

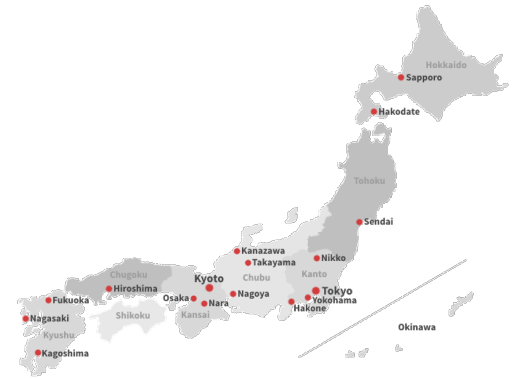
JAPAN FACT BOOK

BASIC DATA TO ASSESS JAPAN MARKET
MEDICAL DEVICE OPPORTUNITIES

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Geographic

The size of Japan is about 146,000 miles², 1/25 of the United States. It is about 90% of the States of California and slightly larger than Germany. Less than 30% is habitable; the majority living on the coastline. The rest are steep mountains, volcanic land and hills. Japan consist of 4 major islands; Hokkaido, Honshu, Shikoku and Kyushu. Honshu is divided into 5 regions; Tohoku, Kanto, Chubu, Kansai and Chugoku. The Capital Tokyo is in Kanto region.



Population

The population of Japan is about 127M, 2/5 of the United States. The population density is 869.2/sq. miles, x10 of the United States, but in reality much higher due to only 12% of their land being arable. The US is 16.8% and Germany is 34.1% in comparison. This density is comparable to Massachusetts which is 871.1/sq. miles with only 7,800 sq. miles of land and 6.7 million people living (both being 5% of Japan).

The population growth rate is negative, about the same as Germany, but the proportion of age 65 and over is growing fast, 24% in 2012, keeping the lead as the oldest country even in 2030 with 32.2%. Germany will be with 27.9% and Italy with 25.5% by then. The US has the most population of age 65 and over with over 43 million in 2012, followed by Japan with over 30 million amongst developed countries. These two countries will continue to be the top 2 nations even in 2030. However, if we include China and India, the US becomes in 3rd place followed by Japan. ¹

| | | |
|--|---|---|
| Land Area | 377,915 km ² 145,914 miles ² | 4% of USA 90% of California 106% of Germany |
| Population | 126,919,659 | 40% of USA 157% of Germany |
| Population Growth Rate | -0.16% | +0.78 USA -0.17% Germany |
| Age Distribution | 0 - 14 | 13.11% |
| | 15 - 24 | 9.68% |
| | 25 - 54 | 37.87% |
| | 55 - 64 | 12.76% |
| | 65+ | 26.59% |
| Birth Rate (per 1000) | 7.93 | 12.49 USA 8.47 Germany |
| Death Rate (per 1000) | 9.51 | 8.15 USA 11.42 Germany |
| Life Expectancy | 84.74 | 79.68 USA 80.57 Germany |
| Fertility Rate | 1.40 | 1.87 USA 1.44 Germany |
| Education Expenditures | 3.8% of GDP | 5.2% USA 5.0% Germany |
| Source: CIA online, The World Factbook | | |

| Year | 0-14 | 15-64 | 65-69 | 70-74 | 75+ | Total |
|---|-------|-------|-------|-------|-------|--------|
| 2010 | 1,680 | 8,104 | 821 | 696 | 1,407 | 12,708 |
| 2015 | 1,583 | 7,682 | 972 | 778 | 1,646 | 12,661 |
| 2020 | 1,457 | 7,341 | 816 | 918 | 1,879 | 12,411 |
| 2030 | 1,204 | 6,773 | 736 | 671 | 2,278 | 11,662 |
| 2040 | 1,073 | 5,787 | 887 | 758 | 2,223 | 10,728 |
| 2050 | 939 | 5,001 | 663 | 720 | 2,385 | 9,708 |
| 2060 | 791 | 4,418 | 562 | 566 | 2,336 | 8,673 |
| Source: Jpn Cabinet Office, Annual report on the aging society 2014 | | | | | | |

Government

The Japanese government is a parliamentary cabinet system with a constitutional monarchy. Executive power is vested in the Cabinet. The Prime Minister selects the Cabinet member, who are collectively

¹ (Ortman, Velkoff, & Hogan, 2014)

responsible to the Legislature. Usually the leader of the majority party or majority coalition in the House of Representatives becomes the Prime Minister. The government is divided into three branches: the executive, the legislative and judicial branch. There are eleven ministries with each headed by a Minister of State who are appointed by the Prime Minister and are members of the Cabinet. Pharmaceutical and medical devices regulations are under the Ministry of Health, Labour and Welfare.

Social Economics

Measured on a purchasing power parity (PPP) basis, Japan is No.4 where China is presently taking the lead, followed by the US and India. Germany is No.5 on the list. China being \$18,090 Billion is slightly lower than the whole EU. The GDP per capita for Japan is \$37,500 at No. 44, whereas the US is No.19 with \$54,400 and Germany being in No 27 with \$46,200. Unemployment rate is at about 3.6%. The overall expenditures are \$1.84 trillion with revenues of only \$1.512

| | | |
|--|-----------------|-----------------------------|
| GDP (PPP) | \$ 4.8 Trillion | 17.4 T USA 3.7 T Germany |
| Urban Population | 93.5% | 81.6% USA 75.3% Germany |
| Health Expenditures (2012) | 10.3% of GDP | 16.9% USA 11.3% Germany |
| Public Expenditure on health | 82.1% HE | 47.6% USA 76.7% Germany |
| Out of pocket payments for healthcare | 14.0% HE | 12.0% USA 13.0% Germany |
| Physician Density (per 1000) | 2.3 (2012) | 2.5 USA 4.0 Germany |
| Nurse Density (per 1000) | 10.5 (2012) | 11.1 USA 11.3 Germany |
| Hospital Bed Density (per 1000) | 13.7 (2009) | 2.9 USA 8.3 Germany |
| Source: CIA online, The World Factbook | | |

trillion. A challenge for Japan is that it has a huge debt which amounts to more than 232% of GDP, being No1 in the world. The government is presently trying to raise the consumption tax rate to 10% but have failed to raise it in 2015. Present rate is at 8%.²

