trends

With an estimated market value of USD 580 million in 2016 (BMI, 2017), Singapore's medical device market is the smallest market when compared to Malaysia, Thailand and Vietnam. Singapore's medical device market shows one of the fastest growth rates with a CAGR of 11.0%, compared to 5.0% in the USA, 3.9% in China, and 3.5% in the Netherlands. It is expected that this trend will continue beyond 2019, reaching a value of USD 857 million by 2020 (BMI, 2017). Singapore is highly dependent on imports of medical devices (85% is imported) due to a relatively small domestic industry. The Netherlands is currently a relatively small but growing player in Singapore's medical device market, ranking 12<sup>th</sup> with 1% of Singapore's market share compared to 31.8% for the USA, 14.1% for Mexico, and 9.5% for China (BMI 2017).

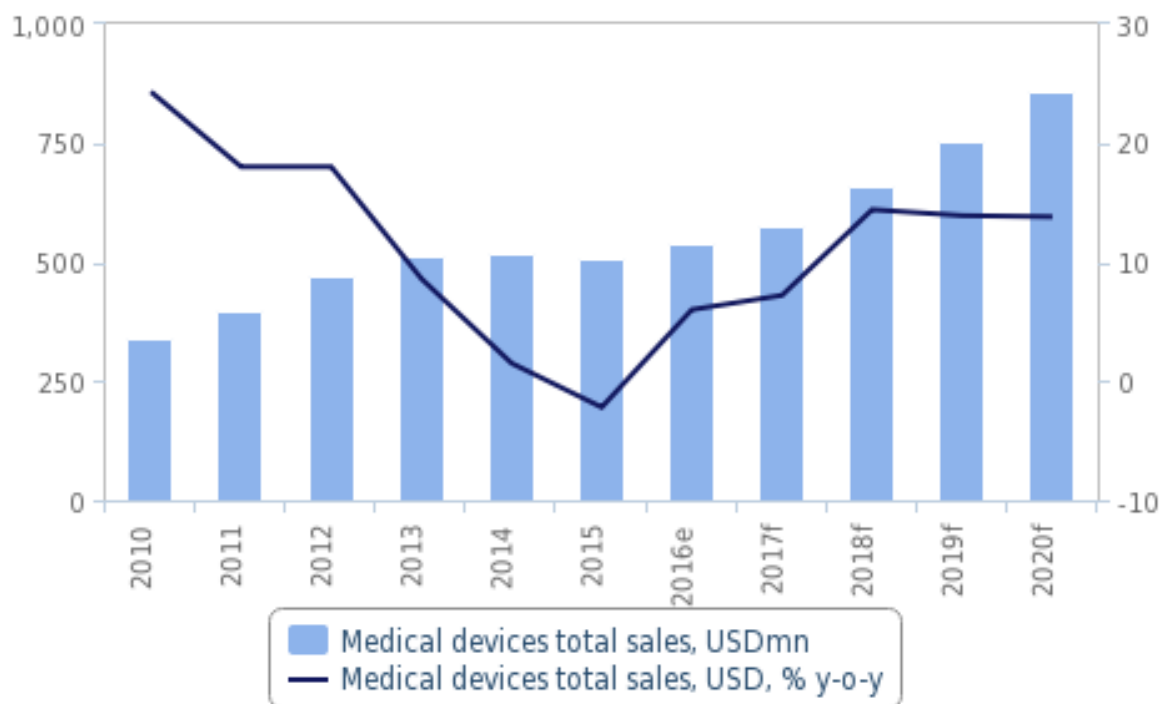


Figure 8: Singapore Medical Device Sales (BMI, 2017)

One of the drivers of growth is the [Singapore Healthcare Masterplan 2012-2020](#), which includes investments in new hospitals, polyclinics and clinics, expansion of existing hospitals and aged care services and facilities, and overall quality improvements. It has been argued that this recent growth of infrastructure might not yet be sufficient to cater for the increasing need for healthcare services, which is indicated by undesirable waiting times and [experienced bed and manpower crunches](#). Future investment are therefore expected.

## Opportunities

- Small, but stable and growing market which values quality and innovative approach, and serves as an entry point for the ASEAN region.
- Strong demand for medical devices that contribute to productivity and efficiency of diagnosis and treatment services.
- Openness to co-create solutions that are able to revolutionise current ways of working. Specific areas of interest are advanced medical devices, robotics and assistive technologies.
- Demand for medical devices and technologies that contribute to Singapore's ambition to create smart wards.
- Providing health services outside the hospital through smart home technology for independent and assisted living.

