한국 주요질환 역학자료집

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EPIDEMIOLOGY IN KOREA

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For a stakeholder to enter into Korea for clinical development, it is in most situations of key importance to get a comprehensive first-look at any disease. To address these needs, Korea National Enterprise for Clinical Trials (hereafter KoNECT) has built up a robust epidemiology database of key diseases in Korea. The epidemiological data covers incidence/prevalence rate, diagnosis, treatment, and risk factors providing comprehensive first-look at these diseases. This database is based on the literature review of epidemiological and clinical studies in Korean subjects. This database may be able to identify the eligible patients' size, the relevance of the eligibility criteria of concerned protocol, and local medical practices.
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EPIDEMIOLOGY IN KOREA

Ministry of Health and Welfare
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EPIDEMIOLOGY IN KOREA

Antiinfective

Graft-versus-Host Disease

Incidence	The incidence of acute graft-versus-host disease (aGVHD) was 41.2% (320 GVHD cases among 775 patients with hematopoietic cell transplantation [HCT], 95% confidence interval [CI]: 37.7-44.7). [1] The incidence of chronic GVHD (cGVHD) was 36.6% (211/437 patients with HCT) and the median duration of follow-up was 46 months (range, 5-71 months). Based on the NIH consensus criteria (NCC), 211 patients were reclassified as having late aGVHD (n=44, 21%), overlap syndrome (n=64, 30%), and classic cGVHD (n=103, 49%). [2]
Prevalence	N/A
Mortality	N/A
Gender	The ratios of males to females for acute and chronic GVHD were 55:45 (Male: 176, Female: 144) and 53:47 (Male: 111, Female: 100), respectively. [1, 2]
Age	N/A
Regional distribution	N/A
Clinical phenotypes/ classification	Among 320 patients with classic aGVHD, the ratio of class II to III-IV was 86:14 (class II=275, III-IV=45). [1] In another study, 167 patients with classic cGVHD and overlap syndrome were graded as mild (n=23, 14%), moderate (n=81, 48%), and severe (n=63, 38%) by NCC global scoring. [2]
Clinical manifestation	Organ involvement in aGVHD was reported in the skin of 44% (141 cases), the gut in 16% (51 cases), and the liver in 7% (23 cases). [1] Moderate cGVHD consisted of a more extensive type (62%) vs a limited type (38%), while patients with mild and severe cGVHD consisted of mainly limited (87%) and extensive types (97%). [2]
Risk factor	ABO-mismatched donors [3], younger age, unrelated donors, acute leukemia [1], HLA allele-mismatched donors [4], preexisting diabetes mellitus, and repeated stem cell transplantation (SCT) [5] were risk factors for GVHD in the Korean population.
Diagnosis	GVHD has been classically divided into acute and chronic variants based upon the time of onset using a cutoff of 100 days. However, this conventional division has been challenged as the signs of these variants may occur outside of this time cutoff. The NCC guidelines widely used for the diagnosis of GVHD consider manifestations which are diagnostic or distinctive of chronic GVHD as overlap syndrome for both acute and chronic manifestations of GVHD. [1, 2]

Treatment	Most patients with cGVHD underwent systemic immunosuppressive treatment including steroids and calcineurin inhibitor (22 cases among 23 patients). Sixteen patients were treated with steroids and cyclosporine, five were administered steroids only, and one patient was administered steroids and cyclosporine alternately with tacrolimus. [6]
Prognosis	In a median follow-up of 39 months (range, 34.4-43.6) after the onset of acute GVHD, the three-year survival was 81.2% (95% CI: 76.6-86.1). [1] Among patients with late-onset aGVHD (n=44), the four-year GVHD-specific survivals were 100%, 86%, and 56% for the late-onset, persistent, and recurrent subtypes, respectively. [2]
Genetic information	Genetic polymorphisms of minor histocompatibility antigen genes [7] and *SOCS* genes [8] were associated with GVHD in the Korean population.
References	[1] Risk and prognostic factors for acute GVHD based on NIH consensus criteria. ***Bone Marrow Transplant*** (2013) 48: 587-592 [2] Feasibility of NIH consensus criteria for chronic graft-versus-host disease. ***Leukemia*** (2009) 23: 78-84 [3] Impact of ABO incompatibility on outcome after allogeneic peripheral blood stem cell transplantation. ***Bone Marrow Transplant*** (2005) 35: 489-495 [4] The impact of HLA and KIR ligand mismatching on unrelated allogeneic hematopoietic stem cell transplantation in Korean adult patients. ***Ann Lab Med.*** (2015) 35: 111-117 [5] Incidence and risk factors for ocular GVHD after allogeneic hematopoietic stem cell transplantation. ***Bone Marrow Transplant*** (2015) 50: 1459-1464 [6] Prognostic implications of the NIH consensus criteria in children with chronic graft-versus-host disease. ***Yonsei Med J.*** (2011) 52: 779-786 [7] Distribution of the minor histocompatibility antigens in Korean population and disparities in unrelated hematopoietic SCT. ***Bone Marrow Transplant.*** (2007) 40: 723-738 [8] Expression of SOCS1 and SOCS3 genes in human graft-versus-host disease after allogeneic hematopoietic stem cell transplantation. ***Blood Res.*** (2013) 48: 16-23

Helicobacter Pylori Infection

Incidence	N/A
Prevalence	The seroprevalence of *Helicobacter Pylori (H. pylori)* infection was 41.5% in total of 23,770 subjects (aged 17-97 years) from a health examination center participated in this cross-sectional study from January 2016 to June 2017. [1] The seroprevalence of *H. pylori* infection was 54.4% in 10,796 subjects in 2011 significantly lower than the seroprevalence of 59.6% in 2005 and 66.9% in 1998. This decreased seropositivity was widespread across all ages and in most areas of the country. This decreasing trend could be explained by cohort analysis. All younger birth cohorts had a lower *H. pylori* seroprevalence than those of older birth cohorts at the same age. Decreased seroprevalence within the same birth cohorts also accounted for this phenomenon. [2]
Mortality	N/A
Gender	The seroprevalence of *H. pylori* infection was significantly higher in males than in females (43.2% vs. 39.5%). [1]
Age	Seropositivity tended to increase with age, although it decreased slightly in the older age group. Age distribution of seroprevalence rate was as follow: 16-19 years: 9.5%, 20-29 years 14.7%, 30-39 years: 30.4%, 40-49 years: 40.6%, 50-59 years :45.8%, 60-69 years: 46.0%, ≥70 years: 43.9%. Age distribution of eradication therapy rate was as follow: 16-19 years: 0%, 20-29 years: 1.9%, 30-39 years: 8.8%, 40-49 years: 18.3%, 50-59 years: 28.6%, 60-69 years: 32.5%, ≥70 years: 30.4%. [1]
Regional distribution	Seoul had the lowest seroprevalence of *H. pylori* infection (38.8%), followed by Gyeonggi (40.6%). Most geographical areas, with the exception of Jeolla and Jeju, had anti- *H. pylori* IgG prevalence values less than 50%. Seroprevalence by geographical areas was as follow: Seoul: 5,535 cases (38.8%), Gyeonggi: 1,729 cases (40.6%), Chungcheong: 403 cases (47.4%), Gyeongsang: 1,354 (49.1%), Jeolla: 396 cases (54.5%), Gangwon: 271 cases (46.8%), Jeju: 325 cases (56.3%) in 2016-2017. Prevalence of *H. pylori* eradication therapy by geographical areas was as follow: Seoul: 3,516 cases (24.6%), Gyeonggi: 969 cases (22.8%), Chungcheong: 184 cases (21.7%), Gyeongsang: 588 cases (21.6%), Jeolla: 137 cases (19.5%), Gangwon: 124 cases (22.5%), Jeju: 45 cases (15.5%) in 2016-2017. [1]
Clinical phenotypes/ classification	N/A

Clinical manifestation	There was no difference in *H. pylori* seropositivity between participants with and without upper gastrointestinal symptoms (41.5% vs 41.6%) [1]
Risk factor	The risk factors associated with *H. pylori* seropositivity according to multivariable analysis were male sex (odds ratio [OR]: 1.34), medium educational level (odds ratio [OR]: 1.17), medium household income level (OR: 1.10), and age of 60-69 years (OR: 8.78). [1] Participants with a high BMI (≥25.0 kg/m^2) showed higher *H. pylori* seropositivity than those with a relatively normal BMI (18.5-23.0kg/m^2) (OR: 1.17). [3] The clinical risk factors of *H. pylori* infection were higher cholesterol level (≥240 mg/dL) (OR: 1.33), male sex, older age, low income, and rural residence. [2] Old age (hazard ratio [HR]: 1.015), smoking (HR: 1.216), alcohol consumption more than four times per week (HR: 1.263), marriage (HR: 2.735), and living with *H. pylori*-infected family members (HR: 1.525) were also as statistically significant risk factors associated with seroconversion. [4]
Diagnosis	The Genedia *H. pylori* ELISA (Green Cross Medical Science), Chorus helicobacter IgG (DIESSE Diagnostica Senese) and Vidas *H. pylori* IgG assays (bioMe´ rieux) exhibited a high concurrence rate, with similar diagnostic accuracy, in Korean adults. Therefore, all three of these non-invasive assays are reliable for serodiagnosis in the Korean population. [5]
Treatment	Of remaining subjects, 5,563 (23.5%, n=5,563/23,632) reported a history of having received *H. pylori* eradication therapy, regardless of the outcome of therapy. Overall, 23.5% of the eligible subjects received *H. pylori* eradication therapy in 2016-2017, which was significantly increased from 19.3% in 2011, which in turn was increased from 13.9% in 2005, demonstrating a significant upward trend in the of *H. pylori* eradication therapy rate over the 11 years from 2005 to 2016-2017 (trend P<0.0001). [1] A cohort of 2,202 patients with *H. pylori* was treated with proton pump inhibitor (PPI)-based triple therapy for seven days. In case of treatment failure recurrence, moxifloxacin-based triple therapy (MA) bismuth-based quadruple therapy (QUAD) was randomly administered. When the second-line treatment failed and H. pylori recurred, the unused MAQUAD was used as a third-line treatment. The “final” eradication rates up to third-line treatment were 80.0% (n=1,692/2,116) in the intention-to-treat (ITT) group and 99.8% (n=1,641/1,644) in the per-protocol (PP) group. Multivariate analysis showed a significantly lower eradication rate for infection with clarithromycin-resistant strains (OR: 0.358, P<0.001) than that in those with susceptible strains. [6]

Prognosis	In a retrospective cohort study for 67,212 people, the mean follow-up duration was 4.6 years, and each participant visited the center for a mean of 3.8 visits. The overall proportions of participants with persistent seropositivity, persistent seronegativity, seroconversion, and seroreversion were 53.1%, 32.5%, 4.3%, and 10.1%, respectively. The annual seroconversion rate was 2.79%. The annual crude and spontaneous seroreversion rates of the entire study population were 3.64% and 2.42%, respectively. [4] Chronic *H. pylori* infection was found to raise the risk of gastric cancer among Koreans, with the highest risk observed for cardia gastric cancer and early gastric cancer (summary OR: 2.88 for both). [7]
Genetic information	*H. pylori* DNA was extracted from antral biopsy specimens from 33 children with *H. pylori* gastritis. 31 (94%) were *cagA* positive. Twenty-four (72%) had s1c genotype and nine (27%) had s1a. The m1 genotype was seen in 27 (82%) and m2 was found in five (15%). The *iceA1* genotype was detected in 25 (76%). Scores of neutrophil activity, chronic inflammation, and *H. pylori* density were independent of *cagA, vacA* and *iceA* status. The *cagA*-positive *vacA* s1c/m1 *iceA1* genotype was predominant in Korean children with recurrent abdominal pain and *H. pylori* gastritis. The *cagA, vacA* and *iceA* genotype were not associated with the severity of gastritis. [8] *IL-18* gene polymorphisms at positions 656, 607, 137, +113, and +127 were genotyped in 678 subjects who underwent a routine health check-up. *H. pylori* positivity was identified in 456 subjects (67.3%). The allele frequencies of *IL-18* polymorphisms at position 137 (rs187238) differed based on the *H. pylori* infection status (G vs. C, adjusted OR: 0.64, confidence interval [CI]: 0.47-0.87, P=0.005). [9] *H. pylori* infection, *CagA* status, and *PRKAA1* polymorphisms were risk factors for gastric cancer in Koreans, and that the combination of two of these factors rather than their independent effects synergistically increased the risk. Significant positive interaction between the *PRKAA1* rs13361707 genotype and *H. pylori* infection was verified on an additive scale [relative excess risk due to interaction, 0.55; 95% CI, 0.05–1.04; P=0.030], and the gene- environment interaction between *PRKAA1* rs13361707 and *CagA* status was also statistically significant (relative excess risk due to interaction, 0.50; 95% CI, 0.30–0.70; P<0.001). [10]

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Hepatitis B Virus Infection

Incidence	Annual incidences of acute hepatitis B were as follow: 2010 (1,486), 2011 (462), 2012 (303), 2013 (117), 2014 (173), and 2015 (155). Annual incidences of vertical transmission were as follow: 2010 (18), 2011 (30), 2012 (26), 2013 (59), 2014 (30), and 2015 (43) from Korea Centers for Disease Control and Prevention data. [1]
Prevalence	The rates of hepatitis B surface antigen (HBsAg) carriers were as follow: 1998 (4.61%), 2001 (4.60%), 2005 (3.69%), 2008 (3.01%), 2010 (2.98%) and since 2013 (2.9%) without significant changes. 2017 (>10 years old, 2.9%), 2017 (>19 years old, 3.4%). [1]
Mortality	There was a dissociation of mortality trends between liver disease and liver cancer despite use of antiviral agents. The crude death rate (CDR) for liver disease decreased from 21.2 to 7.5 per 100,000 persons (64.6% decrease). In contrast, the CDR for liver cancer increased from 20.5% to 22.6% (10.2% increase). The marked reduction in liver disease mortality due to newborn vaccination and widespread use of antivirals for hepatitis B virus (HBV) may have increased the life expectancy and number of patients at risk of developing liver cancer, inadvertently leading to an increased burden of liver cancer in HBV-endemic areas. [2]
Gender	The rates of HBsAg carriage were consistently higher in males than in females, but the difference gradually decreased from 1.1% in 1998, to 0.3% in 2016. [2]
Age	The prevalence of HBsAg by age and sex group from Korean National Health and Nutritional Examination Survey in 2014 was as follow: In men, 10-19 years: 0.0%, 20-29 years: 1.1%, 30-39 years: 5.5%, 40-49 years: 4.4%, 50-59 years: 4.5%, 60-69 years: 2.4%, ≥70 years: 0.9%. In women, 10-19 years: 0.3%, 20-29 years: 1.7%, 30-39 years: 3.2%, 40-49 years: 3.7%, 50-59 years 2.5%, 60-69 years: 4.0%, ≥70 years: 2.4%. [1]
Regional distribution	According to the 2009 census performed in 290,212 individuals of age and gender-standardized population, significant regional variation appeared. Seropositive rates are as follow: Jeju: 5.9%, Jeonnam: 5.6%, Gwangju: 5.0%, Busan: 4.7%, Ulsan: 4.6%, Daejeon: 4.5%, Gyeongnam: 4.5%, Daegu: 4.2%, Gyeongbuk: 3.9%, Jeonbuk: 3.9%, Chungbuk: 3.8%, Gyeonggi: 3.7%, Gangwon: 3.7%, Incheon: 3.6%, Seoul: 3.5%, Chungnam: 2.9%. [1]

Clinical phenotypes/ classification	HBV genotype C2 prevails among chronic carriers of the virus in Korea, which is known to be associated with the more severe liver disease than genotype B. [3] In 377 specimens, genotype C 98.1% (370 cases), mixed pattern of genotype B and C 1.9% (7 cases), genotype B 0% (0 cases). [4] Novel recombinants of HBV genotype C2/A2 from a chronically infected patient in South Korea co-infected with both genotypes A2 and C2 were reported. [5]
Clinical manifestation	Five clinical phases: the immune-tolerant phase, immune-active phase, immune-control phase, immune-escape phase, and HBsAg-clearance phase. Individual patients do not necessarily experience these clinical phases in a continuous manner, and clinical phases are not always correlated with criteria or indications of antiviral therapy. [6]
Risk factor	Perinatal transmission in patients with chronic hepatitis B (CHB) is the most important route of HBV infection in Korea. And others include sexual contact, parenteral drug use, receipt of blood products, dialysis, and occupational exposures. [1] Of the 9,281 mothers and their 9,824 neonates born between July 2002 and December 2012 in a tertiary hospital, a total of 308 mothers were HBsAg-positive, with an HBV prevalence of 3.32% (n=308/9,281). There were 319 neonates born to these HBsAg-positive mothers, and 252 were confirmed to as either HBsAg-positive or -negative. Four were confirmed as HBsAg-positive, with a 1.59% (n=4/252) HBV vertical infection rate. All the mothers of neonates who had an HBV vertical infection were hepatitis B e antigen (HBeAg)-positive. [7]
Diagnosis	Antigen/antibody test (HBsAg, Anti-HBs, IgM anti-HBc, IgG anti-HBc, HBeAg), serum HBV DNA test, HBV genotypes, biochemical test (aspartate aminotransferase [AST], alanine aminotransferase [ALT], gamma-glutamyl transferase [GGT], alkaline phosphatase [ALP], bilirubin, albumin, creatinine, complete blood count [CBC], prothrombin time [PT]), liver biopsy, noninvasive fibrosis test [6] Results of hepatitis B serologic test from July 2002 to December 2014 using Data from Korea Centers for Disease Control and Prevention (KCDC) in 2016 are as follow: Immunoprophylaxis success (97.1%): HBsAg (-)/anti-HBs Ab(+) (85.7%), HBsAg (-)/anti-HBs Ab(-) (11.4%), Immunoprophylaxis failure (2.9%): HBsAg (+)/anti-HBs Ab(-) (2.7%), HBsAg (+)/anti-HBs Ab(+) (0.1%) [1]

Treatment	In Korea, tenofovir alafenamide fumarate (tenofovir AF) and Besifovir dipivoxil maleate were approved for the treatment of chronic hepatitis B in adults in 2017, so a total of eight antiviral drugs are available and these are as follow: 1. Immune modulator: Pegylated interferon alfa 2a 2. High genetic barrier: Entecavir, Tenofovir disoproxil fumarate (Tenofovir DF), Tenofovir alafenamide fumarate (Tenofovir AF), Besifovir dipivoxil maleate (Besifovir) 3. Low genetic barrier : Lamivudine, Telbivudine, Clevudine, Adefovir dipivoxil (Adefovir) [8] The Ministry of Health and Welfare and the KCDC in Korea have been organizing HBV vertical infection prevention projects since July 2002. In this single-institute study, the results of surveys conducted in target mothers who delivered babies in a tertiary hospital were investigated and analyzed. The HBV prevalence of mothers was 3.32% (n=308/9,281), and their vertical infection rate was 1.59% (n=4/252). Thus, the Korean HBV vertical infection prevention projects are effective, and, accordingly, HBV prevalence in Korea is expected to decrease continuously. [7]
Prognosis	The accumulated incidence of cirrhosis developing from CHB is generally reported to be 8–20%. In Korea, the reported annual and 5-year accumulated incidences of cirrhosis are 5.1% and 23%, while those for hepatocellular carcinoma (HCC) are 0.8% and 3%. [6]
Genetic information	Drug resistance related HBV gene mutations are M204V, M204I, L180M+M204V, A181T/V, N236T, L180M+M204V/I + I169T or V173L or M250V and L180M+M204V/I + 184G or S202I/G. [8] *HLA-DPB1* SNPs (rs7770370, rs7770501, rs3128961, andrs9277535) were associated with responses to HBV vaccination in Korean infants. [9] Genetic polymorphisms in *CTNNB1* gene might affect tumor development and survival in patients with HBV-associated HCC. [10]

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Hepatitis C Virus Infection

Incidence	The incidence of liver cirrhosis in patients with chronic Hepatitis C virus (HCV) infection was 33.0/1,000 person-years, while the incidence of hepatocellular carcinoma (HCC) in patients with chronic HCV infection was 9.2/1,000 person-years. [1]
Prevalence	Using an estimated 2009 population of Korea, age, sex and area adjusted anti-HCV positive rate was 0.78%. [1]
Mortality	The estimated incidence of HCC in patients with liver cirrhosis (LC) associated with HCV infection in Korea was 5.8/100 person-years and the overall mortality rate was 5.1/100 person-years. The 3-year cumulative incidence of HCC was 19.1% and the 3-year cumulative mortality rate was 14.5%. [2]
Gender	Anti-HCV prevalence in female patients (0.83%) was higher than that in male patients (0.75%), and 0.4% in Korean pregnant women. [1]
Age	The age-related prevalence of anti-HCV in 2009 is as follow: 20-29 years: 21 cases (0.34%), 30-39 years: 216 cases (0.41%), 40-49 years: 491 cases (0.6%), 50-59 years: 471 cases (0.8%), 60-69 years: 357 cases (1.53%), ≥70 years: 162 cases (2.31%) [1]
Regional distribution	The regional distribution-related prevalence of anti-HCV in 2009 is as follow: Seoul: 421 cases (0.54%), Busan: 138 cases (1.53%), Daegu: 75 cases (0.69%), Incheon: 62 cases (0.51%), Gwangju: 27 cases (0.93%), Daejeon: 57 cases (0.80%), Ulsan: 107 cases (0.50%), Gangwon: 53 cases (0.78%), Gyeonggi: 446 cases (0.53%), Chungbuk: 21 cases (0.50%), Chungnam: 72 cases (0.61%), Gyeongbuk: 51 cases (1.20%), Gyeongnam: 53 cases (1.08%), Jeonbuk: 61 cases (0.97%), Jeonnam: 68 cases (2.07%), Jeju: 6 cases (0.23%). [1]
Clinical phenotypes/ classification	Clinical classification by fibrosis stage is as follow: Stage 0: 7.5%, Stage 1: 28.6%, Stage 2: 32.7%, Stage 3: 18.8%, Stage 4: 12.4%. [3]
Clinical manifestation	N/A
Risk factor	The behavioral risk factors possibly related to HCV infection in the Korean HCV cohort were as follow: Intravenous drug use (5%), needle stick injury (7%), transfusion before 1995 (19%), tattooing (36%), living with HCV carrier (0.8%), hemodialysis (0.8%), No. of sexual partner ≥ 3 (28%), dental procedure (93%), endoscopy (85%), acupuncture (83%), piercing (35%). [3]

Diagnosis	The diagnostic distribution of the HCV group was as follow: Acute hepatitis (5.4%), past infection (3.2%), chronic hepatitis (66.2%), cirrhosis of the liver (15.3%), and HCC (10.0%). [3]
Treatment	When direct antiviral agents (DAAs) are orally administered for 12-24 weeks, the sustained virologic response (SVR) is over 90% and they have an excellent safety profile. DAA drugs can be used in almost all patients with HCV infection who are not eligible for conventional interferon-based treatment. [2] The antiviral regimen was based on interferon in 25.5%, and it was DAA therapy in 28.3%, consisting of 23.4% undergoing a treatment as naïve patients and 4.9% who had experienced interferon. [4]
Prognosis	N/A
Genetic information	When we divided the patients into two groups of patients with non-LC and LC without considering the presence of HCC, HCV subtype 1b (47.3%) was less common than non-1b subtypes (52.7%) in the group of patients with non-LC, but its proportion (56.9%) was higher than that of non-1b subtypes (43.1%) in the group of patients with LC. Difference between these two groups was significant (P=0.006). [5]
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HIV Infection

Incidence	There were 888, 868, 1,013 and 1,081 newly diagnosed human immunodeficiency virus (HIV) cases from 2011 to 2014. [1] Since 2000, the number of the HIV infected people has sharply increased and rather slow down since 2007. [2] There were 1,206 newly identified HIV cases in 2018. [3]
Prevalence	There were 8.662 and 9,615 people living with HIV/AIDS in Korea in 2013 and in 2014, respectively. [1] The adult (age 15-49) prevalence rate was 0.1% (2011 CIA world fact book). There were 12,991 People living with HIV/AIDS in Korea in 2018. [3]
Mortality	There were 148 deaths in 2011 and 1,512 cumulative deaths until 2011. Annually, 100-150 deaths have been reported since 2006. [2] A retrospective hospital-based cohort study was conducted to assess mortality and causes of death among HIV-infected patients between 1990-2011. Of the 747 attended patients, a total of 222 patients (29.7%) died during the study period. And of the 222 patients who died, 154 (69.4%) died in hospital (120 in the study hospital and 34 in other hospitals) and 52 (23.4%) at home. Mortality rates per 100 person-year (PY) declined from 8.7 in pre-highly active antiretroviral therapy (HAART) period (1990-1997) to 5.4 in early-HAART period (1998-2001), which further declined to 4.9 in late-HAART period (2002-2011). [4]
Gender	According to newly occurring patients in 2018, gender ratio was 10.4:1 (1,100:106). [3]
Age	The number of newly diagnosed HIV cases in 2018 by age is as follow: 15-19 years: 20 cases, 20-24 years: 134 cases, 25-29 years: 261 cases, 30-34 years: 189 cases, 35-39 years: 139 cases, 40-44 years: 121 cases, 45-49 years: 90 cases, 50-54 years: 90 cases, 55-59 years: 71 cases, 60-64 years: 37 cases, 65-69 years: 24 cases, ≥70 years: 30 cases. People in age 20-29 and 40-49 make up 77% of the total. [3]
Regional distribution	Reported place distribution in 2011 and cumulative distribution from 1985 to 2011, respectively are as follow: Seoul: 34.8%, 37.5%, Gyeonggi: 24.4%, 20.4%, Incheon: 7.0%, 5.4% Busan: 6.8%, 9.3%. [2]
Clinical phenotypes/ classification	Among 747 HIV-infected patients in hospital, percentage of patients according to 1993 Centers for Disease Control and Prevention (CDC) classification criteria clinical categories at presentation are as follow: Category A (53.8%), category B (16.1%), category C (30.1%) [4]

Clinical manifestation	N/A
Risk factor	Among 747 HIV-infected patients in hospital, percentage of patients by risk factors are as follow: Heterosexual (69.9%), homo/Bisexual (23.9%), IDU/transfusion (3.2%), unknown (4.1%). [4]
Diagnosis	The primary reasons for HIV testing were health check-ups (41%) and presence of clinical manifestations (31%). The late diagnosis group included 858 individuals (37.3% of the study population). [5]
Treatment	During the initial visit, a CD4+ T cell count/% proportion, plasma HIV-RNA (viral load), complete blood count including white blood cell differential count, chemistry profile, serologies for hepatitis A, B, and C, and screening tests for syphilis, toxoplasmosis, gonorrhea, and tuberculosis such as tuberculin skin tests, interferon (IFN)-release assays, or chest X-rays should be performed. In the case of advanced disease, a repeat test for tuberculosis is recommended when the CD4+ T cell count recovers over 200/ uL if the initial test for tuberculosis was negative. [6]
Prognosis	The distribution of duration from presentation to death is as follow: < 3 months (33.8%), 3-6 months (11.7%), > 6 months (54.5%). [4]
Genetic information	HIV-1 gp41 plays a key role in viral entry. The insertion of Thr at position 4 and Met/Val/Phe substitutions at position 7 are frequently observed in the fusion peptide (FP) motif of gp41 without major enfuvirtide resistance associated with mutation in heptad repeats 1/2 (HR1/2) of HIV-1 isolates from Korean patients. Here, the influence of these mutations on their biological function was evaluated by employing HIV-1 variants with mutant FPs as shown previously and with recombinant HIV-1 using the env genes of 20 HIV-1 isolates from Korean patients. In an infectivity assay, all FP mutants showed lower infectivity than the wild-type NL4-3. In particular, the substitutions at position 7 led to much greater reductions in infectivity than the insertions at position 4. Nevertheless, the replication kinetics of most mutants were similar to those of the wild type, except that the FP mutants with an Ile insertion at position 4 and a Phe substitution at position 7 showed reduced replication. Moreover, most point mutants showed lower IC50 values for enfuvirtide than the wild type, whereas the L7M substitution resulted in a slightly increased IC50 value. The infectivity using the HIV-1 env recombinant viruses decreased in 14 cases but increased slightly in six cases compared with the wild type. [7]

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Influenza

Incidence	The incidence of medically-attended laboratory-confirmed influenza infection was 242.8 per 100,000 adults during 2013-2014 based on surveillance data from the Hospital-based Influenza Morbidity & Mortality Surveillance (HIMM) network. [1] For H1N1 type, incidence rate was 5.68% for all suspected cases, 1.34% for confirmed cases in 2009. Mostly in younger age groups and 5-9 year age group was the most affected (20.42%). [2]
Prevalence	For H1N1, 6% (95.9% outpatients, 4.06% hospitalized, 0.05% admitted to hospitals) of the total population received antiviral drugs based on the Antiviral Drug Surveillance System (ADSS) of 2009. [2]
Mortality	Influenza was associated with an average of 2,900 excess deaths per year, based on individual mortality data from 2003-2013 compiled by the Korea Statistics Micro-Data Service system. Overall all-cause excess annual mortality rate per 100,000 people was 5.97, whereas it was 46.98 for adults aged over 65 years. It also greatly varied from year to year, ranging from 2.04 in 2009-2010 to 18.76 in 2011-2012. [3]
Gender	Females accounted for 50.02% of all patients and 52.66% of confirmed cases in total, 2,825,821 antiviral drug users for H1N1 registered in the ADSS from September 1 to December 31, 2009, including 665,231 confirmed cases. [2]
Age	The mean age was 19.9 year (±17.3 year) and the median age was 14 year (range, 0–102 year). Substantially more cases were recorded in the younger group than those in the older group. Children aged 0–9 year accounted for 33.94% of all cases, whereas only 3.89% of the patients were over 60 years. The school-age group of 10–19 year had the highest number of confirmed cases. [2] Hospital-Based Influenza Surveillance in 2011-2012 of Korea, age distribution of emergency room-based incidence cases was as follow: <1 years: 8.2%, 1-4 years: 40.4%, 5-9 years: 16.1%, 10-19 years: 4.5%, 20-49 years: 17.6%, 50-64 years: 5.8%, ≥65 years: 7.3%. Age distribution of inpatient-based incidence cases was as follow: <1 years: 11.1%, 1-4 years: 31.0%, 5-9 years: 13.4%, 10-19 years: 3.3%, 20-49 years: 7.9%, 50-64 years: 8.1%, ≥65 years: 24.4%. [4]

Regional distribution	The number of patients exposed to novel influenza A (H1N1) was highest in and around the capital area, but the incidence per 100 people was high in Gwangju (6.67) and Chungbuk (6.38). The highest incidence rate of severe outcomes was in Gangwon (4.89 ICU admissions/100,000), where most of the districts are rural areas. After classifying the region by city and province, the incidence of influenza A (H1N1) was higher in provinces where the proportions of 0–19 year patients (24.30%) and those over 60 years (15.99%) were greater than those in the city (22.73% and 13.57% respectively). [2] Mortality burden higher in province-level administrations than in metropolitan cities, with an average of 8.09 and 4.10 deaths per 100,000 people, respectively. [3]
Clinical phenotypes/ classification	Influenza A (H1N1) (n=3,214, 64.0%), A (H3N2) (n=1,748, 34.8%), and influenza B viruses (n=63, 1.3%) by the Korean Influenza Surveillance Scheme (KISS) during the 2008-2009 influenza season. [5] It is difficult to differentiate influenza A and B by clinical manifestations. [6] The proportion of males to females and elderly population were significantly higher for influenza A (H3N2) patients group compared with influenza B. [7]
Clinical manifestation	It is frequently isolated in children less than six years of age, in the winter and spring. [3] Clinical characteristics of children with influenza A and B in 2011-2102 were as follow: Influenza A: fever (97.0%), cough (86.4%), rhinorrhea (69.7%), sputum (56.1%), rale (19.7%), wheezing (10.6%), abdominal pain (7.6%), seizure (7.6%), vomiting (6.1%), diarrhea (6.1%) Influenza B: fever (100%), cough (89.7%), rhinorrhea (83.3%), sputum (64.1%), vomiting (20.5%), diarrhea (11.5%), sore throat (10.3%), rale (9.0%), seizure (5.1%), abdominal pain (3.8%) [6]
Risk factor	The presence of one more underlying medical conditions in elderly aged ≥60 years and lower economic status, ≤9 years of age, underweight (body mass index [BMI]<18.5 kg/m^2). [2] Cardiovascular disorders (odds ratio [OR]: 4.05), chronic lung diseases (OR: 3.38), hypertension (OR: 2.37), diabetes mellitus (OR: 3.09), and neuromuscular diseases (OR: 10.18) were independently associated with hospitalization of patients with laboratory-confirmed influenza. [7]

Diagnosis	Rapid antigen test (sensitivity: 71.4%, specificity: 95.8%, positive predictive value: 79.7%, negative predictive value: 93.5%), direct and indirect immunofluorescence assays (DFA and IFA) (sensitivity: 47-93%), viral isolation in tissue cell culture, nucleic acid amplification tests (including rRT-PCR) (sensitivity: 86-100%). [8] Rapid antigen test decreases sensitivity from 5 days after symptoms are expressed. Test performance varied according to days after fever onset. Test specimens for rapid influenza diagnostic test should be collected as soon as possible after the onset of symptoms (less than 4 days). [9]
Treatment	In the survey on National Health and Nutrition and influenza vaccination from 2007 to 2010, the overall vaccination rate was 21.7% (2007-2010). The influencing factors of influenza vaccination included multiple socio-demographic factors and health behaviors. [10] Ant-viral agents are neuraminidase inhibitor (oseltamivir, zanamivir) and M2 inhibitor (amantadine, remantadine). But M2 inhibitors are not recommended because of resistance. [8] The therapeutic effect of oseltamivir is more effective in type A influenza (n=352, 94.1%) than type B influenza (n=57, 78.1%). [11]
Prognosis	Among the hospitalized patients with influenza, 33.6% were accompanied by complications. Pneumonia (28.7%), acute renal failure (4.1%), Rhabdomyolysis (0.8%), Encephalitis (0.8%). [4]
Genetic information	In 2005-2010, of 308 influenza A viruses examined, 229 (74.4%) had the S31N substitution in the M2 protein. The frequency of amantadine resistance was 30% for A/H1N1, 100% for pandemic A/H1N1 2009, and 76% for A/H3N2. [12] During the 2008-2009 season, 533 (99.8%) of 534 A (H1N1) viruses were resistant to oseltamivir and all of them harbored the H275Y mutation in the NA gene. No oseltamivir-resistant A (H3N2) viruses (0.0%, n=0/295) were observed. The rates of amantadine resistance in A (H1N1) and A (H3N2) during this period were 2.1% (n=12/572) and 99.3% (n=285/287). [13] In type A influenza, parts of H5N1 and H3N2 and H274Y variations in H1N1 were reported to be resistant to oseltamivir. [11]

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Nontuberculous Mycobacteria

Incidence	The age-adjusted incidence was 1.0 per 100,000 in 2003 and 17.9 per 100,000 in 2016 using data of the National Health Insurance Service database. Annual age-adjusted incidence of nontuberculous mycobacteria (NTM) infection tended to increase rapidly from 2003 to 2016. [1]
Prevalence	Age-adjusted prevalence of NTM infection rapidly increased from 2003 to 2016. The age-adjusted prevalence was 1.2 per 100,000 in 2003 and 33.3 per 100,000 in 2016. [1]
Mortality	Mortality rates of all patients with NTM infection at 1 year and 5 years after diagnosis were 4.7 and 17.8%, respectively. The standardized mortality ratio of patients with NTM infection to the general population was 2.16 [1]
Gender	The age-adjusted prevalence of NTM infection was higher in women. In 2016, it was 20.8 per 100,000 in men and 45.1 per 100,000 in women. And women had about 2.5 times higher age-adjusted incidence than men (24.9 vs. 10.4 per 100,000). But the 5-year mortality rate was about three times higher in men than that in women (28.3% vs 9.9%). [1]
Age	Age distribution among total of 46,194 patients with NTM identified between 2003 and 2016 was as follow: 0-19 years: 4.0%, 20-29 years: 6.3%, 30-39 years: 9.0%, 40-49 years: 12.7%, 50-59 years: 20.5%, 60-69 years: 20.8%, 70-79 years: 19.5%, ≥80 years: 7.1%. In 2016, the prevalence was the highest in patients aged 80 years or older (188.7 per 100,000). And elderly patients also had higher incidence. [1]
Regional distribution	A total of 46,194 patients with NTM were identified between 2003 and 2016. And of all patients, 45.7% were living in metropolitan areas. [1] Overall prevalence (number of cases per 100,000 population) of NTM infections by administrative division, adjusted for age and sex, South Korea, 2007–2016 was as follow: Seoul: 254.5, Busan: 102.6, Daejeon: 194.4, Gwangju: 302.0, Daegu: 119.9, Incheon: 86.3, Ulsan: 81.5, Gyeonggi: 110.2, Gangwon; 108.9, Jeonbuk: 98.4, Jeonam: 35.1, Gyeongbuk: 26.8, Gyeongnam: 66.0, Chungbuk: 30.6, Chungnam: 35.2, Jeju: 35.8. [2]

Clinical phenotypes/ classification	From January 2012 to April 2012, Pre-identified NTM (60 species in 3 hospital of Busan-Gyeongnam area) were examined. They confirmed 4 (6.6%) Mycobacterium tuberculosis (MTB) and 56 (93.4%) NTM from 60 pre-identified NTM species by multiplex PCR (Polymerase Chain Reaction) and PRA (PCR-restriction fragment length polymorphism analysis). The distribution of 56 NTM species were *M. intracellulare* type I 15 (26.7%), *M. avium* 14 (25%), *M. abscessus* 11 (19.5%), *M. kansasii* type I 3 (5.4%), *M. pulveris* 2 (3.6%), *M. intracellulare* type, *M. chelonae*, *M. kansasii* type V, *M. gallinarum*, *M. wolinskyi*. [3]
Clinical manifestation	The symptoms of NTM lung disease – cough, sputum, hemoptysis, fatigue, malaise, and weight loss – are nonspecific and similar to symptoms of pulmonary tuberculosis (TB), and thus may also reflect underlying lung disease such as bronchiectasis and chronic obstructive lung disease. Patients with NTM lung disease are more likely to be older, female, non-smoking, and to have fewer constitutional symptoms, a history of previous TB treatment, absence of pleural effusion, involvement of the middle and lower lung zone, and bilateral disease than do patients with pulmonary TB. [4]
Risk factor	NTM infection is related to population density and the degree of urbanization. [2]
Diagnosis	A study selected presumptive NTM isolates negative for probe hybridization for M. tuberculosis complex, cultured in a third referral hospital from 21 January 2003 to 20 January 2004. Ninety seven-isolates were identified to the species level by direct sequencing of fragments of 16S rRNA, *hsp65* and *rpoB* genes. A total of 120 isolates were studied for the distribution analysis. The identification rate by sequencing of 16S rRNA, *rpoB*, and *hsp65* were 65%, 82% and 87%, respectively. The *hsp65* or *rpoB* gene was more efficient than 16S rRNA for the identification of NTM by sequencing. [5]
Treatment	A total of 41 patients were treated with a Moxifloxacin (MXF)-containing regimen because of a persistent positive culture after at least 6 months of clarithromycin-based standardized antibiotic therapy. The overall treatment success rate was 29% (12/41), and the median time to sputum conversion was 91 days (IQR, 45 to 190 days). Results indicate that MXF may improve treatment outcomes in about one-third of patients with persistently culture positive MAC (Mycobacterium avium Complex) lung disease who fail to respond to clarithromycin-based standardized antibiotic treatment. [6]
Prognosis	Common causes of death in patients with NTM infection were respiratory diseases such as tuberculosis (10.0%), pneumonia (8.3%), and chronic lower respiratory disease (14.2%), and lung cancer (7.2%). Other cancers (15.0%) were also common causes of death. [1]

Genetic information	A total of 8 mycobacterial reference strains and 13 clinical isolates were digested with restriction enzymes such as *MSP I*. The results of using this process clearly demonstrated that all 13 specimens were identified by *rpoB* gene PRA method. The PCR-RFLP method based on the *rpoB* gene is a simple, rapid, and accurate test for the identification of Mycobacterium. PCR-RFLP profiles obtained from reference strains of mycobacteria used in this study, *M. avium* (Strain: ATCC 25291 / DNA fragment size: 105, 80, 50, 45), *M. chelonae* (ATCC 35749 / 105, 95, 80, 50, 40), *M. gordonae* (ATCC 14470 / 175, 80, 45), *M. Kansasii* type 1 (Pasteur institute / 175, 60, 45, 40), *M. smegmatis* (ATCC 19420 / 200, 90), *M. celatum* type 1 (ATCC 51130 / 145, 95, 45), *M. abscessus* (Pasteur institute / 105, 95, 80), *M. tuberculosis* (ATCC 27294 / 175, 80, 60, 40) [7]
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Norovirus Infection

Incidence	2,138 cases (101 outbreaks) were newly occurred in 2016 and 2,054 cases (99 outbreaks) were newly occurred in 2017 using data from Korean centers for disease control and prevention (KCDC). [1]
Prevalence	N/A
Mortality	N/A
Gender	N/A
Age	It is most often seen in younger age people with weak immune systems. [1]
Regional distribution	Regional distribution of incidence of norovirus (NoV) in 2017 (total 101 outbreaks) are as follow: Seoul: 18 outbreaks, Busan: 3 outbreaks, Daegu: 4 outbreaks, Incheon: 3 outbreaks, Gwangju: 1 outbreak, Daejeon: 2 outbreaks, Ulsan: 3 outbreaks, Gyeonggi: 39 outbreaks, Gangwon: 11 outbreaks, Chungbuk: 0 outbreak, Chungnam: 7 outbreaks, Jeonbuk: 1 outbreak, Jeonnam: 1 outbreak, Sejong: 1 outbreak, Gyeongbuk: 2 outbreaks, Gyeongnam: 2 outbreaks, Jeju: 3 outbreaks. [1]
Clinical phenotypes/ classification	Place distribution of incidence of NoV in 2017 (total 101 outbreaks) are as follow: School (55), Workplace (3), Army/police (0), Group facilities (19), Funeral hall/ Wedding hall (0), Public restaurant (23), Homemade meal (0), Unknown (0). [1]
Clinical manifestation	Total of 39 cases in Chungbuk high school, main symptoms are as follow: Diarrhea (69.2%), Abdominal pain (51.3%), Nauseated (43.6%), Vomiting (30.8%), Fever (12.8%). The average latent period was 44 hours. [1]
Risk factor	Area water supply, food intake could be risk factor. [1]
Diagnosis	The primer sets used for the detection of NoV may differ in each laboratory because a standard method for detection has not yet been established. GI-F1/R1/F2 and GII-F1/R1/F2 are recommended for the detection of NoV by the KCDC. Using reverse transcription polymerase chain reaction (RT-PCR) and semi-nested PCR, NoV GI and GII were detected higher in advanced primer sets (91.7% (NKI-F/R/F2), 89.3% (NKII-F/R/R2)) compared to conventional primer sets (54.2% (GI-F1/R1/F2), 52.5% (GII-F1/R1/F2), 25.0% (SRI-1/2/3), and 32.2% (SRII-1/2/3)). [2]
Treatment	N/A
Prognosis	N/A

Genetic information	Of the 230 genotyped strains, GII.4 (77.3%) was the most frequently observed capsid genotype, followed by GII.3 (6.1%) and GII.13 (3.9%). A norovirus GII.4 variant, GII.Pe/GII.4 Sydney 2012, was the most frequently found polymerase/capsid genotype (65.7%), followed by GII.P17/GII.17 (2.1%) and GII.P21/GII.3 (2.1%). Phylogenetic, similarity, and capsid epitope analyses of GII.Pe/GII.4 Sydney 2012 strains were performed. We concluded that the norovirus GII.4 variant, GII.Pe/GII.4 Sydney 2012, was the main cause of norovirus-related gastroenteritis in Korea in 2013. [3]
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Primary Immunodeficiency Disease

Incidence	N/A
Prevalence	The prevalence of primary immunodeficiency disease (PID) at the end of 2005 was 11.25/million children under 19 years of age in Korea. By five-year age groups, the highest prevalence (15.78/million) was observed in those between 5 and 9 years old. [1]
Mortality	Between January 2001 and December 2005, 15 (9.8%) of 152 patients died due to pneumonia (n=8), sepsis (n=4), bleeding (n=2), and lymphoma (n=1). [1] The five, 10, and 20-year survival rates were 94.7%, 93.7%, and 82.9%, respectively, among patients aged 0-19 years treated for PID in university hospitals from 2001 to 2005. [2]
Gender	Of 152 patients, 119 were boys, resulting in a 3.6:1 sex ratio of boys to girls. [1]
Age	The highest prevalence (15.78/million) was observed in those 5-9 years of age. The time elapsed between the onset of clinical symptoms and PID diagnosis was 19 months for PID 14 months for antibody deficiencies, and 21 months for phagocytic disorders. Clinical symptoms developed at 2.1 year of age, and the time of PID diagnosis was at 3.7 years. [1]
Regional distribution	Seoul (n=41/152), Gyeonggi (n=33/152), Jeolla (n=22/152), Gyeongsang (n=21/152), Jeju (n=15/152), Chungcheong (n=14/152), and Gangwon (n=6/152). [1]
Clinical phenotypes/ classification	The 152 patients were divided into four groups; antibody deficiencies (n=81, 53.3%), phagocytic disorders (n=44, 28.9%), combined immune-deficiencies (n=20, 13.2%), and T cell deficiencies (n=7, 4.6%). [1]
Clinical manifestation	Overall, the most common initial manifestation in PID patients was pneumonia. - Among those with antibody deficiencies: pneumonia and otitis media were the initial manifestations in 53.1% and 11.1% of patients, respectively. - Among those with T cell deficiencies, the initial manifestations included tetany (71.4%) and congenital anomalies of the heart and great vessels (three patients). - Among those with phagocytic disorders, the initial manifestations included lymphadenitis (27.3%), perianal abscess (22.7%), and pneumonia (15.9%). [1]
Risk factor	In this study, 23% of patients had one more family member with proven suspected immunodeficiency. Most often a pair of siblings/ cousins was affected. [1]

Diagnosis	Laboratory analyses were performed using standard techniques and included complete blood counts, platelet counts, examination of peripheral blood smears, erythrocyte sedimentation rates, and complement hemolytic activity (CH50) with C3 and C4. Peripheral blood lymphocyte subsets were analyzed by flow cytometry using a basic panel of T-cell subsets (CD3, CD4, and CD8), B-cells (CD19) and natural killer cells (CD56, CD16). Levels of immunoglobulin G, A, and M (IgG, IgA, and IgM) were determined using the immunoturbidimetric technique. The reference ranges for normal levels were 916-1,796 mg/dL for IgG 93-365 mg/dL for IgM and 40-260 mg/dL for IgA. IgG subclass 1, 2, 3, and 4 concentrations were determined using the single radial immunodiffusion method. The normal ranges for IgG subclass are 315-855 mg/dL for IgG1 64-495 mg/dL for IgG2 23-196 mg/dL for IgG3, and 11-157 mg/dL for IgG4. [3]
Treatment	Regular intravenous immunoglobulin (IVIg) was infused in patients with hypogammaglobulinemia and recurrent infections. - IVIg was administered as the primary treatment modality to 63 patients (41.4%) with antibody combined deficiencies. - Prophylactic treatment was prescribed to patients with T-cell deficiency and phagocytic disorders. - IFN-γ and an anti-fungal agent were administered to patients with chronic granulomatous disease. - Hematopoietic stem cell transplantation was performed in three patients (two patients with Wiskott-Aldrich syndrome and one patient with X-linked severe combined immunodeficiency (SCID). [1]
Prognosis	The frequent complications among 136 patients with PID included short stature (9.9%), bronchiectasis (5.3%), respiratory failure (3.9%), and decreased renal function (3.3%) [2]
Genetic information	Immunoglobulin G3 and G4 deficiency [2]
References	[1] Prevalence of primary immunodeficiency in Korea. ***Journal of Korean Medical Science*** (2012) 27: 788-793 [2] Korean Center for Disease Control. Report on the survey of primary immune deficiency diseases (2006). [3] Immunoglobulin G subclass deficiency is the major phenotype of primary immunodeficiency in a Korean adult cohort. ***J Korean Med Sci.*** (2010) 25: 824-828

Respiratory Syncytial Virus

Incidence	Monthly incidence of respiratory virus isolation in a study data which was obtained 11,798 specimens from patients aged less than 18 years who were admitted with lower respiratory infections (LRI) in a regional hospital from 2006 to 2016 was as follow: March (total LRI cases 900, 12.2%), April (total 1,224, 6.1%), May (total 1,166, 3.2%), June (total 756, 0.9%), July (total 635, 2.5%), August (total 782, 0.7%), September (total 996, 9.7%), October (total 1,198, 22.6%), November (total 1,357, 40.9%), December (total 1,050, 45.4%), January (total 967, 35.9%), February (total 767, 26.2%) So, among 11,798 total LRI patients, 2,230 cases (18.9%) are respiratory syncytial virus (RSV) patients. [1]
Prevalence	N/A
Mortality	N/A
Gender	In a study which tried to isolate respiratory syncytial virus (RSV) from January 1994 through August 1998, the male to female ratio of the culture-positive patients was 107:49. [2]
Age	Prevalence of RSV in a study which was aimed to define viral pathogens in Seoul and the neighboring areas form March 2004 to February 2006 in 3 university hospitals according to age, Age distribution among 625 total patients were as follow: <1 years: 342, 1-2 years: 145, 2-3 years: 78, 3-4 years: 34, 4-5 years: 11, 5-6 years: 0, 6-7 years: 3, 7-8 years: 0, 8-9 years: 0, 9-10 years: 0, 10-20 years: 1, >20 years 11. [3]
Regional distribution	RSV infection mainly occurred between October and February, and showed the peak in November. The prevalence of RSV infection had a moderate negative correlation with mean temperature (r=-0.60), a weak negative correlation with relative humidity (r=-0.26), and precipitation (r=-0.34). Regarding air pollutants, RSV activity moderately correlated with NO2 (r=0.40), SO2 (r=0.41), and CO (r=0.58). In the RSV peak season in Korea (between October and February), RSV epidemics showed a weak positive correlation with relative humidity (r=0.35, P=0.03) and precipitation (r=0.38). [4]
Clinical phenotypes/ classification	In order to know RSV's genetic changes 4028 respiratory specimens were examined from local hospital outpatients in Gyeonggi Province, South Korea over six consecutive years (2009-2014) by real-time one-step RT–PCR. 183 patients were positive for RSV infection. Of the 131 RSV-A specimens sequenced, 61 (43.3%) belonged to the ON1 genotype, 66 (46.8%) were NA1 genotype, 3 (2.1%) were GA5 genotype, and 1 (0.7%) belonged to the GA1 genotype. Of the 31 RSV-B specimens sequenced, 29 were BA9 genotype (87.9%) and 2 were BA10 genotype (6.1%). [5]