Healthcare expenditure is \$332 billion and increasing.³ This is driven by the rapidly increasing aging population and increase in chronic diseases. 83% was funded by public sources, more than 77% of Germany, and quite apart from the US being 48%.⁴ The gap between the premiums collected and the expenditure continues to widen, in 2013, only 56% covered, spending \$1.1 trillion despite income of \$622 billion.⁵ However, if you look at the health expenditure per capita, Japan spent only \$3,649.00 comparing to \$4,811.00 and \$8,745.00 of Germany and the US, respectively.⁶ This is primary due to the lower compensation of medical staffs, and less obesity compared to the US and Germany. Still, Japan is the third largest spender on healthcare after the US and China, as prices on drugs and medical device are higher. The government is presently trying to lower the drug expenditure by increasing the use of generic drugs.

² (CIA The World Factbook, 2015)
³ (MHLW Health Expenditure 2014)
⁴ (OECD Health Statistics 2014)
⁵ (Wada, 2015)
⁶ (OECD Health Statistics 2014)

Health Insurance System

Japan has a universal health insurance system. All Japanese are covered by either employers or by the government plans. Amazingly, most of the health insurance plans are private in term of administrative law but in practice, they are quasi-public, as they are bound to provide uniform benefits and cover all eligible beneficiaries. Employers have little freedom to alter the premium levels. All of the premiums are taxed to finance the national fund which finances the health cost of the elderly. The mandated benefits are ambulatory and hospital care, extended care, most dental care and prescription drugs. Interestingly, normal childbirth is not covered, along with abortion, cosmetic surgery, traditional medicine, and unapproved and/or uninsured therapy. The copay ranges between 10 to 30%; age 6 to 70 paying 30%. However, if the copay exceeds a fixed monthly limit, which will differ depending on the income level, it will be subsidized later to ease the financial burden. There is no HMO or PPO meaning patients can choose any hospitals or clinics as they wish.

Now how does this work with most payers being private? The price that the healthcare providers receive are fixed by the Central Social Insurance Medical Council. This is reviewed every other year and revised accordingly. Most are fee for service, not a bulk fee. There are DRG type of procedures but still limited and only to public hospitals for now. Usually, the hospital will bill for the initial examination fees, hospitalization fees based on actual stay, treatment fees performed, lab test fees, drug fees and device fees. The bill will be reviewed by a third party organization prior for the insurer to pay. Interestingly, the charge for visiting foreigners or for treatment due to accident which is not covered by the health insurance is triple the rate defined. In another words, being insured by this universal system, the cost is pressured down to 1/3 of the necessary cost for the hospital to be profitable.

Health

The leading chronic disease deaths in Japan are malignant neoplasm followed by circulatory diseases. These are primarily due to aging population and shift in westernized lifestyle. These diseases account for 60% of mortality and growing. Within the malignant neoplasm, the respiratory system is the leading death, probably due to its high smoking population (22% in 2011⁷). Within circulatory diseases, cerebrovascular diseases are leading followed by ischemic diseases and AMI.

The WHO database shows that the leading cause of death in Japan is lower respiratory infections (125.8k, 10.6%),

| Illness | | Deaths | Rate per 100k | CAGR |
|--------------------|---------------------|---------|---------------|--------|
| Malignant Neoplasm | Total | 367,943 | 293.3 | 0.96% |
| | Respiratory | 73,373 | 58.5 | 1.29% |
| | Stomach | 47,890 | 38.2 | -1.27% |
| | Colon/Rectum | 48,461 | 38.6 | 1.25% |
| | Liver/Biliary | 47,639 | 37.9 | -1.30% |
| | Pancreas | 31,692 | 25.3 | 2.93% |
| | Breast | 13,317 | 10.6 | 2.74% |
| | Esophagus | 11,548 | 9.2 | -0.19% |
| | Prostate | 11,505 | 18.8 | 1.61% |
| | Lip, Oral & Pharynx | 7,408 | 5.9 | 1.67% |
| Circulatory | Total | 341,489 | 272.3 | -1.35% |
| | Cerebrovascular | 114,118 | 91.0 | -3.13% |
| | Ischemic | 34,839 | 27.8 | -0.90% |
| | Hypertension | 6,928 | 5.5 | -2.32% |
| | AMI | 38,953 | 31.1 | -3.82% |
| | Heart Failure | 71,612 | 57.1 | 0.00% |
| Respiratory | 202,428 | 161.4 | 0.16% | |
| COPD | 16,160 | 12.9 | -0.74% | |
| Pneumonia | 119,566 | 95.3 | -1.77% | |
| Digestive | 47,774 | 38.1 | 0.55% | |
| Liver | 15,656 | 12.5 | -1.02% | |
| Diabetes Mellitus | 13,647 | 10.9 | -2.94% | |
| Renal failure | 24,747 | 19.7 | -0.72% | |