## Market Entry Considerations

- Singapore's medical device market is highly competitive and therefore saturated with both basic supplies and advanced medical equipment. It is advised to access the market with a solution that is able to compete on quality and cost-effectiveness, as key decision-makers tend to decide on those criteria.
- As mentioned in [chapter 5](#), when it comes to innovative medical devices, Singapore values co-creation over flat sales to enable optimal benefit of medical devices by integrating solutions in the health infrastructure. This also includes piloting extensively before committing to larger projects. In some cases, these pilots are eligible for funding through the MOH. A quote from an local innovation officer of a prominent hospital perfectly summarised this mindset: ***"When you want to come to Singapore, don't bring your sales persons, bring your developers!"***
- The [Ministry of Health Care Transformation \(MOHT\)](#) has been launched in January 2018 to take an experimental and evidence-based approach to redesigning healthcare in Singapore. The MOHT provides an entry point for organisations looking to implement innovative concepts and technologies in the Singaporean health system.
- Hospital clusters are also open to engage in co-development and pilot projects for innovative medical devices. A senior officer from another hospital cluster: ***"Companies with innovative solutions are encouraged to partner with hospitals. If hospital pilots excite government this will increase the chances for public support"***.
- Singaporeans are pragmatic and do not prefer specific countries with whom they would like to work to improve their health system. Demonstrated results are all that matter. Singaporean health decision-makers however show a keen interest in the Dutch health system due to its reputation.
- Local distributors indicate that Singapore is very innovative, yet competitive market which requires a careful selection of partners that really have the capabilities and network to deliver progress and results.
- In order to receive support for a new (pilot) project, time must be taken to develop and establish relationships in Singapore. A 'chaperone' (key opinion leader) can be instrumental to start a pilot.
- The [Agency for Care Effectiveness \(ACE\)](#) is responsible for health technology assessment.

## 6.3 eHealth

The Dutch has strengths in the eHealth sphere, which encompasses solutions which help connect actors in health systems, often through the exchange and storage of health information. Organisations within this strength offer solutions in health information exchange, interoperability, telemedicine, serious gaming and personal health monitoring. These organisations typically partner with health care providers and consumers.

## Trends

Singapore is the continental leader in digital health (JASEHN, 2018). The [Integrated Health Information Systems \(IHIS\)](#) is the central body that is assigned to digitise, connect and analyse Singapore's health ecosystem. It manages highly integrated systems and IT expertise across the public healthcare sector, including all 9 public hospitals, 8

national specialty centres and 20 polyclinics. Since 2011, the [National Electronic Health Record \(NEHR\)](#) has been progressively deployed to both public and private healthcare institutions across Singapore to collect, store and being able to share summary patient data across different authorised health professionals.

Singapore vision for its digital health infrastructure is described in the [Health IT Master Plan \(HITMAP\)](#). In this plan Singapore announces to move its entire healthcare information exchange system to the cloud. This cloud will store healthcare information from different hospitals and will have enough capacity to host additional applications in the future. Some of these additional applications include population profiling through improving data analytics capabilities, informing prevention programmes through population data, and improving visibility of the costs and outcomes of healthcare to both professionals and patients (IHIS, 2019). Cybersecurity is a (political) hot topic in Singapore. There are reports stating that MOH servers experience on average 400 cyber-attacks per day.

Given its advanced ICT infrastructure and digitally literate population, Singapore tends to very open to 'eHealth innovations' and provides interesting opportunities to co-develop and pilot innovative solutions within the Asian context.

#### Text box 4: Exploring of tele-health solutions

Singapore is actively piloting tele-health solutions. An examples of a multi-annual programme is the [Smart Health-Assist \(SHA\) Programme](#), which is a cooperation between the MOH and the [Infocommunications Media Development Authority of Singapore \(IDA\)](#) which started in 2015.

Examples of finalised pilots include:

- The [NUHS tele-health programme](#) in which 1 300 patients with hypertension, diabetes and heart failure were monitored online.
- Singapore-based leading long-term care technology solutions provider Napier Healthcare Solutions study towards the [effectiveness of tele-health in the management of chronic illness among the elderly](#).

## Opportunities

- Implementing telemedicine as a tool to increase the accessibility of healthcare services and mental health services. An examples of a central coordinated pilot for a video consultation system included [IHIS](#), [Institute of Mental Health \(IMS\)](#), [KK Women's and Children's Hospital \(KKH\)](#), and [Tan Tock Seng Hospital \(TTSH\)](#), which have been rolled out to other public healthcare institutions and residential care partners afterwards. An example of a smaller scale pilot with no direct involved of the [IHIS](#) is [Thye Hua Kwan Moral Society's Day Rehabilitation Centre](#) teaming up with telemedicine provider [Doctor Anywhere](#).
- Solutions that contribute to improving the (inter)operability of the National Electronic Health Record (NEHR). [IHIS](#) last series of consultations sessions with progressionals and patients were held in the beginning of 2018.
- Artificial Intelligence (AI), robotics and assistive technologies which increase the productivity and efficiency of the health infrastructure and health workforce.
- E-learning tools to increase the capacity and efficiency of (continuous) medical education.
- Solutions that contribute to cybersecurity.
- Demand for ICT technologies that contribute to Singapore's ambition to create smart wards.