Clinical manifestation	The most common clinical symptoms were fever, cough, nasal discharge, and phlegm; multiple logistic regression analysis showed that RSV positive infection on pediatric patients was strongly associated with cough (odds ratio [OR]: 2.8) and wheezing (OR: 2.8). The ON1 genotype was significantly associated with phlegm (OR: 11.8), while the NA1 genotype was associated with the pediatric patients' gender (males, OR: 2.4) and presence of chills (OR: 5.1). RSV subgroup B was showed association with nasal obstruction (OR: 4.6). [5] Children who presented with high serum IgE levels during RSV infections had more severe symptoms compared to those with low IgE levels. It suggests that measurement of total serum IgE levels might be helpful in evaluating disease severity and recurrent wheezing in children admitted with RSV bronchiolitis/pneumonia (RSV-LRI). [6]
Risk factor	The RSV detection rate in preterms and low birth weight infants (27.4%) were significantly higher compared with the group that birth weight was more than 2,500 g (23.0%) during the RSV season and non-RSV season. [7]
Diagnosis	"BIOLINE RSV" demonstrated good sensitivity and specificity for the detection of RSV antigen from nasopharyngeal aspirates (NPAs) of children with lower respiratory tract infections (LRTIs). Because of simple methods and quick results, this test may be useful for the diagnosis of RSV infection during the epidemic periods. [8]
Treatment	From January 1991 to July 2012, nasopharyngeal (NP) aspirates were obtained from patients who visited Seoul National University Children's Hospital for respiratory symptoms. The year to year variability of RSV season exists. The starting time of palivizumab immunoprophylaxis should be adjusted based on the season of RSV epidemic. [9]
Prognosis	During 2011-2016 in a regional hospital in South Korea, 1,193 patients aged less than 15 years with laboratory-confirmed RSV infection were identified. Of these, 35 (35 of 1,193, 2.93%; boys, 19; girls, 16; mean age: 20.8±16.6 months) presented with seizure. Febrile seizure was the most common diagnosis (27 of 35, 77.1%); simple febrile seizures in 13 patients (13 of 27, 48.1%) and complex febrile seizures in 14 (14 of 27, 51.9%). Afebrile seizures without meningitis or encephalopathy were observed in 5 patients (5 of 35, 14.3%), seizures with meningitis in 2 (2 of 35, 5.7%), and seizure with encephalopathy in 1 (1 of 35, 2.9%) patient. Lower respiratory symptoms were not observed in 8 patients. In a patient with encephalopathy, brain diffusion-weighted magnetic resonance imaging revealed transient changes in white matter, suggesting cytotoxic edema as the mechanism underlying encephalopathy. Most patients recovered with general management, and progression to epilepsy was noted in only 1 patient. [10]

Genetic information	Genetic characteristics in the second variable region G protein gene of Human respiratory syncytial virus (HRSV) were investigated during 5 consecutive seasons from 2010 to 2015. A total of 4,793 specimens (throat swabs) were collected from patients with acute respiratory tract. HRSV were evaluated and classified as HRSV A (n=111) or HRSV B (n=64) by real-time RT-PCR or RT-PCR. Out of 175 HRSV positive samples, 94 samples were successfully sequenced using G gene. Phylogenetic analysis revealed that 62 HRSV-A strains clustered into genotypes ON1 (n=54, 87.1%), NA1 (n=7), NA2 (n=1) and 32 HRSV-B strains clustered into three genotypes: BA4 (n=28, 87.5%), BA5 (n=2), BA6 (n=2). These results provide a better understanding of HRSV prevalence pattern and genetic characteristics. [11]
References	[1] Prevalence of respiratory virus infection with regard to age, sex, and seasonality factors: A single center experience against children hospitalized during the 10 years. ***Allergy Asthma Respir Dis.*** (2017) 5(6): 320-325 [2] Epidemiology of Acute Viral Respiratory Tract Infections in Korean Children. ***Journal of Infection*** (2000) 41(2): 152-158 [3] Epidemiology of Respiratory Viral Infection in 2004-2006. ***Korean J Lab Med.*** (2006) 26(5): 351-357 [4] Correlation of respiratory syncytial virus infection with climate parameters and air pollution levels in Korean children during 2005–2012. ***Allergy Asthma Respir Dis.*** (2018) 6(4): 206-210 [5] Molecular and clinical characterization of human respiratory syncytial virus in South Korea between 2009 and 2014. ***Epidemiol Infect.*** (2017) 145(15): 3226-3242 [6] Significance of total serum IgE in children with lower respiratory infections due to respiratory syncytial virus. ***Allergy Asthma Respir Dis.*** (2016) 4(2): 126-132 [7] Seasonal Variations of Respiratory Syncytial Virus Infection among the Children under 60 Months of Age with Lower Respiratory Tract Infections in the Capital Area, the Republic of Korea, 2008-2011. ***J Korean Soc Neonatol.*** (2012) 19(4): 195-203 [8] Evaluation of a rapid diagnostic kit "BIOLINE RSV™" for the detection of respiratory syncytial virus. ***Korean J Pediatr Infect Dis.*** (2007) 14(1): 91-96 [9] Evaluation of Timeliness of Palivizumab Immunoprophylaxis Based on the Epidemic Period of Respiratory Syncytial Virus: 22 Year Experience in a Single Center. ***Pediatr Infect Vaccine.*** (2015) 22(3): 172-177 [10] Respiratory syncytial virus-associated seizures in Korean children, 2011–2016. ***Korean J Pediatr.*** (2019) 62(4): 131-137 [11] Characteristics of Respiratory Syncytial Virus isolated from Acute Respiratory Infectious Disease in Busan. ***Journal of bacteriology and Virology*** (2016) 46(3): 173-180

Tuberculosis

Incidence	A total of 32,181 and 30,892 patients with tuberculosis (TB) were newly registered in 2015 and 2016, respectively. [1, 2] The incidence rate in 2014 was 86/100,000 [3]
Prevalence	The prevalence in 2014 was 101/100,000 [3] In 2014, 70,993 and 12,156 patients were treated for TB in the lungs and other organs, respectively. [4]
Mortality	The mortality in 2014 was 4/10,000 population. [1]
Gender	Among 30,892 TB cases newly registered in 2016, 17,865 (57.8%) were male and 13,027 (42.2%) were female. [1]
Age	Among 30,892 TB cases newly registered in 2016, patients in their 70's was the largest group (n=5,459, 17.7%), followed by those in their 50's (n=5,167), 60's (n=4,403), and 40's (n=4,027). [2]
Regional distribution	Among 30,892 TB cases newly registered in 2016, Gyeonggi area had the largest number of cases (n=6,577, 21%), followed by Seoul (n=5,769), Busan (n=2,221), Gyeongbuk (n=2,214), and Gyeongnam (n=1,977). [5]
Clinical phenotypes/ classification	The types of TB included pulmonary tuberculosis (PTB) with extra-PTB (n=45, 25.1%), PTB without extra-PTB (n=134, 74.9%), and extra-PTB without PTB (n=14, 23.7%). [6]
Clinical manifestation	N/A
Risk factor	The factors related to the index case included bacillary load and proximity to an infectious case. Other factors included immunosuppressed conditions such as human immunodeficiency virus co-infection, immune-mediated inflammatory disorders, malnutrition, young age, diabetes, health care worker, socioeconomic and behavioral factors, tobacco smoker, alcohol consumption, indoor air pollution, and demographic factors. [7]
Diagnosis	TB patients were diagnosed by culture (n=170, 88.1%), pathology (n=39, 20.2%), clinical symptoms (n=4, 2.1%), AFB smear (+) (n=38, 19.7%). [6]

Treatment	Group 1 (oral first-line drugs): Isoniazid (5 mg/kg), Rifampin (10 mg/kg), Ethambutol (15 (15-20) mg/kg), Pyrazinamide (20-30 mg/kg), and Rifabutin (5 mg/kg) Group 2 (injectable drugs): Kanamycin (15 mg/kg), Amikacin (10 mg/kg), Streptomycin, Capreomycin Group 3 (quinolones): Levofloxacin (750-1,000 mg), moxifloxacin (400 mg), Ofloxacin (400 mg) Group 4 (oral second-line drugs): Cycloserin (15 mg/kg), prothionamide (15 mg/kg), p-aminosalicylic acid (150 mg/kg) [8]
Prognosis	N/A
Genetic information	*IRGM* rs10065172 was associated with a decreased susceptibility to TB in terms of both allele and genotype frequencies in the Korean population. [6]
References	[1] Korean Statistical Information Service. Tuberculosis Status (2015, 2016). http://kosis.kr/ [2] Korea Statistical Information Service. Current Status of Tuberculosis. Status of New Tuberculosis Patients - By Sex and Age (2017). http://kosis.kr/ [3] OECD iLibrary. Prevalence of tuberculosis (2014). http://www.oecd-ilibrary.org/ [4] Korea Statistical Information Service. Health Insurance Statistics. 298 disease by age group (2016) [5] Korea Statistical Information Service. Current Status of Tuberculosis. Status of New Tuberculosis Patients - By Region (2017). http://kosis.kr/ [6] Association between genetic variants in the *IRGM* gene and tuberculosis in a Korean population. ***Infection*** (2014) 42: 655-660 [7] Is ambient air pollution another risk factor of tuberculosis? ***Korean J Intern Med.*** (2014) 29(2): 170-172 [8] Treatment of Drug Susceptible Pulmonary Tuberculosis. ***Tuberc Respir Dis.*** (2015) 78(3): 161-167

Cardiovascular

Angina

Incidence	N/A
Prevalence	According to the 2013 Community Health Survey (CHS), the prevalence of angina was 2.1 % in adults aged 40 years and more. [1]
Mortality	The crude mortality rate of coronary heart disease (CHD) was 28.9/ 100,000 in 2015. [2]
Gender	The sex-specific mortality rates of coronary heart disease were 30.7 and 27.1/100,000 in men and women, respectively, in 2015. [2]
Age	The prevalence of angina increased with age. The prevalence of angina was 0.13% for those aged 20-24 years and 5.75% those aged 65-69 years. [3]
Regional distribution	Notable regional differences in angina were generally not observed in Korea. In the 2013 CHS, Gwangju (2.8%) and Chungnam (2.7%) showed the highest prevalence, whereas Ulsan (1.3%) and Gyeonggi (1.7%) had the lowest prevalences. [1]
Clinical phenotypes/ classification	According to National Health Insurance Service (NHIS) data in 2005, 714,101 among 956,191 CHD patients had angina. [3] A previous study reported that 67.7% of CHD patients were diagnosed with angina (n=9,127). Among patients with angina, 63.7% had stable angina and 36.3% had myocardial infarction. [4]
Clinical manifestation	The most common symptom was chest pain. [5]
Risk factor	Elevated levels of cholesteryl ester transfer protein, ApoC-3, myeloperoxidase [6], low-density lipoprotein (LDL)/ high-density lipoprotein (HDL) cholesterol ratio [7], cystatin-C level [8], elevated high-sensitivity C-reactive protein (hs-CRP) [9], and red cell distribution width (RDW) [10] have been reported as risk factors of angina in the Korean population.
Diagnosis	Generally, the diagnosis of angina is based on noninvasive methods such as echocardiography, stress test, and radionuclide myocardial perfusion scan as well as invasive diagnostic method (coronary arteriography). [11] Non-invasive stress tests were performed in 13.9% and coronary computed tomography (CT) angiography in 13.7% of cases among patients undergoing percutaneous coronary intervention (PCI). [12]
Treatment	Among 44,967 patients (92 hospitals) undergoing PCI, unstable angina was the most common (35.9%), followed by stable angina (22.6%), non ST-elevation MI (NSTEMI) (19.7%), ST- elevation MI (STEMI) (18.4%), and silent ischemia (3.5%). [12] The incidence rates of re-hospitalization for variant angina were 47.1% in 2009, 50.2% in 2010, and 54.0% in 2011. [13]

Prognosis	Based on the NHIS-National Sample Cohort (2,476 patients with variant angina and a median follow-up duration of 4.9 years), there were 178 (7.2%) all-cause cases of mortality and 95 (3.8%) cardiac-related deaths. [14]
Genetic information	Genetic polymorphisms in the endothelin-1 [15], rho-associated kinase 2 [16], interferon gamma gene [17], *OPG*, *RANK*, and *RANKL* [18] were associated with angina in Korean population.
References	[1] Social Security Information Service. A study on the evolution of the medical use interregional gap using healthcare big data (2016) [2] Korean Statistical Information Service, Vital statistics (2016). http://kosis.kr/ [3] The Socioeconomic Burden of Coronary Heart Disease in Korea. ***Journal of Preventive Medicine and Public Health*** (2012) 45: 291-300 [4] Comparison of clinical outcomes according to presentation of angina pectoris versus acute myocardial infarction in patients who underwent a percutaneous coronary intervention with a drug-eluting stent. ***Coron Artery Dis.*** (2016) 27: 143-150 [5] Microvascular angina: angina that predominantly affects women. ***The Korean Journal of Internal Medicine*** (2015) 30: 140-147 [6] Female Patients with Angina Pectoris, Elevated Levels of Cholesteryl Ester Transfer Protein, ApoC-3, and Myeloperoxidase, and Impaired Antioxidant Ability in Serum. ***J Lipid and Atherosclerosis*** (2009) 19: 232-240 [7] Low Density Lipoprotein-Cholesterol/High Density Lipoprotein-Cholesterol Ratio Predicts Plaque Vulnerability in Patients With Stable Angina. ***Korean Circ J.*** (2012) 42: 246-251 [8] Impact of cystatin-C level on the prevalence and angiographic characteristics of vasospastic angina in Korean patients. ***Int Heart J.*** (2015) 56: 49-55 [9] Elevated hs-CRP in Patients with Stable Angina Pectoris. ***Korean J Med.*** (2012) 82: 45-51 [10] Association between the Red Cell Distribution Width and Vasospastic Angina in Korean Patients. ***Yonsei Med J.*** (2016) 57: 614-620 [11] Diagnosis and treatment of stable angina. ***Korean Journal of Medicine*** (2008) 75: 525-530 [12] The Current Status of Percutaneous Coronary Intervention in Korea: Based on Year 2014 Cohort of Korean Percutaneous Coronary Intervention (K-PCI) Registry. ***Korean Circ J.*** (2017) 47: 328-340 [13] Incidence and Risk Factors Associated With Hospitalization for Variant Angina in Korea. ***Medicine*** (2016) 95: e3237 [14] Incidence and factors associated with mortality in 2,476 patients with variant angina in Korea. ***Scientific Reports*** (2017) 7: 46031

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[18] Association between *OPG, RANK* and *RANKL* gene polymorphisms and susceptibility to acute coronary syndrome in Korean population. ***J Genet.*** (2012) 91: 87-89

Atrial Fibrillation

Incidence	The overall incidence rate was 2.87/1000 person-year in 2010. [1]
Prevalence	In 2004, 4,197 patients had atrial fibrillation (AF), with an estimated prevalence rate of 0.51%. The prevalence rates progressively increased 2.69-fold between 2004 and 2013, reaching 1.38%. [2]
Mortality	All-cause mortality (6.7% to 5.0%, P<0.001), cardiovascular mortality (1.4% to 1.1%) and stroke-related death (1.3% to 0.8%) showed a modest decrease from 2004 to 2013. [2]
Gender	Of 3,517 patients, 2,043 were male (58.1%) and 1,474 were female (41.9%). The incidence was higher in men than that in women. [1]
Age	The mean age of valvular AF patients (n=1,595) was 55.2±11.0 years [3] The incidence tended to increase with age. The incidence rates in men and women aged 30-39 years were 0.82 and 0.55/1,000 person-years, respectively. The incidence increased with age, to 13.09 and 11.54 per 1,000 person-years in men and women aged ≥80 years, respectively. [1]
Regional distribution	In America and Europe, the prevalence of AF is 3-4% in adults in their 60s and 16-18% in elderly over 85 years of age. In general, Asian countries showed a lower prevalence than that in Western countries. [1]
Clinical phenotypes/ classification	Of 15,593 patients in one study, 13,998 (89.8%) had non-valvular AF and 1,595 (10.2%) had valvular AF. [3]
Clinical manifestation	According to a nationwide multi-center study in Korea (n=867), dyspnea (n=344/867), palpitation (n=286/867), and dizziness (n=229/867) were prevalent symptoms in patients with AF. Other symptoms such as chest pain (n=86/867) and syncope (n=75/867) were also reported. [4]
Risk factor	Among comorbid diseases, hypertension (n=1,757, 50%), ischemic heart disease (n=735, 20.9%) and heart failure (n=519, 14.8%) were related to the incidence of AF. [1] Old age (≥60 years), male sex, and obesity (body mass index [BMI] ≥25 kg/m^2) were associated with AF after adjusting for comorbidities. [1]
Diagnosis	Based on echocardiography: left atrium (LA) dimension (41.6±6.5 mm), LA volume index (35.0±12.3), left ventricular ejection fraction LVEF () (63.1±9.0%), E/Em (9.7±5.1), LVEDD (left ventricular end-diastolic dimension) (49.3±6.6 mm), LVESD (LV end-systolic dimension) (33.2±5.8 mm), and LVMI (LV mass index) (75.3±41.2 g/m^2). [5]
Treatment	Among all valvular AF patients, 46.5% and 21.4% were prescribed beta-blockers (BBs) and calcium-channel blockers (CCBs), respectively. [3]

Prognosis	The incidence of BB prescription decreased from 52.6% in period 1 to 46.0% in period 2 and 42.8% in period 3. The incidence of CCB prescriptions also decreased, from 24.8% in period 1 to 22.2% and 18.5% in period 2 and 3, respectively. [3]
Genetic information	Genetic variants in *PITX2* and *ZFHX3* were strongly associated with AF among Korean patients. [5]
References	[1] Incidence and risk factors for atrial fibrillation in Korea: the national health insurance service database (2002-2010). ***Korean Circ J.*** (2016) 46: 515-521 [2] The trends of atrial fibrillation-related hospital visit and cost, treatment pattern and mortality in Korea: 10-year nationwide sample cohort data. ***Korean Circ J.*** (2017) 47(1): 56-64 [3] Epidemiologic features of the Korean atrial fibrillation population in a single center. ***The Official Journal of Korean Heart Rhythm Society*** (2014) 15(2): 17-24 [4] The Joint Multicenter Study on the Atrial Fibrillation in Korea (Korean Atrial Fibrillation Study). ***Korean Circ J.*** (2000) 30:646-652 [5] Korean atrial fibrillation (AF) network: genetic variants for AF do not predict ablation success. ***J Am Heart Assoc.*** (2015) 4: e002046

Congestive Heart Failure

Incidence	N/A
Prevalence	The prevalence of heart failure (HF) in Korea was an estimated 1.53% in 2013. The estimated prevalence rate of HF was 12.4/1,000 adults in 2014. [1]
Mortality	The cumulative six-month, one-year, and two-year survival rates were 90.5%, 80.1%, and 76.4%, respectively. [2]
Gender	Of 1,756 total patients diagnosed with Congestive heart failure (CHF) between 1998 and 2003, 930 were male and 829 were female. [2] Of 475,019 total patients in 2014, 42.3% were male and 57.7% were female. [3]
Age	The mean age was 64.1±14.3 years. [2] Two-thirds of adult HF patients (165,583 patients, 65.1 %) in Korea were 65 years or older. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	New York Heart Association Classification (NYHA) class II (n=59/62) and NYHA class III (n=3/62) [4]
Clinical manifestation	CHF is a chronic progressive condition in which the ventricles cannot pump a sufficient volume of blood in to the body. Consequently, blood and other fluids can back up inside the organs and patients experience clinical symptoms such as dyspnea, edema, and fatigue. [5]
Risk factor	Ischemic heart disease (n=568, 32.3%), cardiomyopathy (n=399, 22.7%), hypertensive heart disease (n=291, 16.5%), valvular heart disease (n=238, 13.5%) have also been reported [2]
Diagnosis	Left ventricular ejection fraction (EF) ≤ 45% and serum low-density lipoprotein cholesterol (LDL-C) ≥ 70 mg/dL. [4]
Treatment	The main goals of treatment for hospitalized patients with HF are to restore euvolemia and to maintain the hemodynamic status without causing adverse events. Accordingly, initial management in the hospital generally includes diuretics, vasodilators, morphine, and inotropic agents, all of which are considered traditional therapies. These agents should mainly increase cardiac output and improve symptoms; importantly, they should improve the clinical outcomes. [6]

Prognosis	The independent prognostic factors include aging, history of heart failure, anemia (hemoglobin<12 mg/dL), hyponatremia (<135 mEq/L), elevated NT-proBNP level (>1,000 ng/L), β- blocker usage, etc. [2] Among patients with class IV disease by NYHA, the one-and two-year survival rates were 76.4% and 61.4%, respectively. The survival rates for class II patients were 90.1% and 88.9%, respectively. [2]
Genetic information	N/A
References	[1] Epidemiology heart failure in Korea: present and future. ***Korean Circ J***. (2016) 46: 658-664 [2] Multicenter Analysis of Clinical Characteristics and Prognostic Factors of Patients with Congestive Heart Failure in Korea. ***Korean Circulation Journal*** (2005) 35: 357-361 [3] Prevalence and socio-economic burden of heart failure in an aging society of South Korea. ***BMC Cardiovasc Disord.*** (2016) 16: 215 [4] Effects of intensive versus mild lipid lowering by statins in patients with ischemic congestive heart failure: Korean Pitavastatin Heart Failure (SAPHIRE) study. ***Korean J Intern Med.*** (2014) 29: 754-763 [5] Pharmacological treatment of heart failure. ***The Korean Journal of Medicine*** (2011) 81: 716-719 [6] The Pharmacologic Treatment of Acute Heart Failure. ***The Korean Journal of Medicine*** (2012) 82(6): 651-657

Hereditary Angioedema

Incidence	Surveys of patients suggest that hereditary angioedema (HAE) affects about 1 in 50-100,000 of any ethnic group, with many of those affected being unaware of their diagnosis. [1]
Prevalence	The estimated general prevalence of HAE is approximately 1/30,000-50,000 persons. However, the prevalence of HAE in Korea remains unknown. According to a study of physicians who were members of The Korean Academy of Asthma, Allergy and Clinical Immunology, only 24 HAE cases a have been reported in Korea. [2] A total of 65 patients diagnosed with HAE by 2016 were identified at 15 tertiary hospitals across the country. The prevalence of HAE was estimated at 1.3/1,000,000 in Korea. [3]
Mortality	There was no reported case of death from HAE so far. [3]
Gender	Of the 65 patients, 21 (32.3%) were males and 44(67.7%) were females. [3]
Age	The age at diagnosis was 36.5 ± 15.8 years, with a mean time delay of 7.8 ± 10.5 years. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	A total of 90.8% patients had type I HAE, while the remaining 9.2% patients had type II HAE. While the face (82.3%) and extremities (upper 71.0%, lower 62.9%) were the most frequently involved, the GI tract was affected in 40.5% of Korean HAE patients. [3] C1 inhibitor deficiency (C1-INH)-HAE types I and II were observed in 85% and 15% of patients, respectively. [4]
Clinical manifestation	Angioedema is clinically characterized by episodes of edema involving the skin, gastrointestinal tract, and other organs. [5] Edema was reported in 11 patients, including the hand (n=7), foot (n=7), face (n=6), genitalia (n=2), arm (n=2), and abdomen (n=1). Abdominal pain was reported in 4 patients. [6]
Risk factor	Familial history (n=12) [6]
Diagnosis	In one case report, the levels of complement C3 and C4 218 and 7 mg/dL, respectively, when he had visited the emergency room. [5]
Treatment	Danazol (200 or 400 mg/day) [6] Treatment options for hereditary angioedema include the following: androgens (danazol), antifibrinolytics, fresh frozen plasma (FFP), and plasma-derived C1 INH [3]

Prognosis	Danazol may prevent the symptoms or signs of HAE, including severe headache. Headache was also reportedly prevented for up to 23 months. [5]
Genetic information	The main *C1 INH* gene mutations were missense mutation (36%), frame-shifts (28.3%), nonsense mutations (8.8%), splice-site mutations (8.8%), small insertions or deletions (4.8%), and changes in the promoter (1.4%) or other regulatory elements (1.4%). [6]
References	[1] Hereditary angioedema. ***Lancet*** (2012) 379(9814): 474-481 [2] Clinical experience in managing patients with hereditary angioedema in Korea: questionnaire survey and a literature review. ***Allergy Asthma Respir Dis.*** (2014) 2(4): 277-284 [3] Clinical Features of Hereditary Angioedema in Korean Patients: A Nationwide Multicenter Study. ***Int Arch Allergy Immunol.*** (2018) 176(3-4):272-279 [4] Hereditary Angioedema Due to C1-Inhibitor Deficiency ? From a Genetic Point of View. ***Hereditary Genet.*** (2015) 4:1 [5] Migraine-like headache in a patient with complement 1 Inhibitor deficient hereditary angioedema. ***J Korean Med Sci.*** (2012) 27: 104-106 [6] Normal C1 inhibitor mRNA expression level in type I hereditary angioedema patients: newly found C1 inhibitor gene mutations. ***Allergy*** (2006) 61: 260-264

Hypertension

Incidence	According to five-year follow-up cohort study in Korea of 1,806 subjects, the age-adjusted incidence rates of hypertension were 22.9% (95% confidence interval [CI]: 19.9-29.0) overall and 22.2% (95% CI: 17.2-27.2) in men and 24.3% (95% CI: 20.4-28.2) in women. [1]
Prevalence	The age-standardized prevalence of hypertension for adults aged 30 years and more was 27.9% in the 2015 Korean National Health and Nutrition Examination Survey (KNHANES). [2]
Mortality	The crude mortality rate of hypertension was 9.9/100,000 in 2015. [3]
Gender	The prevalence of hypertension was higher in men than that in women. In 2015, the hypertension prevalence was 32.7% in men and 23.1% in women. [2] However, the mortality rates showed the opposite pattern at 5.9 and 13.9/100,000 in men and women, respectively. [3]
Age	The prevalence of hypertension increased with age. The prevalence was 28.4% among middle-aged men (40s) and 61.7% for older age men (70+). The prevalence was 13.0% and 71.3% for middle-aged (40's) and older-aged (70+) women, respectively. [2]
Regional distribution	Generally, the prevalence of hypertension was higher in rural areas than that in urban areas in Korea. In 2016, Sejong (17.1%), Gwangju (17.4%), and Daegu cities (17.5%) reported the lowest prevalence of hypertension, whereas Gangwon (21.9%), Chungnam (21.4%), and Gyeonggi provinces (20.7%) ranked highest in Korea. [3]
Clinical phenotypes/ classification	Pre-hypertension is defined as a systolic blood pressure (SBP) of 120-139 mmHg and/or diastolic blood pressure (DBP) of 80-89 mmHg. Among 1,973 subjects 45-64 years of age, the prevalence of pre-hypertension was 53.9% overall (56.5% for men, 51.4% for women). [4] Hypertension is classified into two stages. Stage 1 is defined as an SBP of 140-159 mmHg and DBP of 90-99 mmHg. Stage 2 is defined as SBP ≥160 mmHg and/or DBP ≥100 mmHg. [5] High blood pressure (BP) is classified as either primary (essential) high BP or secondary high BP. Essential hypertension comprised approximately 10% of patients with total hypertension in National Health Insurance Service (NHIS) data. [6]
Clinical manifestation	Hypertension usually has no signs symptoms. Elevated resting heart rate [7], increased urine albumin-to-creatinine ratio within a normal range [8, 9], and high platelet-to-lymphocyte ratio [10] were reported in patients with hypertension in Korea.

Risk factor	Sodium intake, metabolic syndrome, family history, and aging are well-known risk factors of hypertension. [5] Blood cadmium concentration [11], serum ferritin level [12, 13], age at childbirth [14], age at menopause [15], alcohol consumption [16], physical activity [17], sleep duration [18], and shift work [19] were associated with hypertension in the Korean population.
Diagnosis	The clinical guidelines of the Korean Society of Hypertension largely follow those of the European Society of Hypertension/the European Society of Cardiology. [20] Hypertension is diagnosed as SBP ≥140 mmHg and/or DBP ≥90 mmHg.
Treatment	The proportion of patients undergoing medical treatment was approximately 60% in 2015. [2] The Korean guidelines do not recommend medication for patients with pre-hypertension, even though they may have comorbid diabetes, stroke, or coronary artery disease. In elderly over 65 years of age, medication can be initiated when the SBP is ≥160 mmHg. [20] In Korea, sodium reduction is the most important factor in non-medication treatment. Five classes of antihypertensive drugs, including angiotensin-converting enzyme inhibitors, β-blockers, calcium antagonists, and diuretics, were equally recommended as first-line treatments. If BP is not controlled with a single drug, two drugs can be combined for BP control. [20]
Prognosis	The population-attributable risks of hypertension for cerebrovascular disease and coronary artery disease were 35% and 21% in men, respectively. [21] In addition, for each 20 mmHg increase in SBP, the RRs of ischemic stroke, intracerebral hemorrhage, and subarachnoid hemorrhage were 1.79, 2.48, and 1.65, respectively, in men and 1.64, 3.15, and 2.29, respectively, in women. [21]
Genetic information	Genetic polymorphisms in the renin [22, 23], tyrosine hydroxylase [24], microRNA [25], *ANO1* [26], *DDAH2* [27] were associated with hypertension in the Korean population.
References	[1] Incidence of Hypertension in Korea: 5-Year Follow-up Study. ***J of Korean Med Sci.*** (2011) 26: 1286-1292 [2] Korean Center for Disease Control. 2015 Statistics of Korea National Health and Nutrition Examination Survey (2016). https://knhanes.cdc.go.kr/ [3] Korean Statistical Information Service. Vital statistics (2016). http://kosis.kr/ [4] Prehypertension and obesity in middle-aged Korean men and women: the third Korea national health and nutrition examination survey (KNHANES III) study. ***Journal of Public Health*** (2012) 34: 562-569 [5] The Korean Society of Hypertension. Medical guideline for hypertension (2013). [6] Diagnostic Analysis of Patients with Essential Hypertension Using Association Rule Mining. ***Healthc Inform Res.*** (2010) 16: 77-81

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Ischemic Stroke

Incidence	Age- and sex-standardized incidence rates per 100,000 of ischemic stroke are as follow: 2007 (76.5), 2008 (71.1), 2009 (64.2), 2010 (62.5), 2011 (96.3), 2012 (62.6), 2013 (63.3). Through the observation period from 2007 to 2013, the incidence rates of first-ever ischemic stroke of male were higher than those of female. The age-standardized annual incidence rates of intracerebral hemorrhage (ICH) were higher in male for observation period. [1]
Prevalence	N/A
Mortality	Mortality of stroke by sex, age, and region was quoted from the Annual Reports on the Cause of Death Statistics of Korean Statistical Information Service (KOSIS) from 2006 through 2015. In-hospital mortality was quoted from the Report of Assessment for Quality of Acute Stroke Care in Korea of Health Insurance Review Assessment service (HIRA). Crude ischemic stroke mortality by age and sex (death per 100,000) are as follow: 0-29 years: 0.05, 30-39 years: 0.16, 40-49 years: 0.58, 50-59 years: 3.1, 60-69 years: 12.2, 70-79 years: 78.5, 80-89 years: 301.8, over 90 years: 701.1. [1]
Gender	Annual age-standardized incidence rate (per 100,000) of first-ever stroke in 2013 are 81.5 in male and 48.2 in women. [1]
Age	Regarding first-ever ischemic stroke, the crude incidence rate of those ≥ 75 years of age was 735.0 per 100,000, with age between 55 and 74 was 193.8 per 100,000, and with age between 20 and 54 was 22.2 per 100,000 in 2013, respectively. The incidence rate of ischemic stroke of subjects ≥ 75 years of age, increased in recent years. However, it showed gradual decreasing pattern of the subjects with age between 55 and 74. [1]
Regional distribution	Age-standardized death rates of ischemic stroke per 100,000 are as follow: Seoul: 10.1, Incheon: 9.3, Gyeonggi: 6.6, Chungbuk: 11.3, Gangwon: 8.8, Sejong: 14.6, Chungnam: 9.2, Daejeon: 6.9, Gyeongbuk: 10.1, Daegu: 11.0, Jeonbuk: 9.6, Gwangju: 7.0, Jeonnam: 7.2, Ulsan: 10.9, Busan: 9.9, Gyeongnam: 10.4. [1]
Clinical phenotypes/ classification	In terms of subtypes of acute ischemic stroke, 36.7% of overall patients were classified as large-artery atherosclerosis (LAA), followed by cardioembolism (CE) with 21.8% and there was no significant difference between sex. LAA was the most common ischemic stroke subtype from 2008 to 2015. The increasing tendency of patients with CE has been observed. There was a relative sudden decrease of small-vessel occlusion (SVO) and an increase of stroke of undetermined etiology (SUE) starting from 2011. [1]

Clinical manifestation	N/A
Risk factor	In interview data using a questionnaire about alcohol intake from ischemic stroke patients in Clinical Research Collaboration for Stroke in Korea (CRCS-K), drinkers were more common in men than in women (62.7% vs 19.2%). Light to moderate distilled alcohol consumption may reduce the risk of ischemic stroke in Koreans. Population attributable risk for ischemic stroke showed 2.8% of obesity and 3.4% of underweight. In acute ischemic stroke patients, patients with high total cholesterol (≥240 mg/dL) were 7.2% among study population. In stroke population, patients with atrial fibrillation in acute ischemic stroke was 21% (using the age and sex structure of the CRCS-K DB in 2014 and 2015). The prevalence of family history of stroke in Korean stroke patients was about 13.9 % (15.5% in male and 12.8% in female) in CRCS-K registry. In terms of source of stroke history, paternal stroke history was highest in male stroke patients, sibling stroke history was highest in female stroke patients, and overall 2.0% of stroke patients had two or more relatives with stroke. The prevalence of each concomitant disease in patients with ischemic stroke was as follow: Ischemic (coronary) heart disease (7.4%, 7.2% in male, 7.7% in female), peripheral artery disease (31.4%, 27.2% in male, 37.3% in female), cancer (18.0%, 20.8% in male, 14.1% in female), chronic kidney disease (4.8%, 5.3% in male, 4.1% in female). [1]
Diagnosis	Patients who was diagnosed of I63 (cerebral infarction) at discharge or had hemorrhagic complication by intravenous thrombolysis (IVT) or endovascular treatment (EVT), were classified as ischemic stroke. [1]
Treatment	Patients with acute ischemic stroke who arrived within IVT time window has increased from 19.8% in 2008 to 29.9% in 2014 among hospitals participated in CRCSK DB. Acute ischemic stroke patients who received IVT within 1 hour after arrival have also increased from 73.0% in 2009 to 90.3% in 2014. The frequency of patients with an ischemic stroke or transient ischemic attack (TIA) who received antithrombotic therapy at admission was about 92 % (85% in antiplatelet and 12% in anticoagulants, both treatments could be allowed) in CRCS-K registry. In terms of antiplatelets, aspirin monotherapy was most common in antiplatelet therapy at admission (58.9%) and dual or multiple therapy was most common in antiplatelet therapy at discharge (46.5%). In terms of anticoagulants, warfarin was most common in anticoagulants at admission and discharge (59.8% and 97.1%, respectively). [1]

Prognosis	Within 1 year, 3.6% of stroke recurrence and 0.5% of cardiovascular events occurred after ischemic stroke. The event rate of composite events of stroke recurrence, myocardial infarction and mortality within 1 year was about 11.7%, and vascular composite events of stroke recurrence, myocardial infarction, and vascular death was about 6.1%. Among ischemic stroke subtypes, 1-year stroke recurrence rate was highest in the 'undertermined-2 or more' subtype (6.8%) followed by 'other-determined' (4.7%), 'incomplete work-up' (4.6%), and 'cardioembolism' (4.2%) subtypes. While it was lowest in the 'small vessel occlusion' subtype (1.4%). 1-year event rate for composite outcome was highest in the 'undetermined-incomplete work up' (20.4%) and 'cardioembolism' (20.0%), and lowest in the 'small vessel occlusion' subtype (2.7%). [1]
Genetic information	The MTHFR 2572 C > A and 6685 T > C were significantly associated with ischemic stroke prevalence in the cardioembolism subgroup (MTHFR 2572CC vs. CA + AA: AOR, 2.145; 95% CI, 1.203–3.827; P=0.010; MTHFR 6685TT vs. CC: AOR, 10.146; 95% CI, 1.297–79.336; P=0.027). The gene-environment combined effect was significant, with MTHFR 2572CA + AA and folate levels ≤3.45 ng/mL correlating with ischemic stroke incidence. In addition, the total homocysteine (tHcy) levels in subjects with MTHFR 2572AA were elevated compared to tHcy levels in subjects with MTHFR 2572CC. [2]
References	[1] Stroke Statistics in Korea 2018: A Report from the Epidemiology Research Council of the Korean Stroke Society. The Epidemiology Research Council of the Korean Stroke Society (2018) [2] Interplay between 3'-UTR polymorphisms in the methylenetetrahydrofolate reductase (MTHFR) gene and the risk of ischemic stroke. ***Sci Rep.*** (2017) 297(1): 12464

Myocardial Infarction

Incidence	The incidence rates of ST segment elevation myocardial infarction (STEMI) and non-STEMI (NSTEMI) in 2013 were 48.1% and 51.9%, respectively. [1]
Prevalence	The prevalence of myocardial infarction (MI) was 1.5% in subject aged 40 years and more in 2013 Community Health Survey by the Korea Centers for Disease Control and Prevention (KCDC). [2] A total of 30,651 patients visited the emergency room (ER) due to acute MI in 2015 based on National Emergency Department Information System (NEDIS) statistics. [3]
Mortality	The mortality was 20.5/100,000 in 2015. [4]
Gender	Of 39,978 patients registered with MI in the Korea Acute Myocardial Infarction Registry (KAMIR) and KAMIR-NIH (from 2006-2013), 24,949 were male and 10,039 were female. [1]
Age	The mean ages of NSTEMI and STEMI groups were 66.5±12.5 years and 64.1±13 years, respectively. [1]
Regional distribution	N/A
Clinical phenotypes/ classification	Acute STEMI (n=2,514, 56.3%) and acute NSTEMI (n=17,464, 43.7%) [1]
Clinical manifestation	Chest pain: STEMI (n=19,287, 86.9%) vs NSTMI (n=13,041, 75.9%) Dyspnea: STEMI (n=5,021, 22.9%) vs NSTEMI (n=4,649, 27.2%) [1]
Risk factor	STEMI: body mass index (BMI) ≥23 (n=7,541, 37.5%), smoker (n=11,324, 51.2%), hypertension (n=10,390, 48.9%), diabetes mellitus (n=5,548, 26.2%), dyslipidemia (n=2,221, 10.5%) NSEMI: BMI ≥23 (n=5,773, 36.4%), smoker (n=6,828, 39.8%), hypertension (n=9,596, 58.4%), diabetes mellitus (n=5,546, 33.8%), dyslipidemia (n=2,227, 13.6%) [1]
Diagnosis	The two most commonly used markers are serum troponins and CK-MB. Plasma B-type natriuretic peptide (BNP) and N-terminal pro-B-type natriuretic peptide (NT-proBNP) also appear to have predictive value in STEMI and NSTEMI. Elevated values were associated with increased mortality, even in patients without clinical heart failure, after adjusting for age and left ventricular ejection fraction. [5]
Treatment	The use of beta blockers (1,352, 82.8% vs. 1,440, 81.7%), angiotensin receptor blockers (345, 21.1% vs. 903, 26.6%), statins (345, 21.1% vs. 903, 26.6%) and percutaneous coronary intervention (PCI, 96.3% vs. 81.7%) increased between 2006 and 2013 (STEMI vs. NSTEMI). [1]

Prognosis	In-hospital (6.4% vs. 3.8%, P<0.001) and 30-day (8.5% vs. 5.7%, P<0.001) mortalities were higher in patients with STEMI than those in patients with NSTEMI. [5]
Genetic information	N/A
References	[1] Current Trend of Acute Myocardial Infarction in Korea (From Korea Acute Myocardial Infarction Registry between 2006-2013). ***Am J Cardiol.*** (2014) 114(12): 1817-1822 [2] Social Security Information Service. A study on the evolution of the medical use interregional gap using healthcare big data (2016) [3] Korea Statistical Information Service. Statistics of Emergency Care. The number of patient of acute myocardial infarction by age, sex (2016). http://kosis.kr/ [4] Korean Statistical Information Service. Mortality of myocardial infarction (2015). http://kosis.kr/ [5] Current management of acute myocardial infarction: experience from the Korea Acute Myocardial Infarction Registry. ***Journal of cardiology*** (2010) 56: 1-7

Pregnancy-induced Hypertension

Incidence	The incidence of pregnancy-induced hypertension (PIH) was approximately 0.2% among 883,549 pregnant women in a national patient survey in 2011. [1] Based on hospital data, the PIH incidence varied from 1.3% (753/57,009) [2] to 3.9% (27,748/704,801) [3].
Prevalence	N/A
Mortality	The maternal mortality due to PIH was 0.15% (5/3,263) based on nationwide multi-center data of 49 hospitals. [3]
Gender	Not Applicable
Age	The PIH incidence increased with age, especially among women over 40 years of age. Among pregnant women over 40 years of age (n=22,300), the PIH incidence was 1.5% in 2011. [1]
Regional distribution	N/A
Clinical phenotypes/ classification	Hypertensive disease in pregnancy is categorized into four categories according to Cunningham's criteria: i) gestational hypertension (GH), ii) mild preeclampsia (MP), iii) severe preeclampsia (SP), and iv) eclampsia (EC). Among 27,748 patients with PIH, the proportions of GH, MP, SP, and EC were 14.9%, 42.7%, 40.3%, and 2.1%, respectively. [3]
Clinical manifestation	Rapid weight gain, high blood pressure, protein in the urine, and swelling (in the hands, feet, and face) are typical signs of PIH. [4, 5]
Risk factor	The risk factors of PIH include nulliparity, age (≥35 years), multifetal gestation, obesity, family history of preeclampsia-EC, preeclampsia in a previous pregnancy, abnormal uterine doppler studies at 18 and 24 weeks, pregestational diabetes mellitus, vascular and connective tissue disease, nephropathy, antiphospholipid antibody syndrome, thrombophilias, hypertension, and renal disease. [5]
Diagnosis	In general, PIH is defined as hypertension caused by pregnancy, which includes preeclampsia and eclampsia; however, it excludes chronic hypertension. [5] Hypertension during pregnancy is defined as a systolic blood pressure >140 mmHg and diastolic blood pressure >90 mmHg. Preeclempsia is diagnosed as hypertension in association with thrombocytopenia (platelet <100,000 cells/mm^3), impaired liver function (elevated ALT or AST both), the new development of renal insufficiency (serum creatinine >1.1 mg/dL), pulmonary edema, or new-onset cerebral visual disturbances. Eclampsia is the convulsive phase of the disorder and is among the more severe manifestations of the disease. [5]

Treatment	Among 45 hospitals, sedatives were prescribed for pregnant patients with mild preeclampsia in 15 hospitals. For the treatment of SPEC, hydralazine (n=43/45) and calcium channel blocker (n=22/45) were mostly used as an anti-hypertensive drug with 80% of hospitals initially administering $MgSO_4$ as an anti-epileptic drug. [3]
Prognosis	The most frequent maternal complications in patients with PIH included placenta abruption (4.0%, n=131/3,263), pulmonary edema (3.4%, n=112/3,263), and disseminated intravascular coagulation (1.4%, n=47/3,263). Among the neonates of PIH patients, the proportions of intrauterine growth restriction (IUGR) and fetal death were 23.3% (n=761/3,266) and 1.6% (n=52/3,266), respectively. [3]
Genetic information	Genetic polymorphisms in *AGT, M235T*, *ACE* [6], *LPL,* Asp9Asn, -93G promotor [7], factor V [8] and *APOE* were associated with PIH in Korea.
References	[1] Korea Institute for Health and Social Affairs. Advanced Maternal Age Women and Adverse Birth Outcomes in Korea (2013). [2] Pregnancy-Induced Hypertension, But Not Gestational Diabetes Mellitus, Is a Risk Factor for Venous Thromboembolism in Pregnancy. ***Korean Circ J.*** (2011) 41: 23-27 [3] A clinical study of pregnancy - induced hypertension (PIH) in Korea in the last 7 years (1992-1998). ***Obstetrics & Gynecology Science*** (2000) 43: 2283-2292 [4] Hypertension in pregnancy. ***J Korean Med Assoc.*** (2016) 59: 24-30 [5] Recent Management of Hypertensive Diseases during Pregnancy. ***Korean J Obstet Gynecol.*** (2005) 48: 545-562 [6] A study on the association between angiotensinogen gene and angiotensin-converting-enzyme gene and pregnancy-induced hypertension in Korean women. ***Korean J Obstet Gynecol***. (2001) 44: 1072-1077 [7] A study on the association between pregnancy-induced hypertension and mutations for lipoprotein lipase gene. ***Korean J Obstet Gynecol***. (2001) 44: 891-897 [8] Factor V Leiden mutation in Korean women with pregnancy-induced hypertension. ***Korean J Obstet Gynecol.*** (2005) 48: 857-866

EPIDEMIOLOGY IN KOREA

Central Nervous System (CNS)

Alzheimer's Disease

Incidence	The incidence of dementia was 18.8/1000 (over 60 years) in 2005. [1]
Prevalence	The prevalence of Alzheimer's disease (AD) was 6.49% in 2008. [2] The prevalence of dementia and AD in patients over 60 years of age was 9.7% and about 70%, respectively, in 2013. [3] A total of 320,837 patients were treated for AD in 2015 based on National Health Insurance Service (NHIS) statistics. [4]
Mortality	The crude mortality due to AD was 8.7 per 100,000 persons in 2015. The sex-specific mortality rate was higher in women (11.7/100,000) than that in men (5.7/100,000) in 2015. [5]
Gender	Of 724 total patients, 212 were male (29.3%) and 512 were female (70.7%). [3] The 320,837 patients treated for AD included 87,868 (27%) men and 232,969 (73%) women. [4]
Age	The mean ages at diagnosis and onset were 71.3 and 68.5 years, respectively. [3] The incidence of AD in subjects aged 75 years and older (14.7/1,000) was four times that in subjects aged 65-74 years (3.5/1,000). [6]
Regional distribution	The incidence was significantly higher in rural (12.6/1,000) than in urban (1.0/1,000) areas. [6]
Clinical phenotypes/ classification	The AD group included mild (n=17) and moderate (n=13) AD. [1]
Clinical manifestation	N/A
Risk factor	After excluding those with missing data, a family history of dementia was reported in 19.7% of subjects. [1] The proportions of subjects with vascular risk factors and other comorbid illnesses included 29.5% with hypertension, 12.8% with diabetes mellitus, 10% with hyperlipidemia, 8.1% with heart disease, and 3.4% with stroke. [3]
Diagnosis	The Clinical Dementia Rating (CDR) was determined for 675 patients, as follows: CDR 0.5 (n=228), 1 (n=259), 2 (n=157), 3 (n=31) The Mini-Mental State Examination (MMSE) was performed on 713 patients, as follows: MRSE ≥24 (n=165), 18-23 (n=258), ≤17 (n=290) [3]
Treatment	With donepezil treatment, patients with AD showed significantly increased gray matter volumes in the hippocampus, and they had significantly higher scores on the Korean version of the mini-mental state examination (K-MMSE) compared to untreated patients. [7]

Prognosis	In a 10-year follow-up Korean study of 724 patients with AD, the overall median survivals from the onset of first symptoms and from the time of diagnosis were 12.6 years (95% confidence interval [CI] 11.7-13.4) and 9.3 years (95% CI: 8.7-9.9), respectively. [7]
Genetic information	*TRIML2* may contribute to AD susceptibility. [8] *PSEN1*, *H163P*, and *APP* mutations have also been associated with AD. [9]
References	[1] Clinical Research Center for Dementia. Incidence and clinical phenotypes of AD (2005). http://public.crcd.or.kr/Info/Mechanism/Morbidity [2] Prevalence of Dementia among the South Korean Population. ***J Korean Diabetes*** (2012) 13: 124-128 [3] Survival of Alzheimer's disease patients in Korea. ***Dementia and Geriatric Cognitive Disorders*** (2013) 35: 219-228 [4] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015) http://kosis.kr/ [5] Korea Statistical Information Service. Statistics of mortality. Cause of mortality (236 classification) by sex, age (5-year), Mortality rate (2017). http://kosis.kr/ [6] Incidence of and risk factors for Alzheimer's disease and mild cognitive impairment in Korean elderly. ***Dementia and geriatric cognitive disorders*** (2015) 39(1-2): 105-115 [7] Effects of donepezil on brain morphometric and metabolic changes in patients with Alzheimer's disease: A DARTEL-based VBM and 1H-MRS. ***Magnetic Resonance Imaging*** (2016) 34: 1008-1016 [8] Association of tripartite motif family-like 2 (*TRIML2*) polymorphisms with late-onset Alzheimer's disease risk in a Korean population. ***Neuroscience Letters*** (2016) 630: 127-131 [9] A novel *PSEN1* H163P mutation in a patient with early-onset Alzheimer's disease: Clinical, neuroimaging, and neuropathological finding. ***Neuroscience Letters*** (2012) 530: 109-114