Source: 2014 MHLW Vital Statistics

⁷ (WHO NCD Country Profiles 2014)

whereas ischemic diseases are the leading cause of death in the US (393.7k, 14.8%) and Germany (132.9k, 15.3%). Death due to ischemic heart disease is in third place (102.5k, 8.6%) for Japan. Lower respiratory infections for the US is only 2% and 2.4% for Germany. Lower respiratory infections and pancreas cancer are growing in Japan, whereas Alzheimer's and other dementias diseases, hypertensive heart disease, and kidney disease are increasing in the US. There might be some definition issue with lower respiratory infection, as many of the late stage diseased patients would commonly have this as one of their last causes of death. Death due to hypertensive heart disease and Alzheimer's and other dementias are growing in Germany. In the US, besides the two in Germany, death due to kidney diseases is growing. The future outlook for Japan is, with the aging population and further western style living will shift closer toward Germany and the US. One of the indicator is the gradual growth of obesity in children and in adolescents.⁸

| | Japan | | | USA | | | Germany | | |
|----|------------------------------|--------|-------|------------------------------|--------|-------|------------------------------|--------|-------|
| | Causes of death | Death | Rate | Causes of death | Death | Rate | Causes of death | Death | Rate |
| 1 | Lower respiratory infections | 125.8k | 10.6% | Ischemic heart disease | 393.7k | 14.8% | Ischemic heart disease | 132.9k | 15.3% |
| 2 | Stroke | 120.6k | 10.1% | Alzheimer's & dementias | 251.7k | 9.5% | Stroke | 59.9k | 6.9% |
| 3 | Ischemic heart disease | 102.5k | 8.6% | Respiratory cancer | 171.5k | 6.5% | Respiratory cancer | 45.8k | 5.3% |
| 4 | Respiratory cancer | 71.7k | 6.0% | COPD | 154.4k | 5.8% | Hypertensive heart disease | 34.8k | 4.0% |
| 5 | Stomach cancer | 51.0k | 4.3% | Stroke | 133.6k | 5.0% | Alzheimer's & dementias | 32.1k | 3.7% |
| 6 | Colon & rectum cancer | 47.7k | 4.0% | Diabetes mellitus | 71.5k | 2.7% | COPD | 30.6k | 3.5% |
| 7 | Liver cancer | 31.8k | 2.7% | Hypertensive heart disease | 71.3k | 2.7% | Colon & rectum cancer | 28.6k | 3.3% |
| 8 | Pancreas cancer | 30.0k | 2.5% | Colon & rectum cancer | 62.1k | 2.3% | Diabetes mellitus | 24.2k | 2.8% |
| 9 | Self harm | 29.5k | 2.5% | Kidney diseases | 59.2k | 2.2% | Lower respiratory infections | 21.1k | 2.4% |
| 10 | Kidney diseases | 29.1k | 2.4% | Lower respiratory infections | 52.3k | 2.0% | Breast cancer | 19.6k | 2.3% |

Adult risk factors such as obesity is significantly lower in Japan being only 5% of the population. Percent of high blood pressure is higher than the US but lower than Germany. These differences are possibly contributing to the differences in the top causes of death amongst Japan, US and Germany.⁹ The probability of dying between the age of 30 to 70, due to cancers,

| Adult Risk Factors | Japan | USA | Germany |
|---|-----------|-----------|------------|
| Obesity (2014) | 3.5% | 35.0% | 22.7% |
| Raised blood pressure (2008) | 26.7% | 18.0% | 31.5% |
| Current tobacco smoking (2014) | 21% | 14% | 22% |
| Total alcohol per capita consumption (2010) | 7.2 Liter | 9.2 Liter | 11.8 Liter |

Source: WHO Noncommunicable Diseases Country Profiles

| Illness | Patients (2014) | Deaths (2014) | Death rate (per 100k) |
|--------------------------|-----------------|---------------|-----------------------|
| Hypertensive diseases | 10,108k | 6,928 | 5.5 |
| Diabetes | 3,166k | 13,647 | 10.9 |
| Heart diseases | 1,729k | 196,760 | 156.9 |
| Malignant neoplasm | 1,626k | 367,943 | 293.3 |
| Cerebrovascular diseases | 1,179k | 114,118 | 91.0 |

Source: 2014 MHLW Vital Statistics & Patient Survey

⁸ (WHO Statistical Profile 2015)
⁹ (WHO NCD Country Profiles 2014)

cardiovascular diseases, chronic respiratory diseases and diabetes is somewhat comparable with Japan being 9%, 12% for Germany and 14% for the US.¹⁰

Based on the 2014 MHLW Patient Survey¹¹ conducted, there were 10,108,000 patients with hypertensive diseases, as number one and followed by 3,166 with diabetes, 1,729 with heart diseases, 1,626 with malignant neoplasm and 1,179 with cerebrovascular diseases.

Patients with hypertensive diseases (10,108k), both in- and out-patients, were 3 times more than those with diabetes (3,166k) on a particular day in October 2014. There were a total of 1,318,800 in-patients and 7,238,400 out-patients on that day. Patients with age 65 and older were 4,447,500. The top three illnesses for hospitalizations were mental and behavioral disability (265.5k), circulatory diseases (240.1k) and neoplasm (144.9k). The top three illnesses for out-patient were digestive diseases (1,310.0k), circulatory diseases (933.0k), and musculoskeletal and connective tissue diseases (877.8k). In the 2011 survey, 20.2% of hospitalization and 0.8% of out-patient were emergent. 51.3% (in-patient) and 33.4% (out-patient) of those emergent patients were transported in medical facilities by ambulance.¹²