## Market Entry Considerations

- [IHIS](#) functions as a central stakeholder to engage the Singaporean eHealth market. Tenders and call for proposals are shared via the [IHIS Procurement website](#).

- The [Ministry of Health Care Transformation \(MOHT\)](#) has been launched in January 2018 to take an experimental and evidence-based approach to redesigning healthcare in Singapore. The MOHT provides an entry point for organisations looking to implement innovative concepts and technologies in the Singaporean health system.
- The Singaporean MOH has also created a 'regulatory sandbox' under the MOH's new [Licensing Experimentation and Adaptation Programme \(LEAP\)](#) for health providers to pilot telemedicine tools.
- Various initiatives focus on the development and testing of eHealth innovations. Examples include the [National HealthTech Challenge](#), which provides a platform that offers professionals from Research Institutes, Institutes of Higher Learning, and commercial entities (e.g. start-ups, SMEs and MNCs) the opportunity to work on challenges in public healthcare, the [National Innovation Challenge \(NIC\)](#) which focuses on AI, and [National Health Innovation Centre projects](#) focusing on smart MedTech.
- The Singaporean eHealth market values co-creation over flat sales. To best integrate solutions in its public health system, Singaporean decision-makers tend to prefer to work with suppliers in pilots before committing to larger projects. In some cases, these pilots are eligible to obtain funds through the Ministry of Health.
- When it comes to successfully creating market demand for more complex solutions, a 'dual approach' is recommended. This entails a top-down approach by engaging with the Ministry of Health and a bottom-up approach by engaging with hospitals. This process takes a lot of time and establishing local presence is highly recommended.
- The [Smart Nation and Digital Government Office](#) stimulates health initiatives such as the [HealthHub](#) that provides a web portal and mobile application that is slated to be Singapore's first one-stop online health information and services portal.

## 6.4 Hospital Design and Build

The strength 'Hospital Design and Build' encompasses solutions which help public and private health systems to expand and improve health infrastructure. Organisations within this strength offer solutions in design (architecture), engineering, build, planning of operations and maintenance, and project management. Providers of such solutions typically partner with public or private hospital project developers and assigned project managers.

### Trend

In 2012, the Ministry of Health launched the [Healthcare 2020 Masterplan](#) to address the shifting health needs of Singaporeans and to counteract growing waiting times. Targets include an expansion to 6 200 day care places, 10 000 home care places, and 17 000 nursing home beds by 2020 as shown in [Section 4.6](#) (Rashith & Khalik, 2018). The main construction activities will be finished with the opening of Woodland Health Campus in 2022 (Min Kok, 2016).