Amyotrophic Lateral Sclerosis

Incidence	The crude incidence rate per 100,000 was 1.68 in 2015. [1]
Prevalence	The crude prevalence rate per 100,000 was 6.49 in 2015. [1]
Mortality	N/A
Gender	The ratio of males to females for amyotrophic lateral sclerosis (ALS) was 1.5:1. [2,3]
Age	By age group: <20: 28 cases (0.6%), 20-29: 81 cases (1.8%), 30-39: 154 cases (3.4%), 40-49: 496 cases (10.9%), 50-59: 1,178 cases (25.9%), 60-69: 1,317 cases (28.9%), 70-79: 1,100 cases (24.2%), ≥80: 196 cases (4.3%) [1] The mean age of ALS onset is 58 years. [2]
Regional distribution	Seoul (metropolitan): 978 cases (21.5%), Large city: 1,079 cases (23.7%), Small city: 2,040 cases (44.8%), Rural: 454 cases (10.0%) [1]
Clinical phenotypes/ classification	Classical phenotypes: amyotrophic lateral sclerosis (ALS), primary lateral sclerosis, progressive bulbar palsy, progressive muscular atrophy Atypical phenotypes: ALS-parkinsonism-dementia complex, Madras motor neuron disease, Monomelic amyotrophy of upper limb/juvenile, muscular atrophy of distal upper extremity, Monomelic amyotrophy of lower limb [2]
Clinical manifestation	N/A
Risk factor	N/A
Diagnosis	Clinically possible ALS is defined as the presence of upper motor neuron (UMN) and lower motor neuron (LMN) signs in one region, UMN signs in at least two regions, or UMN and LMN sign in 2 regions with no UMN signs rostral to LMN signs. Laboratory-supported probable ALS is defined as the presence of UMN signs in one or more regions and LMN signs by electromyography in at least two regions. Clinically probable ALS is defined as the presence of UMN and LMN signs in two regions with some UMN signs rostral to the LMN signs. Clinically definite ALS UMN and LMN signs in 3 regions. [1]
Treatment	Riluzole, a glutamate antagonist, is the only drug approved by the Food and Drug Administration for the treatment of ALS. The prevalence of riiluzole administration was 60.8% in a cross-sectional study and 65.5% in a retrospective review. [3]
Prognosis	The five-year survival rate was 40.1%. [4]
Genetic information	*SOD1* (ALS1), *TARDP* (ALS10), *FUS* (ALS6), *ANG* (ALS9), *SQSTM1* (ALS3), *MAPT (FTD)* (ALS2), *OPTN* (ALS12), *C9orf72* (ALS-FTD2) [2]

References	[1] Epidemiology and diagnostic process of amyotrophic lateral sclerosis as distinct from myelopathy: 5-year cohort study of whole population in South Korea. ***Amyotroph Lateral Scler Frontotemporal Degener.*** (2018) 13: 1-8 [2] Amyotrophic lateral sclerosis and motor neuron syndromes in Asia. ***J Neurol Neurosurg Psychiatry*** (2016) 87(8): 821–830 [3] Current status of the diagnosis and management of amyotrophic lateral sclerosis in Korea: a multi-center cross-sectional study. ***J Clin Neurol.*** (2012) 8(4): 293–300 [4] Long-Term Outcome of Amyotrophic Lateral Sclerosis in Korean Subjects. ***Ann Rehabil Med.*** (2017) 41(6): 1055-1064

Attention Deficit Hyperactivity Disorder (ADHD)

Incidence	The average annual diagnostic incidence of attention deficit hyperactivity disorder (ADHD) was 0.357% (29,310.5/8,218,252), and the incidence of medication use for ADHD was 0.248% (20,340.3/8,218,252) in 2008-2011. [1]
Prevalence	The total number of patients diagnosed with ADHD increased from 72,704 (0.71%) in 2007 to 85,468 (0.93%) in 2011. [2] The six month prevalence of adult ADHD symptoms was 1.1% in 2006. [3]
Mortality	N/A
Gender	Of 85,468 patients diagnosed with ADHD in 2011, 67,487 were boys and 17,981 were girls. [2]
Age	The mean ages of patients with ADHD was 11.19±3.20 years in 2011. [2]
Regional distribution	N/A
Clinical phenotypes/ classification	Combined type (n=22/51), predominantly inattentive type (n=15/51), predominantly hyperactive-impulsive type (n=4), not otherwise specified (n=10) [4]
Clinical manifestation	Inattention (n=15), hyperactive-impulsive (n=4), and combined (n=22) [4]
Risk factor	Among 117,242 patients newly diagnosed with ADHD, 19,154 (16.3%) patients had at least one comorbid psychiatric diagnosis. The most common were depression (20%), emotional disorders with onset specific to childhood (13%), tic disorders (13%), anxiety disorders (12%), conduct disorders (12%), intellectual disabilities (10%), developmental disorders (6%), other behavioral and emotional disorders with onset usually occurring in childhood and adolescence (4%), pervasive developmental disorders (3%), and others (7%). [1]
Diagnosis	The primary screening tool to identify elementary school children with ADHD is the Korean version of the ADHD Rating Scale-Parent version (K-ARS-P). A secondary screening tool is the combination of the Korean versions of the Child Behavior Checklist attention problems (K-CBCL-A) and the Child Behavior Checklist Teacher version (K-CBCL-T) (T scores ≥60 indicated attention problems in the K-CBCL, while T scores ≥63 indicated total problems in the K-CBCL.). Of 3,085 subjects who participated in the secondary screening, 1,215 (39.4%) were diagnosed as having ADHD. [5]
Treatment	In 2011, 60,108, 11,190, and 5,188 individuals were prescribed methylphenidate, atomoxetine, and the combination of atomoxetine and methylphenidate, respectively. [2]

Prognosis	Adult ADHD symptoms are highly associated with substance abuse, mood and anxiety disorders, somatoform disorders, sleep disturbances, and suicidality. [3]
Genetic information	*MAO* has been associated with the symptoms of ADHD. [6] *RELN* might be related to ADHD symptoms. [7]
References	[1] Nationwide rate of attention-deficit hyperactivity disorder diagnosis and pharmacotherapy in Korea in 2008-2011. ***Asia Pac Psychiatry*** (2014) 6: 379-385 [2] Prescribing patterns for attention deficit hyperactivity disorder medications among children and adolescents in Korea, 2007-2011. ***Epidemiol Health*** (2016) 38: e2016045 [3] Prevalence, correlates, and comorbidities of adult ADHD symptoms in Korea: results of the Korean epidemiologic catchment area study. ***Psychiatry research*** (2011) 186: 378-383 [4] Patterns of temperament and character in a clinical sample of Korean children with attention-deficit hyperactivity disorder. ***Psychiatry and Clinical Neurosciences*** (2008) 62: 160-166 [5] The Validities and Efficiencies of Korean ADHD Rating Scale and Korean Child Behavior Checklist for Screening Children with ADHD in the Community. ***Psychiatry Investig.*** (2014) 11: 258-265 [6] Association between monoamine oxidase gene polymorphisms and attention deficit hyperactivity disorder in Korean children. ***Genetic Testing and Molecular Bio marker*** (2014) 18: 505-509 [7] Association between *RELN* gene polymorphisms and attention deficit hyperactivity disorder in Korean children. ***Psychiatry Investigation*** (2016) 13: 210-216

Autism

Incidence	N/A
Prevalence	The prevalence of autism spectrum disorders (ASDs) in South Korea was 2.64% among 55,266 children aged 7-12 years. [1] The number of registered disabled individuals with autism was 18,133 (registration rate 91.3%) in 2015. [2]
Mortality	N/A
Gender	Of 214 patients with autism, 192 were boys and 22 were girls from 2004 to 2006. [3]
Age	The median ages were 22 (18-30) and 19 (19-32) years in the venlafaxine and placebo groups, respectively. [3] Among registered disabled individuals with autism in 2014, 50% and 33% were in their 10's and 20's, respectively. [4]
Regional distribution	N/A
Clinical phenotypes/ classification	N/A
Clinical manifestation	N/A
Risk factor	Intellectual disability has been associated with ASDs (n=50) [1]
Diagnosis	ASD should be suspected in children failing ASD-specific screening tests; and in the presence of red flags in social, language and/or play domains, in children with developmental language delay, abnormal behavior, and poor school performance in children at high risk. Comprehensive assessment comprises a step-wise approach that includes detailed history-taking, holistic examination, and close observation in relation to play, social interaction and behavior. Diagnosis is established using the diagnostic criteria for ASD in the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V). [5]
Treatment	Six patients who received venlafaxine (usual treatment dose plus 18.75 mg) along with their usual treatment (zuclopenthixol and/or clonazepam) with seven patients who received placebo plus usual care. [6]
Prognosis	Since neuroleptics are known to be epileptogenic and benzodiazepines tend to reduce their already limited cognitive capabilities, controlling behavioral disorders via an alternative psychopharmacological avenue; i.e., antidepressants, could provide a substantial improvement in the overall condition and quality of life of patients. [6]

Genetic information	Nine intronic SNPs at *PEX7* in 214 patients with ASD and 258 controls revealed the association of two SNPs and 1 haplotype with ASD. [3] *LAMB1* polymorphism [6]
References	[1] Prevalence of Autism Spectrum Disorders in a Total Population Sample. ***Am J of Psychiatry*** (2011) 168: 904-912 [2] Korea Statistical Information Service. Survey of the disabled. Changes in estimated number of disabled persons and disability registration rate (2016). http://kosis.kr/ [3] Association Between Peroxisomal Biogenesis Factor 7 and Autism Spectrum Disorders in a Korean Population. ***Journal of Child Neurology*** (2012) 27: 1270-1275 [4] Korea Statistical Information Service. Survey of the disabled. Age distribution (2016). http://kosis.kr/ [5] Autism Spectrum Disorders - Diagnosis and Management. ***Indian J Pediatr.*** (2017) 84(4): 307-314 [6] Using venlafaxine to treat behavioral disorders in patients with autism spectrum disorder. ***Progress in Neuro-Psychopharmacology & Biological Psychiatry*** (2016) 65: 85-95

Bipolar Disorder

Incidence	N/A
Prevalence	The prevalence of bipolar I disorder in Korea ranges from 0.16% to 0.44%, significantly lower than that reported in Western countries. [1]
Mortality	N/A
Gender	Among 579 subjects included in a final analysis from 2001 to 2006 included 262 (45.3%) men and 317 (54.7%) women. [2]
Age	The mean age of 184 patients with bipolar disorder was 41.51±13.56 years. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	These patients included 539 (93.1%) subjects with bipolar I disorder, 21 (3.6%) with bipolar II disorder, and 19 (3.3%) with bipolar disorder not otherwise specified (NOS). [2]
Clinical manifestation	Anxiety disorder (AD)-concurrent mood change (n=15/55) aggressive behaviors (n=22/55), delinquent behaviors (n=9/55), school refusal (n=17/55), and running away (n=1/55) were reported [4]
Risk factor	Familial history, including familial psychiatric history (40/65 families) and at least two family member relatives diagnosed with a psychiatric disorder (19/40 families) have also been reported. [5] Female patients with bipolar disorder experience seasonal and premenstrual changes in mood and behavior regardless of their mood episodes. The traits of seasonality and premenstrual syndrome are associated with each other. [6]
Diagnosis	Among 198 children and adolescents (aged 6-18), 20 (10.1 %) subjects were diagnosed as having bipolar disorder I, 10 (5.1 %) as bipolar disorder II, 25 (12.6 %) as not otherwise specified and 143 (73.7 %) as major depressive disorder. [4]
Treatment	Mood stabilizer: lithium (n=119/171), valproate (n=26/171), carbamazepine (n=20/171) Anti-anxiety: alprazolam (n=6/171), lorazepam (n=35/171), clonazepam (n=14/171) [7]

Prognosis	The prevalence of metabolic syndrome was significantly higher in patients with bipolar disorder than that in the control group. The odds ratio [ORs] (95% confidence interval [CI]) were 2.44 (1.35-4.40), 2.48 (1.34-4.59) and 2.57 (1.40-4.74), based on definitions from the American Heart Association (AHA), Adult Treatment Panel (ATPIII) and International Diabetes Federation (IDF), respectively. Patients taking medications for bipolar disorder had a significantly higher prevalence of increased waist circumference, elevated triglyceride (TGs), and reduced high-density lipoprotein cholesterol (HDL-C) than those in the control group. Obesity and dyslipidemia were particularly prevalent in patients with bipolar disorder. [8]
Genetic information	*BDNF* may be a genetic risk factor for an earlier onset of bipolar disorder. [3] *EGR2* is related to the pathogenesis of bipolar disorder. [9] *HSP-70* may play a role in the disrupted mechanisms that lead to bipolar disorder. [7]
References	[1] Prevalence of bipolar spectrum disorder in Korean college students according to the K-MDQ. ***Neuropsychiatr Dis Treat.*** (2013) 9: 869-874 [2] Initial depressive episodes affect the risk of suicide attempts in Korean patients with bipolar disorder. ***Yonsei Med J.*** (2010) 51: 641-647 [3] Association of the Brain-derived Neurotrophic Factor Gene and Clinical Features of Bipolar Disorder in Korea. ***Clin Psychopharmacol Neurosci.*** (2012) 10: 163-167 [4] Comparison of clinical characteristics of bipolar and depressive disorders in Korean clinical sample of youth: a retrospective chart review. ***European Child & Adolescent Psychiatry*** (2014) 23: 307-316 [5] Mental Disorders in Offspring of Parents with Bipolar Disorder. ***J Korean Neuropsychiatr Assoc.*** (2014) 53: 310-319 [6] Association of seasonality and premenstrual symptoms in bipolar I and bipolar II disorders. ***Journal of Affective Disorders*** (2011) 129: 313-316 [7] *TAAR 6* and *HSP-70* variations associated with bipolar disorder. ***Neurosci Lett.*** (2009) 465: 257-261 [8] Patients taking medications for bipolar disorder are more prone to metabolic syndrome than Korea's general population. ***Progress in Neuro-Psychopharmacology and Biological Psychiatry*** (2010) 34: 1243-1249 [9] Genetic association of the *EGR2* gene with bipolar disorder in Korea. ***Exp Mol Med.*** (2012) 44: 121-129

Cerebral Palsy

Incidence	The incidence of cerebral palsy was 2.3/1000 in a retrospective survey of 75 infants from 1994 to 2004. [1]
Prevalence	In 2008, the overall prevalence of cerebral palsy was 3.2/1000 children. [2]
Mortality	The mortality rate in 2015 was 0.2/100,000 populations. [3]
Gender	Of 31 consecutive patients with cerebral palsy who underwent cervical operation between 2006 and 2014, 18 and 13 were male and female, respectively. [4]
Age	The mean ages of cerebral palsy patients with corrected and uncorrected groups were 40.8±8.5 and 40.0±6.2 years, respectively. [4]
Regional distribution	N/A
Clinical phenotypes/ classification	The Gross Motor Function Classification System Expanded and Revised (GMFCS E&R) classifies a child's gross motor function into five levels, from level I (the child walks without limitations) to level V (self-mobility is severely limited even with the use of an assistive device). Severity corresponding to GMFCS E&R level III was defined as mild level III, as moderate and level IVV, as severe. Mild GMFCS E&RIII 34.7%, 10/29), moderate (GMFCS E&R III 24.1%, 7/29), severe (GMFCS E&R IVV 41.4% 12/29). [5]
Clinical manifestation	The most common type of preterm cerebral palsy was spastic (95%), whereas the types of term cerebral palsy were more diverse, with spastic occurring in 67% of subjects, athetoid in 20%, dystonic in 7%, and hypotonic in 7%. Diplegic and quadriplegic lesions were the most common types in preterm and term cerebral palsy, respectively. [1]
Risk factor	The risk factors of cerebral palsy are low gestational age and low birth weight, long-term ventilator care (more than one week), low Apgar score [1], perinatal brain injury, etc. [6] Among them, low gestational age has been reported as the most important risk factor for cerebral palsy. Premature infants account for 50-60% of total cerebral palsy patients. [6]
Diagnosis	In clinical practice, the diagnosis of cerebral palsy is typically based on parent reports of attained motor milestones (sitting, pulling to stand, and walking) and evaluation of posture, deep tendon reflexes, and muscle tone. MRICT is recommended for children with neurological findings suggestive of cerebral palsy to determine the presence of brain abnormality. [6]
Treatment	Even though it is impossible to completely cure cerebral palsy, a variety of treatments could increase the abilities and physical strength and prevent complications in patients with cerebral palsy. Specific treatment varies by individual condition. In general, treatment focuses on maintaining and improving a quality of life and overall health. [6]

Prognosis	Angular and translational correction were 19.0° (C2-7 Cobb angle), 19.8° (T1 slope minus C2-7 Cobb angle), and 16 mm (C2-7 Sagittal Vertical Axis (SVA)), Postoperative Neck Disability Index (NDI) scores showed greater improvement in the corrected group than the uncorrected group. In the corrective group, grip power increased postoperatively (8.9±8.9 vs. 15.5±8.3). [4]
Genetic information	N/A
References	[1] Clinical characteristics of cerebral palsy following preterm or term birth 10 years' experience. ***Korean J of Obstet Gynecol.*** (2006) 49: 2544-2550 [2] Prevalence and lifetime healthcare cost of cerebral palsy in South Korea. ***Health Policy*** (2011) 100: 234-238 [3] Korean Statistical Information Service. Mortality of cerebral palsy (2015). http://kosis.kr/ [4] Clinical Outcomes of Correcting Cervical Deformity in Cerebral Palsy Patients. ***World Neurosurg.*** (2016) 96: 500-509 [5] Characteristics of dysphagia in children with cerebral palsy, related to gross motor function. ***Am J Phys Med Rehabil.*** (2013) 92: 912-919 [6] Motor delay: cerebral palsy. ***Korean Journal of Pediatrics*** (2006) 49: 1019-1025

Chronic Back Pain

Incidence	In 2010, 257,580 patients admitted to the hospital. [1]
Prevalence	The prevalence of chronic low back pain was 6.4% in men and 11.5% in women according to the Korean National Health and Nutrition Examination Survey (KNHANES) in 2009. [2]
Mortality	N/A
Gender	The prevalence of chronic low back pain was significantly higher in women (11.5%) than in men (6.4%). [2]
Age	The prevalence was higher in older age groups. According to a study using KNHANES, data women aged 50-59 years had 2.8-fold higher risk of low back pain than women aged 19-29 years. [2]
Regional distribution	N/A
Clinical phenotypes/ classification	A total of 481 patients with chronic low back pain were diagnosed with lumbar disc herniation (n=136, 28%), spinal stenosis (n=191, 39%), spondylolisthesis (n=24, 5%), musculoskeletal back pain (n=61, 12%). [3]
Clinical manifestation	The symptomatic levels were at the L4-5, L5-S1, L3-4, and L2-3 levels in 29, 18, 14, two patients, respectively. [4] Of 47 total patients with chronic low back pain, depression (n=24, 51%), sleep disturbance (n=30, 63.8 %) were also reported. [5]
Risk factor	Depression (n=98/481) were strongly associated with clinical insomnia in chronic low back pain. [3] Age, education level, occupation, physical activity, menopausal status, body mass index (BMI) and waist circumference. [2]
Diagnosis	Analysis of pain distribution patterns and careful history taking can be used as an initial guide to classify chronic back pain as somatic or radicular. X-ray and MRI-CT are frequently used for diagnosis. [6]
Treatment	Endoscopic radiofrequency denervation of medial branch of dorsal ramus (n=52). [4]
Prognosis	The pain scores on visual analogue scale for back pain had improved significantly from a preoperative mean of 7.1 to a postoperative mean of 2.0 of patients were satisfied with the procedure. [4]
Genetic information	N/A

References	
	[1] Effects of the Back Pain Management Program on Patients with Chronic Low Back Pain. ***J Muscle Jt Health*** (2014) 21: 114-124
	[2] Associations Between Body Composition and Chronic Low Back Pain in Adults: Data from the 2009 Korea National Health and Nutrition Examination Survey. ***Kor J Health Promot.*** (2012) 12: 187-194
	[3] Risk Factors Associated with Clinical Insomnia in Chronic Low Back Pain: A Retrospective Analysis in a University Hospital in Korea. ***Kor J Pain*** (2015) 28: 137-143
	[4] The effectiveness of endoscopic radiofrequency denervation of medial branch for treatment of chronic low back pain. ***J Korean Neurosurg Soc.*** (2014) 56: 338-343
	[5] Assessment of depression, anxiety, sleep disturbance, and quality of life in patients with chronic low back pain in Korea. ***Korean J Anesthesiol.*** (2014) 66: 444-450
	[6] Causes and Diagnostic Strategies for Chronic Low Back Pain. ***J Korean Med Assoc.*** (2007) 50: 482-493

Depression

Incidence	The incidence of depression was 5.1% per year. [1]
Prevalence	According to a survey of mental disorders in Korea by the Ministry of Health and Welfare, the prevalence of depression was 1.5% in 2016. [2]
Mortality	Of 8,605 suicides in 2005, 5,163 of these are estimated to be related to depression. [3]
Gender	Of 1,257 patients in depression group, 537 patients (42.7%) were male and 720 patients (57.3%) were female. [4] The prevalence of depression was 1.1% for men and 2.0% for women [2]
Age	The mean age of depression group (n=1,257) was 44.85±11.33 years. [1]
Regional distribution	The prevalence of depression was 1.0% in urban area and 0.8% in rural area in 2016. [2]
Clinical phenotypes/ classification	Chronicity depression (≥24 months: n=45, <24 months: n=164) and recurrent tendency depression (≥3 episodes: n=86, and <3 episodes: n=123). [5]
Clinical manifestation	Anxiety (n=342/897 (caregivers)): mild anxiety (n=182/897), moderate anxiety (n=119/897), severe anxiety (n=42/897). Depression (n=737/897): mild (n=362/737), moderate (n=229/737), and severe depression (n=146/737). [6]
Risk factor	A history of cancer (n=25, 2.0%), alcohol, diabetes (n=77, 6.1%), hypertension (n=185, 14.7%), congestive heart disease (n=38, 3.0%), stroke (n=7, 0.6%) and dyslipidemia (n=162, 12.9%) associated with depression. [4]
Diagnosis	The Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) defines depression as follows: - at least one of the following symptoms: diminished interest/pleasure and depressed mood - at least five of the following symptoms: depressed mood, diminished interest/loss of pleasure in almost all activities, sleep disturbance, weight change/appetite disturbance, decreased concentration, indecisiveness, suicidal ideation/thoughts of death, psychomotor agitation/retardation, fatigue/ loss of energy, feelings of worthlessness/inappropriate guilt. The International Classification of Diseases, tenth revision (ICD-10) defines as follows: - at least two of the symptoms: depressed mood, loss of interest/pleasure, or decreased energy/increased fatigue - at least two of the following symptoms: loss of confidence/self-esteem, unreasonable feelings of self-reproach, recurrent thoughts of death/suicide, complaints of diminished ability to think/concentrate, change in psychomotor activity, sleep disturbance, or change in appetite. [7]

Treatment	Antidepressant (n=54/54), antipsychotics (n=17/54), mood stabilizers (n=7/54) [8]
Prognosis	The remission rate after four weeks (18.5% vs. 44.4%) and at discharge (33.3% vs. 66.7%) between anxious distress and non-anxious distress. [8]
Genetic information	Patients with the Met/Met *BDNF* genotype had a significantly higher rate of chronic depression than all others. [5] *5-HTTLPR* was also associated with chronic depression. [9]
References	[1] A review of the epidemiology of depression in Korea. ***J Korean Med Assoc.*** (2011) 54: 362-369 [2] Korea Statistical Information Service. Mental illness survey. Socio-demographic distribution of the prevalence of major depressive disorder in one year (2017). http://kosis.kr/ [3] Economic burden of depression in South Korea. ***Social Psychiatry and Psychiatric Epidemiology*** (2012) 47: 683-689 [4] The effect of emotional stress and depression on the prevalence of digestive diseases. ***J Neurogastroenterol Motil.*** (2015) 21: 273-282 [5] Association between the *BDNF* Val66Met Polymorphism and Chronicity of Depression. ***Psychiatry Investig.*** (2013) 10: 56-61 [6] Prevalence and predictors of anxiety and depression among family caregivers of cancer patients: a nationwide survey of patient-family caregiver dyads in Korea. ***Supportive Care in Cancer*** (2013) 21: 2799-2807 [7] Epidemiology of Depressive Disorders in Korea. ***Psychiatr Invest.*** (2005) 2: 22-27 [8] Difference in Treatment Outcome in Hospitalized Major Depression Patients with versus without Anxious Distress Specifier in DSM-5. ***Korean J Psychopharmacol.*** (2015) 26: 22-28 [9] Serotonin transporter gene polymorphisms and chronic illness of depressin. ***J Korean Med Sci.*** (2010) 25: 1824-1827

Diabetic Peripheral Neuropathy

Incidence	Among 33 type 2 diabetes patients without diabetic peripheral neuropathy (DPN) in 2006, six were diagnosed with DPN in 2012. [1]
Prevalence	The prevalence of DPN was 33.5% among 3,999 patients with type 2 diabetes in the diabetic clinics of 40 hospitals in Korea. [2, 3]
Mortality	N/A
Gender	Women had a 1.26 (95% confidence interval [CI]: 1.03-1.53) times higher prevalence of DPN than that in men. [3]
Age	The prevalence of DPN increased gradually with age. Elderly diabetes patients had a 52% increased risk of DPN than that of their younger counterparts. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	Among patients with DPN (n=1,338), 577 (43.1%) were diagnosed with painful DPN (PDPN) (14.4% of 3,999 patients with type 2 diabetes). [4]
Clinical manifestation	Among patients with PDPN, 490 (84.9%) complained of pain or discomfort in their legs or feet and 87 (15.1%) in their hands. Patients with DPN also frequently reported sleep problem. [4]
Risk factor	DPN was related to diabetes duration, insulin resistance, hyperglycemia, current cigarette smoking, dyslipidemia, and hypertension. [1, 3, 5, 6]
Diagnosis	DPN is defined as the presence of symptoms and/or signs of peripheral nerve dysfunction in patients with diabetes after excluding other causes. The diagnostic tests for DPN are not clearly established because of the various pathophysiology developing from nerve injury to clinical manifestations, differences in mechanisms according to the type of diabetes, comorbidities, and the unclear natural history of DPN. [5]
Treatment	Of 1,338 patients diagnosed with neuropathy, 69.8% (n=934) had been prescribed medications for neuropathy. The most frequently prescribed medications included a-lipoic acid (42.4% of prescriptions, n=396), anticonvulsants (25.9%, n=242), c-linoleic acid (18.1%, n=169), tricyclic antidepressants (16.1%, n=150), serotonin-norepinephrine reuptake inhibitors (1.3%, n=12), opioids (0.9%, n=8), selective serotonin reuptake inhibitors (0.8%, n=7), and topical preparations (0.1%, n=1). [3]
Prognosis	N/A
Genetic information	N/A

References	[1] The Role of Insulin Resistance in Diabetic Neuropathy in Koreans with Type 2 Diabetes Mellitus: A 6-Year Follow-Up Study. ***Yonsei Medical J.*** (2014) 55: 700-708 [2] Current Status of Diabetic Peripheral Neuropathy in Korea: Report of a Hospital-Based Study of Type 2 Diabetic Patients in Korea by the Diabetic Neuropathy Study Group of the Korean Diabetes Association. ***Diabetes & Metabolism Journal*** (2014) 38: 25-31 [3] Current Status of Diabetic Peripheral Neuropathy in Korea: Report of a Hospital-Based Study of Type 2 Diabetic Patients in Korea by the Diabetic Neuropathy Study Group of the Korean Diabetes Association. ***Diabetes and Metabolism Journal*** (2014) 38: 25-31 [4] Prevalence and clinical implications of painful diabetic peripheral neuropathy in type 2 diabetes: results from a nationwide hospital-based study of diabetic neuropathy in Korea. ***Diabetes Res Clin Pract.*** (2014) 103: 522-529 [5] Recent Advances in Diagnostic Strategies for Diabetic Peripheral Neuropathy. ***Endocrinology and Metabolism*** (2016) 31: 230-238 [6] Insulin resistance is independently associated with peripheral and autonomic neuropathy in Korean type 2 diabetic patients. ***Acta Diabetol.*** (2012) 49: 97-103

Insomnia

Incidence	Insomnia was present in 151 (23%) of 651 followed-up participants without baseline insomnia from a prospective community-based study from 2001 to 2003. [1]
Prevalence	The prevalence of insomnia was an estimated 22.8% among 1,141 representative Korean adults aged 20-69 years in 2002. [2]
Mortality	N/A
Gender	The prevalence of insomnia was significantly higher in women (25.3%) than that in men (20.2%, P<0.001). [2]
Age	The prevalence of insomnia increased significantly with age (P<0.001), being higher in those aged 60-69 years than in those aged 20-29 years (odds ratio [OR]: 2.368, 95% confidence interval [CI]: 1.762-3.182, P<0.001). [2] Another study of elderly participants aged 60 years older reported an estimated insomnia prevalence of 32.7%. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	Among 184 patients, the insomnia included psychophysiological insomnia (n=112), insomnia due to mental disorder (n=41), general medical conditions (n=16), sleep disorder (n=14), and substance use (n=1). [3]
Clinical manifestation	Difficulty initiating sleep occurred every night, on most nights (56 nights) per week, on several nights per week, once per week, and less than once per week in 2.6%, 1.9%, 4.0%, 2.0%, and 0.9% of subjects, respectively. The corresponding prevalence rates for difficulty in maintaining sleep were 2.5%, 2.2%, 6.5%, 4.0%, and 3.1%, respectively. [2]
Risk factor	The precipitating factors included major life events (e.g., illness, separation) and less severe but more chronic daily stress. The temperament factors included anxiety and worry-prone personality cognitive styles, increased predisposition for arousal, and tendency to repress emotions. The environmental factors included noise, light, uncomfortably high or low temperatures, and high altitude The genetic factors include female sex, advancing age, and familial history. [4]
Diagnosis	Sleep diary, Questionnaires polysomnography (PSG), quantitative electroencephalographic analysis (qEEG) [4] About Rapid antigen test: 1) sensitivity for seasonal influenza : 71.4% 2) specificity: 95.8% 3) positive predictive value: 79.7% 4) negative predictive value: 93.5% [5]

Treatment	Benzodiazepine: Flurazepam (15-30mg), Triazolam (0.125-0.25mg), Flunitrazepam (1mg), Brotiazolam (0.25mg), Clonazepam (0.5mg) non-benzodiazepine GABA modulator: Zolpdem antidepressant: Trazodone (25-50mg), Mirtazapine (15-30mg), Amitriptyline (10-20mg), Doxepin (3-6mg) Antihistamine: Doxylamine (25mg) Melatonin: Prolonged-release melatonin (2mg) Antipsychotics: Quetiapine (25-50mg), Olanzapine (2.5-5mg) [6]
Prognosis	N/A
Genetic information	Dysregulation of *ROR1, PLCB1,PLCB4 by PAX6* and *CT*. [5]
References	[1] Insomnia, depression, and physical disorders in late life: a 2-year longitudinal community study in Koreans. ***Sleep*** (2009) 32: 1221-1228 [2] Epidemiology of insomnia in Korean adults: prevalence and associated factors. ***J Clin Neurol.*** (2009) 5: 20-23 [3] Prevalence and clinical characteristics of insomnia and its subtypes in the Korean elderly. ***Archives of Gerontology and Geriatrics*** (2017) 68: 68-75 [4] Insomnia: causes and diagnosis. ***Hanyang Medical Reviews*** (2013) 33: 203-209 [5] Genetic and metabolic characterization of insomnia. ***PLosONE*** (2011) 6: e18455 [6] Optimizing the pharmacological treatment for insomnia. ***J Sleep Med.*** (2016) 13: 1-7

Narcolepsy

Incidence	N/A
Prevalence	The worldwide prevalence is 0.02~0.08%. In South Korea, an estimated 20,000-60,000 patients have narcolepsy. [1] The prevalence of narcolepsy in Korean adolescents was 0.015% (95% CI: 0.0-0.031%). [2]
Mortality	N/A
Gender	Of 53 patients with narcolepsy, 27 were male and 26 were female. [3]
Age	The mean ages of 53 patients with narcolepsy were 31.4±12.3 (modafinil-treated group) and 29.1±9.9 (placebo-treated group) years. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	The presence of excessive daytime sleepiness (EDS) (n=22/22), cataplexy (n=18/22), and sleep-onset REM periods (SOREMP) (n=22/22). [4]
Clinical manifestation	Narcolepsy is a serious chronic sleep disorder characterized by excessive daytime sleepiness, cataplexy, sleep paralysis, and hypnagogic hallucination [2]. A Korean study of 23 patients reported the distribution of clinical manifestations as follows: excessive daytime sleepiness (n=23/23), cataplexy (n=19/23), hypnagogic hallucination (n=5/23), and sleep paralysis (n=12/23) [1]
Risk factor	N/A
Diagnosis	Multiple Sleep Latency Test (MLST) : average sleep latency (8 minutes), more two times SOREMP Concentration of Hypocretin : <110 pg/mL HLA typing : HLA subtype DQB1*0602 positive (90% of narcolepsy patients) [5]
Treatment	Patients (n=32) were received modafinil. [3]
Prognosis	The adverse effect of modafinil include a mild headache lasting several days (n=10, 31.2%) and hand tremors or nervousness (n=5, 15.6%, reduction of dose to 100 or 150 mg). [3] Compared to the on-placebo condition in the placebo group, the on-modafinil condition in the modafinil group showed a significantly reduced regional cerebral blood flow (rCBF) in the left hippocampus and left and right parahippocampal gyri. [3] Narcolepsy typically begins between adolescence and early adulthood, causing cognitive dysfunction, low academic performance and interpersonal problems. [2]

Genetic information	In one study all of the narcoleptic patients were *HLA-DRB1*1501* and *HLA-DQB1*0602*-positive, and their frequencies were significantly higher in patients than those in the random controls. [6] The high frequency of *HLA-DQB1*0602* was also related to narcolepsy in Korean. [7]
References	[1] Evaluation of Cognitive Functions in Patients with Narcolepsy. J Agric Med. ***Community Health*** (2013) 38: 97-107 [2] Prevalence of narcolepsy-cataplexy in Korean adolescents. ***Acta. Neurologica Scandinavica*** (2008) 117: 273-278 [3] Effect of Modafinil on Cerebral Blood Flow in Narcolepsy Patients. ***Sleep*** (2008) 31: 868-873 [4] The Temperament and Character Pattern of Korean Narcolepsy Patients. ***Sleep Medicine and Psychophysiology*** (2005) 12: 45-49 [5] Narcolepsy : Clinical Feature, Diagnosis and Treatment. ***Sleep Medicine and Psychophysiology*** (2010) 17: 63-68 [6] Association of HLA-DR and-DQ Genes with Narcolepsy in Koreans: Comparison with Two Control Groups, Randomly Selected Subjects and DRB1* 1501-DQB1* 0602-Positive Subjects. ***Human immunology*** (2006) 67: 749-755 [7] HLA-DQB1 allele and hypocretin in Korean narcoleptics with cataplexy. ***Journal of Korean medical science*** (2007) 22: 127-131

Parkinson's Disease

Incidence	N/A
Prevalence	The National Health Insurance Service (NHIS) indicated that 91,302 patients were treated for Parkinson's Disease (PD) in 2015. [1]
Mortality	The mortality in 2015 is 6.8/100,000. [2]
Gender	Of a total of 1,200 patients diagnosed with PD, 446 were men (37.2%) and 754 were women (62.8%). [3] The 91,302 patients treated for PD included 36,236 (39.7%) men and 55,066 (60%) women. [1]
Age	The mean age was 72.2±8.9 years, ranging from 36 to 94 years. [3] Of the 91,302 patients treated for PD, 53.8% (n=49,169) were over 75 years of age, followed by 17,245 (18.9%) aged 70-74 years, 10,395 (11.4%) aged 65-69 years, and 6,614 (7.2%) aged 60-64 years. [4]
Regional distribution	N/A
Clinical phenotypes/ classification	PD normal cognition (n=273, 28%), PD mild cognitive impairment (MCI) (n=467, 38.9%), and PD dementia (n=460, 38.3%). [3]
Clinical manifestation	PD is characterized by neuronal loss in the substantia nigra and other brain regions, and is associated with the formation of intracellular protein inclusions known as Lewy bodies. [5] Tremor: PD normal cognition (n=175, 52.9%), PD MCI (n=326, 54.9%), PD dementia (n=345, 56.3%) Rigidity: PD normal cognition (n=225, 82.4%), PD MCI (n=387, 82.9%), PD dementia (n=390, 84.8%) Bradykinesia: PD normal cognition (n=249, 91.2%), PD MCI (n=430, 92.1%), PD dementia (n=418, 90.9%) Postural instability and gait disturbance: PD normal cognition (n=93, 34.1%) PD MCI (n=206, 44.1%), PD dementia (n=291, 63.3%) [3]
Risk factor	Hypertension (n=597, 49.8%), diabetes mellitus (n=265, 22.1%), Dyslipidemia (n=140, 11.7%), smoking (n=106, 8.8%), and arterial fibrillation (n=42, 3.5%), stroke (n=103, 8.6%), head injury (n=21, 1.8%), and chronic alcoholism (n=16, 1.3%) [3]
Diagnosis	The Korean version of the mini-mental status examination (K-MMSE) and clinical dementia rating (CDR) were applied by a neuropsychologist to patients diagnosed with PD. Brain MRI was performed for all PD subjects to rule out other organic brain disorders, such as hydrocephalus or significant ischemic changes of the basal ganglia or white matter. [6]

Treatment	Among 467 patients with mild cognitive impairment (MCI), 110 (23.6%) were taking one antidementia medication, whereas 438 (95.2%) of the dementia patients were taking antidementia medications. Rivastigmine was the most commonly used drug for cognitive impairment (n=322), followed by donepezil (n=171), memantine (n=49) and galantamine (n=15). [3]
Prognosis	N/A
Genetic information	*HTR2A* variant contributed to the susceptibility to impulse control and repetitive behaviors in PD. [7] A possible association between endothelial dysfunction as assessed by flow-mediated dilation and low vitamin D status has been reported in patients with early PD. [8] *SNCA* SNP rs11931074 showed the most significant association with PD susceptibility (adjusted odds ratio [OR]: 1.48, 95% confidence interval [CI]: 1.31-1.67, $P=2.20E^{-10}$) [1]
References	[1] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015). http://kosis.kr/ [2] Korean Statistical Information Service. Mortality of Parkinson's disease (2015). http://kosis.kr/ [3] Prevalence and treatment pattern of Parkinson's disease dementia in Korea. ***Geriatrics Gerontology International*** (2016) 16: 230-236 [4] Korea Statistical Information Service. Health Insurance Statistics. 298 disease by age group (2016). http://kosis.kr/ [5] Alzheimer's disease and Parkinson's disease genome-wide association study top hits and risk of Parkinson's disease in Korean population. ***Neurobiology of aging*** (2013) 34: 2695-e1 [6] Prevalence of Parkinson's disease in Korea. ***Journal of Clinical Neuroscience*** (2007) 14: 1155-1157 [7] Genetic variant of HTR2A associates with risk of impulse control and repetitive behaviors in Parkinson's disease. ***Parkinsonism Relat Disord.*** (2012) 18: 76-78 [8] Vitamin D deficiency and its relationship with endothelial dysfunction in patients with early Parkinson's disease. ***J Neural Transm.*** (2015) 122: 1685-1691

Schizophrenia and Schizoaffective Disorders

Incidence	During a 12-year period (January 1995 to December 2006), 24,391 patients (12,057 inpatients and 12,334 outpatients) were diagnosed with schizophrenia. [1]
Prevalence	The treated prevalence rate of schizophrenia in the Korean population was 0.4% in 2005. [2] In 2016, the prevalence of schizophrenia was 0.2%, corresponding to an estimated 63,361 schizophrenia patients according to a survey of mental disorders by the Korea Ministry of Health and Welfare. [3]
Mortality	There were 978 estimated deaths due to schizophrenia in 2005 including 640 men and 338 women. [2]
Gender	Of 145 patients with schizophrenia, 74 were male and 71 were female. [4] In another study of 278 patients with schizophrenia, 189 were male and 89 were female. [5] According to the 2016 survey of mental disorders by the Korea Ministry of Health and Welfare, the schizophrenia prevalences for men and women was 0.5% and 0.4%, respectively. [3]
Age	The mean age at schizophrenia onset was 25.6±9.1 years. [4]
Regional distribution	N/A
Clinical phenotypes/ classification	N/A
Clinical manifestation	Positive symptom (n=18/22): formal thought disorder, bizarre behavior, hallucination, and delusion) and negative symptoms (n=9/22): anhedonia-asociality, avolition-apathy, affective flattening, and alogia. [6]
Risk factor	N/A
Diagnosis	Schizophrenia (n=273/300), schizophreniform disorder (n=16/300), and schizoaffective disorder (n=11/300) [7]
Treatment	All 145 patients in one study used antipsychotics, including aripiprazole (n=32, 22.1%), olanzapine (n=41, 28.3%), and risperidone (n=72, 49.7%). Forty-three patients (29.7%) used antidepressants, including selective serotonin reuptake inhibitors (SSRIs, n=40, 27.8%), SSRI and bupropion (n=2, 1.4%), and exclusively buporin (n=1). [4] Of 191 (63.7%) who completed an eight-week acute phase, 109 discontinued treatment (mean aripiprazole daily dose: 19.65 mg) and 148 (77.5%) completed the maintenance phase from week 8 until week 26 (mean aripiprazole daily dose: 20.64 mg). [7]

Prognosis	Positive and Negative Syndrome Scale (PANSS) total score: baseline, 96.35±20.15 week 8, 67.52±23.22 week 26, 63.72±24.10 PANSS positive symptoms subscale: baseline, 26.55±6.00 week 8, 16.94±7.29 week 26, 15.43±7.26 PANSS negative symptoms subscale: baseline, 22.29±7.53 week 8, 16.49±6.82 week 26, 15.71±6.87. Clinical Global Impression-Severity of Illness (CGI-S) scores: baseline, 5.10±1.01 week 8, 3.56±1.39 week 26, 3.31±1.44. Aripiprazole demonstrated a rapid onset of efficacy. For all four parameters, statistically significant differences from baseline were evident from week 1 and sustained throughout the 26 weeks of treatment. [7]
Genetic information	rs1063639 of *HDAC4* may play a role in the susceptibility of schizophrenia in the Korean population. rs2530223 of *HDAC3* may be related to smoking status in schizophrenia. [5] *ST8SIA2* associated with susceptibility to both schizophrenia and bipolar disorder. [8]
References	[1] Cause-Specific Mortality of Psychiatric Inpatients and Outpatients in a General Hospital in Korea. ***Asia-Pacific Journal of Public Health*** (2015) 27: 164-175 [2] Economic burden of schizophrenia in south Korea. ***Journal of Korean Medical Science*** (2008) 23: 167-175 [3] Korea Statistical Information Service. Mental illness survey. Prevalence and estimated number of patients with psychotic disorders in one year. (2017). http://kosis.kr/ [4] The prevalence of metabolic syndrome in Korean patients with schizophrenia receiving a monotherapy with aripiprazole, olanzapinerisperidone. ***Progress in Neuro-Psychopharmacology and Biology Psychiatry*** (2011) 35: 1273-1278 [5] Association of histone deacetylase genes with schizophrenia in Korean population. ***Psychiatry Research*** (2010) 178: 266-269 [6] Aripiprazole in the Treatment of Early-Onset Schizophrenia Spectrum Disorder: A Case Series in Korean Children and Adolescents. ***Curr Ther Res Clin Exp.*** (2009) 70: 173-183 [7] Long-term efficacy and safety of aripiprazole in patients with schizophrenia, schizophreniform disorder,schizoaffective disorder: 26-week prospective study. ***Psychiatry and Clinical Neurosciences*** (2009) 63: 73-81 [8] Association between *ST8SIA2* and the Risk of Schizophrenia and Bipolar I Disorder across Diagnostic Boundaries. ***PLoS ONE*** (2015) 10: DOI:10.1371/journal.pone.013941

EPIDEMIOLOGY IN KOREA

Dermatology

Acne Vulgaris

Incidence	N/A
Prevalence	The total prevalence of acne was 36.2% in a cross-sectional study conducted in 2014 of 693 elementary school children aged 7-12 years. [1] The National Health Insurance Service (NHIS) reported that 110,758 patients were treated for acne in 2015. [2]
Mortality	N/A
Gender	Of 1,236 total patients at 17 referral hospitals in 2006, 480 (38.8%) were male and 756 (61.2%) were female (61.2%). [3] The 110,758 patients treated for acne included 48,966 (44.2%) men and 61,792 (55.8%) women. [2]
Age	The mean age was 23.9±6.9 years. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	In male patients, acne first appeared on the cheeks (61.7%), forehead (60.4%), nose (31.5%), and perioral area (21.5%). In female patients, acne first appeared on the forehead (64%), cheeks (56.7%), nose (26.5%), and perioral area (22.2%). [3]
Clinical manifestation	Acne vulgaris is a chronic, inflammatory disease of the pilosebaceous units, characterized by comedones, papules, pustules, nodules, and often scars. Multiple factors, including *Propionibacterium acnes* activity, increased sebum production, androgenic stimulation, follicular hypercornification; and lymphocyte, macrophage and neutrophil inflammatory responses and cytokine activation, are thought to play a role in acne pathogenesis. [4]
Risk factor	The main triggering or aggravating factors were psychological stress (82%), lack of sleep (75.2%), menstruation (61.3%), smoking (50.4%), drinking (50.4%), cosmetics (36%), pregnancy (28.4%), and consumption of chocolate (19%). [3]
Diagnosis	The global acne grading system (GAGS) was used to assess acne severity. The GAGS score is calculated by rating six different locations (i.e., the forehead, right cheek, left cheek, nose, chin, and chest/upper back) as 0 (no lesions), 1 (≥1 comedo), 2 (≥1 papule), 3 (≥1 pustule), or 4 (≥1 nodule) and multiplying each rating by a factor specific to that area. The factors are determined based on the surface area and distribution and density of pilosebaceous units. The GAGS score is the sum of all six location scores, and the GAGS grade is defined according to the global score (0, none; 1-18, mild; 19-30, moderate; 31-38, severe; ≥and 39, very severe). [4]
Treatment	N/A

Prognosis	N/A
Genetic information	N/A
References	[1] Epidemiology and risk factors of childhood acne in Korea: a cross-sectional community based study. ***Clin Exp Dermatol.*** (2015) 40: 844-850 [2] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015). http://kosis.kr/ [3] A multicenter epidemiological study of acne vulgaris in Korea. ***International Journal of Dermatology*** (2011) 50: 673-681 [4] Effectiveness of conventional, low-dose and intermittent oral isotretinoin in the treatment of acne: a randomized, controlled comparative study. ***British Journal of Dermatology*** (2011) 164: 1369-1375

Allergic Rhinitis

Incidence	N/A
Prevalence	The prevalence of allergic rhinitis (AR) was 16.2 ± 1.0% in study using Korean National Health and Nutritional Examination Survey (KNHANES) of 2010-2012. [1] In 1998, age-standardized prevalence rates of AR were 1.0% in males and 1.5% in females. And the prevalence rates of AR increased to 10.6% and 13.5% for males and females in 2007-2009 using KNHANES data. [2]
Mortality	N/A
Gender	The prevalence of AR was significantly higher in females than males. Among Korean male aged 19 or over, the prevalence of AR was as follow: 1998 (1.0%), 2001 (2.3%), 2005 (7.0%) and 2007-2009 (10.6%). And among Korean female aged 19 or over, the prevalence of AR was as follow: 1998 (1.5%), 2001 (3.1%), 2005 (9.7%) and 2007-2009 (13.5%). [2]
Age	Age distribution of prevalence in age ≥19 patients in 2007-2009 was as follow: In male, 19-29 years: 992 cases (13.9%), 30-39 years: 1,444 cases (14.6%), 40-49 years: 1,475 cases (9.6%), 50-59 years: 1,241 cases (7.5%), 60-69 years: 1,200 cases (5.6%), ≥70 years: 988 cases (3.4%). In female, 19-29 years: 1,290 cases (18.4%), 30-39 years: 2,037 cases (19.3%), 40-49 years: 1,919 cases (12.5%), 50-59 years: 1,651 cases (8.8%), 60-69 years: 1,581 cases (5.6%), ≥70 years: 1,492 cases (2.7%). [2]
Regional distribution	The regions with the highest and lowest prevalence in 12- to 13-year-old children were as follows: Chungcheong and Honam in “Diagnosis of AR, ever” (33.7% vs. 24.5%), Jeju and Yeongnam in “Treatment of AR, last 12 months” (25.5% vs. 18.0%), Chungcheong and Yeongnam in “Rhinitis with sensitization” (31.6% vs. 23.6%). The regions with highest and lowest prevalence in 6–7 years old children were as follows: Yeongnam and Seoul in “Diagnosis of AR, ever” (42.1% vs. 31.0%), Yeongnam and Jeju in “Treatment of AR, last 12 months” (31.8% vs. 21.9%), Jeju and Seoul in “Rhinitis with sensitization” (26.0% vs. 18.4%). There is a regional difference in inhalant allergens among the children with “rhinitis with sensitization”. [3]
Clinical phenotypes/ classification	The distribution of severity based on AR and its impact on Asthma (ARIA) guidelines was as follow: Mild intermittent (25.7%), moderate to severe intermittent (16.4%), mild persistent (16.4%), and moderate to severe persistent (41.2%). [4]