| Major illness | Oct 2014 | | | Oct 2011 | | | CAGR | | |
|---|----------|--------|--------|----------|--------|--------|-------|-------|--------|
| | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Tuberculosis | 20k | 11k | 10k | 26k | 14k | 12k | -8.4% | -7.7% | -5.9% |
| Virus Hepatitis | 184k | 92k | 92k | 206k | 98k | 108k | -3.7% | -2.1% | -5.2% |
| Malignant Neoplasm | 1,626k | 876k | 750k | 1,526k | 830k | 695k | 2.1% | 1.8% | 2.6% |
| Hyperlipidemia | 2,062k | 596k | 1,465k | 1,886k | 525k | 1,361k | 3.0% | 4.3% | 2.5% |
| Diabetes Mellitus | 3,166k | 1,768k | 1,401k | 2,700k | 1,487k | 1,215k | 5.5% | 5.9% | 4.9% |
| Vascular and unknown dementia | 144k | 40k | 103k | 146k | 43k | 103k | -0.5% | -2.4% | 0.0% |
| Schizophrenia, Schizotypal disorder& paranoia | 773k | 361k | 414k | 713k | 354k | 360k | 2.7% | 0.7% | 4.8% |
| Alzheimer's | 534k | 142k | 392k | 366k | 104k | 262k | 13.4% | 10.9% | 14.4% |
| Hypertensive diseases | 10,108k | 4,450k | 5,676k | 9,067k | 3,822k | 5,259k | 3.7% | 5.2% | 2.6% |
| Heart diseases (ex. Hypertensive) | 1,729k | 947k | 786k | 1,612k | 882k | 734k | 2.4% | 2.4% | 2.3% |
| Neurovascular diseases | 1,179k | 592k | 587k | 1,235k | 616k | 620k | -1.5% | -1.3% | -1.8% |
| COPD | 261k | 183k | 79k | na | na | na | na | na | na |
| Asthma | 1,177k | 515k | 662k | 1,045k | 521k | 523k | 4.0% | -0.4% | 8.2% |
| Dental caries | 1,846k | 786k | 1,059k | 1,945k | 828k | 1,117k | -1.7% | -1.7% | -1.8% |
| Gingivitis & periodontal diseases | 3,315k | 1,373k | 1,942k | 2,657k | 1,084k | 1,572k | 7.7% | 8.2% | 7.3% |
| Esophagus, Stomach & duodenum | na | na | na | 1,246k | 526k | 720k | na | na | na |
| Liver diseases | 251k | 132k | 119k | 276k | 142k | 133k | -3.1% | -2.4% | -3.6% |
| Chronic Renal Failure | 296k | 185k | 110k | na | na | na | na | na | na |
| Bone fracture | 580k | 226k | 354k | 542k | 208k | 334k | 2.3% | 2.8% | 2.0% |

Source: 2014 & 2011 MHLW Patient Survey

Detailed breakdown of Illnesses per hospitals and clinics are listed in table 9. Based on this data, it shows that many patients are not visiting their local clinics, but instead are going directly to hospitals. This trend is more with large hospitals, like university or teaching hospitals. For that reason, many of the large hospitals are charging extra when patients are not referred by local clinics or smaller hospitals.

¹⁰ (WHO NCD Country Profiles 2014)

¹¹ (MHLW Patient Survey 2014)

¹² (MHLW Patient Survey 2012)

| Illness on a set date of October 2014 | Inpatient (x1,000) | | | Outpatient (x1,000) | | |
|---|--------------------|---------|---------|---------------------|---------|---------|
| | Total | Hps | Clinics | Total | Hps | Clinics |
| Total | 1,318.8 | 1,273.0 | 45.8 | 7,238.4 | 1,641.9 | 4,233.0 |
| Infectious and parasitic disease | 20.7 | 20.3 | 0.4 | 173.3 | 41.7 | 141.6 |
| Tuberculosis | 3.4 | 3.4 | 0 | 1.7 | 1.5 | 0.2 |
| Viral hepatitis | 1.4 | 1.3 | 0.1 | 28.3 | 14.0 | 14.3 |
| Neoplasm | 144.9 | 143.2 | 1.7 | 231.6 | 187.3 | 44.3 |
| Malignant Neoplasm | 129.4 | 127.9 | 1.5 | 171.4 | 146.5 | 24.8 |
| Stomach | 13.5 | 13.4 | 0.2 | 19.2 | 14.9 | 4.3 |
| Colon, rectum | 18.9 | 18.7 | 0.3 | 28.0 | 22.9 | 5.1 |
| Liver, bile duct | 6.9 | 6.8 | 0.1 | 5.5 | 4.5 | 1.0 |
| Trachea, bronchus & lung | 18.8 | 18.7 | 0.1 | 16.1 | 14.3 | 1.8 |
| Breast | 5.4 | 5.3 | 0.1 | 24.3 | 21.5 | 2.8 |
| Blood, hematopoietic diseases & immunological failure | 6.3 | 6.1 | 0.2 | 21.6 | 10.4 | 11.2 |
| Endocrine, Nutritious and metabolic diseases | 33.0 | 31.6 | 1.3 | 437.0 | 131.9 | 305.1 |
| Diabetes | 20.9 | 20.0 | 1.0 | 222.3 | 77.6 | 144.7 |
| Hyperlipidemia | 0.3 | 0.2 | 0.1 | 143.7 | 21.7 | 122.1 |
| Mental and behavioral failure | 265.5 | 264.3 | 1.3 | 257.7 | 110.9 | 146.9 |
| Neurological diseases | 122.2 | 199.5 | 2.7 | 173.0 | 69.3 | 103.7 |
| Alzheimer's | 47.0 | 45.8 | 1.2 | 45.1 | 14.1 | 30.9 |
| Ophthalmopathy | 11.5 | 10.2 | 1.3 | 337.9 | 56.9 | 280.9 |
| Ear & mastoid diseases | 2.5 | 2.4 | 0.1 | 100.5 | 15.2 | 85.3 |
| Circulation diseases | 240.1 | 230.4 | 9.7 | 933.0 | 236.3 | 696.7 |
| Hypertensive diseases | 6.4 | 4.8 | 1.6 | 671.4 | 104.6 | 566.8 |
| Heart diseases (excluding hypertensive) | 59.9 | 57.4 | 2.5 | 133.9 | 68.2 | 65.7 |
| Cerebrovascular diseases | 159.4 | 154.9 | 4.6 | 94.0 | 44.7 | 49.2 |
| Respiratory diseases | 90.7 | 88.1 | 2.6 | 668.4 | 91.6 | 576.8 |
| Pneumonia | 34.6 | 33.3 | 1.3 | 8.2 | 3.9 | 4.3 |
| COPD | 7.9 | 7.6 | 0.4 | 22.0 | 8.8 | 13.3 |
| Asthma | 3.8 | 3.6 | 0.2 | 127.6 | 23.7 | 103.9 |
| Digestive diseases | 65.6 | 63.6 | 2.0 | 290.3 | 115.9 | 174.4 |
| Liver diseases | 8.0 | 7.7 | 0.3 | 32.6 | 12.1 | 20.5 |
| Dermatosis, subcutaneous tissue diseases | 10.9 | 10.5 | 0.4 | 286.9 | 47.7 | 239.3 |
| Musculoskeletal and connective tissue diseases | 69.9 | 64.4 | 5.5 | 877.8 | 180.6 | 697.2 |
| Renal, urological & reproductive diseases | 46.9 | 44.0 | 2.9 | 283.1 | 112.6 | 170.5 |
| Chronic renal failure | 24.1 | 21.7 | 2.4 | 107.3 | 47.2 | 60.1 |
| Pregnancy, delivery & puerperium | 18.4 | 14.2 | 4.3 | 14.5 | 6.7 | 7.8 |
| illness during perinatal period | 6.7 | 6.4 | 0.3 | 2.9 | 2.4 | 0.5 |
| Congenital anomaly, deformation & chromosomal abnormalities | 5.8 | 5.7 | 0.1 | 14.3 | 9.0 | 5.3 |
| Injuries, addiction and other exogenous diseases | 131.3 | 124.5 | 6.8 | 303.7 | 102.5 | 201.2 |
| Fractures | 91.4 | 86.4 | 5.0 | 92.0 | 39.9 | 52.1 |