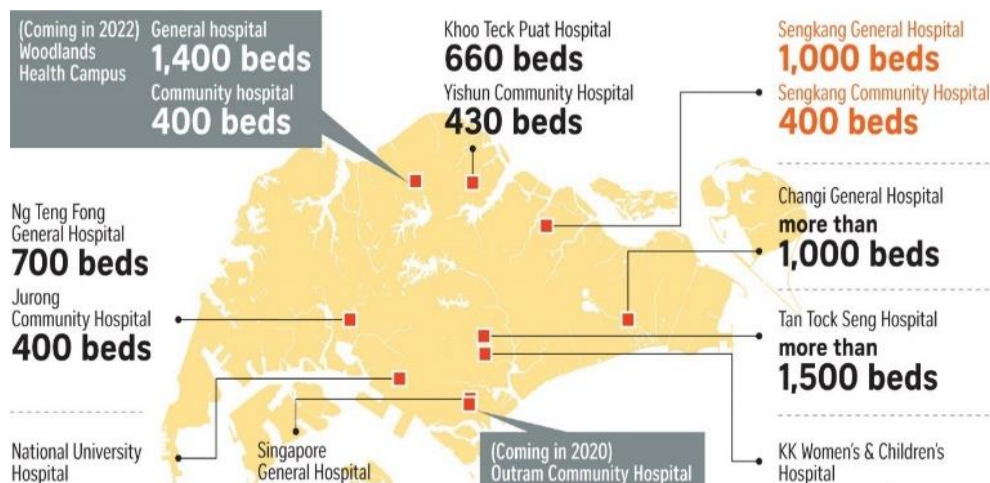


Figure 9: Singapore map of current and future hospital beds



Current figures and reports however indicate that the capacity growth may not provide enough relief if the rate of hospitalisations (mainly due to the geriatric population) continue to increase (ValueChampion, 2018). Singapore has announced additional investments in primary care services by [opening six new polyclinics by 2023, with another four to six more opening by 2030](#). Another growth segment are nursing homes, assisted living facilities and 'Non-Residential Long-Term Care Facilities' which saw [large growth rates beyond 2013](#) which have kept up and are expected to continue as Singapore ages. A new investment cycle targeting secondary and tertiary care services has not yet been announced.

Text box 5: Six new polyclinics to be completed in 2023



[Learn more.](#)

## Opportunities

- Although Singapore is coming to the end of a large health infrastructure investment cycle, several new projects have recently started or will be initiated in the upcoming years. Examples are the expansion of the National Cancer Center (to be realised by 2022), expansion of the Tan Tock Seng Hospital (to be realised by 2035), and investments in the primary and senior health infrastructure (polyclinics and nursing homes) ([Section 4.6](#)).
- Several private players in the Singaporean market expect private high-end nursing homes to be an upcoming growth market in Singapore and the rest of the region (Value Champion, 2019).

## Market Entry Considerations

- MOH Holdings (MOHH) issues [tenders](#) for large scale programmes and partnerships.
- [GeBIZ](#) is the Singapore Government's [one-stop e-procurement portal](#). All public sector invitations for quotations and tenders are posted on and handled through GeBIZ.
- The Singaporean hospital build market is rather consolidated with a mix of local, foreign Asian, and several Western-origin larger construction companies. [Annex 6](#) provides an overview of such larger players. Partnering with a company or consortia that has a local presence and are able to offer turnkey solutions is highly advised.

## 6.5 Public Health

The Dutch strengths 'Public Health' refers to the identification and implementation of policy and practice in the health system which improves access, coverage, quality, capacity or efficiency (health system strengthening). Organisations within this strength typically offer solutions in health financing, supply chain management, capacity building, training & education, and emergency responses. Organisations typically partner with government, public health agencies, knowledge and research institutes, and NGOs (The World Health Organization, 2019).

## Trends

In terms of 'Public Health' related challenges, Singapore is currently focussing on two major challenges:

- Alleviating the pressure on secondary and tertiary hospitals by increasing primary care utilisation. Prior to 2014, the Singaporean government minimized its involvement in primary health provision and many small clinics and independent GPs existed. Access to quality primary care was subsidised and improved by the introduction of the [Community Health Assist Scheme \(CHAS\)](#). This scheme already served 260 000 Singaporeans in the first year of implementation (Lim, 2017). Singapore is increasing looking at how to reshuffle task, directing care services more and more to the primary level, and improve 'coordinated and integrated care' by continuous alignments and communication between the primary and higher care lines.
- A pressing and growing shortage of health workers. In 2016, Health Minister Gan Kim Yong signalled that 30 000 additional healthcare workers will be needed in 2020. There is especially a need for geriatric doctors and specialists and highly trained nurses capable of helming clinics in primary and community health settings (Khalik, 2016). To address health workforce shortages, Singapore initiated the [Healthcare Manpower Plan 2020](#) and [SkillsFuture initiatives](#), which give credits and incentives to guide study choices of young Singaporean citizens. Another strategy is educating Singapore's large base of Foreign Domestic workers and empower them to deliver a higher level of care. The [Elderarer Foreign Domestic Worker \(FDW\) Scheme](#) is a major instrument which enables seniors to hire a pre-trained FDW who has undergone comprehensive training. Next to empowering its health workforce, Singapore places strong emphasis on increasing productivity through technology. For example, through the adoption of assistive technology for patients and health professionals. The AIC 'Healthcare Productivity Roadmap' has set-up a special [Healthcare Productivity Fund](#) dedicated to this policy outcome.

### Text box 6: **Healthcare Productivity Fund (HPF) to stimulate Efficiency in Community Care**

Service providers with projects that can improve productivity in terms of man-hour savings, cost savings and improvements in quality of care may tap on HPF funding schemes (AIC, 2016). Eligible community care providers can tap on HPF for the schemes. [Learn more.](#)

## Opportunities

- Expertise and solutions that contribute to increasing the quality and utilisation of primary care services.
- Expertise and solutions that contribute to training and educating primary health workers at the primary and community level, geriatrics health services, and rehabilitation. The Lien Foundation indicates Singapore has a strong demand for physical therapists.