Clinical manifestation	Among 516 children, clinical manifestations are as follow: Sneezing (64.0%), nasal obstruction (94.5%), rhinorrhea (84.4%), itching (58.4%), postnasal drip (38.9%). Children who were sensitized to animal hair more frequently had sneezing than those who were not. Sneezing and itching strongly suggest AR in Korean children. [5]
Risk factor	Risk factors for current AR were male (the adjusted odds ratio [OR]: 1.486), family history of paternal AR (OR: 3.208), family history of maternal AR (OR: 3.138), antibiotic use in infancy (OR: 1.547), mold exposure during infancy (OR: 1.416), mold exposure during the last 12 months (OR: 1.285) and sensitization on skin prick tests (OR: 2.596). Whereas breast-milk feeding (OR: 0.720) was a protective factor. Sensitized allergens as risk factors for current AR were Dermatophagoides pteronyssinus, Dermatophagoides farina, ragweed, mugwort, oak, alder, birch, Japanese hop, cat, and dog. [6]
Diagnosis	The allergen microarray chip method (Immuno Solid-phase Allergen Chip, ImmunoCAP ISAC) is a reliable new method to diagnose the components of an allergen in patients with allergic rhinitis sensitive to house dust mites. [7] Skin prick test, MAST, ImmunoCAP IgE detection [5]
Treatment	Ultra-rush immunotherapy using Dermatophagoides in children is effective for treating allergic disease but can induce systemic effects rather than conventional immunotherapy. [8] The results of this study suggest that subcutaneous immunotherapy (SCIT) may have more rapid effects on clinical symptoms and skin reactivity in children with AR, compared to sublingual immunotherapy (SLIT). [9] All the symptoms of AR were improved with SLIT. Forty-five percent of the patients were satisfied for SLIT, while 12% were unsatisfied. The incidence of adverse effects was 12% during maintenance therapy, although it was 48% during the up-dosing phase. The drop-out rate of SLIT was 31.0%. [10]
Prognosis	The comorbid rate of asthma and rhinitis was high, with 60-80% of asthma patients also having symptoms of rhinitis. Younger asthmatic patients had a higher comorbid rate of rhinitis (80%) than that in elderly patients (60%). Asthmatic patients with rhinitis, regardless of age, had more severe clinical symptoms, implying that rhinitis affects asthma severity and outcome. [4]

Genetic information	The subjects with CC genotype of *TLR4* rs1927911 had a higher risk of AR than those with other genotypes. *TLR4* rs1927911 or *CD14* rs2569190 polymorphisms interact with early-life environmental factors in a synergistic manner, which may have influenced the intestinal microbiota to promote the development of AR and atopic AR. [11] *TAP1* and *TAP2* genotyping was performed in 110 AR patients and 107 healthy controls. Decreased frequencies of Ile/Val genotype at codon 333, Asp/Gly genotype at codon 637, and haplotype A and B were observed in AR patients compared to those in the control subjects (P<0.05). [12]
References	[1] Prevalence, Risk Factors and Comorbidities of Allergic Rhinitis in South Korea: The Fifth Korea National Health and Nutrition Examination Survey. ***Am J Rhinol Allergy.*** (2014) 28(2): e107-114 [2] Time Trends of Allergic Rhinitis and Effects of Residence on Allergic Rhinitis in Korea from 1998 Through 2007-2009. ***Asian Nurs Res (Korean Soc Nurs Sci).*** (2012) 6(3): 102-106 [3] Analysis of regional prevalence of allergic diseases in Korean school children. ***Allergy Asthma Respir Dis.*** (2015) 3(1): 62-69 [4] Epidemiology and Current Status of Allergic Rhinitis, Asthma, and Associated Allergic Diseases in Korea: ARIA Asia-Pacific Workshop Report. ***Asian Pacific Journal Of Allergy and Immunol.*** (2009) 27(1): 167-171 [5] Clinical features of allergic rhinitis in Korean children. ***Allergy Asthma Respir Dis.*** (2015) 3(2): 116-123 [6] The prevalence and risk factors of allergic rhinitis from a nationwide study of Korean elementary, middle, and high school students. ***Allergy Asthma Respir Dis.*** (2015) 3(4): 272-280 [7] Comparison of Component-Resolved Diagnosis by Using Allergen Microarray With the Conventional Tests in Allergic Rhinitis Patients: The First Using in Korea. ***Clin Exp Otorhinolaryngol.*** (2015) 8(4): 385-389 [8] Safety and efficacy of the ultra-rush immunotherapy with extracts of Dermatophagoides pteronyssinus in children. ***Korean J Pediatr.*** (2008) 51(8) :868-73 [9] Comparison of short-term effects between subcutaneous and sublingual immunotherapies in children with house dust mite-sensitized allergic rhinitis and asthma. ***Allergy Asthma Respir Dis***. (2015) 3(3): 180-186 [10] Early Compliance and Efficacy of Sublingual Immunotherapy in Patients with Allergic Rhinitis for House Dust Mites. ***Clin Exp Otorhinolaryngol.*** (2009) 2(3): 136-140 [11] Interactions between innate immunity genes and early-life risk factors in allergic rhinitis. ***Allergy Asthma Immunol Res.*** (2015) 7(3): 241-248 [12] *TAP1* and *TAP2* Gene Polymorphisms in Korean Patients with Allergic Rhinitis. ***J Korean Med Sci.*** (2007) 22(5): 825-831

Atopic Dermatitis

Incidence	N/A
Prevalence	The prevalence of atopic dermatitis (AD) in Korean children and adults in 2008 was 2.2%. The total number of AD patients was 1,086,982 in 2008. [1]
Mortality	N/A
Gender	The prevalence of AD was 2.1% in men and 2.4% in women. [1]
Age	The highest prevalence of AD by age was 26.5% among subjects 12-23 months of age. The cumulative prevalence of AD among subjects aged less than 24 months was 23.8%. The prevalence decreased to 7.6% at 6 years, 3.4% at 12 years, and 2.4% at 18 years. [1]
Regional distribution	According to the Korean National Health and Nutrition Examination Survey (KNHANES) 2009-2011 data, the AD prevalence among adults was higher in urban (87.3%) than in rural (12.7%) areas. [2]
Clinical phenotypes/ classification	Based on standardized clinical severity scoring system for AD (the SCORing Atopic Dermatitis Index) mild (≤25), moderate (25-50), and severe (>50) disease occurred in 34/251 (13.5%), 123/251 (49.0%), 94/251 (37.5%) patients. [3]
Clinical manifestation	N/A
Risk factor	The allergic substances included house dust mites (n=196/324), foods (n=160/324), pollutants (n=152/324), and stress (n=148/324). [4] A family history of AD, raising pets, secondhand smoking, and diagnosis of asthma allergic rhinitis were positively associated with AD. [5]
Diagnosis	IgE test (57%), blood test (n=75), skin test (n=24), both (n=89). [4]
Treatment	Subcutaneous allergen immunotherapy with house dust mite extract was administered to all 255 patients. [3] Twenty patients with AD underwent treatment with azathioprine (100 mg/day for 22.20±19.85 weeks). [6]
Prognosis	The overall compliance rate for subcutaneous allergen immunotherapy (SCIT) was 66.5% (n=167/251) at 12 months. [3] Improvements were observed in the Eczema Area and Severity Index (EASI) scores, from 26.12±3.20 to 15.15±3.05. [6] The degree of pruritus decreased from 7.35±1.66 to 4.10±2.89. [6]

Genetic information	Two SNPs and the C-A haplotype in *PDPN* gene significantly associated with intrinsic AD. [7] MIF promoter polymorphisms in the 173-C allele and the MIF C/5-CATT and C/7-CATT haplotypes were significantly associated with an increased risk of AD. [8]
References	[1] Prevalence of atopic dermatitis in Korea: analysis by using national statistics. ***Journal of Korean Medical Science*** (2012) 27: 681-685 [2] Instant Noodles, Processed Food Intake, and Dietary Pattern are Associated with Atopic Dermatitis in an Adult Population (KNHANES 2009-2011). ***Asia Pacific Journal of Clinical Nutrition*** (2016) 25: 602-613 [3] Clinical Efficacy of Subcutaneous Allergen Immunotherapy in Patients with Atopic Dermatitis. ***Yonsei Med J.*** (2016) 57: 1420-1426 [4] Multicenter questionnaires on the current management of atopic dermatitis in Korea. ***Allergy Asthma Respir Dis.*** (2016) 4: 271-275 [5] Analysis of the prevalence of and risk factors for atopic dermatitis using an ISAAC questionnaire in 8,750 Korean children. ***International archives of allergy and immunology*** (2013) 162: 79-85 [6] The Clinical Efficacy of Azathioprine in Korean Patients with Atopic Dermatitis. ***Ann Dermatol.*** (2015) 27: 774-775 [7] Are Podoplanin Gene Polymorphisms Associated with Atopic Dermatitis in Koreans? ***Ann Dermatol.*** (2015) 27: 275-282 [8] Association of Macrophage Migration Inhibitory Factor Polymorphisms with Total Plasma IgE Levels in Patients with Atopic Dermatitis in Korea. ***PLoS ONE*** (2016) 11: e0162477

Herpes Zoster

Incidence	A study based on the National Health Insurance Service (NHIS) database in 2011, identified 529,690 individuals with herpes zoster, corresponding to an incidence of 10.4/1,000 person-years in all age groups. [1]
Prevalence	The NHIS indicated that was 640,000 patients were treated for herpes zoster in 2014. The number increased by an annual average of 7.3%, from 450,000 in 2009 to 640,000 in 2014. [2]
Mortality	N/A
Gender	In 2014, about 250,000 men (39%) and 390,000 women (61%) were treated for herpes zoster. [2]
Age	In 2014, the highest number of treated patients was in their 50s (n=165,000, 25.6%), followed by those in their 60s (n=119,000, 18.5%) and 40s (n=100,000, 16.0%). [2, 3]
Regional distribution	N/A
Clinical phenotypes/ classification	Herpes zoster is an acute, blistered skin disease caused by the varicella-zoster virus (VZV). According to the type and site of occurrence, it may be classified as herpes zoster duplex unilateralis, herpes zoster generalisatus, disseminated herpes zoster, chronic zoster, zoster sine herpete, etc. [4, 5]
Clinical manifestation	Herpes zoster is characterized by severe pain and unilateral clustered blistered skin rash along the skin above the ganglion. [6]
Risk factor	Although the cause of herpes zoster is not clear, aging and immunodeficiency are the most common risk factors. After a chickenpox infection, VZV is latent in the posterior ganglion and is known to be reactivated by various factors such as temporary immune function deterioration, physical damage, malignant tumor, immunosuppressant administration, etc. [6, 7]
Diagnosis	Herpes zoster is very characteristic of the pathologic changes that appear on the skin and can be diagnosed by observing symptoms. If clinical symptoms are not clear, Tzanck smear, immunofluorescence, viral culture, and biopsy are performed for accurate and rapid diagnosis. [8]
Treatment	The initial goal of treatment is to prevent the spread of early infections, shorten the duration of the infection, and prevent the occurrence of post-herpetic neuralgia. Therefore, in the early stage of herpes zoster, medication for skin lesions (antivirals, antihistamines, etc.), [9] and consult with a pain medicine specialist are needed to prevent post-herpetic neuralgia. Among 40 children with varicellaherpes zoster, 65% (n=26), 22.5% (n=9), 2.5% (n=1), and 2.5% (n=1) were treated with venous acyclovir, oral acyclovir/ oral valacyclovir, venous acyclovir/oral valacylovir, oral famciclovir, and oral acyclovir only, respectively. [10] As a preventive measure, vaccination is recommended. The vaccination rate was 9% among 607 patients aged 50 years and more. [11]

Prognosis	Herpes zoster can cause various complications sequelae in the treatment process, including post-herpetic neuralgia, secondary bacterial infections, pneumonia, and encephalomyelitis. Post-herpetic neuralgia, the most common of these, is a very painful complication that may last for months or years. [5, 12] Herpes zoster can also increase the risk of stroke and transient ischemic attack. [13]
Genetic information	In Korean patients with herpes zoster, several SNPs appear at high frequencies in the interleukin-10 promoter gene. As a result, the incidence of herpes zoster varies according to race and individual susceptibility to herpes zoster varies. [14]
References	[1] Population-based study of the epidemiology of herpes zoster in Korea. ***J Korean Med Sci.*** (2014) 29: 1706-1710 [2] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015) http://kosis.kr/ [3] A Comparative Study of the Clinical Findings Associated with Herpes Zoster and According to Age. ***Korean J Dermatol.*** (2009) 47: 1338-1344 [4] A case of herpes zoster duplex unilateralis with herpes zoster generalisatus. ***Korean J Dermatol.*** (2005) 43: 1579-1581 [5] Epidemiology and Clinical Features of Herpes-zoster Meningoencephalitis. ***Korean J Dermatol.*** (2016) 54: 788-795 [6] Zoster-associated Pain. ***J Korean Med Assoc.*** (2008) 51: 536-542 [7] Clinical Features of Herpes Zoster according to Immune State. ***Korean J Dermatol.*** (2006) 44: 149-156 [8] A comparison of direct immunofluorescence method and Tzanck test for the diagnosis of varicella-zoster virus and herpes simplex. ***Korean J Dermatol.*** (2000) 38: 1194-1198 [9] Clinical Study of Herpes Zoster: Focused on the Characteristics of Pruritus in Herpes Zoster. ***Korean J Dermatol.*** (2012) 50: 591-598 [10] Clinical Manifestations of Hospitalized Children Due to Varicella-Zoster Virus Infection. ***Korean J Pediatr Infect Dis.*** (2013) 20: 161-167 [11] Awareness, Knowledge, and Vaccine Acceptability of Herpes Zoster in Korea: A Multicenter Survey of 607 Patients. ***Ann Dermatol.*** (2015) 27: 531-538 [12] Determinants of Central Nervous System Involvement in Herpes Zoster. ***J Korean Neurol Assoc.*** (2015) 33: 13-17 [13] Risk of stroke and transient ischaemic attack after herpes zoster. ***Clin Microbiol Infect.*** (2016) 22: 542-548 [14] Single Nucleotide Polymorphisms of Interleukin-10 Promoter Gene in Korean Herpes Zoster Patients. ***Korean J Dermatol.*** (2006) 44: 1325-1331

Psoriasis

Incidence	The overall incidence rate for psoriasis was 212.6 per 100,000 in a nationwide population-based cohort study using the Korean National Health Insurance database of 2010. [1] Among new patients visiting a single dermatology center in 1964-1994, newly diagnosed psoriasis patients accounted for 3.7% of outpatients and 7.0% of inpatients. The rate of new patients increased to 9.5% in the early 2000s. [2]
Prevalence	After adjusting for age and sex, the standardized prevalence of psoriasis was 453 per 100,000 in a population-based epidemiological study using the Korean National Health Insurance database of 2015. [3] Estimated as 0.5~1% in 2012. [2]
Mortality	N/A
Gender	As of 2015, the male-to-female ratio was approximately 1.3:1 among patients with psoriasis. [3]
Age	Age distribution of psoriasis prevalence was as follow: 0-9 years: 5,312 cases (2.3%), 10-19 years: 12,078 cases (5.2%), 20-29 years: 25,217 cases (10.8%), 30-39 years: 37,605 cases (16.1%), 40-49 years: 45,173 cases (19.3%), 50-59 years: 48,775 cases (20.9%), 60-69 years: 31,925 cases (13.6%), 70-79: 21,363 cases (9.1%), ≥80 years: 6,461 cases (2.8%) in 2015 [3]
Regional distribution	Regional distribution of psoriasis prevalence was as follow: City and county (51.3%), metro city (36.7%), rural place (12.0%) [3]
Clinical phenotypes/ classification	Classification was as follow: Plaque psoriasis (83.8%), palmoplantar pustulosis (11.2%), generalized pustular psoriasis (2.7%), guttate psoriasis (1.5%), psoriatic arthritis (0.8%). Severity of psoriasis was as follow: Mild (77.4%), moderate-to-severe (22.6%) [3]
Clinical manifestation	Korean patients had a bimodal onset of disease. The early onset type showed more extensive body surface area as well compared to that increased family history as in Caucasians. [2] The mean Psoriasis Area and Severity Index (PASI) score of 382 pediatric patients was 17.2±12.7 between 1985 and 2010. The trunk (249 children, 69.5%) was the most frequently affected body part, followed by the legs (234 children, 65.3%) and scalp (207 children, 57.8%). Facial involvement was reported in 46.3% (166 children) of all patients with psoriasis. [4]
Risk factor	Family history was present in 25.8% of cases. The rate of family history was 33.9% in the early onset group (<15 years) and 11.6% in the late-onset group (>30 years). [2]

	The adjusted odds ratio (OR) for moderate-to-severe psoriasis as compared with mild psoriasis: male sex (1.11~1.16), young and mid-aged adult patients (children younger than 10: 0.22~0.26, elders older than 60: 0.40~0.77). [3]
Diagnosis	Histopathological examination is the only method for confirming the diagnosis of psoriasis. Characteristic findings include uniform elongation of the rete ridges, dilated blood vessels, thinning of the supra papillary plate, intermittent parakeratosis, perivascular infiltration of lymphocytes, and the presence of occasional neutrophil aggregates in the epidermis. The histopathological diagnosis is made by comprehensively evaluating these findings. The frequencies of each histopathological finding were investigated for all types of psoriasis and for each clinical type. Overall, perivascular and dermal inflammatory cell infiltration was the most common finding (99%), followed by vascular dilatation (97%), absent granular layer (96%), regular elongation of the rete ridge (93%), elongation of the dermal papillae (93%), parakeratosis (93%), suprapapillary thinning (90%), spongiform pustules of Kogoj (55%), Munro's microabscess (54%), and edema of the dermal papillae (37%) in 98 psoriasis patients. [5]
Treatment	Topical steroids, vitamin D ointment, and tacrolimus ointment were administered to 339 (94.7%), 223 (62.3%) and 45 (12.6%) children, respectively. Most steroids were of mild to moderate potency. Systemic treatments were administrated to 116 children (32.4%). Oral acitretin was the most common medication (40 children, 11.2%), followed by cyclosporin (15 children, 4.2%). Phototherapy was administrated to 41 patients (11.5%), with ultraviolet B therapy the most frequently used method (26 children, 7.3%). No biologic therapy was administered. [4]
Prognosis	Psoriasis preceded psoriatic arthritis (PA) in 73.6% of patients with a mean interval of 12.2 years. [2] Sunlight exposure and summer season were helpful in improving the disease state, while winter season and stress aggravated the disease course. [3] A case-control study conducted in Korea showed a higher prevalence of metabolic syndrome, cardiovascular disease, hypertension, and hyperlipidemia in psoriasis patients than in controls. [3]

Genetic information	Human leukocyte antigen (HLA) loci such as A1, B13, B17 and Cw6. In particular, HLA-Cw6 is strongly associated with psoriasis. Lower prevalence of psoriasis in Asian populations might result from the lower frequency of HLA-Cw6 in this population. In the Korean population, HLA-Cw0602 was found in 69.6% of the patients with psoriasis, but only in 9.0% of the healthy controls. [3] IL-2 -330*G and IL-4 -590*C alleles were significantly increased in psoriasis patients, especially the late-onset group, compared to that in the control. The combined effect of IL-2 -330*G and IL-4 -590*C showed was positive and were more significantly associated with the late-onset group of psoriasis patients than that in the controls. [6] mRNA levels of blood inflammatory cytokines (IL-12p40, IL-17A, and IL-22) were significantly elevated in 25 patients with psoriasis compared to the levels in 5 healthy controls. [7]
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EPIDEMIOLOGY IN KOREA

Endocrine & Metabolism

Cushing's Disease

Incidence	N/A
Prevalence	N/A
Mortality	The mortality rate of Cushing's disease (CD) patients is 4-fold higher than that of the general population. [1]
Gender	Among 18 CD patients who underwent transsphenoidal surgery (TSS) from 2004 to 2010, one was male, and 17 were female. [2]
Age	N/A
Regional distribution	N/A
Clinical phenotypes/ classification	CD with macroadenoma (n=7/30) and CD with microadenoma (n=23/30) [3]
Clinical manifestation	CD is a serious condition associated with high rates of morbidity and mortality that result from excessive levels of systemic glucocorticoids. The classic features of CD include central obesity, moon face, hirsutism, facial plethora, buffalo hump, hypertension, and purple striae. CD is also characterized by high risks of osteoporosis and fractures. [1]
Risk factor	N/A
Diagnosis	Initial MRI revealed microlesions (n=11). Histologic confirmation of pituitary adenoma was also performed (n=10/11, 90.9 %). [2] Confirmatory tests include dexamethasone- corticotropin-releasing hormone (CRH) test, midnight serum cortisol level, and adrenal CT/pituitary MRI. [4]
Treatment	Thirty-eight of 54 patients (70.3%) who underwent TSS achieved an initial remission. [5]
Prognosis	The recurrence rate of CD after initially successful TSS was 32.4% at five years and 54.6% at 10 years. [5] CD is associated with increased risks of cardiovascular, metabolic, and respiratory disorders; psychiatric complications; osteoporosis; and infections. CD-related diseases lead to increased morbidity and mortality in CD patients. [1]
Genetic information	Mutations in *ACTH* [3], protein kinase, cAMP-dependent, *PRKACA* [6]

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Diabetic Nephropathy

Incidence	The incidence of diabetic nephropathy (DN) as a cause of end-stage renal disease (ESRD) in Korea is 45.2%. [1]
Prevalence	The prevalence of DN was 77.8% (n=42/54) and 26.4% (n=19/72) in patients with and without retinopathy, respectively (P<0.001). [2] Among patients with diabetes, 26.7% had albuminuria, and 8.6% had chronic kidney disease based on Korean National Health and Nutrition Examination Survey (2008-2011). [3]
Mortality	The mortality due to DN was 19.3%, higher than that due to non-diabetic nephropathy (9.2%). [4]
Gender	Of 180 diabetes patients with albuminuria, 61.2% was male and 38.8% was female. [3]
Age	The mean age of patients (male, n=209) with DN was 65.6±9.5 years. [5] The mean age of diabetes patients (n=180) with albuminuria was 60.8±1.2 years. [3]
Regional distribution	According to States Renal Data System, the countries with the highest reported incidence of DN included Malaysia and Mexico (58-60%); with incidence rates in Korea, Thailand, New Zealand, Hong Kong, Japan, Taiwan, USA, Israel, and the Philippines of over 40%. [4]
Clinical phenotypes/ classification	DN was defined as diabetes with the presence of albuminuria impaired glomerular filtration rate (GFR). Albuminuria was defined as an albumin/ creatinine ratio (ACR) ≥30 mg/g. The albuminuria categories were as follows: microalbuminuria (ACR 30-299 mg/g) and macroalbuminuria (ACR ≥300 mg/ g). Impaired GFR is defined as eGFR <60 mL/min/1.73 m^2. [3]
Clinical manifestation	Class I (n=2), class IIA (n=6), class IIB (n=12), class III (n=9), and class IV (n=21) [2]
Risk factor	Duration of diabetes (years), hypertension, smoking. [5]
Diagnosis	DN was defined as the presence of albuminuria (spot urine albumin/creatinine ratio≥30 mg/g) and low estimated GFR (<60 mL/min/1.73m^2). [5] Systolic blood pressure (143±21 mmHg), diastolic blood pressure (83±10 mmHg), albumin (3.2±0.7 g/dL), bilirubin (0.50±0.261 mg/dL), cholesterol (206±59 mg/dL), glycated hemoglobin (HbA1c) (7.16±1.37%), glucose (156±58 mg/dL), creatinine (2.72±2.00 mg/dL), eGFR (37.5±25.31 ml/ min/1.73 m^2), UPCR (urine protein/creatinine ratio) (6.1±5.9 g/g Cr), hematuria (78%), proteinuria ≥2+ (82%), and kidney length (10.7±1.01 cm). [2] DN was diagnosed in 32% of patients with diabetes. [6]
Treatment	N/A

Prognosis	DN is a leading cause of end-stage renal disease, which is associated with an increased risk of cardiovascular mortality. [3]
Genetic information	The *V16A* polymorphism of *Mn-SOD* is related to the stages of albuminuria in Korean type 2 diabetic patients. [7]
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Dyslipidemia

Incidence	N/A
Prevalence	In adults aged ≥20 years in the Korea National Health and Nutrition Surveys (KNHANES), age-standardized prevalence rates of dyslipidemia were as follow: 1998 (54.0%), 2001 (65.8%), 2005 (66.5%), 2007 (60.6%), 2008 (58.7%), 2009 (58.9%), and 2010 (59.0%). [1] The prevalence of dyslipidemia in Koreans 30 years old and over was 40.5% in the 2014-2016 KNHANES. [2]
Mortality	N/A
Gender	The prevalence of dyslipidemia among adults 30 years or older is 46.4% and 52.9% for men and women, respectively [2]
Age	Prevalence by age was as follow: 30-39 years: 26.1%, 40-49 years: 32.8%, 50-59 years: 46.3%, 60-69 years: 55.8%, ≥70 years: 50.1%. [2]
Regional distribution	N/A
Clinical phenotypes/ classification	Hypertriglyceridemia (28.7%) and hypo- high-density lipoprotein (HDL)-cholesterolemia (41.2%) were the two most frequent lipid abnormalities. The overall prevalence of hypercholesterolemia (14.5%) and hyper- low-density lipoprotein (LDL)-cholesterolemia (14.8%) increased by 1.36- and 1.35-fold in 2010 compared with those in 2007, respectively. The prevalence of hypertriglyceridemia was much higher in men in younger age groups. Women had a higher prevalence of hypo-HDL-cholesterolemia in all age groups. [1]
Clinical manifestation	N/A
Risk factor	Obesity: dyslipidemia was observed in 1 out of every 4 adults with normal body weight and in about half of overweight or obese adults. More than 3 out of every 5 adults with abdominal obesity were also dyslipidemic. Dietary intake: one in every 4 men and every 5 women consumed more energy than the body required. The percentage of energy intake from fat has increased by 1.2 times in 2016 (22.9%) compared to those in 2007 (18.4%). [2] High triglycerides in males may occur due to alcohol consumption and unhealthy lifestyles in those age groups. For example, high-risk alcohol consumption, defined as an average consumption of ≥7 drinks in men (≥5 drinks in women) on ≥2 occasions per week was most common in males 30 to 49 years of age, and was 4- to 5-fold more common than in women of the same age group. Furthermore, the proportion of high-fat diets was approximately twice as high among men as among women in respondents 30 to 49 years of age (15.7% vs. 8.9%). [3]

Diagnosis	Hyper- LDL cholesterolemia was defined as serum LDL-cholesterol ≥160 mg/dL or taking antidyslipidemic drug(s). Hypo- HDL cholesterolemia was defined as serum HDL-cholesterol < 40mg/dL. Hypertriglyceridemia was defined as serum triglycerides ≥200mg/dL.. Dyslipidemia was diagnosed as having one of the definitions stated above, taking any medication for dyslipidemia, or previously diagnosed. [2]
Treatment	Treatment was defined based on both ICD-10 code (E78) and prescription of anti-dyslipidemic drug(s). The total number of people diagnosed or treated with dyslipidemia was determined using the National Health Insurance Big Data from 2002 through 2016 made by National Health Insurance Service. Adherence to treatment was defined as the condition wherein anti-dyslipidemic drug(s) was prescribed more than 290 days within a year (≥80% of year). The distribution of treatment method in 2016 is as follow: Monotherapy (87.8%) includes Statin (93.8%), Fibrate (4.0%), Omega-3 (2.0%), Ezetimibe, Others (niacin or cholestyramine). Dual therapy (11.6%) includes Statin+Fibrate (23.0%), Statin+Ezetimibe (56.3%), Statin+Omega-3 (20.3%), Statin+Others (niacin or cholestyramine). And the other was triple therapy (0.6%). [2]
Prognosis	Elevation or imbalance in blood cholesterols is the most important cardiovascular risk factor. High levels of total cholesterol (TC) and LDL-cholesterol are recognized as significant contributing factors to atherosclerotic cardiovascular disease, and elevated low HDL-cholesterol is associated with increased risk of cardiovascular disease. [4]
Genetic information	The study populations comprised 7,471 Japanese and 3,529 Korean individuals in the dyslipidemia study, and 3,474 Japanese and 1,671 Korean individuals in the metabolic syndrome study. Japanese or Korean individuals with the C allele of *APOA5* and the T allele of *BTN2A1* had a 2.05- or 1.92-fold increased risk for hypertriglyceridemia and a 1.82- or 1.56-fold increased risk for hypo-HDL-cholesterolemia, respectively, compared to those with the TT genotype of *APOA5* and the CC genotype of *BTN2A1*. [5]

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Hypoparathyroidism

Incidence	The crude incidence rate per 100,000 was 120.8, with 62,118 treated patients in 2017 in the Health Insurance Review Assessment service (HIRA) database. [1]
Prevalence	N/A
Mortality	N/A
Gender	N/A
Age	N/A
Regional distribution	N/A
Clinical phenotypes/ classification	N/A
Clinical manifestation	The classic symptom of hypoparathyroidism is neuromuscular irritability owing to hypocalcemia. Other manifestations can occur due to episodes of hypercalcemia and hyperphosphatemia (for example, extraskeletal calcification), but the cause of some symptoms (for example, neuropsychiatric symptoms) remains poorly understood. [2]
Risk factor	Postoperative hypoparathyroidism occurred in 135 patients (25.4 %), 19 of whom (3.6% of total patients) experienced permanent hypoparathyroidism. Parathyroid autotransplantation, bilateral central lymph node (LN) dissection, gross extrathyroidal extension, and the presence of parathyroid gland in the pathologic specimen were associated with postoperative hypoparathyroidism in multivariate analysis ($P<0.05$, respectively). [3]
Diagnosis	The combination of levels of albumin-corrected or ionized calcium in serum below the laboratory normal range (<8.5 mg/dL or 2.12 mmol/L) and absent, low or inappropriately normal parathyroid hormone (PTH) levels at the time of hypocalcaemia are the hallmarks of hypoparathyroidism. [2]
Treatment	Conventional treatment of adults with hypoparathyroidism involves calcium supplementation or activated vitamin D supplementation (using calcitriol or alphacalcidol (1α(OH)D3)), or a combination of both. Treatment aims to increase intestinal calcium absorption to increase serum calcium concentrations. [2]
Prognosis	N/A

Genetic information	A functional mutation was identified in exon 2 of *GCMB* (C106R). In addition, heterozygous gain-of-function mutations in *CASR* (D410E and P221L) were detected in other subjects; One SNP in the prepro-*PTH*, five SNPs in *CASR*, and four SNPs in *GCMB* were also observed. A variety of biochemical phenotypes were reported in isolated hypoparathyroidism (IH) patients with the molecular genetic diagnosis of IH. [4]
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Metabolic Syndrome

Incidence	A five-year follow-up cohort study of 762 subjects without metabolic syndrome (Mets) reported overall incidence rates of Mets of 13.9% for men and 20.8% for women in 2003. [1]
Prevalence	The prevalence of Mets was 24.5% in 2015 based on the National Health Insurance Service (NHIS). [2]
Mortality	As compared to those without, people with Mets had an increased HR for all-cause mortality of 2.44 (95% confidence interval [CI]: 1.20-4.94). [3]
Gender	Prevalences of Mets were 29.2% and 20.0% for men and women in 2015, respectively. [2]
Age	The prevalence of Mets increased with age. Among men, the prevalence was 42.7% for those aged 20-24 years and 53.0% for those aged 65-69 years. In women, the prevalences was 26.0% for those aged 20-24 years and 47.2% for those aged 65-69 years. [2]
Regional distribution	According to the Korean Genome and Epidemiology Study (KoGES) of 5,024 and 5,020 people in rural Ansung and urban Ansan, respectively, the age- and sex-adjusted Mets prevalence rates in adults were 29.3 and 22.3% in rural and urban areas, respectively. [4]
Clinical phenotypes/ classification	According to 2015 national Health Insurance Service (NHIS) data, the prevalence of the five components of Mets were 22.4%, 42.8%, 35.9%, 30.3%, and 22.1% for abdominal obesity, high blood pressure, high blood glucose, high triglycerides (TGs), and low high-density lipoprotein cholesterol (HDL-C), respectively. [2] Among these components, abdominal obesity was the most powerful factor for the incidence Mets (adjusted relative risk [RR]: 3.28). However, low HDL-C, abdominal obesity, and diabetes were significantly associated with the incidence of Mets in women (adjusted RR: 2.53, 2.51, and 2.47, respectively). [1]
Clinical manifestation	Mets usually has no signs symptoms. Elevated serum uric acid [5-8], snoring [9, 10], high apolipoprotein B [11, 12], increased alanine aminotransferase (ALT) [13], micro albuminuria [14, 15], high serum alkaline phosphatase (ALP) [16], and non-alcohol fatty liver [17, 18] were reported in patients with Mets in Korea.
Risk factor	Life style factors such as smoking [19], heavy drinking [20], less physical activity [21, 22], and dietary habit [23, 24] were largely reported as risk factor of Mets. Insufficient potassium intake [25], dairy consumption [26], lower muscle mass [27], and sleep duration [28] were also associated with Mets in the Korean population.

Diagnosis	In Korea, the definition of Mets was based on the 'Third Report of the National Cholesterol Education Program Adult Treatment Panel III (NCEP-ATP III)' criteria however, the criteria for central obesity were based on the International Diabetes Federation (IDF) South Asian cut-points. Mets was diagnosed as the presence of three or more of the following criteria: (i) waist circumference: ≥90 cm in men and ≥80 cm in women (ii) TGs ≥150 mg/dL (iii) HDL-C <40 mg/dL in men and <50 mg/dL in women (iv) blood pressure ≥130/85 mmHg or antihypertensive medications use, and (v) fasting blood glucose ≥100 mg/dL or antidiabetic medication use. [4]
Treatment	Healthy lifestyle changes are the first line of treatment for Mets. Medication is used to treat and control the five components of Mets, such as weight control, high blood pressure, high TGs, low HDL-C, and high blood glucose. [29]
Prognosis	Mets increased the risks of cardiovascular disease (CVD) and several types of cancers. [29] As compared with non-Mets subjects, patients with Mets had approximately twice the risk of CVD (odds ratio [OR]: 1.98, 95% CI: 1.30-3.03 for men; OR: 4.04, 95% CI: 1.78-9.14 for women) [30] and a 50% increased risk of colorectal adenoma (OR: 1.51, 95% CI: 1.18-1.93). [31] Obese subjects with Mets had HRs for all-cause mortality of 2.2 (95% CI 1.4-3.4) and 3.0 for CVD mortality (95% CI: 1.4-6.6) compared to the risks in overweight subjects without Mets. [32] The RR of cancer mortality in subjects with Mets was 1.41 (1.08-1.84) compared to that in subjects without Mets. With increasing numbers of metabolic risk factors to 1, 2-3, and 4-5, the RRs for cancer mortality were 1.32 (95% CI: 0.83-1.48), 1.47 (95% CI: 1.10-1.96), and 2.42 (95% CI: 1.25-4.68), respectively. [33]
Genetic information	Genetic polymorphisms in *APOA5* [34, 35], *APOE* [36], *ADIPOQ* [37], and *PPARγ* [38] were associated with Mets in Korean population.
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Non-Alcoholic Fatty Liver Disease

Incidence	The incidence of non-alcoholic fatty liver disease (NAFLD) was 26/1,000 persons in a retrospective cohort study of National Health Insurance Service (NHIS) data. [1]
Prevalence	Among 750,000 adults who received health screenings in 1988-2007, the prevalence of NAFLD was 7% and 28% in 1988 and 2007, respectively, indicating a rapid increase. [1] The overall prevalence of NAFLD in 2008 was 28.1% (n=28,130) based on multi-center health examinees data (n=99,969). [2]
Mortality	The crude mortality rate of liver disease was 13.4/100,000 persons. [3]
Gender	There was a clear gender difference in the prevalence of NAFLD, with more men (40.2%, 23,952/59,550) than women (10.3%, 4,178/40,419) affected by NAFLD. Men had a 5.83-fold (95% CI 5.63-6.05) increased risk of NAFLD than did women. [2]
Age	A significantly different prevalence of NAFLD was observed between those <50 and those ≥50 years of age, although this difference was seen only in women (8.6, 24.5 % respectively, P<0.001). In men, there was no difference in prevalence between age groups (40.3, 39.9% respectively). [2]
Regional distribution	According to a survey of 141,610 people who received health screenings in Seoul and Gyeonggi between January 2009 and December 2010, the overall prevalence of NAFLD was higher in Gyeonggi (27.7%) than that in Seoul (26.9% P<0.001). [4]
Clinical phenotypes/ classification	NAFLD can be divided into simple steatosis and non-alcoholic steatohepatitis (NASH) with inflammation and fibrosis. About 10% of all fatty liver disease is fatty hepatitis with inflammation. Fatty hepatitis can progress to cirrhosis and liver cancer in about 20-30% of cases. [5]
Clinical manifestation	NAFLD is one type of fatty liver which occurs when fat is deposited (steatosis) in the liver due to causes other than excessive alcohol use. [6]
Risk factor	Obesity [7], especially visceral obesity is closely related. [5] Age, insulin resistance, hyperlipidemia [1], sodium intake [8], apolipoprotein B/AI (ApoB/AI) ratio [9], free fatty acids, and oxidative stress can be risk factors for NAFLD.
Diagnosis	Diagnosis is based on ultrasonography, histology, and liver enzyme tests. [10]
Treatment	In the treatment of NAFLD, dietary control is most important to reduce total energy intake, especially for the control of carbohydrate and fat intake. [1] High doses of vitamin E, pioglitazone, probiotics, and statins are used as pharmacotherapy. [5, 6]
Prognosis	In general, patients with NAFLD have a good prognosis, but NASH, the most extreme form of NAFLD, can progress to cirrhosis and non-B non-C hepatocellular carcinoma. [10] It is related to the severity and incidence of type 2 diabetes. [11] Also, patients with NAFLD had increased risks of coronary artery disease [12] and hypertension. [13]

Genetic information	*PNPLA3* SNP [14], and Tumor Necrosis Factor-α promoter polymorphism [15] were related to NAFLD of Korean people.
References	[1] Korean Association for the Study of the Liver. Korean Liver Disease Whitepaper: Part 2 Chapter 2 Alcohol and Non-Alcoholic Fatty Liver Disease (2013). [2] Impact of nonalcoholic fatty liver disease on insulin resistance in relation to HbA1c levels in nondiabetic subjects. ***Am J Gastroenterol.*** (2010) 105: 2389-2395 [3] Korean Statistical Information Service, Vital statistics (2016). http://kosis.kr/ [4] Original Article : Regional prevalence of non-alcoholic fatty liver disease in Seoul and Gyeonggi-do, Korea. ***Clinical and Molecular Hepatology*** (2013) 19: 266-272 [5] Non-Alcoholic Fatty Liver Disease. ***Clinical and Molecular Hepatology*** (2011) 17: 332-336 [6] The Analysis of Non-pharmacological Intervention Study for Nonalcoholic Fatty Liver Disease: Intervention Types and Measurement Parameters. ***Journal of Korean biological nursing science*** (2013) 15: 43-53 [7] Metabolically Healthy Obesity and the Development of Nonalcoholic Fatty Liver Disease. ***Am J Gastroenterol.*** (2016) 111: 1133-1140 [8] Dietary sodium and potassium intake in relation to non-alcoholic fatty liver disease. ***Br J Nutr.*** (2016) 116: 1447-1456 [9] Apolipoprotein B/AI ratio is independently associated with non-alcoholic fatty liver disease in nondiabetic subjects. ***J Gastroenterol Hepatol.*** (2013) 28: 678-683 [10] Relative etiological role of prior hepatitis B virus infection and nonalcoholic fatty liver disease in the development of non-B non-C hepatocellular carcinoma in a hepatitis B-endemic area. ***Digestion*** (2011) 84: 17-22 [11] Cohort study of non-alcoholic fatty liver disease, NAFLD fibrosis score, and the risk of incident diabetes in a Korean population. ***Am J Gastroenterol.*** (2013) 108: 1861-1868 [12] Nonalcoholic fatty liver disease is associated with coronary artery disease in Koreans. ***World J Gastroenterol.*** (2013) 19: 6453-6457 [13] Clinical association between non-alcoholic fatty liver disease and the development of hypertension. ***J Gastroenterol Hepatol.*** (2014) 29: 1926-1931 [14] Role of the PNPLA3 I148M polymorphism in nonalcoholic fatty liver disease and fibrosis in Korea. ***Dig Dis Sci.*** (2014) 59: 2967-2974 [15] Role of Tumor Necrosis Factor-α Promoter Polymorphism and Insulin Resistance in the Development of Non-alcoholic Fatty Liver Disease in Obese Children. ***Pediatric gastroenterology, hepatology & nutrition*** (2012) 15: 44-51

Obesity

Incidence	N/A
Prevalence	According to the Korean National Health and Nutrition Examination Survey (KNHANES), the age-standardized prevalence of obesity in 2015 was 31.5% (standard error (SE) 0.8) based on body mass index (BMI) ≥25 kg/m^2. [1]
Mortality	Compared to individuals with a BMI of 23.0=24.9 kg/m^2, those with a BMI of 25.0-29.9 kg/m^2 had an Hazard Ratio (HR) for all-cause mortality of 1.04 in both men and women, while those with a BMI of 30.0 kg/m^2 or higher had HRs of 1.71 and 1.20 in men and women, respectively. [2]
Gender	The prevalence of obesity was higher in men than that in women. The age-standardized prevalence of obesity in 2015 was 39.6% and 28.8% for adult men and women, respectively. [1]
Age	Middle-aged men (40's) and older women (60 years or more) had the highest prevalence of obesity (45.6% and 41.7%, respectively). [1] Men showed a higher prevalence of obesity than that in women until their middle ages, but the prevalence showed the opposite pattern in older ages. [1]
Regional distribution	Generally, the prevalence of obesity was higher in rural than in urban areas in Korea. In 2016, Daejeon (24.6%), Daegu (24.8%), and Seoul (25.5%) reported the lowest prevalence of obesity, while Gangwon province (30.9%), Sejong city (30.1%), and Chungbuk province (28.7%) had the highest prevalence of obesity in Korea. [3]
Clinical phenotypes/ classification	According to Asian obesity criteria, BMI of 23-24.9, 25-<30 and 30 kg/m^2 and higher were defined as overweight, obesity, and severely obese, respectively. [3] The prevalence of severe obesity was 4.7%in men and 3.7% in women in the 2013 KNHANES. [4]
Clinical manifestation	Obesity is a major contributor to metabolic dysfunction involving lipid and glucose, furthermore, it influences organ dysfunction including cardiac, liver, intestinal, pulmonary, endocrine, and reproductive functions. [3] White blood cell (WBC) count was significantly higher in obese Koreans. [5] Gut dysbiosis [6, 7] was associated with obesity in the Korean population.
Risk factor	Energy intake (high energy, fast food, sugar intake etc.), physical inactivity and smoking cessation were risk factors of obesity [3]. Additionally, sodium intake [8], Vitamin D intake [9], sleep duration [10], long working hours [11], and shift work [12] were also risk factors of obesity in the Korean population.
Diagnosis	BMI is generally used as a measure of obesity. [13, 14] Waist circumference (WC) is also used to measure abdominal obesity. [3, 14] The WC cut-off values for obesity are 90 and 85 cm for men and women, respectively.