Source: 2014 MHLW Patient Survey

Healthcare Providers

Based on the 2014 MHLW Medical Facility Survey¹³ conducted, there were 177,546 medical facilities active in Japan on October 1, 2014, where 8,493 (4.8%) were hospitals (20+ beds), 100,461 medical clinics (56.5%) and the remaining being dental clinics. Physician offices in the States are accounted as medical clinics in Japan. Only 18.4% were public hospitals and 4.1% for medical clinics. There were only 0.5% public dental clinics. Within private hospitals, 3.4% were individually owned. 43.7% were individually owned medical clinics. The bulk were medical professional entities, 67.4% and 39.3%, respectively. Within general hospitals, 3,848 of them have beds for long term care. A quarter of the hospitals have 50 to 99 beds. 210 hospitals increased their bed size and 417 decreased in

| Type | Facilities (2014) | | Growth |
|-----------------|-------------------|-------|--------|
| Hospitals | 8,943 | 4.8% | -0.6% |
| Psychiatric | 1,067 | 12.5% | +0.1 |
| General | 7,426 | 87.5% | -0.6 |
| Medical Clinics | 100,461 | 56.5% | -0.1% |
| w/ bed | 8,355 | 8.3% | -9.7% |
| w/o bed | 92,106 | 91.7% | +0.9% |
| Dental Clinics | 68,592 | 38.7% | -0.2% |
| Total | 177,546 | 100% | -0.1% |

Source: 2014 Medical Facility Survey

| No of beds | Facilities (2014) | | Growth |
|------------|-------------------|-------|--------|
| 20-49 | 945 | 11.1% | -2.2% |
| 50-99 | 2,147 | 25.3% | -1.0% |
| 100-149 | 1,421 | 16.7% | -0.5% |
| 150-199 | 1,336 | 15.7% | +1.1% |
| 200-299 | 1,116 | 13.1% | -0.6% |
| 300-399 | 711 | 8.4% | +0.1% |
| 400-499 | 380 | 4.5% | +1.9% |
| 500+ | 437 | 5.2% | -3.0% |

Source: 2014 Medical Facility Survey

¹³ (MHLW Medical Facility Survey 2014)

one year. Clearly consolidation of hospitals is happening as the number of hospitals decreased and a certain number of hospitals added more beds in a year, as usually the total number of beds per prefecture is not easily change; a zero sum game. Interestingly, 843 medical clinics totally eliminated their beds in a year.

Common specialties in the general hospitals are Internal Medicine (92.1%), Rehabilitation (72.2%) and Orthopedics (66.6%). The number of Diagnostic Pathology, Diabetes (Metabology) and Gastroenterological Surgery departments are increasing,