## Market Entry Considerations

- Key partners to engage with in the Singaporean public health strength are the [MOH](#), [MOHT](#), [AIC](#), [NUS](#) and primary and community care providers, including the [Lien Foundation](#).
- To engage with the primary health sector in Singapore, the [Primary Care Network \(PCN\)](#) managed through the MOH is an important network.

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## 7 CONCLUSIONS

This report has highlighted the top reasons for Dutch companies and organizations to be interested in the Singaporean healthcare market. The report has also spelled out the trends, opportunities, and market entry considerations in five main areas of interest of the Dutch health sector: Mobility & Vitality, Medical Devices & Supplies, eHealth, and (to a lesser extent) Hospital build and Public Health.

As emphasized in this report, Singapore seeks to maintain its excellent and affordable health system which has been put under an increasing strain of a larger health demand caused by trends of rapid ageing of the Singaporean population and an upcoming burden of non-communicable (chronic) diseases.

To address these trends, Singapore's public health decision-makers have initiated the '3 Beyonds-policy': beyond healthcare to health putting emphasis on prevention, beyond hospital to community focusing on empowering healing and ageing at home and beyond quality to value to gather and benchmark information to come to smarter use of health services.

Singapore's public health sector has put a lot of energy behind realisation of the 3 Beyonds, leading to larger overarching shifts, transformations and investments in smart expansions to increase the capacity of its health infrastructure and health workforce and strategic interventions to implement information technology, equipment and concepts to increase productivity and efficiency within the health system.

Singaporeans have a proactive and open approach to achieve the 3 Beyonds by proactively studying international health systems such as the Netherlands and welcoming organisations to test and apply solutions for Singapore's healthcare challenges within the country.

The Netherlands is one of the frontrunners in the digitalisation of healthcare, renowned for its long-term care system and related innovative approaches, and home to multiple high-ranked university medical centres and (related) research infrastructures and spin-off companies. Singapore provides opportunities in various fields for Dutch providers of health expertise and solutions that are willing to invest to co-create solutions within the Singaporean health system.

### Next steps

This report marks an important step to strengthen the bilateral healthcare relation between Singapore and the Netherlands. Together with the Netherlands Embassy in Singapore, future steps and activities will be identified to further connect Singaporean and Dutch healthcare stakeholders and build towards sustainable healthcare relationships. Please get in touch with the Netherlands Embassy and TFHC for more information.

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## 8 ANNEXES

### Annex 1 – List of Interviewees

An important element of the study was the fact-finding visit to Singapore, whereby a delegation from TFHC, accompanied by representatives of the Netherlands Embassy in Singapore gained insights from key stakeholders in the Singaporean health sector. The fact-finding visit took place over two separate visits totalling a period of one week and included 11 meetings and 3 round table discussions with representatives from the public and private sector, operating at the national, regional and local level. These organisations are listed in chronological order below:

1. Ministry of Health (MOH)
  - a. Medical Information
  - b. IT Strategy & Planning
  - c. Health and Welfare Bureau for the Elderly
2. Ministry of Healthcare Transformation (MOHT)
3. KK Women's and Children's Hospital
4. National University Hospital
5. National University Hospital Systems
6. Roundtable 'Elderly Care in Singapore: Challenges and Opportunities'
  - a. Lien Foundation
  - b. Ageing Asia
  - c. St Joseph's Home
  - d. Agency for Integrated Care
7. Roundtable 'How to do business in the Singaporean Healthcare market'
  - a. MyDoc
  - b. Eye Care and Cure Asia Pte Ltd
8. International Finance Corporation
9. APACMED
10. Value Addition
11. Jaga-Me Home Care Services
12. Roundtable 'How to do business in Singapore?'
  - a. Somnotec Pte. Ltd.
  - b. All Eights Pte Ltd.