Treatment	Obesity management is the application of comprehensive lifestyle programs designed to modify dietary habits, physical activity, and other health behaviors. [14, 15] Anti-obesity medication for obesity should be used together with comprehensive lifestyle programs. The approved medications for long-term obesity management include orlistat, lorcaserin, phentermine-topiramate, naltrexone-bupropion, and liraglutide. [16, 17] The surgical treatment of obesity should be reserved for patients with (i) BMI >35 kg/m^2 and (ii) BMI >30 kg/m^2 and one or more significant comorbid conditions. [3] Alternative medicine such as Oriental medication and acupuncture are also used for the treatment of obesity in Korea. [18-20]
Prognosis	Obesity causes metabolic syndrome, type II diabetes, cardiovascular diseases (CVD), and typical type of cancers. [3] Dose-response relationships were observed between obesity and related disease incidences (hypertension, type 2 diabetes, and hypercholesterolemia) [21] Obese subjects had increased odds ratio (OR) for metabolic syndrome of 3.28 (95% confidence interval [CI]: 1.70-6.34) and 2.51 (95% CI: 1.63-3.86) compared to those in non-obese men and women, respectively. [22] Sarcopenic obese subjects had an increased CVD risk compared to that in non-sarcopenic, non-obese subjects OR: 2.49, 95% CI: 1.53-4.06 for men and OR: 1.87, 95% CI: 1.02-3.41, for women). [23] Obese men had a significantly higher risk of prostate cancer than that in non-obese men (OR: 1.45, 95% CI: 1.05-1.99). [24] Hearing loss [25], chronic otitis media, rhinosinusitis, and chronic tonsillitis [26] were associated with obesity in the Korean population.
Genetic information	Polymorphism in *LEPR* [27], *FTO* [28], *IL6* methylation [29], and salt-sensitive [30, 31] genes were associated with obesity in the Korean population.
References	[1] Korean Center for Disease Control. 2015 Statistics of Korea National Health and Nutrition Examination Survey (2016). https://knhanes.cdc.go.kr/ [2] Body-mass index and mortality in Korean men and women. ***N Engl J Med.*** (2006) 355: 779-87 [3] Korea society for the study of obesity. Korean medical guidelines for obesity (2012) [4] Recent Epidemiological Changes in Korean Obesity. ***Korean J Helicobacter Up Gastrointest Res.*** (2017) 17: 62-65 [5] The associations of total and differential white blood cell counts with obesity, hypertension, dyslipidemia and glucose intolerance in a Korean population. ***Journal of Korean medical science*** (2008) 23: 193-198 [6] Obesity and Dysbiosis. ***Korean J Obes.*** (2015) 24: 121-125 [7] The effects of co-administration of probiotics with herbal medicine on obesity, metabolic endotoxemia and dysbiosis: a randomized double-blind controlled clinical trial. ***Clin Nutr.*** (2014) 33: 973-981

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Osteoporosis

Incidence	In women, the incidence of hip fracture in women rose from 146/100,000 in 2003 to 207/100,000 in 2008 and from 62/100,000 to 98/100,000 in men. [1]
Prevalence	The prevalence of osteoporosis was 18.5 % and 2.6 % in woman and man, respectively. [1]
Mortality	The mortality in 2015 is 0.9/100,000. [2]
Gender	Of 3,538 patients, 1,547 were male and 1,991 were female. [1] Of 2,078 patients diagnosed with osteoporosis, 328 were male and 1,750 were female. [3]
Age	The mean age was 69.28±0.29 years. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	Osteoporosis is defined as a disease characterized by low bone mass and micro-architectural deterioration of bone tissue, leading to enhanced bone fragility and a consequent increase in fracture risk. [4]
Clinical manifestation	Fractures (n=200/2,078): hip (n=18), vertebral (n=59), wrist (n=94), and others (n=73). [3]
Risk factor	The presence of past fracture history (odds ratio [OR]: 1.45, 95% confidence interval [CI]: 1.08-1.94), smoking ≥ 1 pack/day (OR: 1.63, 95% CI: 1.01-2.62), menarche after 16 years of age (OR: 1.46, 95% CI: 1.14-1.87), last delivery after 30 years of age (OR: 1.58, 95% CI: 1.20-2.09), more than three offspring (OR: 1.42, 95% CI: 1.07-1.89), post-menopause status (OR: 7.32, 95% CI: 3.05-17.6), more than 17 years since menopause (OR: 1.53, 95% CI: 1.10-2.14), and calcium intake ≥627.5 mg/day (OR: 0.65, 95% CI: 0.43-0.98). [1]
Diagnosis	Body mass index (BMI) (kg/m^2): 25.18±3.28, Distal radius speed of sound (DR-SOS) (m/s) 3972±185, Midshaft tibia speed of sound (MT-SOS) (m/s) 3600±115, DR-SOS T-score 1.72±1.57, and MT-SOS T-score 3.33±1.11. [5]
Treatment	Risedronate, Alendronate, Ibandronate, Zoledronic acid, Clodronate, Pamidronate, Raloxifene, Bazedoxifene, Denosumab, Strontium Ranelate, Teriparatide, parathyroid hormone (1-84), Vitamin D/Ca supplements, Calcitonin, Hormone Replacement Therapy, Testosterone, Alfacalcidol [6]
Prognosis	There were approximate 3.5-fold and 2.5-fold higher rates of mortality within one year after osteoporotic vertebral fracture in men and women, respectively, when compared to the general population. The relative mortality rates at three months, six months, one year, and two years after osteoporotic vertebral fracture were 55.6%, 94.1%, 146.1%, and 206.1% for men and 24.1%, 43.6%, 71.6%, and 104.8% for women, respectively. [7]

Genetic information	*SQRDL* I264T nsSNP may be a significant susceptibility variant for osteoporosis in Korean postmenopausal women. [5]
References	[1] Prevalence and risk factors of osteoporosis in Korea: a community-based cohort study with lumbar spine and hip bone mineral density. ***Bone*** (2010) 47: 378-387 [2] Korean Statistical Information Service. Mortality of osteoporosis (2015). http://kosis.kr/ [3] Health-related Quality of Life in Accordance with Fracture History and Comorbidities in Korean Patients with Osteoporosis. ***J Bone Metab.*** (2016) 23: 199-206 [4] Prevalence of osteoporosis in the Korean population based on Korea National Health and Nutrition Examination Survey (KNHANES), 2008-2011. ***Yonsei medical journal*** (2014) 55: 1049-1057 [5] Association of the I264T variant in the sulfide quinone reductase-like (*SQRDL*) gene with osteoporosis in Korean postmenopausal women. ***PLoS ONE*** (2015) 10: e0135285 [6] International Osteoporosis Foundation. Treatment of osteoporosis (2013). https://www.iofbonehealth.org/data-publications/regional-audits/asia-pacific-regional-audit [7] Epidemiology of osteoporosis and osteoporotic fractures in South Korea. ***Endocrinology and Metabolism*** (2013) 28: 90-93

Pediatric Type 1 Diabetes Mellitus

Incidence	The age-standardized incidence rate per 100,000 was 1.36 (average annual incidence rate for six years of 1995-2000; base population: children of age 14 or under). [1]
Prevalence	N/A
Mortality	N/A
Gender	The male-to-female ratio was 4:5. [1]
Age	N/A
Regional distribution	N/A
Clinical phenotypes/ classification	The classic symptoms of diabetes are polydipsia, polyuria, polyphagia, and weight loss. Re-emergence of bedwetting, nocturia, and a need to leave classes in school to use the bathroom are complaints suggestive of polyuria. The other typical presentations in children with type 1 diabetes mellitus (T1DM) include metabolic deterioration into diabetic ketoacidosis (DKA), nausea, vomiting, dehydration, and lethargy. [2]
Clinical manifestation	N/A
Risk factor	The risks of T1DM were higher in identical twins (<50%), HLA-identical siblings 15%, HLA-haploidentical siblings (6%), HLA-nonidentical siblings (1%), and offspring (5%). [2]
Diagnosis	The diagnosis of T1DM is generally straightforward, with the child's presenting symptoms suggesting the diagnosis and laboratory studies confirming its presence. A plasma glucose concentration greater than 200 mg/dL (11.1 mmol/L) confirms the diagnosis. A fasting glucose value of 126 mg/dL (7.0 mmol/L) or more also is diagnostic. [2]
Treatment	Insulin requirements often temporarily decline 1-3 months after diagnosis. During this period, dose requirements may drop to less than 0.5 units/kg per day. This period lasts several months, and occasionally 12 months or more. Except during this period, most preadolescent children require about 0.5-1.0 units/kg per day. Adolescents usually require about 0.8-1.2 units/kg per day. [2]
Prognosis	Most patients with T1DM have no significant insulin production. [2]
Genetic information	N/A
References	[1] Epidemiologic characteristics of type 1 diabetes in children aged 14 years or under in Korea, 1985-2000. ***Korean J Pediatr.*** (2008) 51(6): 569-575 [2] Type 1 diabetes mellitus in pediatrics. ***Pediatr Rev.*** (2008) 29(11): 374-385

Type 1 Diabetes Mellitus

Incidence	The annual incidence was 3.28 per 100,000 in a study conducted using the National Health Insurance Service (NHIS) database of 2013 and 3.25 per 100,000 for under 20 years-old in 2013. [1] The average childhood (0-14) incidence (per 100,000 and year) was 1.36 (1995-2000), higher than 1.06 in 1994. [2] A total of 217 patients <15 years of age with type 1 diabetes mellitus (T1DM) were registered in the NHIS. The age-adjusted incidence rate in 2012 was 2.87 per 100,000 per year. [3]
Prevalence	The prevalence was 0.017% to 0.021% of the entire population of Korea in 2013. [1] The prevalence in children <15 years was 28.9 per 100,000 in 2012. [3]
Mortality	N/A
Gender	Of the 8,256 subjects, the male to female ratio was 1:1.12, the median age was 37.1 years. [1]
Age	Age distribution of prevalence was as follow: < 20 years: 2,346 cases (28.4%), 0-4 years: 114 cases (1.38%), 10-14 years: 394 cases (4.77%), 15-19 years 998 cases (12.09%), ≥ 20 years: 5,910 cases (71.6%), < 69 years: 7942 cases (96.2%). The age range with the largest number of registrants was 15 to 19, and the number of registrants older than 35 years tended to gradually decrease. [1]
Regional distribution	The number of registrants are as follow: Gyeonggi: 2,334, Seoul: 2,056, Busan: 641, Jeju: 146, etc. [1]
Clinical phenotypes/ classification	Type of registration eligibility requirements of the Korean T1DM registry includes insulin treatment (100%, mandatory requirement), basal C-peptide levels < 0.6 ng/mL (72.9%), stimulated C-Peptide levels < 1.8 ng/mL (8%), 24-Hours urine C-peptide levels < 30 μg (9.7%), a history of diabetic ketoacidosis (DKA) at first diagnosis (20%). [1]
Clinical manifestation	Age of onset of T1DM patients are mostly children, adolescents and young adults. Most often acute, rapid with typical symptoms are polyuria, polydipsia, weight loss, and fatigue. Other clinical characteristics of T1DM include skinny type, 85%~90% autoantibodies at onset, lack of family history of diabetes, common ketosis, no acanthosis nigricans. [4] The overall prevalence of microvascular disease was 83/271 (30.6%), with a decreasing trend. Microalbuminuria (14.4%), persistent microalbuminuria (11.4%), proteinuria (4.4%), diabetic retinopathy (12.9%), and neuropathy (13.7%) were observed in patients. [5]

Risk factor	Environmental risk factors for T1DM include cow milk protein, vitamin D, viral infections, and limited exposure to microorganisms during childhood. [6]
Diagnosis	Diagnosis of type 1 diabetes should be based on a combination of clinical features, autoantibody positivity, and c-peptide reduction, while satisfying the diagnostic criteria for diabetes mellitus. [4]
Treatment	Continuous glucose monitoring (CGM) can dramatically improve the quality of glycemic control in T1DM in comparison to self-monitoring of blood glucose (SMBG). CGM can be used effectively with either multiple daily injections (MDI) or with continuous subcutaneous insulin infusion (CSII). Adjunctive therapies to insulin therapy include metformin, dipeptidyl peptidase-4 (DPP-4) inhibitors, sodium-glucose cotransporter 2 inhibition (SGLT2 inhibitors). [6]
Prognosis	Severe hypoglycemia can increase the risk of death in patients with cardiovascular disease as the underlying disease. [7]
Genetic information	Vitamin D deficiency has been reported in patients with T1DM. Allelic variations in the gene associated with vitamin D metabolism play a role in glucose metabolism. Polymorphisms in CYP2R1 are associated with susceptibility to T1DM in Korean youth. [8] A total of 176 Korean subjects with childhood-onset T1DM were studied to assess the association of CTLA4 polymorphisms with the development of T1DM. A CTLA4-mediated susceptibility effect on the development of T1DM might be significant in children and adolescents that do not have susceptible HLA class II alleles. [9]
References	[1] Epidemiology of Type 1 Diabetes Mellitus in Korea through an Investigation of the National Registration Project of Type 1 Diabetes for the Reimbursement of Glucometer Strips with Additional Analyses Using Claims Data. ***Diabetes Metab J.*** (2016) 40(1): 35-45 [2] Epidemiologic characteristics of type 1 diabetes in children aged 14 yearsunder in Korea, 1985-2000. ***Korean Journal of Pediatrics*** (2008) 51(6): 569-575 [3] Increasing Incidence of Type 1 Diabetes Mellitus Among Korean Children and Adolescents in 2012: Analysis of Data from the Nationwide Registry of Korea. Endocrine Society's 96th Annual Meeting and Expo, June 21-24, 2014 - Chicago MON-0949 [4] Diagnosis and Glycemic Control of Type 1 Diabetes. ***J Korean Diabetes.*** (2015) 16(2): 101-107 [5] Frequencies and Related Factors for Microvascular Complications in Patients with Type 1 Diabetes. ***Ann Pediatr Endocrinol Metab.*** (2012) 17(1): 16-26

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Type 2 Diabetes Mellitus

Incidence	The annual incidence rates of type 2 diabetes (T2DM) ranged from 9.5-9.8/1,000 person-year (PY) in health insurance review & assessment service (HIRA) data from 2007-2011. [1] The incidence rates of T2DM in men and women aged 20-49 years showed decreasing patterns from 2009 (9.8 per 1,000 person-years) to 2011 (9.7 per 1,000 person-years) (P<0.001) by contrast, the incidence in subjects aged 70-79 years showed increased patterns from 2009 to 2011. [1] In one community-based cohort study that included individuals in Korea between the ages of 40 and 79, the annual incidence of T2DM ranged from 1.33% to 5%. [1] A total of 1,500 of 7,542 individuals without diabetes at baseline developed diabetes. The incidence of diabetes for the entire cohort was 22.1 per 1000 person-years, and the 12-year cumulative incidence of diabetes was 19.9%. [2]
Prevalence	The prevalence of T2DM in Korean adults aged 20-89 years was 6.1-6.9%. [1] In the Korea National Health and Nutrition Examination Surveys (KNHANES), the prevalence of diabetes among adults aged ≥30 years in 1998, 2001, 2005, and 2007-2009 was 11.1%, 8.9%, 9.1%, and 9.9%, respectively. The proportion of known cases of diabetes drastically increased from 23.2% in 1998 to 41.2% in 2001, 68.0% in 2005 and 72.3% in 2007-2009. The prevalence of impaired fasting glucose (IFG) also increased from 17.4% in 2005 to 20.4% in 2007-2009. Overall, the prevalence of diabetes and IFG in Korea has rapidly increased in the past 40 years from 1.5% in 1971 to 9.9% in 2009 for diabetes and 20.4% for IFG. [3] According to national health statistics in Korea, the prevalence of T2DM increased from 8.6% in 2001 to 9.5% in 2007. [4] The prevalence of diabetes among adults 30 years or older is 13.7% (4.8 million) from the 2011-2016 KNHANES. [5]
Mortality	The 8th most common cause of death in 2012. Diabetes-related mortality has recently decreased from 25.1 per 100,000 persons in 2002 to 19.6 per 100,000 persons in 2009. [3]
Gender	The prevalence of diabetes among adults 30 years or older is 15.7% and 11.9% for men and women, respectively in 2016. [5]
Age	In men, prevalence of diabetes by age was as follow: 30-39 years: 3.1%, 40-49 years: 12.1%, 50-59 years: 18.8%, 60-69 years: 33.1%, ≥70 years: 27.2%. In women, prevalence of diabetes by age was as follow: 30-39 years: 20.0%, 40-49 years: 31.4%, 50-59 years: 37.9%, 60-69 years: 30.3%, ≥70 years: 27.1%. [5]
Regional distribution	N/A

Clinical phenotypes/ classification	N/A
Clinical manifestation	N/A
Risk factor	The prevalence of obesity and abdominal obesity in Korean adults with diabetes was 48.6% and 58.9%, respectively. Current smoker and high-risk drinker subjects with diabetes amounted to 27.4% and 14.3%, respectively, and 21.9% of those with diabetes participated in regular walking exercise activity. [5]
Diagnosis	At least one of the four criteria as follow: Diagnosed with diabetes by a doctor, currently taking anti-diabetic medications, fasting plasma glucose ≥126 mg/dL, glycated hemoglobin (HbA1c) ≥6.5%. [6]
Treatment	Most adults with previously diagnosed diabetes were treated with oral hypoglycemic agents (80.2%), while 8.9% were treated with insulin with or without an oral hypoglycemic agent; 10.8% were maintained without pharmacologic treatment. [5]
Prognosis	High rates of transfer due to hypoglycemia, approximately 24~60%, are reported in Type 1 and 2 diabetes patients. [6] The incidence rates of coronary artery disease (CAD) and cerebrovascular disease (CVD) in patients newly diagnosed with T2DM were 18.84/1,000 PY and 11.32/1,000 PY, respectively, in the year of diagnosis. Among newly diagnosed individuals with T2DM who were undergoing treatment for Peripheral artery disease (PAD), 14.6% underwent angioplasty for CAD during the same period. [1]
Genetic information	Recently, three studies independently reported that differential methylation at a CpG site in *TXNIP*, cg19693031, was significantly associated with T2DM. [7]
References	[1] The Incidence and Prevalence of Diabetes Mellitus and Related Atherosclerotic Complications in Korea: A National Health Insurance Database Study. ***PLOS one*** (2014) 9(10): e110650 [2] Incidence and predictors of type 2 diabetes among Koreans: A 12-year follow up of the Korean Genome and Epidemiology Study. ***Diabetes Research and Clinical Practice*** (2017) 123: 173-180 [3] The Epidemiology of Diabetes in Korea. ***Diabetes Metab J.*** (2011) 35(4): 303-308 [4] Comorbidity Study on Type 2 Diabetes Mellitus Using Data Mining. ***Korean J Intern Med.*** (2012) 27(2): 197-202 [5] Diabetes Fact Sheet in Korea, 2016: An Appraisal of Current Status. ***Diabetes Metab J.*** (2018) 42(5): 415-424 [6] Hypoglycemic Morbidity and Mortality in Diabetes. ***J Korean Diabetes.*** (2016) 17(1): 17-23 [7] Recent progress in genetic and epigenetic research on type 2 diabetes. ***Experimental & Molecular Medicine*** (2016) 48(3): e220

EPIDEMIOLOGY IN KOREA

Gastrointestinal (GI)

Dyspepsia

Incidence	N/A
Prevalence	In 2015, the National Health Insurance Service (NHIS) indicated that 613,794 patients were treated for functional dyspepsia (FD). [1] According to a nationwide multicenter study of 3,399 healthy subjects, 20.4% (n=694) had dyspeptic symptoms such as epigastric pain/soreness and postprandial discomfort. [2]
Mortality	N/A
Gender	Of 613,794 patients with FD in 2015, 247,522 (40.3%) were male and 366,272 (59.6%) were female, with a high prevalence in female patients. [1]
Age	According to the results of health checkup data of 708 subjects, the prevalence of FD was 11.8% (n=26/220) among those 40-49 years, 15.9% (n=45/283) among those 50-59 years, and 11.7% among those in their 60's (n=24/205). [3] A telephone interview study of 1,044 subjects aged 15 to 60 years reported that uninvestigated dyspepsia was most prevalent at 50-59 years, followed by 40-49, 18-29, and 30-39 years. [4]
Regional distribution	A population-based study in the United States showed that the prevalence of dyspepsia was 31.9% and the prevalence without gastroesophageal reflux disease (GERD) was 15.8%. In Korea, the prevalence of dyspepsia without GERD was 12.2%, similar to that reported by other studies in Western countries. [4]
Clinical phenotypes/ classification	Dyspepsia can be categorized as ulcer-like, dysmotility-like, and unspecified according to the main symptoms of the patients. In 95 patients with functional dyspepsia, 24.2% (n=23) had ulcer-like type, 69.5% (n=66) had dysmotility-like type, and 6.3% (n=6) had unspecified type. [3] Also, according to the symptoms, dyspepsia can be classified as epigastric pain syndrome (EPS) and postprandial distress syndrome (PDS). [5] In a telephone interview survey for 5,000 adults aged 20-69 years, the prevalence of uninvestigated dyspepsia, PDF, and EPS were 7.7%, 5.6%, and 4.2%, respectively. [6]
Clinical manifestation	According to the recent Rome consensus, the term dyspepsia refers to persistent recurrent upper abdominal pain discomfort, referable to the upper gastrointestinal tract. [4] According to the Rome Ⅲ consensus, FD is defined as the presence of early satiation, postprandial fullness, epigastric pain, and epigastric burning in the absence of an organic, systemic, or metabolic disease that could explain the symptoms. [7]
Risk factor	FD is a heterogeneous disorder, and multiple pathogenetic mechanisms are likely to be involved. The etiology of FD is likely associated with delayed gastric emptying, altered visceral sensitivity, dysfunction of the autonomic nervous system, infection, alterations of the immune system, and altered intestinal motility. [8] Emotional stress, depression [9], non-steroidal anti-inflammatory drugs (NSAIDs) use [10], high-salt diets [2], shift work, and irregular lifestyle [11] were associated with dyspepsia in Korea.

Diagnosis	Diagnosis is based on specific symptoms and signs associated with dyspepsia. General blood tests, *Helicobactor pylori* test, upper gastroenterography, and endoscopy are used for the diagnosis of dyspepsia. [12]
Treatment	Proton-pump inhibitors, antacids, gastrointestinal motility promoters, and histamine receptor antagonist are mainly used for treatment. [13]
Prognosis	N/A
Genetic information	Genetic polymorphisms in *GNβ3*-subunit gene were related to changes in the sensitivity of sensory and motor nerves of the gastrointestinal tract due to decreased signal transduction, resulting in functional dyspepsia and irritable bowel syndrome. [8, 11, 14] In the case of FD patients treated with cimetidine, changes in enzyme activity due to *CYP2C19* polymorphism may affect the drug efficacy. [15]
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Gastroesophageal Reflux Disease

Incidence	N/A
Prevalence	The National Health Insurance Service (NHIS) reported that 3,860,000 patients were treated for gastroesophageal reflux disease (GERD) NHIS in 2015. [1] The prevalence of GERD was 5% in a nationwide-multicenter examination of 25,536 patients who had one more reflux symptoms per week in 2006. [2] The prevalence of GERD in Korea is increasing due to accelerated Westernization, longer life expectancy, and widespread *Helicobacter pylori (H. pylori)* eradication. [3]
Mortality	N/A
Gender	In 2015, about 1,650,000 men (43%) and 2,210,000 women (57%) were treated for GERD. [1] However, men more frequently experience pathologic diseases such as reflux esophagitis, Barrett's esophagus (BE), and esophageal adenocarcinoma (EAC). [4]
Age	According to a survey of 1,009 people in 2007, the prevalence of GERD was higher in subjects in their 40s and 50s compared to that for other age groups, but the difference was not statistically significant. The relationship between the prevalence of GERD and age is unclear, and multiple factors are involved in addition to age. [5]
Regional distribution	The prevalence of reflux esophagitis in Korea has increased but is still lower than that in Western countries. [5] In Asia, the prevalence of GERD in Southeast and Western Asia were higher than that in Eastern Asia. [6]
Clinical phenotypes/ classification	GERD includes erosive esophagitis and endoscopy-negative reflux disease, which is also known as non-erosive reflux disease (NERD). Among 3015 GERD patients, 67% (n=2,019) had as erosive esophagitis and 33% (n=996) classified as having NERD in upper gastrointestinal endoscopic examinations. [7]
Clinical manifestation	Heartburn and acid regurgitation are considered specific symptoms for the diagnosis of GERD. [3] The first clinical feature of GERD in Korea is the presence of 'silent GERD' such as erosive esophagitis without reflux symptoms of Barrett's esophagus. Atypical symptoms without typical GERD symptoms were common, including abdominal pain, cough, and the feeling of a foreign object stuck in the throat. [2] Only 37.5% (n=160) of patients reported classical GERD symptoms such as heartburn and/or acid regurgitation. [8]
Risk factor	Hiatal hernia, alcohol consumption, smoking, and obesity have been proposed as risk factors. [5] Male, eating habits, high fat diet [2], *H. pylori* infection, and atrial fibrillation [9] have also been reported as risk factors of GERD. The mechanism of gastroesophageal reflux is as follows: lower esophageal sphincter dysfunction, presence of esophageal hernia, decreased esophageal acid cleansing ability, and decreased resistance of the esophageal mucosa. Recently transient lower esophageal sphincter relaxation has been reported to be the main cause of acid reflux. [10]

Diagnosis	Upper gastrointestinal endoscopy is performed first pH monitoring over 24 hours is then performed, which is the most accurate test to diagnose pathological acid reflux. In addition, esophageal pressure test, Bernstein test, and esophagography are also used for diagnosis. [11]
Treatment	For mild cases of GERD, the most common choice of initial therapy are proton-pump inhibitors (PPIs), followed by half-dose PPIs and H2 receptor antagonists. For severe cases, full-dose PPIs are usually prescribed. The duration of maintenance therapy is based on symptom severity, symptom frequency and endoscopic findings. [12]
Prognosis	GERD can progress to chronic complications such as esophageal ulcers, stenosis, and Barrett's esophagus. Barrett's esophagus refers to the condition in which the lower part of the esophagus, which should be squamous epithelium, has become columnar epithelium, a precursor lesion of esophageal adenocarcinoma. [12]
Genetic information	Korean researchers reported a significant relationship between *IL-1β* genetic polymorphisms and gastric mucosal *IL-1β* level. In addition, the risk of erosive esophagitis was related to a low gastric mucosal *IL-1β* level. Thus, gastric mucosal *IL-1β* level might be a factor in the development of GERD. [13]
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Irritable Bowel Syndrome

Incidence	A total of 2,416,424 patients used medical care related to irritable bowel syndrome (IBS) in 2018. [1]
Prevalence	The prevalence of IBS was 8.2% (5,605) in the total population from a cross-sectional study from June 2007 to December 2007. [2] The number of patients treated for IBS was 1,516,119 based on the statistics of National Health Insurance Service (NHIS) in 2015. [3]
Mortality	Of patients with IBS, 87.6% were prescribed medication most used outpatient clinics and 2% received in-patient care, with a very low mortality rate. [4]
Gender	Female/male ratio is 1.44 (1,399,014 females, 57.9%) [4] In 2015, 710,681 men (46.9%) and 805,438 women (53.1%) were treated for IBS in Korea. [3]
Age	The mean ages of patients with IBS was 45.4±13.6 years. [1] The prevalence was higher among subjects in their 20's (10.5%) than that for other ages (age range 18-60 years). [4]
Regional distribution	N/A
Clinical phenotypes/ classification	Diarrhea can be categorized as diarrhea-predominant IBS (IBS-D) (n=51), constipation-predominant IBS (IBS-C) (n=13), and a mixture of diarrhea and constipation. IBS (IBS-M) (n=35) according to the predominant stool form. [5]
Clinical manifestation	IBS-D patients showed more frequent bowel movements compared to those in IBS-C and IBS-M patients (11.5 vs. 3.5 and 6.5, all P=0.004). Patients with IBS-C more frequently experienced straining during defecation compared to those with IBS-D and IBS-M. Furthermore, patients with IBS-C and IBS-M were more likely to have a feeling of incomplete defecation, a sensation that the stool cannot be passed when having a bowel movement, and the need to press on or around the bottom to remove stool compared to those with IBS-D. [5]
Risk factor	IBS was positively associated with female sex (adjusted odds ratio [OR]: 1.33, 95% confidence interval [CI]: 1.00-1.79, P=0.05) and current smoking (adjusted OR: 1.31, 95% CI: 1.00-1.71, P=0.05). The prevalence of IBS increased with increased psychological stress (adjusted P for trend=0.005). [2] Upper gastrointestinal (GI) diseases most frequently accompanied IBS (36.1%), followed by diseases of the respiratory system (12.3%), musculoskeletal system diseases (8.0%), somatoform disorders (4.3%), and depression/anxiety disorders (3.1%). [1]

Diagnosis	Blood cell counts, chemistry tests and urinalyses (40%), lower GI endoscopy (0.8%), barium enema (1.9%), upper GI endoscopy (18.7%), abdominal CT scan (1.2%), and simple abdominal x-ray (11.8%) among all IBS claims. [1]
Treatment	Ramosetron (5 μg 175 patients), mebeverine (135 mg 168 patients) - three times daily. [6]
Prognosis	There were no significant differences in the responder rates (37% vs 38% in intention-to-treat analysis) and adverse event profiles between ramosetron and mebeverine treatment groups. Neither severe constipation nor ischemic colitis was reported by ramosetron-treated patients. [6]
Genetic information	Genetic polymorphism in *SLC6A4* 5-HTTLPR and *ADRA2A* 1291C>G may be pathophysiological factors of IBS in Korea. [5]
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Liver Cirrhosis

Incidence	N/A
Prevalence	The prevalence of liver cirrhosis is 0.5% in total population, 0.6% in men and 0.4% in women using data from Korean Statistical Information Service (KOSIS) in 2017. [1]
Mortality	The mortality (%, per 100.000) due to liver related disease between 2007-2017 was as follow: 2007 (24.0%), 2009 (21.9%), 2011 (20.9%), 2013 (20.5%), 2015 (20.4%), 2016 (20.2%), 2017 (20.0%). [1]
Gender	The male to female ratio of diagnosed cases in 2017 from National Health Insurance Service (NHIS) health check-up statistics was 1:0.59 (19,505:11,551). [1]
Age	Age distribution of number of diagnosed cases in 2017 from NHIS health check-up statistics are as follow: 20-29 years: 61 cases, 30-39 years: 170 cases, 40-49 years: 4,326 cases, 50-59 years: 10,570 cases, 60-69 years: 10,845 cases, 70-79 years: 4,440 cases, ≥80 years: 644 cases. [1]
Regional distribution	Regional distribution of age-standardized death rate of liver diseases including cirrhosis was as follow: Seoul: 7.5%, Busan: 10.9%, Daegu: 11.9%, Incheon: 10.3%, Gwangju: 6.8%, Daejeon: 7.1%, Ulsan: 8.8%, Sejong: 4.3%, Gyeonggi: 8.4%, Gangwon: 13.0%, Chungbuk: 9.6%, Chungnam: 11.2%, Jeonbuk: 8.7%, Jeonnam: 10.7%, Gyeongbuk: 11.6%, Gyeongnam: 9.8%, Jeju: 11.1%. [1]
Clinical phenotypes/ classification	In a cohort study with 6,307 patients in a single center, classification was as follow: Acute hepatitis (8.4%), chronic hepatitis (62.7%), liver cirrhosis (12.2%), primary liver cancer (8.1%), and a benign liver mass or other diseases (8.7%). Of the cirrhosis, 73.4% were attributable to viral causes (of them, HBV accounted for 83.7%) and 18.1% to alcohol. [2]
Clinical manifestation	Overall symptom experience was relatively low (mean 41.67). The main symptoms needing a management were fatigue, abdominal distension and/or peripheral edema, and muscle cramps and among the study variables, these verity of liver cirrhosis and the number of hospitalizations showed a significant relationship with overall symptom experience. [3]
Risk factor	The most common cause of liver cirrhosis is hepatitis B virus (HBV), affecting around 57-73% of the cases. Alcohol and hepatitis C virus (HCV) remain the second cause, representing 7-31% and 9-22%, respectively. The other causes, other than viral hepatitis and alcohol, represent only a minor proportion of cirrhosis patients, accounting for less than 5%. [4] When alcoholic hepatitis occurs, progression to hepatic fibrosis is common, and if alcoholic hepatitis persists over a long period, the progression of liver fibrosis accelerates, leading to cirrhosis. [5]

Diagnosis	N/A
Treatment	N/A
Prognosis	Progressive worsening of hepatic function in cirrhosis increases the risk of serious and potentially life-threatening complications, which include ascites, portal hypertension, variceal hemorrhage, spontaneous bacterial peritonitis, hepatic encephalopathy, and hepatorenal syndrome. Among these cirrhosis complications, varices and ascites are the most common. They mostly develop late stage of cirrhosis. Hepatorenal syndrome represents a serious, far-advanced stage of liver cirrhosis and carries a poor prognosis. The cumulative incidences of HCC after the first episode of variceal bleeding were as follow: 1 year (2.6%), 2 years (6.7%), 3 years (12.3%), 4 years (18.8%) and 5 years (21.5%). In another study recruiting 1,236 Korean patients with liver cirrhosis, the overall survival rates of the cirrhosis patients were estimated as follow: 5 years (68%), 10 years (57%), and 15 years (43%) The survival rates after the development of symptoms are as follow: Ascites (32% at 5 years, 22% at 10 years), gastrointestinal bleeding (40% at 5 years, 23% at 10 years, hepatic encephalopathy (21% at 5 years, 8% at 10 years), and spontaneous bacterial peritonitis (30% at 5 years, 20% at 10 years) indicating that hepatic encephalopathy is a late complication of end-stage liver diseases. Particularly, patients with old age, HBsAg seropositivity, low albumin levels, or high bilirubin levels were ultimately associated with an unfavorable prognosis. [4] More than half of the patients with alcoholic cirrhosis have complications at the time of diagnosis, and the incidence of liver cancer and the risk of death are high with alcoholic cirrhosis. The risk of liver cancer in patients with cirrhosis is approximately 1.5% per year, and 3 to 10% of chronic alcohol users develop cirrhosis, eventually causing liver cancer. In the study of the National Danish Registry, the rate of progression of alcoholic hepatitis to cirrhosis after 5 years was 16%, which is higher than that (6.9%) of patients with simple fatty liver disease. The rate at which alcoholic hepatitis progresses to alcoholic cirrhosis is approximately 10 to 20% per year, and finally, 70% of alcoholic hepatitis will progress to liver cirrhosis. [5]

Genetic information	The frequencies of the *PNPLA3* rs738409 genotypes, CC, CG, and GG in the healthy control group were 29.9, 50.0, and 20.1 %, respectively, and those in non-alcoholic fatty liver disease (NAFLD) patients were 20.0, 48.4, and 31.6 %, respectively, showing a higher frequency of the risk allele (G allele) (P=0.006). Among the NAFLD patients, the CG+GG genotype frequency was significantly higher in patients with advanced fibrosis, defined as NFS ≥ −1.455 or BARD score ≥2, than in patients with mild-to-moderate fibrosis (P=0.012 and P=0.046, respectively). In multivariate analysis, the CG+GG genotype was an independent factor for NAFLD development (odds ratio [OR]: 2.568) and for advanced liver fibrosis according to the criteria of NFS ≥ −1.455 (OR: 18.573) or a BARD score ≥2 (OR: 4.040). [6]
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Peptic Ulcer

Incidence	The annual incidences of Perforated peptic ulcer (PPU) showed decreasing trend for study periods, especially in gastric ulcer. The incidence of gastric ulcer perforation was 49.8% in the first 3 years and 36.9% in the last 3 years, which was statistically significant. The decreasing incidence of perforated gastric ulcer was mainly observed in male under the age of 60. [1]
Prevalence	A total of 310 patients were diagnosed as peptic ulcer disease through endoscopy during one year of 2007 from 12,705 patients (2.4%). [2] Despite the eradication of *Helicobacter Pylori (H. pylori)*, no commensurate decreases in admission rates for peptic ulcer and bleeding ulcer was found. The admission rates for peptic ulcer was 4.3% in 1990, 5.2% in 1996 and 4.2% in 2006. The rates of ulcer bleeding were 49.3% in 1990, 46.7% in 1996, and 46.9% in 2006 respectively. [3] The prevalence of peptic ulcer diseases among people who underwent endoscopy was 18.0% in 1995, 19.1% in 2000, and 20.2% in 2005. [4]
Mortality	All of the in hospital mortality cases were also occurred in old age group (over 60 years). [1]
Gender	From the medical records of 402 patients who were diagnosed with PPU from 2010 to 2015 at Hallym university-affiliated hospitals, including the Chuncheon, Kangdong, Dongtan, Hangang, Kangnam and Hallym University Sacred Heart Hospital, the male to female ratio of prevalence was 5.7:1 [1]
Age	Average age was 50.6. Among 396 patients, 121 (30.6%) patients were older than 60 years and the proportion of women was significantly higher in patients older than 60 years (old age group) compared with patients younger than 60 years (young age group) (5.5% vs 36.4%). [1]
Regional distribution	N/A
Clinical phenotypes/ classification	A total of 174 patients who were tested for *H. pylori* infection status were categorized into 4 groups in terms of the etiology of peptic ulcer (both *H. pylori* positive and non-steroidal anti-inflammatory drugs (NSAIDs) use, either *H. pylori* positive or NSAID use, and Non-*H. pylori*, non-NSAIDs group). The patients with solely *H. pylori* positive were 73 cases and the patients taking NSAIDs without *H. pylori* infection were 16 cases. 5 patients were infected *H. pylori* and also taking NSAIDs (Both *H. pylori* positive and NAIDs user group). The remaining 80 patients who were negative for *H. pylori* test and not taking any kinds of NSAIDs or ASA were categorized into Non-*H. pylori*, non-NSAIDs group. [1]
Clinical manifestation	Among 310 Peptic Ulcer Disease (PUD) patients, bleeding symptoms such as melena, hematemesis and hematochezia occurred in 110 patients (35.5%). [2]

Risk factor	Older age (odds ratio [OR]: 1.09) and comorbidity (OR: 4.11) were associated with NSAID associated perforated peptic ulcer compared with non-*H. pylori*, non-NSAID associated PPU. Older age (OR: 1.04) and alcohol consumption (OR: 2.08) were associated with non-*H. pylori*, non-NSAID associated PPU compared with solely *H. pylori* positive PPU. [1]
Diagnosis	Of 396 patients, 54 (13.6%) patients had been diagnosed with peptic ulcer at median 12 month before the time of perforation (interquartile range: 2-36 month). [1]
Treatment	Except 9 patients who were lost to follow-up, 69 (88.5%) patients were prescribed with 7 or 14 days of standard triple therapy (n=66), or 14 days of bismuth-based quadruple therapy (n=3) as the first-line regimen. Among them, 33 patients achieved successful eradication after the first-line treatment (eradication rate of 47.8%) and 4 patients who failed to eradication after first line regimen achieved successful eradication after 2nd line treatment (overall eradication rate of 53.6%). [1]
Prognosis	The rate of ulcer recurrence in the *H. pylori* -negative group was 24.8%, which was significantly lower than that in the *H. pylori* non-eradicated group (p=0.040). The mean PUD recurrence duration in the *H. pylori*-negative group was 518 days. Males accounted for more than 60% of both groups, and these proportions were higher than those of the baseline study. In the *H. pylori*-negative group, 24.8% of the patients experienced only one recurrence event, and 2.5% of the patients experienced more than two recurrence events. The most common stage of the recurrent ulcers was the healing stage (45.5%) followed by the active (29.5%) and scar stages (25%) with similar proportions. The location (i.e., stomach or duodenum) of the recurrent PUD was the same as the original ulcer in 67.9% of the patients, and the majority of recurrence events were single ulcers (81.7%). The 5-year cumulative probabilities of PUD recurrence in the *H. pylori*-negative group and non-eradicated groups were 36.4% and 43.8%, respectively. The difference of recurrence rate between of *H. pylori* negative to positive is no more than 2% until 3year follow-up. However, the difference of recurrence becomes bigger when we follow the patients more than 3 years. [5]
Genetic information	The *IL-1β* -581C/T and *IL-1β* -1061C/T genotypes may be associated with low-dose aspirin-induced peptic ulcers in a Korean ethnic group. [6]
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Ulcerative Colitis

Incidence	Based on population-based data from an urban district in Seoul, the mean annual incidence rates of ulcerative colitis (UC) increased from 0.05 to 0.34/100,000 inhabitants in 1986-1990, and from 1.34 to 3.08/100,000 inhabitants in 2001-2005. [1] The incidence of UC from 2006 to 2012 was 5.0 to 4.2/100,000. [2]
Prevalence	The adjusted prevalence rate of UC was 30.87/100,000 (95% confidence interval [CI]: 27.47-34.27). [1]
Mortality	Of 16,152 patients with UC from 2006 to 2012, 404 died from cancer (n=94, 23.3%), circulatory diseases (n=66, 16.3%), and gastroenterological diseases (n=63, 15.6%) [2]
Gender	Of 304 patients, 147 were men and 157 were women, with a male-to-female ratio of 0.94:1. [3]
Age	The median age at diagnosis was 40 years (range, 12-72 years). [3] The mean age at diagnosis was 34±14 years. [4]
Regional distribution	UC is most prevalent in North America and Northern Europe, with Asian countries having a relatively lower prevalence. [5]
Clinical phenotypes/ classification	Disease activity at diagnosis was mild in 149 patients (49.0%), moderate in 125 patients (41.1%), and severe in 26 patients (8.6%). [3] According to Montreal classifications, the extent of disease was categorized as proctitis (present up to 15 cm from the anal verge), left-sided colitis (present up to but not beyond the splenic flexure), or extensive colitis (present beyond the splenic flexure). [4]
Clinical manifestation	Three hundred patients (98.7%) had a variety of symptoms related to colorectal inflammation, the most common of which was rectal bleeding (90.8%). In the remaining four patients (1.3%), who were asymptomatic at diagnosis, UC was incidentally detected during colorectal cancer screening by colonoscopy. At diagnosis, 134 patients (44.1%) had proctitis, 69 (22.7%) had left-sided colitis, and 101 (33.2%) had extensive colitis. [3]
Risk factor	In general, family history [6], hygiene, smoking, loss of immune function, and tolerance to normal flora [7] were closely associated with UC incidence. Fatigue [8] and visceral abdominal obesity [9] were also reported as risk factors for UC.
Diagnosis	Diagnosis of UC was made if all three of the criteria were present: a history of diarrhea, blood, and pus in the stool for longer than 4 weeks; a sigmoidoscopiccolonoscopic picture with diffusely granular, friable, and ulcerated mucosa without rectal sparing, and characteristic histopathological signs of inflammation on biopsy. [3]

Treatment	Infliximab treatment (33 patients) at a dose of 5 mg/kg at 0, 2, 6, and every 8 weeks. [4] Mesalazine, corticosteroid, 5-aminosalicylic acid (5-ASA) were also used for the treatment of UC. [5]
Prognosis	Twenty-three patients (69.7%) achieved at least one clinical remission during the observation period after an average of 1.4 rounds of infliximab administration. Ten patients (30.3%) did not achieve remission. [4]
Genetic information	The genotype and allele frequencies of the g.-1920G>A polymorphism of *IFITM1* differed significantly from those in the healthy controls (P=0.002 and 0.042, respectively). [10] *FCGR2A, JAK2, and HNF4A* variants play a role in the pathogenesis of UC in Koreans. [11]
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EPIDEMIOLOGY IN KOREA

Genitourinary

Benign Prostate Hyperplasia

Incidence	The incidence of benign prostate hyperplasia (BPH) in 2008 was 2,105/100,000 men, which increased with age. [1]
Prevalence	The prevalence rate of BPH was 20.0% in Korean rural area. [2] The National Health Insurance Service (NHIS) indicated 1,062,057 patients treated for BPH in 2015. [3]
Mortality	N/A
Gender	Not Applicable
Age	The mean age of 233 male patients with BPH between 2002 and 2008 was 65.77±9.46 years. [4] Among 1,062,057 patients treated for BPH, the number of patients aged ≥75 years was the largest (n=251,975, 23.7%), followed by 65-69 years (n=179,933), 70-74 years (n=175,180), and 60-64 years (n=152,245). [3]
Regional distribution	N/A
Clinical phenotypes/ classification	One study divided 186 patients into two groups according to prostate size measuring using transrectal ultrasonography: Group 1 (< 30 mL) -included 51 patients, while Group 2 (> 30 mL) included- 135 patients. [5]
Clinical manifestation	In the subscores of the International Prostate Symptom Score (IPSS), the score for weak urinary stream was highest (3.37±2.08); the scores for incomplete emptying (2.43±2.18), hesitancy (2.19±2.15), and nocturia (2.05±1.31) were also high. [6]
Risk factor	Epidemiologic factors (marital status, education level, smoking status, alcohol consumption status, body mass index (BMI), and regular exercise) and comorbidities (hypertension and diabetes) influenced the risk of BPH. [6]
Diagnosis	The mean BMI (23.9±2.7 kg/m^2), serum prostate-specific antigen (PSA) level (2.36±9.22 ng/mL), mean prostate volume (36.4±31.7 g), mean total IPSS (20.1±6.6), mean voiding subscore (11.1±5.2), and mean storage subscore (9.0±2.6). [2]
Treatment	In one study, all patients (n=189) underwent transurethral resection of the prostate (TURP), which is considered the gold-standard treatment for BPH. [5] Several alpha antagonists including alfuzosin, doxazosin, tamsulosin, and terazosin, have shown excellent efficacy without severe adverse effects. In addition, new alpha antagonists, silodosin and naftopidil, and phosphodiesterase 5 inhibitors have emerge for the treatment of BPH. [7]

Prognosis	Among BPH patients with prostates less than 30 mL in volume, IPSS, voiding symptoms, storage symptoms, and quality of life (QoL) were significantly improved three months after. However, the improvement in storage symptoms and QoL were not as great as those in patients with prostates greater than 30 mL in volume. [5]
Genetic information	*FGFR1* and *FGFR2* may be related to BPH severity and progression. [4]
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Chronic Renal Failure

Incidence	The overall incidence rate was 2.5/1,000 person-years; during 369,088 person-years of follow-up, 906 participants chronic kidney disease (CKD). [1]
Prevalence	The prevalence of CKD was 8.2% in Korean National Health and Nutrition Examination Survey (KNHANES) 2011-2013. [2]
Mortality	In 2015, the overall mortality rate of kidney and genital organ disease was 12.8/100,000, with sex-specific mortality rates of 11.9 and 13.8/100,000 for men and women, respectively. [3]
Gender	The prevalences of CKD were 8.9% (95% confidence interval [CI]: 8.2-9.7) and 7.5% (95% CI: 6.9-8.3) in adult men and women, respectively. [2]
Age	The prevalence of CKD increased with age. The prevalences were 2.8% (95% CI: 2.3-3.4) and 22% (95% CI: 20.5-23.5) for those aged 20-39 and 60 years and more, respectively. [2]
Regional distribution	The proportions of dialysis patients in the metropolitan area including Seoul, Incheon, and Gyeonggi province was 49.5%. The proportions in Gyeongsang, Jeolla, Chungcheong, and Gangwon provinces were 25.9%, 10.3%, 10.2%, and 3.0%, respectively. [4]
Clinical phenotypes/ classification	CKD is categorized into five stages based on glomerular filtration rate (GFR) ranges. The GFR categories were as follows: G1, GFR ≥ 90 mL/min/1.73 m^2 G2, GFR 60-89 mL/min/1.73 m^2 G3a, GFR 45-59 mL/min/1.73 m^2 G3b, GFR 30-44 mL/min/1.73 m^2 G4-5, GFR < 30 mL/min/1.73 m^2. [5] The prevalences of stages 1, 2, 3a, 3b, and 4-5 were 3.0%, 2.7%, 1.9%, 0.4%, and 0.2%, respectively. [2] Among older subjects aged 60 years and more, the prevalences were 3.0%, 8.7%, 8.1%, 1.7%, and 0.5%, respectively. [5]
Clinical manifestation	The signs and symptoms of severe decrease in GFR include uremia, and uremic syndrome. Uremic syndrome leads to nausea, vomiting, changes in mental status, abnormal bleeding, and heart problems. [5]
Risk factor	Obesity [1, 6], metabolic syndrome [7-9], cardiovascular disease [10, 11], diabetes, and urinary tract infection [5] were risk factors of CKD. Low-grade inflammation [12], hepatitis B virus infection [13], low glycated hemoglobin (HbA1c) level [14], low serum bilirubin level [15], and high serum C-reactive protein level [16] were associated with CKD in Korean populations.
Diagnosis	The clinical guideline of the Korean Center for Disease Control and the Korean Society of Neurology largely follows that of the Kidney Disease: Improving Global Outcomes (KDIGO). CKD was diagnosed according to kidney damage over 3 months, as defined by (i) structural-functional abnormalities of the kidney such as pathological abnormality markers of kidney damage (abnormality in the composition of the blood/urine and/or abnormality in imaging test) and (ii) GFR < 60 mL/min/1.73 m^2 for over three months. [5]

Treatment	Preparation for kidney replacement therapy is recommended when GFR declines to below 30 mL/min/1.73m^2. In Korea, 42,595 and 7,694 individuals underwent hemodialysis and peritoneal dialysis, respectively, in 2011. [4] The frequencies of dialysis were 91.4% for three times per week and 7.6% for twice per week. [4]
Prognosis	The five-year survival rates of CKD were 65.3% for men and 68.0% for women among patients with kidney replacement therapy. Among patients with comorbid diabetes, 56.9%, survived for five years. [17] The two-year survival rates were 74.8% for patients undergoing hemodialysis patients and 66.9% for patients undergoing peritoneal dialysis. [18]
Genetic information	Genetic polymorphisms in *TGF-β* gene [19], *RANTES* [20], and *Langerin* gene [21] were associated with CKD in Korean populations.
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Erectile Dysfunction

Incidence	N/A
Prevalence	The self-reported prevalence of erectile dysfunction (ED) among 1,570 Korean men aged 40-79 years was 13.4%. Based on International Index of Erectile Function (IIEF)-5 scores (cut-off score ≤ 17), the prevalence was an estimated32.4%. [1]
Mortality	N/A
Gender	Not applicable
Age	The mean age was 60.17±6.29. [2] The prevalence tended to increase with age (40-49 years 17%, 50-59 years 29.6%, 60-69 years 62%, and 70-79 years 84.4%). [1]
Regional distribution	The Global Study of Sexual Attitudes and Behaviors (GSSAB) subgroup compared sexual behaviors, the prevalence of sexual dysfunction and help-seeking patterns in nine Asian countries. The prevalence of ED was highest in the Philippines (33%), followed by Thailand (29%), Malaysia (28%), Korea (18%), Japan (13%), Taiwan (China) (9%), Hong Kong (China) (8%) and Singapore (2%). [3]
Clinical phenotypes/ classification	Out of 49 patients, mild disease (n=6), mild to moderate disease (n=12), moderate disease (n=10), and severe disease (n=21) [2]
Clinical manifestation	ED has been defined as the inability to achieve or maintain sufficient erection rigidity for sexual intercourse. [3]
Risk factor	The risk factors for ED included psychogenic etiologies (n=16/49), organic etiologies (n=22/49), mixed etiologies (n=11/49), diabetes mellitus (n=11/49), hypertension (n=12/49), and hyperlipidemia (n=6/49). [2] The risk factors for ED include age, diabetes, hypertension, obesity, lack of exercise, dyslipidemia, smoking, depression, lower urinary tract symptoms, and pelvic surgery. [4]
Diagnosis	Medical history review and physical examinations are used for the diagnosis of ED. The International Index of Erectile Function (IIEF) is also used to assess erectile function. [5]
Treatment	Avanafil: placebo (n=68), 100 mg (n=71), and 200 mg (n=69). In one study, 40% of patients in each group had been treated with phosphodiesterase type 5 (PDE5) inhibitor before entering this study. [6]
Prognosis	After 12 weeks of avanafil treatment, the IIEF-EFD score was significantly improved compared to the baseline score. [6]
Genetic information	Alteration of *TRPC4* channel is one pathophysiology of ED. [7]

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IgA Nephropathy

Incidence	Comparison of the incidence rates between 1987-1991 and 2002-2006 revealed an increase in immunoglobin A nephropathy (IgAN) from 25.6 to 34.5%. [1]
Prevalence	The medical records of 1,818 patients with renal biopsy (M:F=1.02:1) were retrospectively. Glomerulonephritis (GN) comprised 85.9% of the total biopsy cases. The most common primary GN was IgAN (28.3%), followed by minimal-change disease (MCD) (15.5%), membranous nephropathy (MN) (12.3%), focal segmental glomerulosclerosis (FSGS) (5.6%) and membranoproliferative GN (MPGN) (4.0%). [1]
Mortality	There were 71 deaths (5.3%) during a median observation period of 100 (interquartile range, IQR, 51-210) months and 13,916 person-years. The cases of mortality were significantly older (47 vs. 32 years) and had a higher blood pressure (140 vs. 120 mmHg), more nephrotic features and more depressed renal function at the time of biopsy than did the survivors. A higher proportion of the patients who died was managed with immunosuppressive agents before death (30.2 vs. 12.0%). [2]
Gender	The proportion of men and women was equal. [2]
Age	The median age at the time of biopsy of 1,364 patients was 33 years. The median age was lower in men (31 years IQR, 22-45) than that in women (35 years IQR, 27-45). [2] In elderly patient (> 60 years), the prevalence of IgAN was lower than that in younger patients (32.9% for <15 years, 46.1% for 15-60 years, and 19.9% for >60 years). [3]
Regional distribution	N/A
Clinical phenotypes/ classification	The most common secondary GN was lupus nephritis (8.7%). The most common idiopathic nephrotic syndrome was MCD (38.5%) followed by MN and IgAN. [1]
Clinical manifestation	Gross hematuria was present in 33.2% of patients. The mean estimated glomerular filtration rate (eGFR) was 67.6 mL/min/1.73m^2 and proteinuria was 1.3 g/day. [2] A significant portion (22%) of patients with IgAN had nephrotic-range proteinuria. [3]
Risk factor	Patients with renal risk factors such as initial renal dysfunction (eGFR <60 mL/min/1.73m^2 standardized mortality [SMR]: 1.70, 95% CI: 1.13-2.46), systolic blood pressure ≥140 mmHg (SMR: 1.88, 95% CI: 1.19-2.82), proteinuria ≥1 g/day (SMR: 1.66, 95% CI: 1.16-2.29) had an elevated mortality rate. Patients with preserved renal function, normotension, and proteinuria <1 g/day, however, had a similar mortality rate to that in the general population.