| Departments | | No of hospitals | | Growth | Departments | | No of hospitals | | Growth |
|----------------------|-------|-----------------|--------|--------------------------|-------------|-------|-----------------|--|--------|
| Internal medicine | 6,838 | 92.1% | -0.6% | General surgery | 4,683 | 63.1% | -1.3% | | |
| Pulmonary | 2,679 | 36.1% | +1.8% | Respiratory surgery | 885 | 11.9% | +4.4% | | |
| Cardiology | 3,869 | 52.1% | +1.8% | Cardiovascular surgery | 1,028 | 13.8% | +3.8% | | |
| Gastroenterology | 3,908 | 52.6% | +1.8% | Breast surgery | 739 | 10.0% | +14.4% | | |
| Nephrology | 970 | 13.1% | +13.5% | Broncho-esophagological | 89 | 1.2% | 0.0% | | |
| Metabology | 1,149 | 15.5% | +14.1% | Gastroenterological surg | 1,538 | 20.7% | +9.0% | | |
| Hematology | 543 | 7.3% | +18.8% | Urology | 2,798 | 37.7% | +0.3% | | |
| Dermatology | 3,027 | 40.8% | +0.6% | Proctology | 1,204 | 16.2% | -0.2% | | |
| Allergy | 444 | 6.0% | -1.1% | Neurological surgery | 2,553 | 34.4% | +1.3% | | |
| Rheumatology | 1,226 | 16.5% | +2.5% | Orthopedics | 4,943 | 66.6% | -0.3% | | |
| Infectious disease | 119 | 1.6% | +15.5% | Reconstructive surgery | 1,237 | 16.7% | +2.4% | | |
| Pediatrics | 2,656 | 35.8% | -0.9% | Cosmetic surgery | 123 | 1.7% | +0.8% | | |
| Psychiatry | 1,681 | 22.6% | +2.1% | Pediatric surgery | 363 | 4.9% | -1.1% | | |
| Psychotherapy | 629 | 8.5% | +0.3% | Ophthalmology | 2,446 | 32.9% | -0.4% | | |
| OBGY | 1,176 | 15.8% | -2.2% | ENT | 1,978 | 26.6% | +0.1% | | |
| OB | 185 | 2.5% | +7.6% | Rehabilitation | 5,362 | 72.2% | +1.9% | | |
| GY | 820 | 11.0% | +3.1% | Radiology | 3,393 | 45.7% | +1.0% | | |
| Diagnostic Pathology | 784 | 10.6% | +87.6% | Clinical Lab | 202 | 2.7% | +17.4% | | |
| Anesthesia | 2,721 | 36.6% | +1.1% | ER | 543 | 7.3% | +19.9% | | |

Source: 2014 Medical Facility Survey

whereas General Surgery, General Internal Medicine and OBGY departments are decreasing. The number of Pediatric and OBGY specialties in both hospitals and clinics are decreasing year after year reflecting the decrease in birth rate. Common specialties for clinics are Internal Medicine (63,888, 63.6%), Pediatrics (20,872, 20.8%), Gastroenterology (18,658, 18.6%), General Surgery (13,976, 13.9%), Cardiology (13,097, 13.0%), Orthopedics (12,792, 12.7%), Dermatology (12,328, 12.3%) and Rehabilitation (12,198, 12.1%).

Malignant tumor surgery was performed in the month of September 2014 at 2,319 hospitals (31.2% of 7,426). Colon (24.4%) being number 1, followed by stomach (21.5%). The number of cases were 56,143 for malignant tumor, where colon was 10,290 and stomach being 7,162 cases.

| Procedures | Hospitals | | Clinics | | Procedures | Hospitals | | Clinics | |
|----------------------------|-------------|-------------|-------------|-------------|---------------------------|-------------|-------------|-------------|-------------|
| | No of sites | No of cases | No of sites | No of cases | | No of sites | No of cases | No of sites | No of cases |
| Bone Density | 4,864 | 170,738 | 21,992 | 397,678 | Coronary CT & Cardiac MRI | 1,302 | 37,394 | 117 | 3,637 |
| Bronchoscopy | 1,306 | 14,368 | 135 | 1,437 | General Anesthesia | 3,484 | 226,928 | 785 | 7,870 |
| Upper Gastrointestinoscopy | 5,010 | 550,850 | 16,539 | 468,278 | Laparoscopy | 2,790 | 73,610 | 2,170 | 21,615 |
| Colonoscopy | 4,135 | 241,087 | 6,729 | 123,389 | Malignant tumor surgery | 2,319 | 56,143 | 311 | 1,243 |
| Serial Angiography | 1,702 | 96,100 | 117 | 4,733 | Esophageal | 402 | 1,119 | 0 | 0 |
| DSA | 1,445 | 31,384 | 97 | 1,008 | Lung | 730 | 4,256 | 0 | 0 |
| Cardio Digital Radiography | 1,161 | 59,653 | 28 | 3,725 | Stomach | 1,593 | 7,162 | 23 | 44 |
| Mammography | 2,512 | 215,875 | 1,315 | 256,094 | Liver | 753 | 2,940 | 4 | 36 |
| Scintigraphy | 1,137 | 84,348 | 28 | 979 | Gall Bladder | 381 | 811 | 0 | 0 |
| SPECT | 1,054 | 45,111 | 19 | 436 | Pancreas | 445 | 985 | 0 | 0 |
| PET | 61 | 2,351 | 24 | 487 | Colon | 1,812 | 10,290 | 102 | 482 |
| PETCT | 273 | 37,187 | 63 | 13,539 | Kidney | 634 | 1,769 | 0 | 0 |
| Multi-slice CT | 5,437 | 2,279,376 | 3,042 | 204,510 | Prostate | 667 | 2,159 | 16 | 37 |
| Other CT | 980 | 52,276 | 2,318 | 70,555 | Breast | 1,234 | 6,910 | 50 | 406 |
| MRI (3.0 and above) | 509 | 162,408 | 64 | 13,689 | Uterus | 604 | 2,786 | 17 | 30 |
| MRI (>1.5 to <3.0) | 2,573 | 724,443 | 642 | 141,561 | Dialysis | 2,402 | 1,712,661 | 2,032 | 1,804,114 |
| MRI (1.5) | 912 | 69,841 | 1,213 | 142,079 | Radiotherapy (External) | 804 | 222,334 | 30 | 2,678 |
| 3D imaging | 2,010 | 251,463 | 563 | 45,717 | Radiotherapy (Internal) | 183 | 1,000 | 3 | 5,254 |

Source: 2014 Medical Facility Survey

In terms of special medical facilities, 1,762 hospitals were equipped with out-patient chemotherapy rooms and 780 hospitals with ICU. The number of patients are the total numbers of patients treated in those rooms for the month of September 2014.