## Annex 2 – Leading Causes of Death in Singapore

Table 13: Leading Causes of Death in Singapore

Health indicators	Singapore	Netherlands
<b>Life expectancy 2017 (Healthy)</b>	75.5 (66.6)	82.1 (72.1)
<b>Leading causes of (2017):</b>		
Death	<ol style="list-style-type: none"> <li>1. Ischemic heart disease</li> <li>2. Lower respiratory infection</li> <li>3. Stroke</li> <li>4. Road injuries</li> <li>5. Alzheimer's disease</li> <li>6. COPD</li> <li>7. Chronic kidney disease</li> <li>8. Lung cancer</li> <li>9. Colorectal cancer</li> <li>10. Cirrhosis</li> </ol>	<ol style="list-style-type: none"> <li>1. Ischemic heart disease</li> <li>2. Alzheimer's disease</li> <li>3. Lung cancer</li> <li>4. Stroke</li> <li>5. COPD</li> <li>6. Colorectal cancer</li> <li>7. Lower respiratory infect</li> <li>8. Breast cancer</li> <li>9. Pancreatic cancer</li> <li>10. Falls</li> </ol>
Premature death	<ol style="list-style-type: none"> <li>1. Ischemic heart disease</li> <li>2. Lower respiratory infection</li> <li>3. Stroke</li> <li>4. Road injuries</li> <li>5. Neonatal disorders</li> <li>6. Lung cancer</li> <li>7. Chronic kidney disease</li> <li>8. Self-harm</li> <li>9. Congenital defects</li> <li>10. HIV/AIDS</li> </ol>	<ol style="list-style-type: none"> <li>1. Lung cancer</li> <li>2. Ischemic heart disease</li> <li>3. Stroke</li> <li>4. Alzheimer's disease</li> <li>5. COPD</li> <li>6. Colorectal cancer</li> <li>7. Breast cancer</li> <li>8. Self-harm</li> <li>9. Lower respiratory infect</li> <li>10. Pancreatic cancer</li> </ol>
Disability	<ol style="list-style-type: none"> <li>1. Low back pain</li> <li>2. Headache disorder</li> <li>3. Diabetes</li> <li>4. Depressive disorders</li> <li>5. Age-related hearing loss</li> <li>6. Anxiety disorders</li> <li>7. Other musculoskeletal</li> <li>8. Neonatal disorders</li> <li>9. Neck pain</li> <li>10. COPD</li> </ol>	<ol style="list-style-type: none"> <li>1. Low back pain</li> <li>2. Headache disorders</li> <li>3. Diabetes</li> <li>4. Neck pain</li> <li>5. Depressive disorders</li> <li>6. Anxiety disorders</li> <li>7. Age-related hearing loss</li> <li>8. Falls</li> <li>9. COPD</li> <li>10. Oral disorders</li> </ol>

## Annex 3 – Overview of Singapore’s Health Funding Schemes

Table 14: Overview of Singapore’s Health Funding Schemes

	Medisave	Medishield	Medifund	Eldershield (Careshield Life in 2020)
<b>Input</b>	Employer and employee make deposits into mandatory savings account	Premiums and subsidy	Government fund	Premiums, insurance and subsidy
<b>Eligibility</b>	Used in highly subsidised wards	Used in highly subsidised wards	Used in specific approved institutions	Lower income groups of 30+ years with severe disabilities
<b>Output</b>	Covers basic care, outpatient expenses and hospitalisation charges	Covers 80/90% of claimable costs to shield against large hospital bills and prolonged illness which requires long-term care	Medifund is an endowment fund set up by the Government to help Singaporeans who are unable to pay for their medical expenses after utilising both Medisave and Medishield Life.	Provides protection against long-term care costs

## Annex 4 – Overview of Singapore’s Hospitals

Table 15: Overview of Singapore’s public and private hospitals

Public Hospitals	West: National University Health System	Central: National Healthcare Group	East: Singapore Health Services	Private hospitals
<b>General Hospitals</b>	*National University Hospital *Ng Teng Fong General Hospital	Tan Tock Seng Hospital *Khoo Teck Puat Hospital *Woodlands General Hospital	*Singapore General Hospital *Changi General Hospital *Sengkang General Hospital	*Farrer Park Hospital *Gleneagles Hospital *Mount Elizabeth *Mount Elizabeth Novena Hospital *Parkway East Hospital *Raffles Hospital *Thomson Medical Centre
<b>Specialised Hospitals / National Specialty Centres</b>	*National University Cancer Institute *National University Heart Centre *National University Centre for Oral Health	*National Skin Centre *Institute of Mental Health	*National Cancer Centre *National Dental Centre *National Heart Centre *National Neuroscience Institute *Singapore National Eye Centre *KK Women’s and Children’s Hospital	*Concord International Hospital *Mount Alvernia Hospital
<b>Community Hospitals</b>	*Jurong Community Hospital	*Yishun Community Hospital *Woodlands Community Hospital	*Bright Vision Hospital *Outram Community Hospital *Sengkang Community Hospital	*West Point Hospital
<b>Medical School</b>	*Yong Loo Lin School of Medicine *National University of Singapore	*Lee Kong Chian School of Medicine *Nanyang Technological University	*Duke-NUS Medical School	
<b>Primary Care</b>	*Bukit Batok Polyclinic *Choa Chu Kang Polyclinic *Clementi Polyclinic *Jurong Polyclinic *Queenstown Polyclinic *Bukit Panjang Polyclinic *Pioneer Polyclinic	*Ang Mo Kio Polyclinic *Geylang Polyclinic *Hougang Polyclinic *Toa Payoh Polyclinic *Woodlands Polyclinic *Yishun Polyclinic *Sembawang Primary Care Centre	*Bedok Polyclinic *Bukit Merah Polyclinic *Marine Parade Polyclinic *Outram Polyclinic *Pasir Ris Polyclinic *Sengkang Polyclinic *Tampines Polyclinic *Eunos Polyclinic *Punggol Polyclinic	