	Risk stratification according to the number of major risk factors present at diagnosis revealed a mortality rate in low-risk IgAN patients equal to that of the general population, whereas high-risk patients had a higher mortality rate than that of the general population. [2]
Diagnosis	The PREMIER study performed from 2003 to 2008 included data from 4,918 cases with confirmed renal biopsy. The indication for asymptomatic urinary abnormalities accounted for 42.1% of total renal biopsies. The most common pathologic diagnosis was IgAN (36.5%). [3] In mass school urine screening testing, IgAN and thin basement membrane nephropathy were the most common causes in the combined hematuria and proteinuria and isolated hematuria groups, respectively. A school urine screening program can detect early-stage chronic renal disease. [4]
Treatment	Of 1,364 patients, 137 were treated with immunosuppressive agents, 25 of which were treated with intravenous steroids 130 with oral steroids, 36 with oral cyclophosphamide, nine with cyclosporine, and nine with mycophenolate mofetil. [2]
Prognosis	71 deaths (5.3%) and 277 cases of end-stage renal disease (ESRD, 20.6%) occurred during 13,916 person-years. The 10-, 20-, and 30-year patient survival rates were 96.3%, 91.8%, and 82.7%, respectively. More than 50% of patient deaths occurred without ESRD progression. The overall mortality was elevated by 43% from an age/sex-matched general population (SMR: 1.43, 95% CI: 1.04-1.92). Men had a comparable mortality to that of the general population (SMR: 1.22, 95% CI: 0.82-1.75), while the rate was double in women (SMR: 2.17, 95% CI: 1.21-3.57). [2]
Genetic information	The frequency of intermediate-producer *IL-10* genotypes (GCC/ACC and GCC/ATA) was lower among patients with IgAN, suggesting that *IL-10* promoter polymorphism predisposed Korean patients to the development of IgAN. [5] The *HO-1* gene promoter length polymorphism was related to the renal impairment of IgAN at diagnosis, which is an important risk factor for mortality in IgAN patients. [6]
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Urinary Incontinence

Incidence	N/A
Prevalence	The prevalence of urinary incontinence (UI) was 7.9% based on Korean National Health and Nutrition Examination Survey (KNHANES) 2007-2009 data. [1] The National Health Insurance Service (NHIS) reported that 28,200 patients were treated for UI in 2015. [2]
Mortality	N/A
Gender	Of 28,200 patients treated in 2015, 22,750 (81%) were women, four times more than the number of men. [2]
Age	The mean age of the patients was 49.7 years. The incidence was significantly higher in subjects aged in their 40s and older. [1]
Regional distribution	The prevalence of UI was 7.9% in Korea, similar to the 4.8%-13.0% reported in other Asian population studies. [1]
Clinical phenotypes/ classification	Stress UI occurs when sudden pressure is applied, such as coughing. Urge UI is defined as urination before arriving at the bathroom, while mixed UI has symptoms of both of stress and urge UI. Of the 13,484 Koreans include in the NHIS results, 48.8%, 7.7%, and 41.6% reported stress, urge, and mixed UI, respectively. [3]
Clinical manifestation	UI is a disorder of control of the bladder and urethra sphincter, which causes the pressure in the bladder to exceed the maximum urethral resistance and results in involuntary urine drainage. Although it is not a life-threatening disease, it causes physical dermatitis, urinary tract infection, odor, depression, etc. UI affects various aspects of patient life. [4]
Risk factor	The number of vaginal deliveries, hysterectomy, obesity, age [5], overactive bladder [6], caffeine intake [7], and muscle loss [8] were associated with UI.
Diagnosis	At the time of diagnosis of UI, checking of UI history and physical examination are performed. Objective examinations include urodynamic, cystography, etc. [9, 10]
Treatment	The primary treatment of urge UI is medication (anti-muscarinic) and behavior therapy. The primary treatment for stress UI is physical treatment (pelvic floor exercises) and surgical treatment including sling surgery, tension-free vaginal tape (TVT)-obturator tape (TOT). [10]
Prognosis	The reported cure rate after treatment with medication and TOT was over 90%. [10]
Genetic information	N/A

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EPIDEMIOLOGY IN KOREA

Hematology

Acute Lymphoblastic Leukemia

Incidence	The age-standardized incidence rate (per million) of lymphoid leukemias was 28.2 among children aged 0-14 years according to a study based on the Korean Central Cancer Registry (KCCR) database. [1] A 2016 KCCR report indicated 217,057 cancers including 642 cases of lymphoid leukemia, accounting for 0.3% of all cancers. Among children under 14 years of age, acute lymphoblastic leukemia (ALL) accounted for the largest proportion of all cancer cases 18.5%. [2]
Prevalence	Among the 1,464,935 total cancer patients in 2014, the 4,924 patients with lymphocytic leukemia patients accounted for 0.3% of the total number of patients. [2]
Mortality	The five-year relative survival rate of children aged 0-14 years with lymphoid leukemias was 81% in a study based on the KCCR database from 2007 to 2011. [1]
Gender	Of 642 cases of lymphocytic leukemia that occurred in 2014, 367 (57%) were males and 275 (43%) were females, with a higher incidence in male patients. [2]
Age	According to the KCCR report, ALL occurred most frequently in children younger than 10 years. In childhood, the incidence of ALL was the highest in children aged 0-4 years (46.3 cases per million) compared to the incidence in other ages (0 years, 23.1; 5-9 years, 22.6; 10-14 years, 16.9 per million). [1] Generally, ALL is more common in children while acute myelogenous leukemia is more frequently reported in adults. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	ALL is categorized according to the type of lymphocyte from which the leukemia cells originate as well as the maturity of the leukemia cells. Leukemia starts in B cells in about 80% to 85% of children with ALL. The subtypes of B-cells in ALL include: early precursor B ALL, common ALL, pre-B ALL, and mature B-cell ALL (Burkitt leukemia). About 20 to 25% of children with ALL have T-cell ALL. [3, 4]
Clinical manifestation	Leukemia is caused by the development of cancer in the hematopoietic stem cells and the suppression of normal hematopoietic stem cells, which causes anemia, infection, and bleeding. [5] It is similar to other leukemias and may include symptoms such as fatigue, general weakness, weight loss, anorexia, fever, infection, bleeding, bruising, headache, and bone pain, as well as signs including enlargement of the lymph nodes (LNs), spleen, and liver. [6]
Risk factor	Leukemia is caused by the mutation of several genes involved in lymphocyte proliferation, differentiation, maturation, and destruction. [7] Polymorphisms in innate immunity genes [8], Philadelphia chromosome [9], and Down syndrome [10] are well-known risk factors. Paternal smoking [11] and radio-frequency radiation exposure [12] are also associated with ALL.

Diagnosis	If leukemia is suspected, general blood tests and blood smears can be used to detect leukocytes. Additionally, red blood cells, platelet and abnormal cell counts, and bone marrow tests can also be performed. [13]
Treatment	Because leukemia is a blood cancer, chemotherapy is the first priority, including remission induction, consolidation and intensification, and maintenance therapy. [5, 14] Stem cell transplantation [15] and gene targeting therapy [16] are also used for treatment.
Prognosis	The KCCR data indicated steadily increasing five-year relative survival rates of leukemia of 67.7%, 77.0%, 80.6%, and 81.0% in 1996-2000, 2001-2005, 2006-2010, and 2007-2011, respectively. [1] Generally, ALL survival rate tended to be lower in older people than that in younger people. In cases of adult and elderly ALL patients, the rates of early mortality within three months from the start of induction chemotherapy were 5% and 27% for those aged under and over 60 years, respectively. [17]
Genetic information	Genetic polymorphisms in *NOTCH1, FBXW7, PHF6,* and *IL7R* genes [18], and *CYP1A1* [11] have been associated with ALL in Koreans.
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Acute Myeloid Leukemia

Incidence	The crude incidence rate per 100,000 was 9.8 (as childhood Acute Myeloid Leukemia [AML]) in 2015. [1] The age-standardized incidence rate per 100,000 was 9.9 (as childhood AML) in 2015. [1]
Prevalence	N/A
Mortality	N/A
Gender	Of 168 total patients, 85 were male (50.6%) and 83 were female (49.4%). [2]
Age	The median age was 70 years (65-89). [2] 257 cases (2.1%), 10-19 years: 656 cases (5.4%), 20-29 years: 1,101 cases (9.0%), 30-39 years: 1,486 cases (12.2%), 40-49 years: 2,315 cases (19.0%), 50-59 years: 2,740 cases (22.5%), 60-69 years: 2,019 cases (16.6%), 70-79 years: 1,268 cases (10.4%), 80- years: 331 cases (2.7%) [1]
Regional distribution	N/A
Clinical phenotypes/ classification	N/A
Clinical manifestation	Patients present with signs and symptoms including fatigue, hemorrhage, or infections and fever. Pallor, fatigue, and dyspnea on exertion are common. An isolated mass of leukemic blasts is usually referred to as a granulocytic sarcoma. Hyperleukocytosis (more than 100,000 white cells/mm^3) can lead to symptoms of leukostasis, such as ocular and cerebrovascular dysfunction or bleeding. There may also be metabolic abnormalities (e.g., hyperuricemia and hypocalcemia), although these are rarely found at presentation. [3]
Risk factor	N/A
Diagnosis	Most patients had de novo AML (n=152, 90.5%). [2]
Treatment	Half of the patients (n=84, 50%) in one study were treated with high-intensity regimens (HIR), and mostly cytarabine with idarubicin (n=76, 90.5%). Furthermore, 18 patients (10.7%) received low-intensity regimens (LIR) and 66 (39.3%) received supportive care (SC). The response rate in the HIR group was 58.4% (n=49), with complete remission (CR) in 42.9% and partial remission (PR) in 15.5% of patients. The response rate in the LIR group was 33.3% (CR: 5.6%, PR: 27.8%). Only three patients in the SC group achieved PR. [2]

Prognosis	The median survival times with HIR, LIR, and SC were 6.8, 10.2, and 1.6 months, respectively. The median survival times with HIR and LIR were significantly longer than that with SC (P<0.0001 and P=0.006, respectively). Multivariate analysis identified age, Eastern Cooperative Oncology Group-performance status (ECOG-PS), hemoglobin level, and serum creatinine level as statistically significant prognostic factors for survival. In the HIR group, the prognostic factors for survival were ECOG-PS, hemoglobin level, and C-reactive protein level. [2]
Genetic information	Loss of p15 gene expression causes susceptibility to relapse and decreased survival in acute promyelocytic leukemia patients. [4]
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Anemia

Incidence	In 332 independent, community-living, elderly aged 60 years and older, 24 (3 males and 21 females) were newly diagnosed with anemia, resulting in a three year incidence rate of 7.2% (n=24/332). [1] The annual incidence of Korean children with aplastic anemia was 5.16 per million per year. [2]
Prevalence	The prevalence of iron deficiency (ID) and iron deficiency anemia (IDA) was 2.0% (95% confidence interval [CI]: 1.3%-2.6%) and 0.7% (95% CI: 0.3%-1.0%), respectively, in men, and 22.4% (95% CI: 20.7%-24.2%) and 8.0% (95% CI: 6.8%-9.2%), respectively, in women. Among reproductive age females, the prevalence was 31.4% (95% CI: 28.9%-33.8%) and 11.5% (95% CI: 9.6%-13.4%), respectively. [3] In the elderly, the overall prevalence of anemia was 13.6% (n=171/1,254) and increased with age. [4] The prevalences of anemia and iron deficiency in hemodialysis patients were 27.4% and 25.2%, respectively. [5] Anemia was present in 41% of men and 51% of women with stage 1-5 chronic kidney disease (CKD). The prevalence of anemia increased with progression of glomerular filtration rate (GFR) and albuminuria stage. Diabetic patients had a significantly higher prevalence of anemia than that in subjects with other etiologies. [6]
Mortality	N/A
Gender	The overall prevalence of anemia in the elderly was 9.9 % (n=27/273) in men and 14.7% (n=144/981) in women. [4] The male and female ratio was 1.2:1 in childhood aplastic anemia. [2]
Age	Anemia was least prevalent (0%-1.1%) in men 10-49 years of age but gradually increased to 12.8% by ≥70 years. While 47.3% of anemic men were ≥70 years of age, 61.2% of anemic women were of reproductive age (15-49 years). [3] The median age in elderly (60+ years) was 70 years (range: 60-95 years). [4] Hemoglobin levels were significantly lower in subjects 80 years of age, at 13.4 g/dL in those 60-69 years, 13.3 g/dL in those 70-79 years, and 12.9 g/dL in those over 80 of age. [4] The mean age was 72±4.8 years among 332 elderly persons aged 60 years and older. [1] The median age at diagnosis of aplastic anemia was 9.3 years. [2]
Regional distribution	N/A

Clinical phenotypes/ classification	Based on mean corpuscular volume (MCV), the anemia was 3.5% microcytic, 93.5% normocytic, and 3% macrocytic. Therefore, normocytic anemia the most common pattern of anemia. The prevalence of IDA as defined by ferritin level was 7.0% (n=12/171), corresponding to 14.8% (n=4/27) of men and 5.6% (n=8/144) of women. [4] Among 24 subjects with new-onset anemia, five and eight were diagnosed with IDA and anemia of chronic disease (ACD), respectively. [1] The mean hemoglobin of 569 anemic individuals was 11.1±1.1 g/dL (range, 6.9-12.9). Mild, moderate, and severe anemia occurred in 486 (85.4%), 82 (14.4%), and one (0.2%) patient, respectively. The majority (n=421, 74%) were normocytic, 132 (23.2%) were microcytic, and 16 (2.8%) were macrocytic anemia. In the IDA subgroup, the mean hemoglobin was 10.6±1.2 g/dL (range 6.9-12.9). Of these, 130 (45.1%) were microcytic and others were normocytic. Mild, moderate, and severe anemia occurred in 210 (72.9%), 77 (26.7%), and one (0.3%) patients with IDA, respectively. [3]
Clinical manifestation	Subjects with anemia had significantly lower body mass index (BMI) and levels of alanine aminotransferase (ALT), total protein, albumin, total cholesterol (TC), triglycerides (TG), low-density lipoprotein cholesterol (LDL-C), and ferritin than those with normal hemoglobin levels. Serum blood urea nitrogen (BUN) and creatinine levels were significantly higher in the anemic group than in the non-anemic group. [4] The mean hemoglobin in hemodialysis patients was 10.5±1.5 g/dL. The mean phosphorus level was 5.1±1.9 mg/dL and 70.7% of patients had a Ca × P of <55 mg^2/dL^2. [5]
Risk factor	Compared to the prevalence of IDA in adult men 18-49 years of age, the relative risks (RRs) of IDA were 8.1 in adults aged over 65 years, 35.7 in lactating women, 42.8 in premenopausal women, and 95.5 in pregnant women. Low income, underweight, and iron-vitamin C-poor diets were also associated with IDA. [3] Female sex, old age, lower albumin level, higher creatinine level, and lower BMI were identified as independent risk factors of anemia in the elderly. [4] The risk factors for anemia in CKD include female (odds ratio [OR]: 1.7), diabetic nephropathy (OR: 5.0), lower GFR (OR: 4.6, 6.6, 23.7, and >100 at stages 3a, 3b, 4, and 5, respectively), transferrin saturation (TSAT) <20% (OR: 3), and overt albuminuria (OR: 1.9). Ferritin level was not associated with anemia. [6]

Diagnosis	The mean levels of hemoglobin (mean±SD) in the elderly were 14.5±1.4 g/dL in men and 13.0±1.1 g/dL in women. Hemoglobin levels were significantly lower in subjects 80 years old. [4] Constitutional anemia was diagnosed in 44 children. The causes of acquired aplastic anemia were identified in 39 children. Severe aplastic anemia at initial diagnosis was more common than non-severe aplastic anemia. [2]
Treatment	Among IDA patients, the rate of iron injection was 48.2% (n=185/384). The rate of iron injection in ID was higher in accredited (65.6%) than that in non-accredited centers (30.9%). [5]
Prognosis	The overall survival (OS) rate of aplastic anemia was 47.8% with supportive care, 68.1% with immunosuppressive therapy (IST), and 81.8% with hematopoietic stem cell transplantation (HSCT). In IST, the response rate was 65.7% and the relapse rate after response was 54.4% within a median of 23.0 months. The factors associated with OS were severity of disease in supportive care, severity and response to IST, donor type, graft failure, and post-transplant events in HSCT. [2]
Genetic information	N/A
References	[1] Incidence of anemia in older Koreans: Community-based cohort study. ***Archives of Gerontology and Geriatrics*** (2005) 41(3): 303-309 [2] Epidemiology and clinical long-term outcome of childhood aplastic anemia in Korea for 15 years: retrospective study of the Korean Society of Pediatric Hematology Oncology (KSPHO). ***J Pediatr Hematol Oncol.*** (2011) 33(3): 172-178 [3] Prevalence and Risk Factors for Iron Deficiency Anemia in the Korean Population: Results of the Fifth Korea National Health and Nutrition Examination Survey. ***J Korean Med Sci.*** (2014) 29(2): 224-229 [4] Prevalence and Characteristics of Anemia in the Elderly: Cross-Sectional Study of Three Urban Korean Population Samples. ***American Journal of Hematology*** (2004) 77: 26-30 [5] Prevalence of Anemia and Calcium-Phosphorus Abnormalities in Hemodialysis Patients in Southwestern Seoul. ***Korean J Med.*** (2013) 85(4): 378-384 [6] Prevalence and Risk Factors for Anemia in Chronic Kidney Disease in Korea - KNOW-CKD Cohort Study. Proceedings of the 34th Annual Spring Meeting of the Korean Society of Nephrology (2014) 1: 239

Chronic Lymphocytic Leukemia

Incidence	The age-standardized incidence rates (ASRs) of chronic lymphocytic Leukemia (CLL) in 1999–2010 were 0.13/100,000. The annual percentage change in the incidence rates were 4.17% for CLL. [1]
Prevalence	N/A
Mortality	N/A
Gender	In a study of 38 patients diagnosed with CLL in a single center between 1999 and 2011, the male to female ratio was 1.53:1. [2] The male to female ratio of CLL was 1.39. [1]
Age	The median age was 64 years old (40-86) at the time of diagnosis. [2] The age-specific incidence rate was highest in the 75-79years age group. [1]
Regional distribution	N/A
Clinical phenotypes/ classification	N/A
Clinical manifestation	N/A
Risk factor	N/A
Diagnosis	Among study patients, 65.8%, 5.3% and 28.9% were classified as Binet stages A, B, and C, respectively. According to modified Rai classification, 39.5%, 26.3%, and 34.2% of the patients belonged to the low-risk, intermediate-risk, and high-risk group, respectively. The results of both staging systems showed statistically significant differences in the time to first treatment (TTFT) and overall survival (OS) among the subgroups. [2]
Treatment	Among 39 patients who had been diagnosed with CLL between January 2000 and October 2010 at a single institution, 26 patients (67%) received chemotherapy, and more than half of the treated patients (54%) died. [1] The mean TTFT and survival time were 14.0 (0-68.4) and 45.2 (0-123.8) months, respectively. [2]
Prognosis	Among 39 patients newly diagnosed with CLL enrolled between January 2000 and October 2010 at a single institution, the estimated five-year OS was 71%, lower than previously reported. [3]

Genetic information	Chromosomal aberrations were found in 76.3% of patients by conventional karyotyping and interphase fluorescent in situ hybridization (FISH). The most common aberration was 13q deletion (42.1%), followed by trisomy 12, 11q deletion, and 17p deletion, in that order. Significant differences in OS were observed after subdividing the patients according to these aberrations. Depending on the *IGHV* mutation status, the patients were divided into unmutated (29.4%) and mutated (70.6%) groups; the OS and TTFT were shorter in the unmutated than those in the mutated group. [2] The most common mutation (>10% frequency) was *ATM* (20.8%) followed by *TP53* (14.6%), *SF3B1* (10.4%), *KLHL6* (8.3%), and *BCOR* (6.25%). [4]
References	[1] Gradual increase of chronic lymphocytic leukemia incidence in Korea, 1999–2010: comparison to plasma cell myeloma. ***Leukemia & Lymphoma*** (2016) 57(3): 585-589 [2] Molecular and cytogenetic impacts on prognosis of chronic lymphocytic leukemia patients in Korea. Master's thesis, 2012. National Assembly Library Call Number 610-12-364 [3] Chronic lymphocytic leukemia in Korean patients: frequent atypical immunophenotype and relatively aggressive clinical behavior. ***International Journal of Hematology*** (2013) 97(3): 403-408 [4] Genomic Profile of Chronic Lymphocytic Leukemia in Korea Identified by Targeted Sequencing. ***PLoS ONE*** (2016) 1(12):e0167641

Chronic Myeloid Leukemia

Incidence	The annual incidence of chronic myeloid leukemia (CML) was 0.8/100,000. [1] In 2012, the crude and age-standardized incidence rates of CML were 0.91 and 0.76/100,000 persons, respectively. [2]
Prevalence	N/A
Mortality	The five-year relative survival rate of CML was 85.5% during 2008-2012. [2]
Gender	Male to female ratio was 1.6 [1]
Age	The median age was 40 years and ranged 18-77 years. [1] The incidence tended to increase with age. The highest incidence was observed in those of ≥80 years of age (men=13.31, women=6.65/100,000), followed by those of 65-79 years of age (men=9.40, women=6.58/100,000). [2]
Regional distribution	N/A
Clinical phenotypes/ classification	Chronic phase (n=163/187), accelerated phase (n=11/187), and basic crisis (n=7/187). [3]
Clinical manifestation	N/A
Risk factor	N/A
Diagnosis	Giemsa banding technique is used for the detection of the Philadelphia chromosome in more than 20 metaphase cells. Fluorescent in situ hybridization (FISH) can be used to detect rearrangement of t (922) in metaphase cells. Polymerase chain reaction (PCR) is used for the detection BCR-ABL1 translocation. [4]
Treatment	A patient counseling program was efficient in patients who required high-dose imatinib (>400 mg/day). [5]
Prognosis	The patient counseling program was effective in persisting imatinib medication, resulting in improved overall compliance. [5]
Genetic information	Mutations in *BCR/ABL1* [6], *N-ras* [7], and *JAK2 V617F* [8] have been associated with CML.

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Hemophilia

Incidence	Hemophilia A occurs in about 1 in 5,000 male births while hemophilia B is 4-6 times less common. [1]
Prevalence	The prevalence of anti-hepatitis C virus (HCV) positivity in hemophilia B was 47.9% between 1991 and 1999 and gradually decreased to 34.1% in 2005 and 23.8% in 2012. [2] The prevalence of hemophilic arthropathy decreased from 71.1% to 62.1% in hemophilia A and from 62.5% to 41.4% in hemophilia B over time (1991-2012). [3]
Mortality	Of 2,296 patients registered with the Korea hemophilia foundation (KHF), 148 had died by the end of 2012. [3] The median life expectancy in male patients with hemophilia was 69 years, which was 8 years less than the life expectancy of the general male population in Korea (77 years). [2]
Gender	Of 2,148 patients registered with the KHF, 120 (5.6%) were female and 2,028 (94.4%) were male. [3]
Age	The age-based proportions of the cohort (n=2,048) were as follows: <15 years, 20.8%; >30 years, 46.3%; 45 years or more, 17.9%; and 65 years more, 2.7%. The median ages of registration varied with severity, at 7, 15, and 18 years for severe, moderate, and mild hemophilia, respectively. [2]
Regional distribution	N/A
Clinical phenotypes/ classification	The 2,048 total patients were distributed according to hemophilia type and severity. Most patients had hemophilia A (n=1,675, 81.8%), while 373 patients. With respect to severity, 66.6%, 22.2%, and 11.1% had severe, moderate, and mild hemophilia, respectively. [2]
Clinical manifestation	Hemophilia is a disease that causes bleeding due to congenital deficiencies in coagulation factors. [4]
Risk factor	Missense mutations are the most common genetic risk factors for hemophilia A, especially mild to moderate cases, but carry the lowest risk for inhibitor development. In contrast, intron 22 inversion is the most common mutation associated with severe hemophilia A and is associated with a high risk of inhibitor formation. Large deletions and nonsense mutations are also associated with high risks of inhibitor development. Additional mutations associated with hemophilia A include frame shift and splice-site mutations. [5]
Diagnosis	Based on the correlation between factor concentration and clinical manifestations, hemophilia A and B can be divided into three groups: severe (factor VIII: C [FVIII:C] factor IX coagulant activity [FIX:C], <1.0 IU dL^{-1}), moderate (FVIII:CFIX:C, 1-5 IU dL^{-1}), and mild (FVIII:CFIX:C,>5 IU dL^{-1}). [2]

Treatment	In 2012, the per capita FVIII usage in Korea was 3.62 IU, less than the average usage in high gross national income (GNI) countries (5.36 IU). In the same year, the per capita FIX usage in Korea (0.80 IU) was similar to the average in high GNI countries (0.80 IU). The per-patient FVII and FIX usages in Korea were 127,464 and 128,573 IU respectively, higher than the average per-patient usage in high-income countries. [4]
Prognosis	The median life expectancies of patients with hemophilia A and B were 69.03 years and 69.51 years, respectively, by Mann-Whitney test (P=0.690). The most common cause of death was hemorrhage, particularly intracranial bleeding. [2]
Genetic information	Mutations in the F9 gene which encodes for coagulation factor IX were identified in 33 unrelated Korean patients with hemophilia B. Thirty-two of 33 patients had mutations in direct sequencing analyses (mutation detection rate, 97%). A total of 28 unique mutations were detected, including seven novel mutations. Six mutations were recurrent but observed in no more than two patients. In the remaining patient, exon 1 was not amplified, and MLPA analysis confirmed a large deletion involving exon 1. [6] Among 22 unrelated Korean male patients at the Hemophilia Treatment Center of Eulji University Hospital, nine substitution mutations were observed in the factor VIII (F8) gene, including six nonsense (*R15X*, two *R814Xs, R1985X, R2135X*, and *R2166X*) and three missense mutations (*R282H, G1981V,* and *R1997W*). One two nucleotide deletions (c.3637del A, and c.6808-6809del CT, c.6988-6989del CA) were identified in four patients (18.2%). Only one splice-site mutation was identified among the patients. [7]
References	[1] Management of hemophilia in Korea: the past, present, and future. ***Blood Research*** (2014) 3: 144-145 [2] Life Expectancy of Korean haemophiliacs, 1991-2012. ***Heamophilia*** (2014) 20: e356-e358 [3] Korea hemophilia foundation registry trend 1991-2012: patient registry, demographics, health services utilization. ***Heamopilia*** (2015) 21: e479-e525 [4] Utilization patterns of coagulation factor consumption for patients with hemophilia. ***J Korean Med Sci.*** (2016) 31: 33-38 [5] Genetic Risk Factors of Hemophilia A. ***J Genet Med.*** (2010) 7: 1-8 [6] Identification of mutation in the F9 gene including exon deletion by multiplex ligation-dependent probe amplification in 33 unrelated Korean patients with hemophilia B. ***Haemophilia*** (2008) 14: 1069-1075 [7] Mutation analysis of factor VIII in Korean patients with severe hemophilia A. ***Int J Hematol.*** (2010) 91: 784-791

Leukopenia

Incidence	N/A
Prevalence	Leukopenia (white blood cell [WBC] count <4,000/mm^3) was observed in 2,406 (7.7%) of 31,307 persons screened. [1]
Mortality	N/A
Gender	Leukocyte counts were significantly lower in women than those in men. [1] Among 83,740 subjects, the sex-specific prevalence of neutropenia was 8.61% in women and 6.69% in men. [2]
Age	Leukocyte counts were no significant variation among age groups. [1] The incidence of drug-induced leukopenia increases with age and occurs in about 10% of children. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	Most cases of leukopenia have decreased neutrophils. [1] The overall prevalence of neutropenia was 7.48% among 83,740 subjects. [2]
Clinical manifestation	The most important clinical symptom is infectious disease. In the presence of leukopenia, there are little no clinical symptoms associated with infection due to a low inflammatory response to infection in tissues, making early diagnosis and treatment difficult. As the absolute neutrophil count (ANC) decreases, the risk of bacterial infection increases. [3]
Risk factor	Neutropenia due to infection is the most common, most commonly caused by antipsychotic drugs [4], immunosuppressant [5], chemo-radiotherapy [6] and antiepileptic drug. [7] Neutropenia may be secondary to autoimmune disease, bone marrow disease, splenomegaly, etc. [3]
Diagnosis	Complete blood count (CBC) and peripheral blood smear (PBS) are used to calculate the leukocyte percentage and then confirm leukopenia. [3]
Treatment	Since leukopenia both is caused by and causes various diseases, it is recommended to find the cause and to treat it appropriately. Infection is treated with antibiotics (ceftazidime, aminoglycoside, carbapenem, etc.). To increase WBC production, granulocyte colony stimulating factor (G-CSF) should be administered to patients who are not well, have been administered antibiotics, have repeated severe infectious complaints, and have severe congenital neutropenia. [8] Serious leukopenia such as agranulocytosis in infants may require, hematopoietic stem cell transplantation in some cases. [3]

Prognosis	The mean overall survival (OS) of early-stage breast cancer patients without febrile neutropenia (FN) was longer than that of patients with FN (110.1±0.7 vs. 87.7±3.2 months). [9] The median OS was longer in T-cell lymphoma patients with high absolute lymphocyte counts (ALCs) compared to that in those with low ALCs (69.4 vs. 15.5 months). [9]
Genetic information	Nonsynonymous SNP in *NUDT15* was strongly associated with thiopurine-induced early leukopenia. In Koreans, this variant demonstrated sensitivity and specificity of 89.4% and 93.2%, respectively, for thiopurine-induced early leukopenia. [10] *XDH* and *SUCLA2* interaction [11] was also related in Korean patients.
References	[1] Leukopenia and neutropenia in healthy Koreans. ***Korean Journal of Medicine*** (1998) 54: 397-405 [2] Neutropenia and neutrophil to lymphocyte Ratio in a Healthy Korean Population: Race and Sex should be Considered. ***Int J Lab Hematol.*** (2016) 38: 308-318 [3] Neutropenia in children. ***Korean Journal of Pediatrics*** (2009) 52: 633-643 [4] Long-term sustained benefits of clozapine treatment in refractory early onset schizophrenia: a retrospective study in Korean children and adolescents. ***Hum Psychopharmacol.*** (2008) 23: 715-722 [5] A Case of Ulcerative Colitis with Prolonged Remission Following Azathioprine-Induced Pancytopenia. ***Intest Res.*** (2008) 6: 85-89 [6] Effect of early chemoradiotherapy in patients with limited stage small cell lung cancer. ***Radiation oncology journal.*** (2013) 31: 185-190 [7] Oxcarbazepine Induced Leukopenia. ***Korean Epilepsy Soc.*** (2013) 17: 22-23 [8] Incidence and Predictors of Febrile Neutropenia among Early-Stage Breast Cancer Patients Receiving Anthracycline-Based Chemotherapy in Korea. ***Oncology*** (2016) 91: 274-282 [9] Lymphopenia is an important prognostic factor in peripheral T-cell lymphoma (NOS) treated with anthracycline-containing chemotherapy. ***J Hematol Oncol.*** (2011) 4: 34 [10] A common missense variant in *NUDT15* confers susceptibility to thiopurine-induced leukopenia. ***Nat Genet.*** (2014) 46: 1017-1020 [11] Influences of *XDH* genotype by gene-gene interactions with *SUCLA2* for thiopurine-induced leukopenia in Korean patients with Crohn's disease. ***Scand J Gastroenterol.*** (2016) 51: 684-691

Multiple Myeloma

Incidence	The crude incidence rates of multiple myeloma (MM) in 2010 were 2.1 and 2.5/100,000 in 2010 and 2012, respectively. [1, 2] The estimated crude and age-standardized incidence rates of MM in 2015 were 2.9 and 1.7/100,000, respectively. [3]
Prevalence	In 2014, the five-year prevalence rate of MM was 7.0/100,000 (3,547 cases). [4]
Mortality	The crude mortality rate of MM in Korea was 1.5 [1] and 1.6 [2]/100,000 in 2010 and 2012, respectively. The estimated crude and age-standardized mortality rates of MM in 2015 were 1.8/100,000 and 1.0/100,000, respectively. [3]
Gender	The male to female ratio of patients with MM was 1.09:1. [5] In 2014, the incidence of MM was 3.0/100,000 (n=758) in men and 2.5/100,000 (n=638) in women. [6]
Age	The median age of patients was 63 years (range, 38-86 years) and 43.0 % were ≥ 65 years. [7] The incidence of MM tended to increase with age. In five-year age groups, the highest incidence was observed in subjects 75-79 years of age (15.8/100,000), followed by 80-84 years (15.2/100,000, n=111), 70-74 years (13.6/100,000, n=243), and 65-69 years (10.9/100,000, n=219) in 2014. [6]
Regional distribution	In 2014, the Gyeonggi area had the highest number of cancer patients newly registered in the national cancer registration system (n=1,067), followed by Seoul (n=962), Gyeongnam (n=267), Gyeongbuk (n=261) and Jeonnam (n=244) [8]
Clinical phenotypes/ classification	Based on the Durie-Salmon staging system, 61.1% of patients were stage IIIA and 22.1% of patients were stage IIIB; however, based on the ISS, 40.7% were stage III and 38.9% were stage II. [2]
Clinical manifestation	Malignant compression fractures (n=26, 23%), and epidural extensions of plasmacytoma (n=15, 13.3%) [2]
Risk factor	Hypercalcemia (n=17, 15.0%), renal insufficiency (n=26, 23.0%), anemia (n=87, 77.0%), and bone disease (n=86, 76.1%), and amyloidosis (n=3, 2.7%) [2]
Diagnosis	MM was diagnosed as the detection of plasmacytoma in tissue biopsy, bone marrow plasmacytosis with >30% plasma cells of total nucleated cells, and monoclonal immunoglobulin spike. The severity of the disease complications was evaluated by radiologic assessment such as plain radiography, CT, MRI, and PET-CT. [9]

Treatment	N/A
Prognosis	N/A
Genetic information	*IL-6R* amplification (n=53/102), *RB1* (13q14) deletion (n=31, 30.4%), and *TP53* (17p13) deletion (n=10, 9.8%). [10]
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EPIDEMIOLOGY IN KOREA

Musculoskeletal

Ankylosing Spondylitis

Incidence	N/A
Prevalence	The prevalence of ankylosing spondylitis (AS) is approximately 0.07-0.30% in the Korean population. [1] The National Health Insurance Service (NHIS) indicated that 38,314 patients were treated for AS in 2015. [2]
Mortality	N/A
Gender	The 38,314 patients treated for AS included 26,955 (70%) men and 11,359 (30%) women. [2] Men manifested symptoms at a significantly earlier age. *HLA-B27* genotype was more commonly observed in men. The hips were more commonly affected in men and knees in women. When spinal mobility was measured using tragus-to-wall distance and the modified Schober's test, women had significantly better results. [3]
Age	The mean age (standard deviation [SD]) of the AS patients was 33.2 (10.1) years. The mean onset age (SD) was 20.9 (8.1) years. [4]
Regional distribution	N/A
Clinical phenotypes/ classification	Juvenile-onset AS (JoAS) occurred in 236 patients and adult-onset AS (AoAS) in 581 patients. [4]
Clinical manifestation	AS is an inflammatory disease characterized by insidious inflammation of the spine, and sacroiliac and peripheral joints. [5] Lower back pain buttock pain (n=391, 47.1%), peripheral joint involvement (n=132, 15.8%), knee joint arthritis (n=115, 13.7%), Achilles tendinitis (n=60, 7.2 %), ankle joint arthritis (n=35, 4.2%), plantar fasciitis (n=19, 2.3%), tarsal joint arthritis (n=14, 1.7%), shoulder joint pain (n=12, 1.4%), and other symptoms (n=60, 7.2%) have been reported. [4]
Risk factor	Familial history (n=157/802, 19.6%), peripheral arthritis (n=391/802, 47.1%), hip joint involvement (n=604/817, 73.9%), *HLA-B27* carrier (n=727/767, 94.8%), enthesitis (n=344/805, 42.7%), and uveitis (n=246/829, 29.7%) were also reported in subjects. [4]
Diagnosis	The serum Dickkopf-1 level was significantly lower in patients with AS (12,321±6,136 pg/mL) than that in controls (20,811±5,671 pg/mL), serum osteocalcin level was significantly higher in patients with AS (14.5±5.6 ng/mL) than that in the controls (8.9±3.4 ng/mL), and osteoprotegerin level was significantly higher in patients with AS (3.51±1.1 pmol/mL) than that in the controls (2.0±1.0 pmol/mL). [6]

Treatment	The classes of tumor necrosis factor (TNF) inhibitors administered for the treatment of AS included infliximab (n=39/177), etanercept (n=57/177), and adalimumab (n=81/177). [7] TNF-a blocker therapy (n=49/56): Infliximab (n=22), etanercept (n=6), and adalimumab (n=21). [6]
Prognosis	After three months of TNF-a blocker therapy, serum DKK-1 and C-terminal telopeptide of type I collagen (CTX-1) levels did not change; serum osteocalcin levels increased significantly; and serum osteoprotegerin level, Bath AS Disease Activity Index (BASDAI), erythrocyte sedimentation rate (ESR), and CRP decreased. [6]
Genetic information	The HLA-B*2705 subtype was more common than other subtypes in Korean AS patients. [8] The allelic frequency of HLA-B27 in the general Korean population was approximately 5.6% in a study that genotyped 1,600 healthy Koreans. The major HLA-B27 alleles in patients with AS in Korea are HLA-B*2705 (92.2%) and HLA-B*2704 (5.8%). [1]
References	[1] The dynamic evolution of rheumatology in Korea. ***Nat Rev Rheumatol.*** (2016) 12(3): 183-189 [2] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015). http://kosis.kr/ [3] Clinical and radiographic features of adult-onset ankylosing spondylitis in Korean patients: comparisons between males and females. ***Journal of Korean medical science*** (2010) 25: 532-535 [4] Clinical spectrum of ankylosing spondylitis in Korea. ***Joint Bone Spine*** (2010) 77: 235-240 [5] Renal involvement in ankylosing spondylitis: prevalence, pathology, response to TNF-a blocker. ***Rheumatology international*** (2013) 33: 1689-1692 [6] Dickkopf-1 level is lower in patients with ankylosing spondylitis than in healthy people and is not inXuenced by anti-tumor necrosis factor therapy. ***Rheumatol Int.*** (2012) 32: 2523-2527 [7] Immunogenicity of anti-tumour necrosis factor therapy in Korean patients with rheumatoid arthritis and ankylosing spondylitis. ***International Immunopharmacology*** (2014) 21: 20-25 [8] Human leucocyte antigen-B27 subtypes in Korean patients with ankylosing spondylitis: higher B*2705 in the patient group. ***Int J Rheum Dis.*** (2009) 12: 34-38

Axial Spondyloarthropathy

Incidence	N/A
Prevalence	The prevalence of spondyloarthropathy (SpA) was 0.3% among 16,623 subjects in chronic disease management surveys performed in Incheon in 2005. [1]
Mortality	The crude mortality rate of diseases of the musculoskeletal system and connective tissue was 2.9/100,000 in 2015. [2]
Gender	The male to female ratio for ankylosing spondylitis (AS) was 8:1 in a study of 830 patients. [3] Compared to male patients, female patients with non-radiographic axial SpA (nr-axSpA) were older at disease onset (33.4±11.4 vs. 27.5±9.9 years) and at the time of diagnosis (35.1±11.0 vs. 29.0±9.9 years). [4]
Age	The mean onset age of AS was 20.9 (SD, 8.1) years in 830 patients. [3] Another study reported a mean age of 25.9 (SD, 9.2) among 155 patients. Compared to that of AS, the mean age at disease onset of nr-axSpA patients is significantly higher (29.5 years, n=459). [4]
Regional distribution	N/A
Clinical phenotypes/ classification	SpA is a chronic inflammatory disorder that primarily affects the enthesis. SpA can be distinguished according to the clinical presentation as predominantly axial SpA or predominantly peripheral SpA. For patients with predominant axial disease the Assessment of SpA international Society (ASAS) has recently developed and validated new classification criteria for axial SpA covering patients with nr-axSpA and radiographic axial SpA (AS). A review of the medical records of 1,742 patients with SpA revealed 459 patients with AS and 155 patients with nr-axSpA. [4]
Clinical manifestation	Of 830 patients with AS, lower back and buttock pain was the most frequent onset symptom (47.1%). Among peripheral joint involvement, the knee joint (13.7%) was the most commonly affected, followed by the ankle joint (4.2%). Enthesitis such as Achilles tendinitis (7.2%) and plantar fasciitis (2.3%) sometimes presented as the first symptom. History of uveitis was observed in 246 patients (29.7%). The involvement of other extra-articular organs, such as the heart, kidneys, and colon, was relatively uncommon. [3]
Risk factor	Hepatitis B virus infection [5] is a reported risk factor of SpA in the Korean population.
Diagnosis	N/A
Treatment	Non-steroidal anti-inflammatory drugs (NSAIDs) are an effective, first-line treatment in most patients with inflammatory back pain. If NSAIDs are not effective, anti-tumor necrosis factor (TNF) agents can be administered for severe inflammatory back pain. [6] Etanercept was reported to be an effective medication for AS in Korean patients. [7-10]

Prognosis	Patients with juvenile-onset AS (JoAS) had slower radiographic spinal damage progression over five years compared to that in patients with adult-onset AS (AoAS). [11]
Genetic information	HLA-B27 was closely related to axial SpA. [12-14] HLA-B27 positivity was observed in 96.1% (n=149/155) of nr-axSpA patients and 93.2% (n=313/336) of AS patients. [4] Genetic polymorphisms in TNF-alpha-308 [15], HLA-B27 [16, 17], interleukin 1 gene [18], and lectin 2 gene [19] were associated with SpA in Korean populations.
References	[1] The Prevalence and Clinical Features of Musculoskeletal Diseases in Incheon: Results from Chronic Disease Management Surveys. ***Journal of Rheumatic Diseases*** (2009) 16: 281-290 [2] Korean Statistical Information Service, Vital statistics (2016). http://kosis.kr/ [3] Clinical spectrum of ankylosing spondylitis in Korea. ***Joint Bone Spine*** (2010) 77: 235-240 [4] Clinical characteristics of nonradiographic axial spondyloarthritis in Korea: a comparison with ankylosing spondylitis. ***Int J Rheum Dis.*** (2015) 18: 661-668 [5] Hepatitis B virus reactivation in rheumatoid arthritis and ankylosing spondylitis patients treated with anti-TNF-alpha agents: a retrospective analysis of 49 cases. ***Clin Rheumatol.*** (2012) 31: 931-936 [6] Updates of Spondyloarthrothy Treatment. ***Korean J Med.*** (2013) 85: 256-259 [7] Etanercept 25 mg/week is effective enough to maintain remission for ankylosing spondylitis among Korean patients. ***Clin Rheumatol.*** (2008) 27: 179-181 [8] Safety and clinical responses in ankylosing spondylitis after three months of etanercept therapy. ***J Korean Med Sci.*** (2008) 23: 852-856 [9] Immunogenicity of anti-tumour necrosis factor therapy in Korean patients with rheumatoid arthritis and ankylosing spondylitis. ***Int Immunopharmacol.*** (2014) 21: 20-25 [10] Extended dosing of etanercept 25 mg can be effective in patients with ankylosing spondylitis: a retrospective analysis. ***Clin Rheumatol.*** (2010) 29: 1149-1154 [11] Comparison on radiographic progression for 5 years between juvenile onset ankylosing spondylitis and adult onset ankylosing spondylitis: an observational study of the Korean SpondyloArthropathy Registry (OSKAR) data. ***Clin Exp Rheumatol.*** (2016) 34: 668-672 [12] HLA-B27 subtypes in Korean patients with ankylosing spondylitis. ***Korean J Lab Med.*** (2008). 28: 46-52

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[19] Mannose-binding lectin 2 gene haplotype analysis in Korean patients with ankylosing spondylitis. ***Rheumatol Int.*** (2012) 32: 2251-2255

Osteoarthritis

Incidence	N/A
Prevalence	The prevalence was greater for old-old people (age +75, 35.50%) compared to young-old people (age 60-74, 18.20%). [1] In the 2010-2013 Korean National Health and Nutrition Examination Survey (KNHANES), the estimated prevalence of osteoarthritis (OA) was 12.5% of adults aged ≥50 years. The prevalence of Knee OA was 12.5% in patients aged 50 years and older. (Male 5.1%, Female 18.9%, increase with age). In Men, the prevalence among those ages 50-59 years was as low as 2.1% but increased to 10.4% among those 70 years and older. In women, the prevalence was 18.9% in those 50-59 years of age and 36.0% in those 70 years and older. The prevalence of hip OA was 0.2% (no difference between genders) and increased with age. [2] Using the data of participants aged≥50 years, who were from The Fifth KNHANES (2010-2012), the prevalence of radiographic knee osteoarthritis (RKOA) was 21.1% (19.6–22.8%) in men, and 43.8% (42.0–45.6%) in women. Among the participants with RKOA, 20.9% (18.2–23.9%) of men and 44.6% (42.0–47.2%) of women had Knee OA symptoms. [3]
Mortality	N/A
Gender	The male to female ratio was 1:3.17 in 2013 KNHANES. [4]
Age	The mean age of the 2,280 subjects was 62.6 in 2013 KNHANES [4]
Regional distribution	The mean age of the participants was higher in rural areas than in urban cities. It was 59 in men in Ulsan city and 64 in men in South Jeolla province. The prevalence of obesity was higher in regions with a higher mean age, except in Daejeon, in which the prevalence of obesity reached 25% in women. The prevalence of radiographic knee OA was higher in regions with a higher mean age and prevalence of obesity, and it was 57.9% and 55.9% in women in South Chungcheong and in Jeju provinces, respectively. In the case of symptomatic radiographic knee OA, the trend of higher prevalence in regions with a higher mean age and prevalence of obesity was more prominent. It reached 36.6% in women in Jeju province, which had the highest mean age and prevalence of obesity. [3]
Clinical phenotypes/ classification	N/A
Clinical manifestation	Knee OA seems to increase the risk of several negative outcomes and is associated with higher rates of hospitalization and institutionalization and a higher risk of earlier death. [4]

Risk factor	Old age (>65 years, odds ratio [OR]: 2.552) and low educational level (lower than or equal to elementary, OR: 4.761, middle school, OR: 3.184) were strongly associated with an increased risk of knee OA. The participants with female sex (OR: 2.050), low frequency of strength exercise (<2 times/week, OR: 1.829), obesity (body mass index [BMI] ≥25.0 kg/m^2, OR: 1.563), and hypertension (OR: 1.394) displayed a significantly higher prevalence of knee OA. Those with diabetes and low household income (less than or equal to middle low), non-smokers, and non-drinkers displayed a higher prevalence of knee OA in the univariate analysis. [4]
Diagnosis	N/A
Treatment	The number of patients with at least one use of nonsteroidal anti-inflammatory drugs (NSAIDs), analgesics, corticosteroid (CS), and symptomatic slow acting drugs for OA (SYSADOA) were 82.5%, 32.2%, 8.6%, and 43.4%, respectively. The use of herbal SYSADOAs was 29.7%. For regular users (medication possession ratios ≥ 50%), the use of NSAIDs was substantially decreased (48.8%), while the use of SYSADOA (37.3%) and CS (6.7%) were not significantly changed. The number of CS intra-articular injection (IAI) users among knee OA patients was 0.18%; they were slightly older (64.4 ± 10.9 vs. 63.2 ± 10.8) and more skewed towards females (75.7% vs. 71.5%) than patients who had not received CS IAI. [5]
Prognosis	The knee joint is a frequent site of OA-related pain especially in older age groups in which self-reported knee pain is commonly attributed to symptomatic and radiographic knee OA. [4]
Genetic information	In 190 OA patients and 376 healthy controls, the D-repeat microsatellite polymorphism was examined by amplifying the asporin gene and sequencing its products. The frequencies of the D13 and D14 alleles were 69.7% (n=265/380) and 5.8% (n=22/380), respectively, in OA patients and 64.2% (n=483/752) and 8.7% (n=65/752), respectively, in healthy controls. When we adjusted for gender and age a significant difference between female OA patients and their controls (P=0.0245) in the allele frequency of the D13 allele was found compared to the other alleles. [6]
References	[1] Comparison of Prevalence for Osteoarthritis and Its Risk Factors between Age 60-74 and 75 and Over. ***Journal of Korean biological nursing science*** (2013) 15(4): 219-229 [2] Prevalence of Osteoarthritis among Adults over 50 years old in Korea 2010-2013. ***Public Health Weekly Report*** (2015) 8(4): 82-84 [3] Prevalence of knee osteoarthritis, risk factors, and quality of life: The Fifth Korean National Health and Nutrition Examination Survey. ***International Journal of Rheumatic Diseases*** (2017) 20(7): 809–817

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Rheumatoid Arthritis

Incidence	The age-standardized annual incidence of rheumatoid arthritis (RA) was 42 per 100,000 in a Korean National Health Insurance (NHI) claims data of 2008 [1]
Prevalence	The corresponding prevalence estimates were 0.26 % in 2006, 0.27 % in 2007, and 0.27 % in 2008. [1]
Mortality	N/A
Gender	The numbers (proportions) of female patients were 98,136 (78.3 %), 103,732 (78.6 %), and 105,975 (79.0 %) in 2007, 2008, and 2009, respectively. [1]
Age	RA incidence increased with age, peaked in the age 60–69 years for both sex. Age distribution of incidence per 100,000 are as follow: 0-14 years: 0, 15-19 years: 7, 20-29 years: 14, 30-39 years: 31, 40-49 years: 53, 50-59 years: 94, 60-69 years: 109, 70-79 years: 85, 80-89 years: 36, 90-100 years: 2 [1]
Regional distribution	Regional distribution of RA patients in a university hospital cohort was as follow: Seoul: 38.6%, Gyeonggi: 28.6%, Gyeongsang: 13.5%, Chungcheong: 10.1%, Jeolla: 5%, Gangwon: 2.9%, Jeju: 0.98% [2]
Clinical phenotypes/ classification	According to radiographic severity, classification are as follow: Stage 1: 21.5%, stage 2: 21.54%, stage 3: 29.65%, stage 4: 14.09%. Based on functional disorder classification, more than 50% of patients had limitation of everyday life their work life. [2]
Clinical manifestation	Rheumatoid factor positivity (RF) (+) was detected in 89.3% of RA patients. The durations of disease were and treatment were 126 months and 42.9 years, respectively. [3] The RF+ and anti-cyclic citrullinated peptides (CCP) antibody positivity rates were 86.8% (n=4,098/4,719) and 83.9% (n=3,018/3,599), respectively. Hypertension (25.5%) was the most frequent concomitant disease, followed by gastrointestinal disease (21.035%). [4]
Risk factor	The smoking rate of the Hanyang RA cohort was 16.8%, while 30.8% of the patients were exposed to passive smoking. [2] The prevalence of RA and osteoarthritis tended to be higher among those with older age, low socioeconomic/education status, and homemaker occupation. [5] Smoking increased the risk of RA development by 2.7-fold, the risk of anti-CCP antibody positive RA development by 2.2-fold, and the risk of anti-CCP antibody negative RA development by 2.8-fold. [3] There were more concurrent chronic diseases such as hypertension (28.5%), and diabetes mellitus (9.7%) in the arthritis group than those in the whole population. [5]