| | No of Hps | No of beds | No of patients |
|-------------------------------|-----------|------------|----------------|
| ICU | 780 | 6,552 | 117,317 |
| SCU | 131 | 926 | 20,604 |
| MFICU | 110 | 715 | 14,484 |
| Sterile room (exclude OR) | 525 | 4,223 | 69,520 |
| Radiotherapy room | 88 | 244 | 2,846 |
| Out-patient chemotherapy room | 1,762 | 14,213 | 217,536 |
| NICU | 330 | 3,052 | 68,838 |
| CCU | 323 | 1,759 | 28,249 |
| GCU | 281 | 3,942 | 65,186 |
| PICU | 41 | 256 | 3,512 |
| Negative pressure room | 624 | 5,434 | 62,637 |

Source: 2014 Medical Facility Survey

Different from the US, there are different levels of urgent/emergent care available; primary to tertiary urgent/emergent care. Primary being urgent care without beds. Secondary are like the trauma center level III and tertiary (critical care center) are level II of the US. There are only 35 advanced critical care centers which are like level I, as of December 2015. There are about 556 primary urgent care centers (After-hours urgent care) which are in operation only at night and on the weekend. In addition, there are about 630 local municipalities with surrounding clinics on rotation. About half of the hospitals (4,804) do have some form of urgent or emergent care capabilities. There are 3,865 hospitals with level III care capabilities. In ten areas, a single hospital will be open in the area at night but the staffs are on rotation from surrounding hospitals. Critical care centers are limited to 266 hospitals, as of February 2014. Forty hospitals are equipped with helicopters to deliver physicians to the accident site.¹⁴ In 2015, there were 6 million "911" calls for ambulance request, transporting over 5.4 million with 56% being age 65 and older. It has taken an average of 8.6 minutes for the ambulance to arrive and 39.4 minutes to transfer to a hospital. 6.2 million have visited the after-hours urgent care.¹⁵

Occupied rates of beds were 74.8% for general, 87.3% for psychiatric, 89.4% for long term care and 92.9% for nursing care needed beds. The total average hospitalization days is 31.9 days, where hospitals are 33.2 days and clinics are 17.4 days. This has significantly reduced from 44.9 days, 43.7 days and 28.2 days in 1990, respectively. The length of stay for age 34 and below has not changed much over the years. Neurological and circulatory diseases are the longest stay putting aside the mental & behavioral failure. The average hospitalization days are 16.8 days for general beds, 164.6 day for long term care and 315.5 days for nursing care needed beds.¹⁶

¹⁴ (MHLW Urgent/Emergent Care Committee 2013)

¹⁵ (FDMA Emergency and Rescue 2014)

¹⁶ (MHLW Patient Survey 2014)

| Illness | Average hospitalization duration (day) | | | | | |
|---|--|----------|-----------|-----------|---------|---------|
| | Total | Age 0-14 | Age 15-34 | Age 35-64 | Age 65+ | Age 75+ |
| Total | 31.9 | 8.4 | 12.0 | 24.4 | 41.7 | 47.6 |
| Infectious and parasitic disease | 20.9 | 4.6 | 7.1 | 18.3 | 31.5 | 27.1 |
| Tuberculosis | 58.7 | 32.8 | 40.7 | 65.2 | 58.4 | 58.6 |
| Viral hepatitis | 16.3 | 5.1 | 12.5 | 12.5 | 21.4 | 38.2 |
| Neoplasm | 18.7 | 19.8 | 14.0 | 14.0 | 21.1 | 25.3 |
| Malignant Neoplasm | 19.9 | 32.1 | 18.6 | 15.4 | 21.7 | 26.1 |
| Stomach | 19.3 | 5.5 | 12.1 | 13.9 | 21.0 | 26.1 |
| Colon, rectum | 18.0 | 8.0 | 10.8 | 13.5 | 20.0 | 24.5 |
| Liver, bile duct | 18.8 | 47.8 | 12.1 | 15.8 | 19.3 | 21.6 |
| Trachea, bronchus & lung | 20.9 | 10.1 | 9.8 | 16.7 | 22.3 | 26.9 |
| Blood, hematopoietic diseases & immunological failure | 21.8 | 10.4 | 10.7 | 19.8 | 26.0 | 27.3 |
| Endocrine, Nutritious and metabolic diseases | 28.5 | 5.4 | 12.4 | 19.0 | 36.3 | 43.1 |
| Diabetes | 35.5 | 13.0 | 14.1 | 20.0 | 47.7 | 65.2 |
| Hyperlipidemia | 29.4 | 1.0 | 4.5 | 7.4 | 62.3 | 83.8 |
| Mental and behavioral failure | 291.9 | 36.2 | 60.1 | 204.4 | 523.0 | 473.0 |
| Neurological diseases | 82.2 | 15.7 | 44.7 | 51.8 | 113.2 | 134.9 |
| Alzheimer's | 266.3 | na | na | 217.8 | 267.4 | 257.6 |
| Ophthalmopathy | 4.1 | 3.8 | 6.6 | 4.6 | 3.9 | 4.1 |
| Ear & mastoid diseases | 7.8 | 4.6 | 6.8 | 8.3 | 8.1 | 8.1 |
| Circulation diseases | 43.3 | 18.2 | 13.6 | 21.4 | 50.6 | 62.7 |
| Hypertensive diseases | 60.5 | 8.9 | 11.0 | 13.8 | 68.4 | 83.3 |
| Heart diseases (excluding hypertensive) | 20.3 | 30.5 | 10.2 | 9.0 | 23.7 | 30.5 |
| Cerebrovascular diseases | 89.5 | 20.7 | 44.6 | 46.9 | 100.7 | 116.0 |
| Respiratory diseases | 27.3 | 5.3 | 10.4 | 15.2 | 39.0 | 41.7 |
| Pneumonia | 29.7 | 6.1 | 9.2 | 16.2 | 36.0 | 38.4 |
| COPD | 68.1 | 9.9 | 9.4 | 25.1 | 72.4 | 80.4 |
| Asthma | 10.8 | 4.9 | 5.9 | 8.4 | 29.0 | 35.1 |
| Digestive diseases | 13.0 | 5.6 | 7.5 | 9.7 | 16.0 | 19.3 |
| Liver | 25.8 | 9.3 | 10.7 | 17.1 | 33.2 | 40.7 |
| Dermatosis, subcutaneous tissue diseases | 22.7 | 5.9 | 9.7 | 16.2 | 29.6 | 32.8 |
| Musculoskeletal and connective tissue diseases | 31.1 | 11.1 | 13.7 | 20.9 | 38.1 | 45.2 |
| Renal, urological & reproductive diseases | 23.6 | 9.4 | 5.9 | 12.4 | 32.4 | 37.8 |
| Chronic renal failure | 62.9 | 46.8 | 15.9 | 35.0 | 72.0 | 88.1 |
| Pregnancy, delivery & puerperium | 7.9 | 5.0 | 7.4 | 9.3 | na | na |
| illness during perinatal period | 10.9 | 10.9 | 44.9 | 29.0 | na | na |
| Congenital, deformation & chromosomal abnormalities | 15.5 | 14.0 | 15.8 | 17.6 | 29.2 | 43.5 |
| Injuries, addiction and other exogenous diseases | 31.7 | 5.1 | 13.7 | 20.5 | 42.8 | 47.7 |
| Fractures | 37.9 | 5.3 | 14.4 | 21.9 | 47.7 | 51.9 |