## Annex 5 – Overview of Singapore’s Health Workforce

Table 16: Overview of Singapore’s Health Workforce

Healthcare Personnel	2014	2015	2016	2017
<b>Doctors</b>	11 733	12 459	12 967	13 386
<b>Doctors - Public</b>	7 330	7 909	8 358	8 573
<b>Doctors - Non-public</b>	3 790	3 914	3 979	4 107
<b>Doctors - Not In Active Practice</b>	613	636	630	706
<b>Specialists Doctors</b>	4 485	4 788	5 047	5 338
<b>Specialists Doctors - Public</b>	2 829	3 052	3 299	3 523
<b>Specialists Doctors - Non-public</b>	1 411	1,47	1 485	1 528
<b>Specialists Doctors - Not In Active Practice</b>	245	266	263	287
<b>Non-specialists Doctors</b>	7 248	7 671	7 920	8 048
<b>Non-specialists Doctors - Public</b>	4 501	4 857	5 059	5 050
<b>Non-specialists Doctors - Non-public</b>	2 379	2 444	2 494	2 579
<b>Non-specialists Doctors - Not In Active Practice</b>	368	370	367	419
<b>Dentists</b>	1 905	2,06	2 198	2 293
<b>Oral Health Therapists</b>	377	400	401	416
<b>Pharmacists</b>	2 563	2 757	2 875	3 047
<b>Registered Nurses</b>	28 864	29 894	31 615	32 672
<b>Enrolled Nurses</b>	8 528	8 931	8 781	8 631
<b>Registered Midwives</b>	226	180	165	137
<b>Advanced Practice Nurses</b>	145	172	197	218
<b>Optometrists And Opticians</b>	2,61	2 624	2,65	2 605
<b>Occupational Therapists</b>	905	967	1 067	1 125
<b>Physiotherapists</b>	1 394	1 549	1 693	1 814
<b>Speech Therapists</b>	400	474	524	595
<b>Traditional Chinese Medicine (TCM) Physicians</b>	2 740	2 808	2 868	2 952
<b>Acupuncturists</b>	240	249	247	254

## Annex 6 – Prominent Hospital Builders in Singapore

Table 17: Prominent Hospital Builders in Singapore

Examples of major organisations	Country of origin	Example of project(s)
<b>Kimly Construction</b>	Singapore	Yishun Community Hospitals
<b>Penta-Ocean Construction</b>	Japan	Sengkang General and Community Hospitals
<b>Ramboll</b>	Denmark	Multiple
<b>Ssangyong Engineering &amp; Construction</b>	South Korea	Woodlands Health Campus
<b>Shimizu Corporation</b>	Japan	National Cancer Centre Singapore

## Annex 7 - Key Players in Singapore's Health System

Table 18: Key Players in Singapore's Health System

Organisation	Function	Website
Agency for Science, Technology and Research (A*STAR)	The agency supports R&D that is aligned to areas of competitive advantage and national needs for Singapore.	<a href="#">URL</a>
Ageing Asia	Ageing Asia Innovation Forum, is an annual business of ageing platform to access investment and partnership opportunities in Asia Pacific	<a href="#">URL</a>
Agency for Care Effectiveness (ACE)	The Agency for Care Effectiveness (ACE) is the national health technology assessment (HTA) agency in Singapore	<a href="#">URL</a>
Agency for Integrated Care (AIC)	AIC was designated the single agency to coordinate the delivery of aged care services, and to enhance service development and capability-building across both the health and social domains.	<a href="#">URL</a>
ASEAN Federation of Medical Device Industry	ASEAN Federation of Medical Device Industry represents a come together among Medical Device Industry Associations in the Southeast Asia Region, and it comprises of 8 trade associations	<a href="#">URL</a>
Asia Pacific Medical Technology Association	Regional medical technology association	<a href="#">URL</a>
Association of Medical Device Industry (AMDI)	Singaporean medical technology association	<a href="#">URL</a>
Centre For Healthcare Innovation And Medical Engineering (CHIME)	The centre will focus on developing innovative healthcare technologies that can address the needs of functional ageing affiliated NUHS	<a href="#">URL</a>
Centre for Healthcare Assistive & Robotics Technology (CHART)	A platform that enables healthcare professionals to work closely with industry, academia and research institutions to co-develop and testbed impactful healthcare solutions in assistive technologies and robotics.	<a href="#">URL</a>
LEAP Programme	Licensing Experimentation and Adaptation Programme (LEAP) is a regulatory sandbox initiative that allows the safe development of new and innovative healthcare models to be piloted in a controlled environment.	<a href="#">URL</a>