	Patients with RA were older and more female predominant than subjects without RA. The prevalence of living in an urban area, college graduation, alcohol consumption and smoking was lower in patients with RA than non-RA. Significantly lower smoking rates in RA was characteristic of Korean patients. Considering the higher non-smoking rate in Korean RA patients, environmental factors other than smoking or genetic backgrounds may be associated with the pathogenesis of RA in Korean patients. [6]
Diagnosis	N/A
Treatment	Total joint arthroplasty was performed in 158 (10.3%) patients, most commonly in the knee (11.26%), followed by the hip (4.76%), elbow (0.96%), and shoulder (0.18%). [2] Disease-modifying antirheumatic drugs (DMARDs) and biologic agents were prescribed to 97.48% (n=4,569/4,687) and 5.78% (n=271/4,687). When patients were stratified according to their Disease Activity Score (DAS) in 28 joints, the percentages of patients in remission (<2.6) with low RA activity (2.6 ≤ and <3.2), moderate activity (3.2 ≤ and ≤ 5.1), and high activity (5.1) were 20.97% (n=898/4,239), 15.19% (n=644/4,239), 46.87% (n=1,987/4,239), and 16.96% (n=719/4,239), respectively. [4] The prevalence of biologics use by RA patients increased from 0.84 % in the first half of 2007 to 1.91 % in the second half of 2009. Among the non-biologic DMARDs, the most commonly prescribed drug was hydroxychloroquine (HCQ), which was used by 47.4–50.4 % of patients, followed by methotrexate (MTX), which was used by 36.0–40.9 % of RA patients. During the same period, the prevalence of leflunomide (LFN) use increased from 5.9 to 11.5 %. More than 33 % of all patients received DMARDs as combination therapy. Since 2007, the MTX-plus-HCQ regimen was used most commonly (10.7–11.1 %), followed by MTX plus SSZ (3.5 %) in 2007 and MTX plus LFN (3.6–6.41 %) in 2008–2009. The most commonly prescribed triple DMARD during 2007–2009 was the combination of MTX, HCQ, and SSZ (4.5–4.8 %). [1]
Prognosis	The mean Health Assessment Questionnaire (HAQ) score was 0.69± 0.66 (from 0 to 3.00) and the mean EuroQol-Five Dimension (EQ-5D) score was 0.67±0.27 (from 0.594 to 1.00). The HAQ and EQ-5D scores worsened with increasing disease activity. [4] The incidence, 1-year mortality, and standardized mortality ratio (SMR) of osteoporotic fracture in RA patients aged 50 and older were higher than those in the general papulation. [7] The SMR was slightly higher in patients with RA, but the incidence rates of malignancies were not significantly different from the general population. But deaths from respiratory diseases were significantly higher. [8]

Genetic information	The representative susceptibility genes for the development of RA were *HLA-DRB 1* (OR of allele *0401: 3.41), *PADI4* (OR: 1.5), *STAT4* (OR: 1.27) and *TRAF1-C6* (OR: 1.21). [3] The genetic risk factors for RA are different in Caucasian and Korean patients. Although patients of different ethnic groups share the HLA region as a major genetic risk locus, most other genes shown to be significantly associated with disease in Caucasians (*TRAF1/C5*, *CD40*, and *CCL21* SNPs) appear not to play a role in Korean patients with RA. [9]
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Oncology

Bladder Cancer

Incidence	The number of cases increased from 2,180 cases in 1999 to 3,549 cases in 2011, a total of 37,950 cases during this period. [1] The crude incidence rate per 100,000 was 7.9 in 2015. [2] The age-standardized incidence rate per 100,000 was 4.4 in 2015. [2]
Prevalence	The crude prevalence rate per 100,000 was 61.6 in 2015. [2] The age-standardized prevalence rate per 100,000 was 33.7 in 2015. [2]
Mortality	The crude mortality rate per 100,000 was 2.5 in 2015. [2] The age-standardized mortality rate per 100,000 was 1.2 in 2015. [2]
Gender	Of 31,407 patients diagnosed with bladder cancer in 2015, 25,609 were male patients and 5,798 were female patients. (prevalence) [3]
Age	0-9 years: 6 cases (0.0%), 10-19 years: 18 cases (0.1%), 20-29 years: 59 cases (0.2%), 30-39 years: 333 cases (1.1%), 40-49 years: 1,313 cases (4.2%), 50-59 years: 4,091 cases (13.0%), 60-69 years: 7,945 cases (25.3%), 70-79 years: 11,007 cases (35.0%), 80- years: 6,635 cases (21.1%) [3]
Regional distribution	Seoul: 894 cases (22.2%), Busan: 314 cases (7.8%), Daegu: 160 cases (4.0%), Incheon: 226 cases (5.6%), Gwangju: 79 cases (2.0%), Daejeon: 65 cases (1.6%), Ulsan: 63 cases (1.6%), Sejong: 15 cases (0.4%), Gyeonggi: 928 cases (23.0%), Gangwon: 121 cases (3.0%), Chungbuk: 133 cases (3.3%), Chungnam: 183 cases (4.5%), Jeonbuk: 168 cases (4.2%), Jeonnam: 153 cases (3.8%), Gyeongbuk: 239 cases (5.9%), Gyeongnam: 250 cases (6.2%), Jeju: 41 cases (1.0%) [3]
Clinical phenotypes/ classification	N/A
Clinical manifestation	N/A
Risk factor	N/A
Diagnosis	High-performance liquid chromatography-quadrupole time-of-flight mass spectrometry (HPLC-QTOFMS) was used to profile the urine metabolites of 138 patients with bladder cancer and 121 control subjects. The cancer group could be clearly distinguished from the control groups on the basis of their metabolomic profiles. Patients with muscle-invasive bladder cancer could also be distinguished from patients with non-muscle-invasive bladder cancer. The differentiation model diagnosed bladder cancer with a sensitivity and specificity of 91.3% and 92.5%, respectively, and comparable results were obtained by receiver operating characteristic analysis (AUC=0.937). Multivariate regression also suggested that the metabolomic profile was correlated with cancer-specific survival time. [4]

Treatment	In one study, 7.3% (n=96/1,324) of patients received neoadjuvant chemotherapy (NAC) and 18.1% (n=239/1,324) received adjuvant chemotherapy (AC). Gemcitabine and cisplatin were most frequently used in combination for both NAC (49.0%) and AC (74.9%). NAC use increased significantly from 4.6% in 2003-2005 to 8.4% in 2010-2013 (P<0.05), while AC use did not increase. Only 1.9% of patients received NAC and AC. Complete remission after NAC was achieved in 12 patients (12.5%). Multivariable modeling revealed that advanced age, the earliest time period analyzed, and clinical tumor stage ≤ cT2 bladder cancer were negatively associated with NAC use (P<0.05). While NAC use has slowly increased over time, it remains an underutilized therapeutic approach in Korean clinical practice. [5]
Prognosis	The five-year survival rate in patients with bladder cancer was 75.4%. [3] Data of 487 patients treated with radical cystectomy and pelvic lymph node dissection between 1991 and 2012 were reviewed. The conditional overall survival (OS) and cancer-specific survival probabilities significantly improved over time, with greater improvements in the cases with unfavorable pathologic features. Moreover, age remained the key prognostic factor for conditional OS estimates from baseline to five years after surgery. [6]
Genetic information	The combined CT/TT genotypes were associated with a significantly increased risk of bladder cancer (odds ratio [OR] CT/TT: 1.58, 95% confidence interval [CI] : 1.15-2.17), compared to that for the CC genotype. Smoking habits, tumor grade and tumor stage did not modify the association between rs2294008 and the risk of bladder cancer. [7] Low *DBC1* expression was a predictor of progression to muscle-invasive bladder cancer (MIBC; progressed disease) (P=0.013). [8]
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Brain and Central Nervous System (CNS) Tumor

Incidence	There were 10,004 newly diagnosed brain tumors in a population of 49.9 million in 2010. The overall crude rate of brain tumors in the Republic of Korea was 20.06/100,000 person-years in 2010, and the rate in children was 5.16/100,000 person-years. The crude rate of glioblastoma (GBM) was 1.05. [1] The crude incidence rate per 100,000 was 3.5 in 2015. [2] The age-standardized incidence rate per 100,000 was 2.8 in 2015. [2]
Prevalence	The crude prevalence rate per 100,000 was 20.3 in 2015. [2] The age-standardized prevalence rate per 100,000 was 17.2 in 2015. [2]
Mortality	The crude mortality rate per 100,000 was 2.5 in 2015. [2] The age-standardized mortality rate per 100,000 was 1.7 in 2015. [2]
Gender	Brain and central nervous system (CNS) tumors occurred in women more often than in men (1.59:1). [1] Brain and CNS tumors occurred in females more often than in males (Female:Male = 1.70:1). [3]
Age	0-9 years: 317 cases (3.1%), 10-19 years: 985 cases (9.5%), 20-29 years: 1,143 cases (11.0%), 30-39 years: 1,348 cases (13.0%), 40-49 years: 1,820 cases (17.6%), 50-59 years: 2,050 cases (19.8%), 60-69 years: 1,389 cases (13.4%), 70-79 years: 952 cases (9.2%), 80- years: 345 cases (3.3%) [4]
Regional distribution	Seoul: 327 cases (18.4%), Busan: 153 cases (8.6%), Daegu: 82 cases (4.6%), Incheon: 98 cases (5.5%), Gwangju: 45 cases (2.5%), Daejeon: 62 cases (3.5%), Ulsan: 39 cases (2.2%), Sejong: 7 cases (0.4%), Gyeonggi: 376 cases (21.2%), Gangwon: 59 cases (3.3%), Chungbuk: 63 cases (3.5%), Chungnam: 92 cases (5.2%), Jeonbuk: 73 cases (4.1%), Jeonnam: 69 cases (3.9%), Gyeongbuk: 98 cases (5.5%), Gyeongnam: 109 cases (6.1%), Jeju: 24 cases (1.4%) [3]
Clinical phenotypes/ classification	The most common tumor was meningioma (37.3%), followed by pituitary tumors (18.0%), gliomas (12.7%), and nerve sheath tumors (12.3%). GBM accounted for 41.8% of all gliomas. [4]
Clinical manifestation	N/A
Risk factor	N/A
Diagnosis	The incidence according to the originating site were as follows: - Meninges: 33% (Tumors of the meninges developed 3 times more frequently in females) - Brain parenchyma: 29.8%, sellar region: 21.8%, cranial and spinal nerves: 15.4% [1]

	A retrospective review was conducted of 321 patients diagnosed with GBM between January 2006 and December 2010. In 75 patients, leptomeningeal spread (LMS) of the tumor was detected by MRI and/or cerebrospinal fluid cytology. [5]
Treatment	In a retrospective review of 321 patients diagnosed with GBM between January 2006 and December 2010, 12 patients underwent intrathecal methotrexate (IT-MTX) chemotherapy, 22 patients underwent other salvage treatments, and 41 patients underwent conservative management. [5]
Prognosis	The five-year survival rate was 41.4%. [3] The five-year survival rate for all ages and all brain tumor types in Korea was 37.5%. For each histological type of brain tumor, the survival of pediatric and younger adult populations was better than that of older adults. The five-year survival rates for GBM, astrocytoma, anaplastic astrocytoma, and oligodendroglioma were 8.9, 51.6, 25.2, and 73.5%, respectively. The two-year survival for GBM increased from 18.6% for cases diagnosed in 1999-2001 to 21.3% for cases diagnosed in 2002-2004 and to 24.7% for cases diagnosed in 2005-2007. [6] In patients without LMS, the median overall survival (OS) was 479 days, whereas that in patients with LMS it was 401 days. Younger age and larger initial tumor size were related to higher LMS incidence. Proximity between the tumor margin and ventricle did not affect LMS. However, the median duration from initial diagnosis to LMS was differed significantly according to the distance to the ventricle. The OS of IT-MTX was 583 days, which did not differ statistically from that of the other treatment and conservative management groups. However, an additional survival benefit may exist compared to the conservative treatment group. The median survival of the IT-MTX group was 181 days compared with 91 days for the conservative management group. [5]
Genetic information	GBM with an oligodendroglial component (GMBO) may represent a subgroup of GBM that is associated with a high prevalence of *IDH1* mutation (23.8 vs. 4.4%) and younger age (49.21 vs. 57.47 years). [7] *BAI-1* expression was associated with a better response to radiation therapy (P=0.014). Glioblastoms with no BAI-1 and high VEGF mRNA expression were more often associated with a poor clinical outcome, with a median survival of 9 and 6 months, respectively, compared to 14 months. [8] While astrocytomas and *IDH*-mutant (secondary) glioblastomas are characterized by the mutational status of *IDH, TP53*, and *ATRX*, oligodendrogliomas have a 1p/19q codeletion and mutations in *IDH*, *CIC*, *FUBP1*, and the *TERTp*. *IDH*-wildtype (primary) glioblastomas typically lack mutations in *IDH*, but are characterized by copy number variations in *EGFR, PTEN, CDKN2A/B, PDGFRA*, and *NF1* as well as mutations in *TERTp*.

	High-grade pediatric gliomas differ from those of adult gliomas, consisting of mutations in *H3F3A, ATRX*, and *DAXX*, but not in *IDH*. In contrast, well-circumscribed low-grade neuroepithelial tumors in children, such as pilocytic astrocytoma, pleomorphic xanthoastrocytoma, and ganglioglioma, often have mutations or activating rearrangements in the *BRAF, FGFR1,* and *MYB*. [9]
References	[1] An Updated Nationwide Epidemiology of Primary Brain Tumors in Republic of Korea. ***Brain Tumor Res Treat.*** (2013) 1(1): 16-23 [2] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015. ***Cancer Res Treat.*** (2018) 50(2): 303-316 [3] Annual report of cancer statistics in Korea in 2015 [4] An Updated Nationwide Epidemiology of Primary Brain Tumors in Republic of Korea, 2013. ***Brain Tumor Res Treat.*** (2017) 5(1): 16-23 [5] Optimal treatment of leptomeningeal spread in glioblastoma: analysis of risk factors and outcome. ***Acta Neurochir***. (2015) 157(4): 569-576 [6] Population-based survival data for brain tumors in Korea. ***Neurooncol.*** (2012) 109(2): 301-307 [7] Glioblastoma with oligodendroglial component represents a subgroup of glioblastoma with high prevalence of IDH1 mutation and association with younger age. ***J Neurooncol.*** (2013) 112(3): 439-448 [8] Expression of VEGF and brain specific angiogenesis inhibitor-1 in glioblastoma: prognostic significance. ***Oncology reports*** (2004) 11(4): 863-869 [9] Molecular Testing of Brain Tumor. ***Journal of Pathology and Translational Medicine*** (2017) 51: 205-223

Breast Cancer

Incidence	The crude incidence rate per 100,000 was 37.7 in 2015. [1] The age-standardized incidence rate per 100,000 was 24.8 in 2015. [1]
Prevalence	The crude prevalence rate per 100,000 was 351.5 in 2015. [1] The age-standardized prevalence rate per 100,000 was 221.7 in 2015. [1]
Mortality	The crude mortality rate per 100,000 was 4.6 in 2015. [1] The age-standardized mortality rate per 100,000 was 2.8 in 2015. [1]
Gender	Not Applicable
Age	0-9 years: 0 cases (0.0%), 10-19 years: 7 cases (0.0%), 20-29 years: 437 cases (0.2%), 30-39 years: 7,756 cases (4.3%), 40-49 years: 41,133 cases (23.0%), 50-59 years: 68,182 cases (38.1%), 60-69 years: 38,470 cases (21.5%), 70-79 years: 18,128 cases (10.1%), 80- years: 4,968 cases (2.8%) [2] The incidence of breast cancer was highest in the 40-49-years age group (n=7,889, 35.0%). [3]
Regional distribution	Seoul: 4,330 cases (22.5%), Busan: 1,366 cases (7.1%), Daegu: 968 cases (5.0%), Incheon: 1129 cases (5.9%), Gwangju: 480 cases (2.5%), Daejeon: 576 cases (3.0%), Ulsan: 383 cases (2.0%), Sejong: 58 cases (0.3%), Gyeonggi: 4717 cases (24.5%), Gangwon: 515 cases (2.7%), Chungbuk: 594 cases (3.1%), Chungnam: 723 cases (3.8%), Jeonbuk: 643 cases (3.3%), Jeonnam: 537 cases (2.8%), Gyeongbuk: 880 cases (4.6%), Gyeongnam: 1,126 cases (5.9%), Jeju: 193 cases (1.0%) [1] The treatment prevalence of age-standardized per 100,000 inhabitants in Seoul (n=454), Busan (n=437), Daejeon (n=422), and Gyeonggi-do (n=411) was the greatest. [4]
Clinical phenotypes/ classification	The rate of early breast cancer has continued to increase, and that of stages III and IV breast cancer was only 9.1% at the time of diagnosis. [3]
Clinical manifestation	N/A
Risk factor	Epidemiologic studies conducted in Korea have shown that older age, family history of breast cancer (2-3 fold higher), early menarche (2-2.5 fold), late menopause (2-4 fold), late full-term pregnancy, and never having breast-fed are the primary risk factors of breast cancer. [5]
Diagnosis	According to tumor stage classification of 1,580 patients, stage II (45.9%) was the most common, followed by stages I (30.8%), III (22.3%), and IV (1.7%, more elderly). [6] Of 110,588 subjects receiving breast cancer screening, the recall rate for further examination was 12.1% (n=13,423). The biopsy rate was 1.01% (n=1,116). Two hundred fourteen breast cancers were detected, corresponding

	to a detection rate of 0.19%. Stage 0 cancer was identified in 23.6% of all cancers, stage I in 40.4%, stage IIa in 19.9%, stages IIb and IIIa in a combined 6.2%, stage IIIc in 3.1%, and stage IV in 0.6%. The positive predictive value (PPV) based on abnormal findings in the screening examinations was 1.6% (PPV1). The PPV when a biopsy or surgical consultation was recommended was 15.1% (PPV2). The percentage of tumors found as stage 0 or I was 64% (n=103/161). Tumors were found as minimal cancer (stage 0 or tumor lesser than 1 cm) in 38.5% of subjects (n=62/161). [7]
Treatment	In a medical records review of 1,580 patients, 61.1% (965 patients) received breast-conserving surgery and 38.9% received modified radical mastectomy. Among significantly higher proportion of patients aged 60 years or more, received modified radical mastectomy (38.9%, P=0.002). [6]
Prognosis	The five-year survival rate was 89.4%. [1] The poor prognostic factors in the elderly included lymph nodal invasion, recurrence, triple–negative status, progesterone receptor-negative disease, and p53-negative status. [8]
Genetic information	Patients with *BRCA1* were diagnosed at a younger age (median age, 37 years) and had tumors of higher histological (61.3% with histological grade 3) and nuclear (37.5% with nuclear grade 3) grade than those of the Korean Breast Cancer Society registry. [8] By the age 70, the female breast cancers risk for *BRCA1* and *BRCA2* mutation carriers were 72.1% and 66.3%, respectively. The estimated contralateral breast cancer risk at five years after primary breast cancer were 16.2% in 52 breast cancer patients with the *BRCA1* mutation and 17.3% for 35 breast cancer patients with the *BRCA2* mutation. [9]
References	[1] Annual report of cancer statistics in Korea in 2015 [2] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015. ***Cancer Res Treat***. (2018) 50(2): 303-316 [3] Basic Findings Regarding Breast Cancer in Korea in 2015, Data from a Breast Cancer Registry. ***J Breast Cancer*** (2018) 21(1): 1-10 [4] High prevalence of breast cancer in light polluted areas in urban and rural regions of South Korea. ***Chronobiology International*** (2015) 32(5): 657-667 [5] Epidemiology of Breast Cancer in Korea: Occurrence, High-Risk Groups, and Prevention. ***J Korean Med Sci.*** (2002) 17(1): 1-6 [6] Clinicopathological characteristics and prognosis in old age breast cancer. ***Korean Journal of Clinical Oncology*** (2015) (11): 6-11 [7] Breast Cancer Screening: A Medical Audit of the Screening Mammography Performed at One Institution for 10 Years. ***J Breast Cancer.*** (2008) 11(4): 180-186

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Cervical Cancer

Incidence	Since the peak of 4,572 cases in 2001, the annual number of cervical cancer cases has been steadily declining, reaching 3,857 in 2010. [1] The crude incidence rate per 100,000 was 7.0 in 2015. [2] The age-standardized incidence rate per 100,000 was 4.6 in 2015. [2]
Prevalence	The age-standardized prevalence rate of cervical cancer decreased from 56.8 to 51.2/100,000 women between 2007 and 2010, respectively. [1] The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 99.1 and 61.5 in 2015. [2]
Mortality	The age-standardized mortality rate has been steadily declining, reaching 2.9/100,000 women in 2011, from a peak of 4.4 in 2003. [1] The crude mortality rate and the age-standardized mortality rate per 100,000 was 1.9 and 1.1 in 2015. [2]
Gender	Not applicable
Age	The median age of 2,158 participants was 49.3 years (range, 19.7–83 years). [3] 0-9 years: 0 cases (0.0%), 10-19 years: 2 cases (0.0%), 20-29 years: 211 cases (0.4%), 30-39 years: 3,559 cases (7.1%), 40-49 years: 9,849 cases (19.5%), 50-59 years: 15,457 cases (30.6%), 60-69 years: 10,563 cases (20.9%), 70-79 years: 7,599 cases (15.1%), 80- years: 3,237 cases (6.4%) [4]
Regional distribution	Seoul: 633 cases (17.7%), Busan: 297 cases (8.3%), Daegu: 187 cases (5.2%), Incheon: 213 cases (6.0%), Gwangju: 85 cases (2.4%), Daejeon: 112 cases (3.1%), Ulsan: 57 cases (1.6%), Sejong: 9 cases (0.3%), Gyeonggi: 796 cases (22.3%), Gangwon: 107 cases (3.0%), Chungbuk: 111 cases (3.1%), Chungnam: 120 cases (3.4%), Jeonbuk: 132 cases (3.7%), Jeonnam: 140 cases (3.9%), Gyeongbuk: 225 cases (6.3%), Gyeongnam: 298 cases (8.3%), Jeju: 48 cases (1.3%) [4] A rural residence was significantly associated with higher rates of cervical cancer screening after adjusting for age and sociodemographic factors. [5]
Clinical phenotypes/ classification	N/A
Clinical manifestation	N/A
Risk factor	Increasing risks were seen in earlier age at first menarche. The odds ratio (OR) increased with late age at postmenopause (OR: 7.0). Increasing numbers of pregnancies and live births were associated with higher risks (OR: 2.7 and OR: 2.9, respectively). The risk of uterine cervical cancer decreased with increasing age at first birth (OR: 0.2). Decreasing risks were also observed for the intake of fresh fruits, carrot, and cabbage. [6]

Diagnosis	Although the participation rate in the National Cancer Screening Program has been increasing steadily since 2004, it did not reach 20% in 2010. The screening rate based on recommendations has also increased from 58.3% in 2004 to 62.4% in 2011. According to international federation of gynecology and obstetrics (FIGO) stage from 1999 to 2004, stage IB1 was most common stage (26.6%), followed by stage IA1 (20.8%). However, about 50% of patients were diagnosed at a loco-regionally advanced stage (≥ IB2). [1] In another study, stage IB1 disease was most common (76.7%), followed by stage IB2 (11.7%) and stage IIA (11.5%) disease. [3]
Treatment	In cervical cancer patients with intermediate-risk factors, chemoradiation was well-tolerated and more effective than radiation as a postoperative adjuvant therapy. The recurrence-free survival rate of the chemoradiation group was significantly higher than that of the radiation group. Hematologic toxicity was more common in the chemoradiation group than in the radiation group ($P<0.01$). However, nonhematologic toxicities were similar between the two groups and most patients (97%) completed postoperative adjuvant therapy. The recurrence patterns were similar between the two groups. [7] Adjuvant chemotherapy alone could be a reasonable option after radical surgery for patients with stage IB–IIA cervical cancer and surgical-pathologic risk factors. [8]
Prognosis	The five-year survival rate in 1993-1995 was 77.5%. After that, five-year survival rate improved to just above 80%. Unlike the expectation, however, five-year survival rate has remained stagnant between 80.0% and 81.2% over the last 15 years. [1] After a median follow-up time of 64.2 months, there were 175 recurrences (8.1%) among 2,158 patients. The recurrence rate was higher in patients who received adjuvant chemotherapy (19.5%, $P<0.05$). Four factors (histology, tumor size, deep stromal invasion [DSI], and lymphovascular space involvement [LVSI]) were significantly associated with disease recurrence and included in the models. [3] The five-year survival rate was 80.3%. [3]
Genetic information	The IVS2 −912GG genotype and IVS2 −912G:IVS4 +314A haplotypes of *IL12B* are associated with increased risks of cervical cancer in Korean women. [9]

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Colorectal Cancer

Incidence	The crude incidence rate and the age-standardized incidence rate per 100,000 was 52.6 and 30.4 in 2015. [1]
Prevalence	The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 433.1 and 248.2 in 2015. [1]
Mortality	The crude mortality rate and the age-standardized mortality rate per 100,000 was 16.3 and 8.5 in 2015. [1]
Gender	During up to seven years of follow-up, 3,051 colorectal cancer incidents were detected in men and 1,093 in women. [2] The age-standardized prevalence rate per 100,000 was 337.9 and 187.4 in adult men and women, respectively (Male:Female=1.5:1) in 2015. [3] Of 341 patients who underwent surgical resection, 203 (60%) were male and 138 (40%) were female. [4]
Age	0-9 years: 2 cases (0.0%), 10-19 years: 42 cases (0.0%), 20-29 years: 410 cases (0.2%), 30-39 years: 3,394 cases (1.5%), 40-49 years: 14,149 cases (6.4%), 50-59 years: 42,621 cases (19.3%), 60-69 years: 62,597 cases (28.4%), 70-79 years: 66,747 cases (30.2%), 80- years: 30,691 cases (13.9%) [3]
Regional distribution	Seoul: 5,055 cases (18.9%), Busan: 2,071 cases (7.7%), Daegu: 1,307 cases (4.9%), Incheon: 1,479 cases (5.5%), Gwangju: 627 cases (2.3%), Daejeon: 713 cases (2.7%), Ulsan: 486 cases (1.8%), Sejong: 96 cases (0.4%), Gyeonggi: 5,687 cases (21.2%), Gangwon: 915 cases (3.4%), Chungbuk: 954 cases (3.6%), Chungnam: 1,266 cases (4.7%), Jeonbuk: 1,203 cases (4.5%), Jeonnam: 1,168 cases (4.4%), Gyeongbuk: 1,728 cases (6.5%), Gyeongnam: 1,689 cases (6.3%), Jeju: 342 cases (1.3%) [3]
Clinical phenotypes/ classification	From 2011 to 2015, the proportion of all tumors with a local stage designation across both sexes was 35.3%; 43.4% were regional stage tumors, and 15.9% were distant stage tumors according to Surveillance, Epidemiology, and End Results (SEER) categorization. [5]
Clinical manifestation	N/A
Risk factor	Greater height was associated with an elevated risk for distal colon cancer and rectal cancer in both men and women. A family history of cancer was associated with higher risk for cancers of the proximal colon in men and distal colon in both men and women. Frequent alcohol consumption and consuming high amounts of alcohol were associated with elevated risk for distal colon cancer in men and higher risk for rectal cancer in women. Frequent meat consumption was associated with a risk for proximal colon cancer in men and for rectal cancer in women. [2]

	In a cross-sectional study of 19,372 consecutive participants aged 20-79 years undergoing screening colonoscopy from January 2006 to June 2009, participants with a family history of colorectal cancer or with a history of colorectal polyps had significantly higher prevalence of adenomas compared to that in participants with an average risk (36.9 vs. 26.9%; age- and sex-adjusted prevalence ratio [aPR] 1.16, 95% CI: 1.09-1.22). [6]
Diagnosis	In a seven year follow-up study of subjects who participated in a health examination provided by the Korean National Health System (KNHS) in 1996-1997, 536 proximal colon cancers, 751 distal colon cancers, and 1,535 rectal cancers were identified in men, and 236 proximal colon cancers, 225 distal colon cancers, and 451 rectal cancers were identified in women. [2]
Treatment	N/A
Prognosis	The five-year survival rate was 70.4% in 2015. [3] Analysis performed on data from 2,230 consecutive patients who underwent resection for colorectal cancer at the Seoul National University revealed an overall five-year survival rate of 62%. In univariate analysis, all factors except for sex, symptom duration, and tumor size were associated with prognosis. Among the factors significant in the univariate analysis, Dukes' stage, number of lymph node metastasis, CEA level, tumor location, gross tumor morphology, and depth of bowel wall invasion were significant in multivariate analysis. Gross tumor morphology was significant only for colon cancer, while histologic differentiation was significant only for rectal cancer. Lymph node metastasis was an independent prognostic variable for both colon and rectal cancer, but its significance was more prominent for rectal cancer. [7]
Genetic information	Comparison of the effect of the homozygous variant (TT) polymorphism with the combined wild-type (CC) and heterozygous (CT) genotypes revealed an inverse relationship between *MTHFR* C677T and colorectal cancer risk (OR: 0.60, 95% CI: 0.46, 0.78 for TT compared to CC/CT). [8]
References	[1] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015. ***Cancer Res Treat.*** (2018) 50(2): 303-316 [2] Site-Specific Risk Factors for Colorectal Cancer in a Korean Population. ***PLoS ONE*** (2011) 6(8): e23196 [3] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015. ***Cancer Res Treat.*** (2018) 50(2): 303-316 [4] Annual report of cancer statistics in Korea in 2015 [5] Characteristics and Survival of Korean Patients with Colorectal Cancer Based on Data from the Korea Central Cancer Registry Data. **Ann Coloproctol.** (2018) 34(4): 212-221

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Endometrial Cancer

Incidence	The incidence of endometrial cancer has increased. The age-standardized rate for endometrial cancer was 2.4/100,000 in 1999 and 4.4/100,000. [1, 2]
Prevalence	According to the statistics of Korean Central Cancer Registry (KCCR), the five-year prevalence was 18.1/100,000 (9,192 cases) in 2014. [3]
Mortality	During 2010-2014, the five-year survival rate of endometrial cancer was 87.9%. [4]
Gender	Not Applicable
Age	Endometrial cancer frequently occurred in middle ages. By 5 year age groups, the highest incidence was observed in age group of 55-59 years (11.1/100,000, 410 cases), followed by age groups of 50-54 years (10.6/100,000, 456 cases), and 60-64 years (8.5/100,000, 214 cases) in 2014. [2]
Regional distribution	N/A
Clinical phenotypes/ classification	Federation of Gynecology and Obstetrics (FIGO) stage : FIGO I (53.9%, n=41), FIGO II (15.8%, n=12), and FIGO III (30.3%, n=23) Grade: 1 (n=29, 38.2%), 2 (n=20, 26.3%), 3 (n=27, 35.5%) [5] FIGO stage distribution of the 95 cases, according to the FIGO staging system were stage Ia (31 cases), stage Ib (34 cases), stage Ic (11 cases), stage IIa (5 cases), stage IIb (2 cases), stage IIIa (4 cases), stage IIIb (no cases), stage IIIc (4 cases), stage IVa (no cases), and stage IVb (4 cases). [6]
Clinical manifestation	Pathology: endometrioid adenocarcinoma (n=70, 92.1%), papillary serous (n=5, 6.6%), and clear cell (n=1, 1.3%). Myometrial invasion: <1/2 (n=32, 42.1), ≥1/2 (n=43, 56.6%) Lymph node status: Positive (22.7%), negative (77.3%) Lymphovascular invasion: positive (n=25, 32.9%), negative (n=50, 65.8%) Resection margin: positive (n=1, 1.3%), negative (n=74, 97.4%). [5]
Risk factor	Menopause age : premenopause (18.7%, n=12), early (less than 50, 40.6%, n=26), late (more than 53, 15.7%, n=10) Hypertension: negative (68.8%, n=44) and positive (22.9%, n=14) Diabetes: negative (79.8%, n=51) and positive (10.9%, n=7) Hormone replacement therapy (HRT): Negative (75%, n=48) and positive (7.8%, n=5) Frequency of pregnancy: less than 1 (15.7%, n=10), 2-4 times (39.1%, n=25), more than 5 (28.1%, n=18) [5]

Diagnosis	Histologically, 89 of the 95 patients had endometrioid type carcinomas, whereas four patients were adenosquamous carcinomas, one adenoacanthoma, and one clear cell carcinoma. [6]
Treatment	All 76 patients were performed radical hysterecotomy. While 34 patients had external beam radiotherapy (EBRT) or intracavitary radiotherapy (ICR) alone, 42 patients had EBRT and ICR. The EBRT delivered to patients as a total dose of 5040 cGy with a daily dose of 180 cGy (total 5 times). The ICR was performed subsequent to EBRT. Total dose of 2000-2400 cGy was delivered, with 400-500 Gy at the vaginal surface 0.5 cm from vaginal surface 3 times per week (total 4-5 times). [5] Of 64 patients, 51 patients had EBRT and 13 patients had EBRT and intracavitary brachytherapy (ICBT). The EBRT was performed on patient with lymphovascular invasion (LVI), endocervical invasion, parametrial invasion and pelvic lymph node (LN) metastasis. A total dose of 50.4-63 Gy (median, 54 Gy) was delivered, with a daily dose of 1.8 Gy. The ICBT was performed subsequent to EBRT. Indications of ICBT were positive surgical margin endocervical invasion. Total dose of 25-40 Gy (median, 30 Gy) was delivered, with 5 Gy at the vaginal surface 0.5 cm from vaginal surface once a day. [7]
Prognosis	The five year overall survival (OS) rates and disease-free survival (DFS) rates were 89.6% and 83.7%, respectively. 5 year OS of FIGO I, II, and III were 96.8%, 91.7%, and 75.7% and 5 year DFS of FIGO I, II, and III were 94.8%, 91.6%, and 59.8% respectively. [5] The median OS was 56 months (range, 7 to 270 months). Two year and five-year OS rates were 68.8% and 58.7%, respectively. The median DFS was 53 months (range, 1 to 268 months). Two-year and five-year DFS rates were 62.5% and 59.2%, respectively. The five-year OS rates of stage I, II, and III were 81.8%, 62.9%, and 37%, respectively. The five-year DFS rates of stage I, II, and III were 82.6%, 63.5%, and 37%, respectively. The five-year OS rates were 65.8% in the group of no lymph node (LN) involvement, 33.3% in the group of pelvic LN involvement and 25% in the group of para-aortic LN involvement, respectively. The five-year OS rates and DFS rates of serosal non-invasion group were 68.9% and 69.3%, respectively. In serosal invasion group, the five-year OS rates and DFS rates were same as 33.3%. [7]
Genetic information	The p53 Pro allele was significantly associated with endometrial cancer with an odds ratio (OR) of 3.56 (95% confidence interval [CI]: 2.10-6.04), while the risk increased to 7.14-fold (95% CI: 2.76-18.45) in postmenopausal women. The homozygote of the Ser allele at codon 31 of p21 showed a significantly increased risk (OR: 2.68, 95% CI: 1.59-4.51) of endometrial cancer as compared with the carriers of the Arg allele, while this risk increased to 3.12-fold (95% CI: 1.23-7.91) in postmenopausal women. [6]

References	[1] Incidence of Cervical, endometrial, and ovarian cancer in Korea, 1999-2010. ***Jorunal of Gynecological oncology*** (2013) 24: 298-302 [2] Korean Statistical Information Service. Incidence, the number of incident patients of specific cancer (61 types), Cancer statistics in Korea (2015). http://kosis.kr/ [3] Korean Statistical Information Service. 5-year prevalence of specific cancer (61 types), Cancer statistics in Korea (2016). http://kosis.kr/ [4] Korean Statistical Information Service. 5-year relative survival of specific cancer (24 types), Cancer statistics in Korea (2015). http://kosis.kr/ [5] The Results of Postoperative Radiotherapy for Endometrial Carcinoma. ***Radiat Oncol J.*** (2007) 25: 93-100 [6] P53 and p21 genetic polymorphisms and susceptibility to endometrial cancer. ***Gynecologic Oncology*** (2004) 93: 499-505 [7] Postoperative radiotherapy for endometrial cancer. ***Radiation Oncology Journal*** (2012) 30: 108-116

Esophagus Cancer

Incidence	The crude incidence rate and the age-standardized incidence rate per 100,000 was 4.7 and 2.7 in 2015. [1]
Prevalence	The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 18.0 and 10.3 in 2015. [1]
Mortality	The crude mortality rate and the age-standardized mortality rate per 100,000 was 3.0 and 1.6 in 2015. [1]
Gender	Of the 9,171 patients of esophagus cancer in 2015, 8,262 (90.1%) were males and 909 (9.9%) were females. (prevalence) [2]
Age	0-9 years: 1 cases (0.0%), 10-19 years: 0 cases (0.0%), 20-29 years: 4 cases (0.0%), 30-39 years: 18 cases (0.2%), 40-49 years: 170 cases (1.9%), 50-59 years: 1,359 cases (14.8%), 60-69 years: 3,103 cases (33.8%), 70-79 years: 3,504 cases (38.2%), 80- years: 1,012 cases (11.0%) [2] Median age: 62 [3]
Histology	There were 918 patients (94.7%, Male:Female=862:56) with Squamous Cell Carcinoma (SCCA) and 27 patients (2.8%, Male:Female=25:2) with esophageal adenocarcinoma. Other cell types of esophageal cancer consisted of adenosquamous carcinoma (n=4, 0.4%), small cell carcinoma (n=2, 0.2%), neuroendocrine carcinoma (n=1, 0.1%) and undifferentiated type (n=17, 1.8%). Of adenocarcinomas, the lesion site of 21 cases was located in the lower esophagus and that of the remaining 6 cases was located in the mid-esophagus. The ratios of adenocarcinoma to SCCA were 10.4% (n=21/201) in the lower esophagus, 1.1% (n=6/529) in the mid-esophagus and 0.0% (n=0/201) in the upper esophagus. Thus, adenocarcinoma was located in the lower esophagus more frequently than in the mid-upper esophagus (P=0.001). [1]
Regional distribution	Seoul: 417 cases (17.2%), Busan: 187 cases (7.7%), Daegu: 113 cases (4.7%), Incheon: 101 cases (4.2%), Gwangju: 58 cases (2.4%), Daejeon: 62 cases (2.6%), Ulsan: 50 cases (2.1%), Sejong: 8 cases (0.3%), Gyeonggi: 419 cases (17.3%), Gangwon: 90 cases (3.7%), Chungbuk: 99 cases (4.1%), Chungnam: 108 cases (4.5%), Jeonbuk: 126 cases (5.2%), Jeonnam: 171 cases (7.1%), Gyeongbuk: 200 cases (8.3%), Gyeongnam: 177 cases (7.3%), Jeju: 34 cases (1.4%) [2]
Clinical phenotypes/ classification	SCCA 96.3%, adenocarcinoma 1.2%, adenosquamous carcinoma 0.8%, unknown 1.6% [3]
Clinical manifestation	N/A

Risk factor	The use of oral bisphosphonate was not associated with an increased risk of esophageal cancer in clinical practice in a large-scale nationwide database. The adjusted hazard ratio for esophageal cancer incidence did not differ statistically between the oral bisphosphonate and comparator groups (0.87, 95% confidence interval [CI]: 0.39-1.98, P=0.743 for IV ibandronate or raloxifene and 0.94, 95% CI: 0.68-1.30, P=0.717 for dual-energy X-ray absorptionmetry). [4] Light drinking, including even one alcoholic drink a day, is associated with increased risks of esophageal, gastric, and colorectal cancer. [5]
Diagnosis	The medical records of patients diagnosed with early esophageal cancer (EEC) between January 1994 and August 2005 at Yonsei University Medical Center were reviewed. Among 888 patients diagnosed with esophageal cancer, 70 (7.9%) were EEC. [6]
Treatment	Among 70 EEC patients, 10 (14.3%) were treated by endoscopic mucosal resection (EMR), and 50 (71.4%) by operation. There were 18 cases (30%) of mucosal lesions and 42 cases (70%) of submucosal lesions. [6]
Prognosis	The five-year survival rate was 24.9%. [2] The five-year overall survival (OS) rate was 84.3%. Comparison of treatment outcomes between EMR-treated and operated groups revealed were no significant differences in complete remission (80% vs. 84%), recurrence (20% vs. 16%), and five-year survival rate (100% vs. 78.3%). [6] The three-year OS rate was 33.6% in all patients. The three-year locoregional recurrence-free survival (LRFS) rate was 33.7%. In multivariate analysis, only pathological stage was a significant independent prognostic factor of both OS and LRFS. The complications at postoperative day 90 included pneumonia (n=9), anastomotic site leakage (n=3), and anastomotic site stricture (n=2). The postoperative 30-day mortality rate was 10.3% (n=4/39); the causes of death among these four patients were respiratory failure (n=3) and myocardial infarction (n=1). [7]

Genetic information	A p53 codon 72 polymorphism was associated with an increased risk of esophageal cancer in a Korean case-control study. Smoking status modified this association. The frequencies of p53 codon 72 polymorphisms (Arg/Arg, Arg/Pro, and Pro/Pro) in esophageal cancer were 39.4%, 45.6%, and 15.0%, respectively, while the frequencies in the controls were 43.2%, 45.6%, and 11.2%, respectively. Compared to the Arg/Arg genotype, the odds ratio (OR) of the Arg/Pro genotype was 1.09 (95% CI: 0.85-1.41) and that of the Pro/Pro genotype was 1.47 (95% CI: 1.02-2.11) for esophageal cancer overall. After adjusting for age, gender, and smoking status, the OR of the Arg/Pro genotype was 1.24 (95% CI: 0.92-1.67) and that of the Pro/Pro genotype was 1.77 (95% CI: 1.15-2.74) for esophageal cancer overall. In never-smokers and ever-smokers, the ORs of the Arg/Pro genotype was 0.59 (95% CI: 0.37-0.95) and 1.39 (95% CI: 1.00-1.91), respectively, and there was a significant difference in the homogeneity test (P=0.011). [8]
References	[1] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015. ***Cancer Res Treat.*** (2018) 50(2): 303-316 [2] Annual report of cancer statistics in Korea in 2015 [3] Comparative Analysis of Patterns of Care Study of Radiotherapy for Esophageal Cancer among Three Countries: South Korea, Japan and the United States. ***The Journal of the Korean society for therapeutic radiology and oncology*** (2008) 26(2): 83-90 [4] Oral Bisphosphonate and Risk of Esophageal Cancer: A Nationwide Claim Study. ***J Bone Metab.*** (2015) 22: 77-81 [5] The relationship between drinking alcohol and esophageal, gastric or colorectal cancer: A nationwide population-based cohort study of South Korea. ***PLoS ONE*** (2017) 12(10): e0185778 [6] Treatment outcomes of 70 cases of early esophageal carcinoma: 12 years of experience. ***Dis Esophagus*** (2007) 20(4): 297-300 [7] Treatment outcomes of neoadjuvant concurrent chemoradiotherapy followed by esophagectomy for patients with esophageal cancer. ***Radiat Oncol J.*** (2015) 33(1): 12–20 [8] p53 codon 72 polymorphism and the risk of esophageal cancer: a Korean case-control study. ***Dis Esophagus*** (2011) 24(8): 596-600

Follicular Lymphoma

Incidence	In general, follicular lymphoma (FL) is the most common indolent form of B-cell lymphoma, accounting for approximately 20-30% of all non-Hodgkin lymphomas. The incidence of non-Hodgkin lymphomas was 9.7/100,000 (4,948 cases). [1]
Prevalence	The five-year prevalence of non-Hodgkin lymphoma was 32.9/100,000 (16,686 cases) from 2009 to 2014. [2]
Mortality	N/A
Gender	Of 343 patients diagnosed with FL, 201 were male (58.6%) and 142 were female (41.4%). [3]
Age	The median age was 53 years, ranging from 16 to 82 years. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	World Health Organization (WHO) grade I (n=50/125), WHO grade II (n=23/125), and WHO grade III (n=46/125). [4]
Clinical manifestation	N/A
Risk factor	N/A
Diagnosis	B symptoms (n=29/330) and bulky lymph nodes defined as > 6 cm at the longest diameter (n=27/324), hemoglobin level (≥12 g/dL, n=254/331), increased LDH and β2-MG. [3]
Treatment	Chemotherapy (n=263), rituximab with CVP (R-CVP) (n=112), rituximab-CHOP (R-CHOP) (n=38), cyclophosphamide (CVP) (n=36), cyclophosphamide (CHOP) (n=64), other (n=13), radiotherapy (n=46), surgery (n=18), watchful waiting (n=15) [3]
Prognosis	From the initial diagnosis, five-year and 10-year overall survival (OS) rates were 100% and 65.2%, respectively. The OS rates from the date of RT start were 100% and 54.9%, respectively. [4]
Genetic information	The Smad signaling pathway [5]
References	[1] Korean Statistical Information Service. Incidence, Cancer statistics in Korea (2015). http://kosis.kr/ [2] Korean Statistical Information Service. 5-year prevalence of specific cancer (61 type), Cancer statistics in Korea (2016). http://kosis.kr/ [3] Clinical features and survival of patients with follicular lymphoma in Korea. ***Clinical Lymphoma, Myeloma, and Leukemia*** (2016) 16: 197-202 [4] Treatment outcomes and clinical relevance of the Follicular Lymphoma International Prognostic Index in Korean follicular lymphoma patients treated with chemotherapy. ***Korean J Intern Med.*** (2016) 31: 560-569 [5] Smad1 expression in follicular lymphoma. ***J Pathol Transl Med.*** (2015) 49: 243-248

Gallbladder and Biliary Tract Cancer

Incidence	The crude incidence rate and the age-standardized incidence rate per 100,000 was 12. 3 and 6.6 in 2015. [1] The age-standardized incidence rate of gallbladder cancer (GBC) in 1999-2013 was 6.1/100,000. [2]
Prevalence	The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 38.2 and 21.1 in 2015. [1]
Mortality	The crude mortality rate and the age-standardized mortality rate per 100,000 was 8.3 and 4.2 in 2015. [1] The age-standardized mortality rates per 100,000 was 4.2 in 1983-2013. [2]
Gender	The age-standardized prevalence rates of GBC in 2014 were 22.3 and 16.5/100,000 in men and women, respectively. Of 19,468 patients diagnosed with GBC and biliary tract cancer in 2015, 9,958 were male (51.2%) and 9,510 were female (48.8%). (prevalence) [3]
Age	20-29 years: 3 cases (0.0%), 30-39 years: 25 cases (0.4%), 40-49 years: 206 cases (3.3%), 50-59 years: 782 (12.5%), 60-69 years: 1,528 cases (24.4%), 70-79 years: 2,300 cases (36.8%), 80- years: 1,407 cases (22.5%) [3] GBC is seen mainly in older people but also develops in younger people. The average age of diagnosis in 2009-2013 was 68 years. More than two out of three people with GBC are 65 years for older at diagnosis. [4].
Regional distribution	Seoul: 969 cases (15.5%), Busan: 548 cases (8.8%), Daegu: 350 cases (5.6%), Incheon: 282 cases (4.5%), Gwangju: 160 cases (2.6%), Daejeon: 156 cases (2.5%), Ulsan: 115 cases (1.8%), Sejong: 15 cases (0.2%), Gyeonggi: 1070 cases (17.1%), Gangwon: 199 cases (3.2%), Chungbuk: 203 cases (3.2%), Chungnam: 277 cases (4.4%), Jeonbuk: 405 cases (6.5%), Jeonnam: 315 cases (5.0%), Gyeongbuk: 489 cases (7.8%), Gyeongnam: 603 cases (9.6%), Jeju: 95 cases (1.5%) (GBC and biliary tract cancer) [3]
Clinical phenotypes/ classification	N/A
Clinical manifestation	Some of the more common symptoms of GBC are: abdominal pain, nausea and/or vomiting, jaundice, and lumps in the belly. The less common symptoms of GBC include: loss of appetite, weight loss, swelling in the abdomen, fever, itchy skin, dark urine, and light-colored greasy stools. [5]

Risk factor	The risk factors include age, sex, geography/ethnicity, gallstones, chronic inflammation, infections, primary sclerosing cholangitis, exposures, obesity, gallbladder polyps, anomalous junction of the pancreaticobiliary duct, and genetics. [6] Up to 95% of GBC are associated with gallstones. Other predisposing factors include gallbladder polyps, gallbladder wall thickening, chronic cholecystitis, porcelain gallbladder, and primary sclerosing cholangitis. [7]
Diagnosis	For treatment planning, it is important to determine if the GBC can be removed by surgery. Tests and procedures to detect, diagnose, and stage GBC are usually done simultaneously. These tests and procedures include physical exam and history, liver function tests, carcinoembryonic antigen (CEA) assay, CA 19-9 assay, blood chemistry studies, CT scan (CAT scan), ultrasound exam, percutaneous transhepatic cholangiography (PTC) , chest x-ray, endoscopic retrograde cholangiopancreatography (ERCP), laparoscopy, and biopsy. [8, 9]
Treatment	The main types of treatments for GBC include surgery, radiation therapy, chemotherapy, and palliative therapy. Although complete surgical resection is the only therapy to afford a chance of cure, en bloc resections of the gallbladder and portal lymph nodes have high morbidity and mortality (similar to bile duct carcinoma). Nodal metastases outside of the regional area (i.e., porta hepatis, gastrohepatic ligament, and retroduodenal area) are not resectable. [8, 9]
Prognosis	The five-year survival rate was 25.1%. [3] The prognosis and treatment options depend on the cancer stage (whether the cancer has spread from the gallbladder), whether the cancer can be completely removed by surgery, the type of GBC, and whether the cancer is newly been diagnosed or has recurred. Treatment may also depend on the age and general health of the patient and whether the cancer is causing signs symptoms. GBC can be cured only if it is found before it has spread, when it can be removed by surgery. If the cancer has spread, palliative treatment can improve patient quality of life by controlling the symptoms and complications. [8, 9]