Source: 2014 MHLW Patient Survey

Based on the 2013 OECD data¹⁷, the average length of stay for Japan is 17.9 days for 2011 whereas the US was 6.1 days and Germany being 9.3 days. For AMI, Japan does not have the data but Korea who is in second place after Japan on overall length, reported 11.6 days where Germany was 10.4 and the US just being at 5.4 days.

¹⁷ (OECD Healthcare at a Glance 2013)

Medical Device Market

Japan is holding in third place (2014) after the US and China, followed by Germany, being about \$30 billion, which is 1/4 of the US. 40% of devices are imported, US being the top with 47% followed by Ireland (10.8%), Germany (8.6%) and China (7.7%).¹⁸

Table 16: Medical Device Market Breakdown in Japan

| Categories | Total | | Domestic | | Imports | | | Note | | |
|-------------|----------|-------|----------|-------|----------|-------|-------|---------|-------------|----------------------------------|
| | (\$ Mil) | (%) | (\$ Mil) | (%) | (\$ Mil) | (%) | No 1 | No 2 | No 3 | |
| Prosthetics | \$5,531 | 18.4 | \$2,461 | 13.7 | \$3,070 | 25.1 | USA | Ireland | Holland | Implants, artificial organs |
| Disposables | \$7,388 | 24.5 | \$4,553 | 25.4 | \$2,836 | 23.2 | USA | China | Holland | Catheters, tubes, sutures, pouch |
| Ophthalmic | \$2,257 | 7.5 | \$524 | 2.9 | \$1,733 | 14.2 | USA | Ireland | Singapore | Eyeglasses, contact lenses |
| Imaging | \$3,914 | 13.0 | \$2,738 | 15.3 | \$1,176 | 9.6 | USA | Germany | China | Xray, MRI, CT, PET |
| Therapeutic | \$1,383 | 4.6 | \$483 | 2.7 | \$900 | 7.4 | USA | Germany | China | Radiotherapy, lasers, ESWL |
| Monitoring | \$3,108 | 10.3 | \$2,390 | 13.3 | \$718 | 5.9 | USA | China | Germany | Endoscope, patient monitoring |
| Homecare | \$1,185 | 3.9 | \$780 | 4.4 | \$405 | 3.3 | China | Denmark | Switzerland | Hearing aids, suction |
| Instruments | \$465 | 1.5 | \$147 | 0.8 | \$318 | 2.6 | USA | Germany | Switzerland | |
| Dental | \$769 | 2.6 | \$471 | 2.6 | \$298 | 2.4 | USA | Ireland | Sweden | |
| IVD | \$2,591 | 8.6 | \$2,390 | 13.3 | \$201 | 1.6 | USA | UK | German | |
| Others | \$1,548 | 5.1 | \$975 | 5.4 | \$573 | 4.7 | | | | |
| Total | \$30,139 | 100.0 | \$17,912 | 100.0 | \$12,228 | 100.0 | USA | Ireland | Germany | |

Source: 2013 MHLW Pharmaceutical Industry Production Statistics Report

In 2014, the total prescription drugs and medical devices reimbursed was 7.2 trillion yen. Reimbursed medical devices were 12.2 billion yen (3.6% growth from 2013), only 1/50 of prescriptions. However, this is growing faster than the prescription which grew only 2.3%.¹⁹ The government is promoting the use of generic drugs to suppress the prescription cost, while lowering the reimbursement price for devices by surveying the actual market price sold to the hospitals and comparing against US and EU pricing. Usually reimbursed medical devices are high end disposable products and prosthetics. Others are not individual reimbursed and the hospital must pay within their treatment fees reimbursed.

The medical device market will continue to grow, but the government will do their best to lower the reimbursement price for devices that are becoming commodities, with multiple companies competing in the market. Meanwhile they are willing to pay higher price for new technologies with clinical and economical benefits. Also, the government would try to encourage local companies to enter the medical device market to lower the dependence of imports, believing that will also drive the cost down but probably will not succeed much.

Further details on each individual market can possibly be provided through JETRO on request basis.

¹⁸ (MHLW Pharmaceutical and Medical Device Industry Report 2014)

¹⁹ (MHLW Prescription Drug Survey 2014)

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