Lien Foundation	Philanthropic house noted for its model of radical philanthropy. The Foundation seeks to foster exemplary early childhood, elderly care etc.	<a href="#">URL</a>
Ministry of Health	Through MOH, the Government manages the public healthcare system to ensure that good and affordable basic medical services are available to all Singaporeans.	<a href="#">URL</a>
Ministry of Healthcare Transformation (MOHT)	MOHT has a mandate to take an experimental and evidence-based approach to redesigning healthcare in Singapore.	<a href="#">URL</a>
MOH Holdings	MOH Holdings (MOHH) is the holding company of Singapore's public healthcare clusters – National University Health System, National Healthcare Group and Singapore Health Services.	<a href="#">URL</a>
Medical Engineering and Research Commercialization Initiative (MERCi)	Technology Transfer Office and accelerator	<a href="#">URL</a>
MedTech Park (JTC MedTech HUB)	Hub dedicated to medical technology industry, serving as a cluster for MedTech manufacturers, product owners and service providers.	<a href="#">URL</a>
National Research Foundation	The NRF sets the national direction for research and development (R&D) and funds strategic initiatives (Ageing).	<a href="#">URL</a>
National Council of Social Service	The National Council of Social Service (NCSS) provides leadership and direction in enhancing the capabilities and capacity of social service organizations	<a href="#">URL</a>
Silver Volunteer Fund (SVF)	The Silver Volunteer Fund (SVF) supports Volunteer Host Organisations (VHOs) that offer programmes with volunteer opportunities to seniors, including the training, management and recognition of senior volunteers in the programme.	<a href="#">URL</a>
Singapore Dental Council (SDC)	The Singapore Dental Council is the self-regulatory body for the dental professions.	<a href="#">URL</a>
Singapore Medical Council (SMC)	The Singapore Medical Council (SMC) is a statutory board under the Ministry of Health and maintains the register on medical practitioners in Singapore.	<a href="#">URL</a>
Singapore Nursing Board (SNB)	The Singapore Nursing Board (SNB) is the regulatory authority for nurses and midwives in Singapore.	<a href="#">URL</a>
Singapore Pharmacy Council (SPC)	The Singapore Pharmacy Council (SPC) is the regulatory authority for pharmacists in Singapore.	<a href="#">URL</a>
Smart Nation	Smart Nation is a Singapore Government initiative to harness infocomm technologies, networks and big data to create tech-enabled solutions	<a href="#">URL</a>
SPRING Singapore	Seed capital for MedTech accelerators will identify, mentor, and nurture promising start-ups on a one-on-one basis	<a href="#">URL</a>

## Annex 8 – Key Events, Trade Fairs, Exhibitions, and Forums

Table 19: Key Events, Trade Fairs, Exhibitions, and Forums

Organisation	Main function	Upcoming date(s)	Country	Venue
<b>Ageing Asia Innovation Forum</b>	Forum where developers, healthcare operators, and investors identify social and economic opportunities	14 – 15 May 2019	Singapore	Sands Expo and Convention Centre
<b>Hospital Management Asia (HMA) Conference 2019</b>	Annual event to share knowledge on hospital management hospital aimed at owners, C-level executives, directors and industry leaders	11 – 12 Sep. 2019	Vietnam	National Convention Center of Vietnam
<b>Medical Fair Asia</b>	Regional hospital, medical and pharmaceutical exhibition	11 – 13 Sept. 2019	Singapore or Thailand	Takes place in Bangkok and Singapore
<b>Healthcare Innovation Summit Asia</b>	Network event of influencers and leaders in the healthcare industry	23 May 2019	Singapore	Parkroyal on Beach Road
<b>ICN Congress Singapore</b>	International gathering of thousands of nurses	27 Jun. – 1 Jul. 2019	Singapore	Sands Expo and Convention Centre
<b>OS+H</b>	Regional occupational safety and health exhibition/ conference	26 – 28 Aug. 2020	Singapore	Singapore
<b>Patient Experience Asia Summit</b>	Thought leaders will	31 Jul. - 1 Aug. 2019	Singapore	Amara Sanctuary

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## Agenda

For more information on upcoming activities:

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