Genetic information	Overexpression of *p53* was detected in 105 of 164 (64%) de novo carcinomas regardless of size and depth of invasion, while K-ras codon 12 mutations were detected in four of 40 (10%) de novo carcinomas, all of which associated with *p53* overexpression. Thus, there are two distinct genetic pathways in gall-bladder carcinogenesis that is, de novo carcinoma develops from a predominant *p53* alteration with low K-ras mutation, and carcinoma-in-pyloric-gland-type adenoma develops from *p53*- and K-ras alteration. The exact sequence of molecular alteration underlying GBC pathogenesis remains unclear. The genetic determinants in gallbladder carcinogenesis are poorly understood, despite over 1,281 gene mutations having been reported to date. [10]
References	[1] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015. ***Cancer Res Treat.*** (2018) 50(2): 303-316 [2] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2013. ***Cancer Res Treat.*** (2016) 48(2): 436-450 [3] Annual report of cancer statistics in Korea in 2015 [4] Korean Statistical Information Service. Cancer incident cases and incidence rates by age group (2013). http://kosis.kr [5] Primary carcinoma of the gallbladder: a review of 10 years of experience at Tri-Service General Hospital. ***Zhonghua yi xue za zhi*** (1993) 51(3): 193-199 [6] Gallbladder cancer: epidemiology and outcome. ***Clinical Epidemiology*** (2014) 6: 99-109 [7] Epidemiology and Risk Factors of Gallbladder Cancer. ***Korean J Pancreas Biliary Tract*** (2018) 23(1): 7-14 [8] Surgical indications and extent of resection in gallbladder cancer. ***Surg Oncol Clin N Am.*** (2002) 11(4): 985-994 [9] Trimodality therapy for advanced gallbladder cancer. ***Am Surg.*** (2001) 67(3): 277-283 discussion 284 [10] APC, K-ras codon 12 mutations and *p53* gene expression in carcinoma and adenoma of the gall-bladder suggest two genetic pathways in gall-bladder carcinogenesis. ***Pathology International*** (1996) 46(5): 333-340

Gastric Cancer

Incidence	GLOBOCAN 2012 reported that Korea has the highest incidence of gastric cancer in the world (41.8/100,000; 62.3 in men, and 24.7 in women), and it is the second most common cancer in Korea. [1] The crude incidence rate per 100,000 was 57.3 in 2015. [2] While the age-standardized incidence rate has been decreasing, the absolute number of cases is increasing due to the rapid increase in the aging population. [1] The age-standardized incidence rate per 100,000 was 33.8 in 2015. [2]
Prevalence	The crude prevalence rate per 100,000 was 504.4 in 2015. [2] The age-standardized prevalence rate per 100,000 was 291.5 in 2015. [2]
Mortality	The mortality rate has shown a decreasing trend but there has been no significant change in the absolute number of deaths. The age-standardized mortality rate per 100,000 was 19.6 in men and 7.9 in women (similar to the rate in Japan) according to GLOBOCAN 2012. [1] The crude mortality rate per 100,000 was 16.7 in 2015. [2] The age-standardized mortality rate per 100,000 was 8.9 in 2015. [2]
Gender	The male-to-female ratio was 2.07:1. [1]
Age	Among those aged 20-79 years, the average annual percent changes were -0.2% in men and -0.4% in women, but the change slowed and instead increased in patients aged 40-54 years (0.2% in men, 1.7% in women). [1] Incident (%): 10-19: 4 cases (0.0), 20-29: 29 cases (0.3), 30-39: 780 cases (2.7), 40-49: 2,965 cases (10.2), 50-59: 6,611 cases (22.6), 60-69: 7,861 cases (26.9), 70-79: 7,656 cases (26.2), over 80: 3,255 cases (11.1) [3]
Regional distribution	Seoul: 4,937 cases (16.9%), Busan: 2,291 cases (7.8%), Daegu: 1,398 cases (4.8%), Incheon: 1,432 cases (4.9%), Gwangju: 761 cases (2.6%), Daejeon: 890 cases (3.0%), Ulsan: 576 cases (2.0%), Sejong: 112 cases (0.4%), Gyeonggi: 5,915 cases (20.3%), Gangwon: 1,036 cases (3.5%), Chungbuk: 1,048 cases (3.6%), Chungnam: 1,603 cases (5.5%), Jeonbuk: 1,272 cases (4.4%), Jeonnam: 1,470 cases (5.0%), Gyeongbuk: 2,026 cases (6.9%), Gyeongnam: 2,137 cases (7.3%), Jeju: 303 cases (1.0%) [3]
Clinical phenotypes/ classification	Due to the increase in individual health check-up and the National Cancer Screening Program, the diagnosis of early gastric cancer (EGC) is increasing. The portions of EGC patients who underwent curative resection were 28.6%, 32.8% and 47.4% in 1995, 1999, and 2004, respectively. [1]
Clinical manifestation	N/A
Risk factor	Family history, *helicobactor pylori* infection, and smoking [1]

Diagnosis	Stomach cancer checkups have been included as part of the National Cancer Screening Program since 1999. Biannual endoscopy and upper gastrointestinography have been performed for adults aged 40 years and more. In 2013, 73.6% of patients participated in the screening. The rate of upper gastrointestinography examinations was 57% in 2007. The sensitivity of endoscopy is 69-84% and it is more sensitive for the detection of distal metastasis invasive advanced gastric cancer than for non-invasive locally advanced gastric cancer. Of 18,414 subjects who had medical checkups in a single center from 2001 to 2007, 81 (0.44%) were diagnosed with gastric cancer, 80% of which were EGC. [4]
Treatment	Among 10,783 consecutive patients who underwent surgery for gastric cancer at a single center from 1970 to 1996, 9,058 patients (84.0%) underwent resection. Immunochemotherapy was the most effective postoperative adjuvant therapy in patients with stage III disease. [4]
Prognosis	The five-year survival rates were 32.8% in 1995-1999 and 57.9% in 2005-2009, similar to the reported rates in Japan. [1] The survival and prognostic factors for 9,262 consecutive patients operated from 1981 to 1996 were evaluated. The five-year survival rates were 55.9% for all patients and 64.8% for patients who received curative resection. Curative resection, depth of invasion, and lymph node metastasis were the most significant prognostic factors in gastric cancer. With regard to the status of lymph node metastasis, the ratio of involved to resected lymph nodes had a more precise and comprehensive prognostic value than only the number of involved resected lymph node. Early detection and curative resection with radical lymph node dissection, followed by immunochemotherapy, particularly in patients with stage III gastric cancer should be the standard treatment in principle, for patients with gastric cancer. [4]
Genetic information	*IL-1B-511, IL-1RN,* and *IL-2* polymorphisms were not important contributors to the pathogenesis of gastric ulcers, gastric cancers, and duodenal ulcers in Korean patients. [5]
References	[1] Epidemiology and screening of gastric cancer in Korea. ***J Korean Med Assoc.*** (2015) 58(3): 183-190 [2] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015 [3] Annual report of cancer statistics in Korea in 2015 [4] Clinicopathologic characteristics and prognostic factors in 10783 patients with gastric cancer. ***Gastric cancer*** (1998) 1(2): 125-133 [5] Polymorphisms of Interleukin-1 and Interleukin-2 Genes in Patients With Gastric Cancer in Korea. ***J Gastroenterol Hepatol.*** (2008) 23(10): 1567-1573

Gastrointestinal Stromal Tumors (GIST)

Incidence	There were 1,233 cases of malignant gastrointestinal stromal tumors (GISTs) in the National Cancer Institute Registry from 1999 to 2005. There was a shift in GIST incidences between 1999 and 2002 (crude incidence rate: 0.02 to 0.24) and from 2003 to 2005 (0.6 to 0.75). [1] We collected pathology reports of 1,227 GISTs from 38 hospitals in Korea between 2003 and 2004. The incidence of GISTs in Korea was 1.6 to 2.2/100,000. [1]
Prevalence	N/A
Mortality	During the follow-up period, 102 patients died because of GISTs. Most GISTs which caused mortality were malignant (80.4%) or high-risk (66.7%). However, 1.8% of benign or uncertain malignant tumors and 6.9% of very low-risk, low–risk, or intermediate risk tumors led to mortality. In the same risk group based on NIH criteria, the incidence of patients, who died of the disease, was higher for those with small intestinal and extra-gastrointestinal GISTs than that of gastric ones. Malignant GISTs according to AFIP criteria also demonstrated a higher mortality rate. [1]
Gender	Male to female ratio was 1 to 1.7. In general, there was a male preponderance of patients. Esophageal, large intestinal, and extra-gastrointestinal GISTs were more common in men than in women, but gastric GISTs were more common in women (P=0.027). [1]
Age	The patient age ranged from 11 to 86 years (mean 57.83±12.62). Five (0.4%) patients were in their first decade, and 20 (1.6%), 87 (7.1%), 200 (16.3%), 302 (24.6%), 382 (31.1%), 210 (17.1%), and 21 (1.7%) in their second, third, fourth, fifth, sixth, seventh, and eights decades, respectively. The incidence of gastric GIST was slightly increased in those older than 60 years, in contrast to decreases in the incidence of the small intestinal GISTs. However, the tumor location was not significantly to patient age (P=0.083). [1]
Regional distribution	N/A
Clinical phenotypes/ classification	The most frequent tumor location was the stomach (63%), followed by the small intestine (30%), colorectum (5%), and esophagus (2%). [1]
Clinical manifestation	N/A
Risk factor	CD34 positivity for was correlated with a higher risk of GISTs (P=0.04). [1]
Diagnosis	Extra-gastrointestinal GISTs (8.3-8.7%) were more common than esophageal GISTs (0.7-1.1%) in a population-based registry. In pathology reports from 38 hospitals during 2003-2004, the most common tumor location was the stomach. The extra-gastrointestinal locations include the omentum and mesentery (45.1%), followed by the pelvis (9.8%), intra-abdominal (34.3%), retroperitoneum (3.9%), abdominal wall (3.9%), and pancreas (3%). Almost all GISTs with immunostaining results were c-kit-positive (96.2%).

	One hundred cases (8.2%: three in the esophagus, 85 in the stomach, eight in the small intestine, and one each in the large intestine and extra-gastrointestinal) were incidentally found during operations for other diseases. [1]
Treatment	During the follow-up study period, 58 primary GIST patients died, 20 of whom had recurrent or metastatic disease at the time of diagnosis. [1] Wedge resection (n=726, 82.8%) was the most common operative method, and laparoscopic surgery was performed in 388 patients (44.2%). Only one patient (0.1%) died within 30 days of surgery. A total of 115 patients with GISTs (n=115/544, 21.1%) had a high risk of malignancy and 41 patients (n=45/495, 8.3%) received adjuvant imatinib mesylate therapy. [2]
Prognosis	In the collected pathology reports, GISTs were classified by NIH (55.4%), AFIP (41.7%), and other (2.9%) criteria. About half of the GISTs were malignant according to the AFIP criteria. Benign tumors were common in the stomach in contrast to malignant tumors which were more common in the intestinal and extra-gastrointestinal areas (P=0.000). High-risk tumors, as classified by the NIH criteria, were also more common in the small and large intestinal and extra-gastrointestinal locations than in stomach (P=0.001). Most extra-gastrointestinal tumors were malignant (88.6%) or high-risk (72.1%). [3]
Genetic information	The overall c-kit mutation frequency was 74%. Histologically, tumors with c-kit mutations showed higher mitotic counts and higher cellularity. The five-year relapse-free survival in patients with GISTs with c-kit mutations was 21%, compared to 60% in those without c-kit mutations. Significantly higher relapse-free survival (RFS) rates were observed in patients with tumors having <5 mitoses/50 high-power fields, spindle-cell histology, tumor size <5 cm, or gastric GISTs. Multivariate analyses indicated an association between poorer RFS and a higher mitotic count (>5/50 high-power fields, OR: 3.0), presence of c-kit mutations (odds ratio [OR]: 5.6), and larger tumor size (>5 cm, OR: 4.2). [4]
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Head and Neck Cancer

Incidence	In a nation-wide survey in 2001, the number of head and neck cancer (HNC) patients was 1,063 cases in the year. [1] The incidence of lip (0.07–0.10/100,000) and oropharyngeal cancer (0.09–0.12/100,000) remained low during the study period while laryngeal cancer (1.17–2.08/100,000) occurred most frequently. The incidence of oral tongue, major salivary gland, tonsil, and hypopharynx increased steeply compared to other HNCs between 1999 and 2012. [2]
Prevalence	N/A
Mortality	N/A
Gender	5:1-Male patients accounted for 83.7% with 890 cases. The distribution by the primary site is as below. 1) Laryngeal cancer = 15.9:1 2) Oral cavity cancer: 1.8:1 3) Nasopharyngeal cancer=2.5:1 4) Oropharyngeal cancer=4.6:1 5) Hypopharyngeal cancer=49.5:1 6) Paranasal sinuses cancer=2.5:1 7) Nasal cavity cancer=1.8:1 Larynx cancer in a male patient group (51.6%) and oral cavity (36.4%) cancer in a female patient group occupied the highest distribution respectively. [1] Male-to-female ratio was over 1.0 for all HNCs. Tonsil, hypopharynx, oropharynx, and larynx cancers had a ratio of >5.0, signifying a heavy predominance of these cancers in Korean men. [2]
Age	The age distribution of all patients ranged from 8 to 91 year with the average of 60.3 year, and the seventh decade occupied the highest frequency of 36.2%. (total) 60-69: 36.2%, 50-59: 25.0%, 70-79: 18.2%. The highest age distribution according to primary site is as below: 1) Laryngeal cancer = 60-69 year: 41.8% 2) Oral cavity cancer= 60-69 year: 25.7% 3) Nasopharyngeal cancer= 60-69 year: 29.7% 4) Oropharyngeal cancer= 50-59 year: 33% 5) Hypopharyngeal cancer= 60-69 year: 49.5% 6) Paranasal sinuses cancer = 60-69 year: 28.3% 7) Nasal cavity cancer= 50-59 year: 32.1% [1]

Regional distribution	Seoul: 669 cases (20.2%), Busan: 246 cases (7.4%), Daegu: 166 cases (5.0%), Incheon: 156 cases (4.7%), Gwangju: 71 cases (2.1%), Daejeon: 89 cases (2.7%), Ulsan: 53 cases (1.6%), Sejong: 7 cases (0.2%), Gyeonggi: 743 cases (22.5%), Gangwon: 117 cases (3.5%), Chungbuk: 88 cases (2.7%), Chungnam: 164 cases (5.0%), Jeonbuk: 138 cases (4.2%), Jeonnam: 144 cases (4.4%), Gyeongbuk: 195 cases (5.9%), Gyeongnam: 220 cases (6.6%), Jeju: 43 cases (1.3%) [3]
Clinical phenotypes/ classification	N/A
Clinical manifestation	N/A
Risk factor	The patients who had smoking history accounted for 41.3% of total with 439 cases. Among HNCs, especially hypopharynx and larynx cancers, patients showed the high percentage of 61.4% and 50.0% in smoking history. These two primary site cancers had statistically significant relationships with smoking than other primary sites had (Pearson chi-square, P<0.01). The patients who had more than moderate level of drinking history were numbered at 248 cases, which was equivalent to 23.3% of all. Hypopharynx and larynx cancers also had the high percentage of 42.6% and 26.4% in drinking history, which also could explain statistically significant relationships between those two cancers and alcohol abuse (Pearson chi-square, P<0.01), just as with smoking history. [1]
Diagnosis	In a nation-wide survey, of 1,063 newly identified HNC patients, the portion of primary sites was as below; 1) Laryngeal cancer: 45.9% - glottic cancer 42.4%, supraglottic 29.5%, transglottic 26.4%, subglottic 1.6% 2) Oral cavity cancer: 16.5% - oral tongue 49.7%, floor of mouth 20%, buccal mucosa 8%, hard palate 4.6%, retromolar trigon 3.4% 3) Oropharynx:10.0% - tonsil 43.4%, tongue base 21.7%, soft palate 19.8% 4) Hypopharynx: 9.5% - pyriform sinus 76.2%, postcricoid 14.9%, post. pharyngeal wall 8.9% 5) Nasopharyngeal cancer:7% - posterolateral wall 66.2%, lateral wall 17.6%, inferior wall 16.2% 6) Paranasal sinuses cancer:4.3% - maxillary sinus 80.4%, sphenoid sinus 10.9%, ethmoid sinus: 8.7% 7) Nasal cavity cancer: 2.6% [1]

Treatment	As for the treatment modality, the cases that treated with surgery, radiotherapy, and chemotherapy accounted for the highest frequency of 21.8% with 207 cases. Next, only surgery cases of 21.5%, and surgery with radiotherapy cases of 20.8% were followed in order. The highest distribution by treatment modality according to primary site: 1) Laryngeal cancer: surgery only 28.2%, radiotherapy only 22.0% 2) Oral cavity cancer: surgery only 40.7%, surgery with radiotherapy 25.3% 3) Nasopharyngeal cancer: surgery with radiotherapy 29.4%, radiotherapy and chemotherapy 20.6%, radiotherapy 19.1% 4) Oropharyngeal cancer: surgery with radiotherapy and chemotherapy 37.9%, surgery and radiotherapy 25.3% 5) Hypopharyngeal cancer: surgery with radiotherapy and chemotherapy 43.2%, surgery with radiotherapy 14.8% 6) Paranasal sinuses cancer: surgery and radiotherapy 37.0%, radiotherapy 30.4% 7) Nasal cavity cancer: surgery 18.5%, chemotherapy 18.5%. [1]
Prognosis	The five-year survival rate was 56.4%. [3]
Genetic information	The associations between genetic polymorphisms in the xenobiotics metabolizing gene, alcohol metabolizing gene and DNA repair genes and the risk of head and neck squamous cell carcinoma (HNSCC) were analyzed: ADH1B +3170A>G His48Arg and XRCC1 R194W (C>T) polymorphism are associated with an increased risk of HNSCC. [4] Of 240 papillary thyroid carcinoma patients, 207 (86.3%) had at least one genetic alteration, including *BRAF* mutation in 190 patients (79.2%), *PIK3CA* mutation in 25 patients (10.4%), *NTRK1/3* fusion in six patients (2.5%), and *RET* fusion in 24 patients (10.0%). [5]
References	[1] Epidemiologic Survey of Head and Neck Cancers in Korea. ***J Korean Med Sci.*** (2003) 18: 80-87 [2] Head and Neck Squamous Cell Carcinoma: Genetic Polymorphisms and Occurrence Risks. ***Hanyang Med Rev.*** (2013) 33: 170-177 [3] Annual report of cancer statistics in Korea in 2015 [4] Trends of human papillomavirus-related head and neck cancers in Korea: National cancer registry data. ***Laryngoscope*** (2013) 123(11): E30-37 [5] Trends in head and neck cancer in South Korea between 1999 and 2012. ***Clinical and Experimental Otorhinolaryngology*** (2016) 9(3): 263-269

Kidney Cancer

Incidence	The number of cases has continued to increase, from 1,402 cases in 1999 to 3,989 cases in 2011, a total of 32,600 cases during this period. The age-standardized incidence rate per 100,000 increased from 3.0 in 1999 to 5.6 in 2011, with an annual percent change (APC) of 6.0 for both sexes. [1] The crude incidence rate and the age-standardized incidence rate per 100,000 was 8.9 and 5.7 in 2015. [2]
Prevalence	The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 69.3 and 43.5 in 2015. [2]
Mortality	The crude mortality rate and the age-standardized mortality rate per 100,000 was 1.9 and 1.0 in 2015. [2]
Gender	From 1999 to 2011, the male to female ratio was 2.2:1. It declined from 2.6:1 (1999) to 2.4:1 (2011). [1]
Age	Increased rapidly in the 40- to 44-year-old age group and then dropped sharply after 75 to 79 years of age. The distribution according to age showed two peaks in the 50- to 54- and 65- to 69-year-old age groups. [1] Mean age at diagnosis with kidney cancer was 56.36. [3] Incident: 0-9: 35 cases (0.8%), 10-19: 7 cases (0.2%), 20-29: 50 cases (1.1%), 30-39 275 cases (6.0%), 40-49: 612 cases (13.4%), 50-59: 1,262 cases (27.7%), 60-69: 1,150 cases (25.2%), 70-79: 872 cases (19.1%), over 80: 294 cases (6.5%) [4]
Regional distribution	Seoul: 863 cases (18.9%), Busan: 338 cases (7.4%), Daegu: 215 cases (4.7%), Incheon: 264 cases (5.8%), Gwangju: 120 cases (2.6%), Daejeon: 129 cases (2.8%), Ulsan: 96 cases (2.1%), Sejong: 10 cases (0.2%), Gyeonggi: 1,046 cases (23.0%), Gangwon: 161 cases (3.5%), Chungbuk: 153 cases (3.4%), Chungnam: 181 cases (4.0%), Jeonbuk: 178 cases (3.9%), Jeonnam: 182 cases (4.0%), Gyeongbuk: 265 cases (5.8%), Gyeongnam: 300 cases (6.6%), Jeju: 54 cases (1.2%) [4] The APC was higher in Korean men (5.7) and women (6.0) than those in American men (1.9) and women (2.3). [1]
Clinical phenotypes/ classification	Clear cell renal cell carcinoma (RCC) accounted for 86.3%, papillary RCC for 7.3%, chromphobe RCC for 6.16%, collecting duct RCC for 0.25%. [5]
Clinical manifestation	N/A

Risk factor	Hypertension is an independent risk factor for kidney cancer mortality (relative risk [RR]: 2.43). After stratification of smoking status, the RR of hypertension in kidney cancer was still increased in current smokers (RR: 2.80). For current smokers, those with systolic blood pressure ≥160 mmHg had an 8.18-flod increased risk of kidney cancer (95% confidence interval [CI]: 3.13-21.36) compared to that than those with a blood pressure below 120 mmHg. There was no significant synergistic effect of hypertension with current smoking on the risk of death from kidney cancer. Hypertension (RR: 2.43) and current smokers (RR: 2.80) [6]
Diagnosis	Collecting duct carcinoma (CDC) of the kidney is an aggressive disease with a poor prognosis that accounts for less than 1% of all renal cancers. From 1996 to 2009, 35 patients with CDC were treated at eight medical centers. The diagnosis of CDC was made based on nephrectomy in 27 cases and renal biopsy in eight cases. [7]
Treatment	Twenty-seven of the 35 CDC patients underwent nephrectomy for initial treatment (curative surgery in 17, and palliative in 10), three patients received chemotherapy, and four patients did not receive any treatment. Palliative chemotherapy was administered to 22 patients, including of eight of 14 relapsed patients, eight of 10 patients with stage IV disease who underwent palliative surgery, and four patients who did not undergo an operation. [7] Surgery 32,688 (81.02%), radiation 1,343 (3.33%), chemotherapy 3,545 (8.79%) [3]
Prognosis	For clear cell RCCs, statistically significant associations were found between overall survival (OS) and sex (P=0.0153), multiplicity (P=0.0461), necrosis (P=0.0191), age, sarcomatoid change, TNM stage, nuclear grade, and modality of treatment (all P<0.0001). OS was also significantly associated with tumor size (P=0.0307), nuclear grade (P=0.0235), multiplicity, sarcomatoid change, and TNM stage (all P<0.0001) in papillary RCCs and with the presence of sarcomatoid change (P=0.0281), nuclear grade (P=0.0015), treatment modality (P=0.0328), and TNM stage (P<0.0001) in chromophobe RCCs. Age (P=0.0125), nodal stage (P=0.0010), and treatment modality (P=0.0001) were significant independent prognostic indicators for clear cell RCC in multivariate analysis. [5] Among CDC patients, the OS of patients with stages I-III disease was 69.9 months, while that of patients with stage IV disease was 8.6 months (P=0.01). Among patients with stage IV disease, the OS of those who received a palliative treatment (immunotherapy, chemotherapy, or targeted therapy) was 18.4 months, higher than the OS of patients without treatment (4.5 months). [7] Survival time (year): 1 year 86.3, 2 year 80.5, 3 year 76.9, 4 year 74.0, 5 year 71.8, 7 year 67.8, 10 year 63.1, 15 year 55.9, 19 year 50.6 [3]

Genetic information	N/A
References	[1] Incidence of kidney, bladder, and prostate cancers in Korea: An update. ***Korean J Urol.*** (2015) 56(6): 422-428 [2] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015 [3] Second Primary Cancer Risk among Kidney Cancer Patients in Korea: A Population-Based Cohort Study. ***Cancer Res Treat.*** (2018) 50(1):293-301 [4] Annual report of cancer statistics in Korea in 2015 [5] Renal cell carcinoma in South Korea: a multicenter study. ***Hum Pathol.*** (2004) 35(12): 1556-1563 [6] The effect of hypertension on the risk for kidney cancer in Korean men. ***Kidney International*** (2005) 67(2): 647-652 [7] Clinical Features and Treatment of Collecting Duct Carcinoma of the Kidney from the Korean Cancer Study Group Genitourinary and Gynecology Cancer Committee. ***Cancer Res Treat.*** (2014) 46(2): 141-147

Liver Cancer

Incidence	The crude incidence rate and the age-standardized incidence rate per 100,000 was 30.9 and 18.2 in 2015. [1] The incidences of liver cancer among Korean men and women declined between 1999 (48.5/100,000 and 12.6/100,000) to 2010 (37.1/100,000 and 10.4/100,000). The reason for the declining incidence appears secondary to decreased hepatitis B virus (HBV) infection, which is the leading risk factor for hepatocellular carcinoma (HCC), due to the successful implementation of HBV vaccination since 1983. [2]
Prevalence	The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 120.3 and 73.5 in 2015. [1]
Mortality	The crude mortality rate and the age-standardized mortality rate per 100,000 was 22.2 and 12.6 in 2015. [1] The five-year survival rate in Korea is relatively lower than that for other cancers. Nonetheless, it has gradually improved from the early 1990s (10.7%) to the late 2000s (26.7%). [2]
Gender	The HCC incidence rates in Korea are more than twice higher for males than females. [2] Of a total of 32,600 cases from 1999 to 2011, 22,313 were males and 10,287 were females, resulting in a male-to-female predominance ratio of 2.2:1. [1]
Age	The mean age was 59.4 year. [3] Incident: 0-9: 21 cases (0.1%), 10-19: 6 cases (0.0%), 20-29: 19 cases (0.1%), 30-39 274 cases (1.7%), 40-49: 1,629 cases (10.3%), 50-59: 4,268 cases (27.1%), 60-69: 4,091 cases (26.0%), 70-79: 3,759 cases (23.9%), over 80: 1,690 cases (10.7%) [4]
Regional distribution	In 2014, the age-standardized incidence rate was highest in Jeju (27.4/100,000), followed by Jeonnam (25.7/100,000) and Gyeongnam (25.2/100,000). A nationwide study indicated higher rates of hepatitis B surface antigen (HBsAg)-positivity in Jeju, Jeonnam, Gwangju, Busan and Gyeongnam. Another nationwide survey reported higher rates of anti-HCV positivity in Jeonnam, Busan, Gyeongbuk and Gyeongnam. Higher seropositivity might partly contribute to the higher incidence of liver cancer; however, other possibilities remain to be elucidated. [5] Seoul: 2,656 cases (16.9%), Busan: 1,379 cases (8.8%), Daegu: 669 cases (4.2%), Incheon: 749 cases (4.8%), Gwangju: 417 cases (2.6%), Daejeon: 375 cases (2.4%), Ulsan: 348 cases (2.2%), Sejong: 38 cases (0.2%), Gyeonggi: 3,117 cases (19.8%), Gangwon: 595 cases (3.8%), Chungbuk: 491 cases (3.1%), Chungnam: 597 cases (3.8%), Jeonbuk: 688 cases (4.4%), Jeonnam: 965 cases (6.1%), Gyeongbuk: 1,054 cases (6.7%), Gyeongnam: 1,381 cases (8.8%), Jeju: 234 cases (1.5%) [4]

Clinical phenotypes/ classification	ChildTurcottePugh class: A (71.6%), B (23.4%), C (5.0%) [3] BCLC stage: 0 (8.1%), A (41.5%), B (11.3%), C (33.0%), D (6.2%) [5]
Clinical manifestation	N/A
Risk factor	HBV (62.5%) and HCV (9.9%) [5] Among the major risk factors, chronic HBV infection is the most common risk factor for the development HCC, with approximately 65%-75% of HCC cases positive for HBsAg. Chronic HCV infection was the second most common cause for the development of HCC, accounting for an estimated 11.2%-13.2% of all cases. Other, probably compound, risk factors included heavy alcohol consumption, cigarette smoking, and a family history of HCC. [1] The annual detection rate of HCC in patients with chronic liver disease was 1.64-4.2%. Liver cirrhosis, irrespective of etiology, is the most important and independent risk factor for the development of HCC. Seventy-three to 85% of patients with HCC have liver cirrhosis. In addition to liver cirrhosis, HBV, HCV, and alcohol are major risk factors for HCC in Korea. Several studies conducted in Korea reported HBsAg positivity in 68.8-78.6% of patients with HCC, anti-HCV positivity in 3.2-12.4%, both in 0.2-1.4%, alcohol abuse in 3.1-4.9%, and cryptogenic underlying liver disease in 5.6-10.3% of cases. HBV-HCV-related cirrhosis was more frequently complicated by HCC than alcoholic cirrhosis with five-year cumulative incidences in each group of 24, 28, and 5%, respectively. Hepatitis B viral load itself is also a risk factor for the post-treatment recurrence of HCC. [6] HBV infection (74%), HCV infection (9%), and alcohol consumption (7%) [7]
Diagnosis	Approximately 60% or more of patients had preserved liver function (Child-Turcotte-Pugh class A). A substantial proportion of patients with HCC are diagnosed at an advanced stage. More than 35% of patients had Barcelona Clinic Liver Cancer C or D stage tumors at the time of diagnosis. [5]
Treatment	In a retrospective study the of tumor stage at the time of diagnosis in 2,241 HCC patients who were treated at a single tertiary academic hospital in Korea over an 18-year period, 8.3% were diagnosed at stage I, 29.2% at stage II, 28.9% at stage III, and 33.6% at stage IV based on the modified International Union Against Cancer staging system and 10.7%, 43.4%, 27.7% and 18.2% based on modified TNM stage by Liver Cancer Study Group of Japan [LCSGJ] in another study. More than half of HCC patients (62.5%) were diagnosed at advanced stages, including stages III and IV. Only a small proportion of HCC patients can receive curative treatments including surgical resection and liver transplantation (LT). [2]

	Liver resection is the most preferred treatment modality for resectable HCCs in patients with well-preserved liver function. The five-year survival rate after curative resection is 40~50%, but five-year recurrence rate is 75-100%. The high recurrence rate is a challenge in patients with HCC who undergo liver resection. Various factors affect the recurrence of HCC after resection. In metastatic HCC, metastasectomy with concurrent resection or local treatment for primary HCC was reported to be superior to medical treatment alone or conservative management. Neoadjuvant chemotherapy (NAC) and AC for HCC, previously considered inefficient, are now being reappraised as potential treatment modalities with following methodological advances in these fields. Neoadjuvant chemoradiation therapy following surgery for unresectable HCC met with satisfactory results. Minimal invasive surgery has also been introduced to the field of liver resection for HCC and is being developed as robotic surgery. Liver transplantation is feasible but it is usually restricted to cases of unresectable HCC meeting the Milan criteria. Transcatheter arterial chemoembolization (TACE) is the treatment modality applied most frequently to patients with HCC in Korea. Percutaneous ethanol injection therapy (PEIT) and radiofrequency ablation (RFA) are generally accepted to be effective locoregional ablation therapies in HCC less than 3 cm in size and less than 4 in number. Antiviral therapy has beneficial effects for aspects of on-treatment liver function and post-treatment recurrence in patients with HBV-related HCC. [6] Resection (15.6%), local ablation (11.0%), transplantation (0.7%), transarterial therapy (46.1%), systemic therapy (4.1%), radiotherapy (1.3%), and supportive care (21.2%) [5]
Prognosis	The survival of HCC patients remains very poor. In a recent report from the National Cancer Center Hospital, the one-, two-, three-, and four-year survival rates were 53.8%, 40.0%, 31.4%, and 25.7%, respectively, and the overall median survival period was 14.3 months. The survival rates differed between subgroups according to the degree of the remaining hepatic reserve (Child-Pugh grade), tumor stage (modified 5th UICC TNM staging), and treatment modalities. [6] The annual report of cancer statistics showed a survival gain of primary liver cancer over the last two decades. For patients diagnosed with liver cancer between 2010 and 2014, the five-year relative survival rate markedly increased from 10.7% to 32.8%, compared to that in patients who were diagnosed between 1993 and 1995. [5]

Genetic information	The association of miRNA polymorphisms with HCC survival was analyzed in 159 HCC patients and 201 controls by tPCR-RFLP analysis. The risk of HCC was significantly lower for miR-499A>G, AG+GG in HCC (adjusted odds ratio [OR]: 0.603, 95% confidence interval [CI]: 0.370-0.984) and HBV-related HCC patients (adjusted OR: 0.561, 95% CI: 0.331-0.950). In addition, the risk of HCC was significantly lower for the miR-149C>T, CT and CT+CC in HCC patients (CT adjusted OR: 0.542, 95% CI: 0.332-0.886, CT+CC adjusted OR: 0.536, 95% CI: 0.335-0.858) and HBV-related HCC patients (CT: adjusted OR: 0.510, 95% CI: 0.305-0.854, CT+CC: adjusted OR: 0.496, 95% CI: 0.302-0.813). The miR-149C>T polymorphism was also associated with the survival rate of HCC patients with OKUDA II stage. [8]
References	[1] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015 [2] Status of hepatocellular carcinoma in South Korea. ***Chin Clin Oncol.*** (2013) 2(4): 39 [3] Temporal Improvement in Survival of Patients with Hepatocellular Carcinoma in a Hepatitis B Virus-Endemic Population. ***J Gastroenterol Hepatol.*** (2018) 33(2): 475-483 [4] Annual report of cancer statistics in Korea in 2015 [5] Epidemiology of liver cancer in South Korea. ***Clin Mol Hepatol.*** (2018) 24(1): 1-9 [6] Current status of liver diseases in Korea: Hepatocellular carcinoma. ***Korean J Hepatol.*** (2009) 15(Suppl 6): S50-S59 [7] Trends of liver cancer and its major risk factors in Korea. ***Epidemiology and Health*** (2015) 37:e2015016 [8] Association study of microRNA polymorphisms with hepatocellular carcinoma in Korean population. ***Gene*** (2012) 504(1): 92-97

Lung Cancer

Incidence	A total of 713 patients were diagnosed with lung cancer at a single site between 2006 and 2008. [1] The crude incidence rate and the age-standardized incidence rate per 100,000 was 47.6 and 26.4 in 2015. [2]
Prevalence	The crude prevalence and the age-standardized prevalence rate per 100,000 was 137.2 and 78.7 in 2015 [2]
Mortality	The crude mortality rate and the age-standardized mortality rate per 100,000 was 34.1 and 17.9 in 2015 [2]
Gender	The male-to-female ratio was 2.7:1. [1] Of 69,931 patients diagnosed with lung cancer in 2015, 43,987 were male (62.9%) and 25,944 were female (37.1%, prevalence). [2]
Age	67.8 years (median), 50-59 (15%), 60-69 (31.3%), 70-79 (34.6%) from the Korea Central Cancer Registry [3] Incident: 0-9: 4 cases (0.0%) 10-19: 4 cases (0.0%), 20-29: 28 cases (0.1%), 30-39: 198 cases (0.8%), 40-49: 930 cases (3.8%), 50-59: 3,620 cases (14.9%), 60-69: 6,513 cases (26.8%), 70-79: 8,778 cases (36.2%), over 80: 4,192 cases (17.3%) [4]
Regional distribution	Seoul: 4,246 cases (17.5%), Busan: 1,697 cases (7.0%), Daegu: 1,195 cases (4.9%), Incheon: 1,195 cases (4.9%), Gwangju: 571 cases (2.4%), Daejeon: 644 cases (2.7%), Ulsan: 465 cases (1.9%), Sejong: 90 cases (0.4%), Gyeonggi: 4,769 cases (19.7%), Gangwon: 932 cases (3.8%), Chungbuk: 949 cases (3.9%), Chungnam: 1,231 cases (5.1%), Jeonbuk: 1,115 cases (4.6%), Jeonnam: 1,363 cases (5.6%), Gyeongbuk: 1,790 cases (7.4%), Gyeongnam: 1,745 cases (7.2%), Jeju: 270 cases (1.1%) [4]
Clinical phenotypes/ classification	Male (%), Female (%): 1) Squamous cell carcinoma (30.9%, 7.0%) 2) Adenocarcinoma (32.9%, 61.8%) 3) Small cell carcinoma (13.3%, 6.1%) 4) Large cell carcinoma (1.5%, 1.1%) 5) Other specified carcinomas (8.5%, 6.0%) 6) Sarcoma (0.2%, 0.1%) 7) Other specified cancer (0.1%, 0.1%) 8) Unspecified cancer (12.7%, 17.8%) [3]
Clinical manifestation	N/A

Risk factor	Smoking overall, lung cancer in never-smokers, environmental tobacco smoke, air pollution, chronic pulmonary disease, and molecular epidemiology [5]
Diagnosis	Bronchoscopic biopsywashing (43.3%), percutaneous biopsy (33.6%), pleural effusion (8.4%), mediastinoscopy (5.7%), open lung biopsy (3.8%), and pleural biopsy (1.8%) [1]
Treatment	Surgery (9.8%), concurrent chemoradiotherapy (6.7%), radiotherapy only (5.9%), chemotherapy (32.4%), and best supportive care only (29.7%) [1]
Prognosis	The median overall survival was 15.3 months. The five-year survival rate: total 21.9%, male 19.4%, female 28.2% [5]
Genetic information	*EML4-ALK* and *TP53* [6]
References	[1] Clinical characteristics of lung cancer diagnosed from 2006 to 2008: Data from Gachon University Gil Hospital. ***The Korean Journal of Medicine*** (2010) 78(2): 215-221 [2] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015 [3] Lung Cancer Epidemiology in Korea. ***Cancer Res Treat.*** (2017) 49(3): 616-626 [4] Annual report of cancer statistics in Korea in 2015 [5] Epidemiology of Lung Cancer in Korea: Recent Trends. ***Tuberc Respir Dis.*** (2016) 79(2): 58-69 [6] EML4-ALK Fusion Gene in Korean Non-Small Cell Lung Cancer. ***J Korean Med Sci.*** (2012) 27(2): 228-230

Malignant Melanoma

Incidence	The incidence of malignant melanoma was 1.2/100,000 (585 cancer cases) in 2014. [1]
Prevalence	The prevalence of skin melanoma was 5.4/100,000 in 2012. [2] The five-year prevalence of malignant melanoma was 3.6/100,000 (1,851 cancer cases) during 2009-2014. [3]
Mortality	The age-standardized mortality rate in Korea on 1985-2013 was 0.23/100,000 and 0.16/100,000 in men and women, respectively. [4]
Gender	In 2014, the incidences were 1.1/100,000 (n=267) and 1.3/100,000 (n=318) in men and women, respectively. [1]
Age	Malignant melanoma frequently occurred in older age groups. In five-year age groups, the highest incidence was observed in subjects ≥85 years of age (9.2/100,000, n=44), followed by 75-79 years (5.7/100,000, n=74), 80-84 years (4.8/100,000, n=35), and 70-74 years (4.6/100,000, n=83) in 2014. [1]
Regional distribution	The incidence rates per 100,000 patient years vary between 21.9 in the United States to 55.9 in Australian men. In contrast, the incidence of melanoma in Asia is significantly lower, at 0.2-0.5/100,000 years. [5]
Clinical phenotypes/ classification	The American Joint Committee on Cancer (AJCC) melanoma staging database divides melanoma into four stages: localized melanoma (stages I and II), regional metastatic melanoma (stage III), and distant metastatic melanoma (stage IV). According to a Korean study of 206 melanoma cases in 2014, were 66.7% (n=20) and 33.3% (n=10) of cases were AJCC stage II and III, respectively. [5]
Clinical manifestation	N/A
Risk factor	In general, race, UV exposure, family history of melanoma, and melanocytic nevus (atypical, congenital, etc.) are risk factors of malignant melanoma. [6] According to a Korean study in 2011, the incidence rate of malignant melanoma was 990/100,000 person-years among 131 subjects with giant congenital melanocytic nevus. [7]
Diagnosis	N/A
Treatment	Amputation: 30/30 patients. [5] Surgery (n=197/206): wide excision (n=161/197), amputation (n=31/197), Mohs micrographic surgery (n=2/197), partial excision (n=3/197), high dose interferon alpha (n=32/206), chemotherapy (n=46/206), radiotherapy (n=31/206) [8]

Prognosis	The overall survival of patients after removal of the malignant melanoma was 93% at one year, 76% at two years, and 67% at five years. Fourteen of 30 patients were alive without disease and six patients had died of the disease at the end of the study. [5]
Genetic information	*FGF4* plays an important role in the progressions of malignant melanoma and squamous cell carcinoma. *FGF4* levels are increased in these conditions in compared to levels in normal tissue. [6]
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Non-Hodgkin's Lymphoma

Incidence	The crude incidence rate and the age-standardized incidence rate (ASR) per 100,000 was 8.6 and 5.9 in 2015. [1] Among all hematologic malignancies (8,006 cases) from 1993 to 2008, non-Hodgkin lymphoma (NHL) was the most frequent (43.4%). The ASRs of NHL increased from 4.7 in 1999 to 5.8 in 2008. The annual percent change was 3.3% between 1999 and 2008, a statistically significant difference. The age-specific incidence rates increased as age increased. [2]
Prevalence	The crude prevalence rate per 100,000 was 53.9 in 2015. [1] By time since diagnosis in 2009, the number of patients less than 1 year was 2,899, 1-2 years 2,319, 2-5 years 5,454, and 5-10 years 5,471. Patients with more than the five year-prevalence comprised 34%. NHL was most frequent with 16,142 patients. [2]
Mortality	The crude mortality rate and the age-standardized prevalence rate per 100,000 was 3.5 and 2 in 2015. [1]
Gender	Of 27,478 patients with NHL, 15,622 were male and 11,856 were female. (1.3:1) (prevalence) [1]
Age	The median age of the patients with malignant lymphoma was 52 years. [3] Incident: 0-9: 102 cases (0.0%), 10-19: 105 cases (2.4%), 20-29: 136 cases (3.1%), 30-39: 263 cases (6.0%), 40-49: 531 cases (12.1%), 50-59: 846 cases (19.2%), 60-69: 925 cases (21.0%), 70-79: 1,048 cases (23.8%), over 80: 439 cases (10.0%) [4]
Regional distribution	Seoul: 856 cases (19.5%), Busan: 280 cases (6.4%), Daegu: 230 cases (5.2%), Incheon: 227 cases (5.2%), Gwangju: 99 cases (2.3%), Daejeon: 136 cases (3.1%), Ulsan: 84 cases (1.3%), Sejong: 11 cases (0.3%), Gyeonggi: 978 cases (22.2%), Gangwon: 174 cases (4.0%), Chungbuk: 143 cases (3.3%), Chungnam: 190 cases (4.3%), Jeonbuk: 193 cases (4.4%), Jeonnam: 186 cases (4.2%), Gyeongbuk: 259 cases (5.9%), Gyeongnam: 299 cases (6.8%), Jeju: 50 cases (1.1%) [4]
Clinical phenotypes/ classification	Malignant lymphoma from 3,998 cases between 2005 and 2006. (100%) NHL (95.4%), a. Diffuse large cell type (42.7%), b. Extranodal marginal zone B-cell lymphoma (19%), c. NK/T-cell lymphoma, nasal type (6.3%), d. Peripheral T-cell lymphoma (6.3%) Hodgkin's lymphoma (4.6%) By immunophenotype: B cell (78%), T cell (22%) [3]
Clinical manifestation	N/A

Risk factor	From the Korean Cancer Prevention Study, a cohort study of South Korean workers and their dependents enrolled during 1992-1995, the risk of these malignancies was consistently raised higher in HBsAg-positive participants throughout 14 years of follow-up. HBsAg-positive participants had an increased risk of NHL overall compared to that in HBsAg-negative participants (incidence 19.4 vs. 12.3/100,000 person-years, hazard ratio [HR]: 1.74, 95% confidence interval [CI]: 1.45-2.09, adjusted for sex, age at baseline, and enrolment year). Among NHL subtypes, HBsAg positivity was associated with increased risk of diffuse large B-cell lymphoma (n=325, incidence 6.86 vs. 3.79/100,000 person-years, adjusted HR: 2.01, 95% CI: 1.48-2.75). [5]
Diagnosis	A total of 174 cases (60%) were diagnosed with extranodal lymphomas, most commonly sites in the gastro-intestinal tract, tonsils, and oronasal cavity. The biopsy sites included the lymph node (30.4% of cases) and extranodal sites (69.6% of cases). Malignant lymphomas arising in the lymph node accounted for 26.3% of B-cell NHL and 35.2% of T/NK-cell NHL. Among extranodal lymphomas, the most frequent sites of involvement included the stomach, Waldeyer's ring, eye, sinonasal cavity, and small intestine, in decreasing order. [6]
Treatment	Data from 40 cases with NHL who underwent autologous stem cell transplantation (ASCT) after high dose chemotherapy (HDC) were assessed. Twenty-four patients had high-risk disease, 12 had sensitive relapse, and two cases had resistant relapse primary refractory each. The median age of the patients was 34 years (range, 14-58 years). The median follow-up duration from transplantation was 16 months (range, 0.6-94 months). [5]
Prognosis	The survival of NHL continually increased from 1993 to 2008 with five-year survival rate of 47.6% between 1993 and 1995 and 62.8% between 2004 and 2008, an increase of 15.2%. The survival rates of women were similar to those of men. [2] The estimated overall survival and progression-free survival at five years were 40% and 30%, respectively. Poor prognostic factors for survival included older age (45 years), poor performance status in all patient analysis, and a longer interval between first complete remission and transplantation in high-risk patients. In high-risk NHL patients, transplantation should be done early after the first complete remission to overcome chemo-resistance. [5]
Genetic information	*GSTP1* rs1695 and the *CYP1A1* rs1048943 genotypes affect the risk of NHL in Korea. Smoking did not modify the association between these polymorphisms and NHL risk. [7]

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Osteosarcoma

Incidence	Among children aged 0-14 years, the age-standardized incidence rate of osteosarcoma was 4.7/100,000 in Korea. [1]
Prevalence	N/A
Mortality	According to the Korea Central Cancer Registry in 2014, the five-year survival was 74.8% among children aged 0-14 years. [1]
Gender	In 2014, the incidence rates were 5.0 and 4.3/100,000 persons in men and women, respectively. [1]
Age	The mean age at surgery was 23 years (range, 7-80 years). [1] Osteosarcomas is a prevalent childhood cancer. By five-year age groups, the highest incidence was observed in those 10-14 years of age (9.5/100,000), followed by those 5-9 (4.3/100,000) and 0-4 years of age (0.4/100,000). [2]
Regional distribution	N/A
Clinical phenotypes/ classification	Histologic subtype: osteoblastic (n=13/27), chondroblastic (n=1/27), fibroblastic (n=9/27), others (n=4/27) [3]
Clinical manifestation	N/A
Risk factor	N/A
Diagnosis	Nineteen (47.5%) and 12 (30.0%) survivors were diagnosed with osteoporosis and osteopenia, respectively. All osteoporotic subjects had tumor in the knee joint region. Nineteen (47.5%) subjects had osteoporosis in the affected femur neck, five (12.5%) in the unaffected femur neck, six (15.0%) in the total body, and five (12.5%) in the lumbar spine. [4]
Treatment	Surgical treatment included limb salvage operations (n=51) and amputations (n=5). [5] Of 280 patients that underwent surgery, limb salvage was performed in 253 cases (90.4%). Preoperative chemotherapy: cisplatin+dozorubicin (n=73, 25%), high dose methotrexate (HD MTX) + cisplatin + doxoruicin (n=131, 44%), and HD MXT + ifosfamide + doxorubicin (n=34, 12%) Postoperatie chemotherapy: cisplatin + dozorubicin (n=35, 13%), high dose methotrexate (HD MTX) + cisplatin + doxoruicin (n=83, 31%), and HD MXT + ifosfamide + doxorubicin (n=18, 7%), and HD MTX + cisplatin + doxorubicin + ifosfamide (n=44, 16%). [6]

Prognosis	Among 225 cases followed up for more than two years, the overall survival (OS) and event-free survival (EFS) rates at five years were 70.9% and 60.7%±3.6%, respectively. The five-year OS and EFS rates were better in the 184 patients who presented without metastasis at the time of diagnosis, at 80.0% and 64.6%, respectively. [6] The overall recurrence rate was 39% in a study of 461 adolescent patients with osteosarcoma. The five-year and 10-year post-relapse survival rates in those with recurrent osteosarcoma were 13% and 4%, respectively. The five-year post-relapse survival rate was influenced by the site of relapse (lung, 39%; local, 0%; lung & bone, 25%; others, 12%, P<0.05). [7]
Genetic information	*EGFR* is frequently expressed in osteosarcoma. [3] *ILK* over expression in patients with osteosarcoma was significantly correlated with the presence of distant metastasis. [5]
References	[1] Korean National Cancer Center, Annual Report of cancer statistics in Korea in 2014, 2016. [2] Korean Statistical Information Service. Incidence rate by pediatric cancer/ sex / age (5 years old) according to international classification of childhood cancer, Cancer statistics in Korea (2015). http://kosis.kr/ [3] Epidermal Growth Factor Receptor: Is It a Feasible Target for the Treatment of Osteosarcoma? ***Cancer Res Treat.*** (2012) 44: 202-209 [4] Young age at diagnosis, male sex, and decreased lean mass are risk factors of osteoporosis in long-term survivors of osteosarcoma. ***J Pediatr Hematol Oncol.*** (2013) 35: 54-60 [5] Role of Integrin-Linked Kinase in Osteosarcoma Progression. ***Journal of Orthopaedic Research*** (2013) 31: 1675-2013 [6] Osteosarcoma in Korean children and adolescents. ***Korean J Pediatr***. (2015) 58: 123-128 [7] Outcome after relapse in childhood and adolescent osteosarcoma: single institution experience in Korea. ***Korean J Pediatr.*** (2008) 51: 78-83

Ovarian Cancer

Incidence	Based on data extracted from the Korean National Cancer Incidence Database, the absolute incidence of ovarian cancer has increased (1,332 in 1999 to 1,981 in 2010). [1] The crude incidence rate and the age-standardized incidence rate per 100,000 was 4.8 and 3.2 in 2015. [2] The incidence of ovarian cancer is increasing gradually (annual percent change [APC], 1.5%). The age-standardized rate of ovarian cancer was 5.0 in 1999 and 5.7 in 2010 (APC, 1.5% 95% confidence interval [CI], 0.82-2.22). However, the incidence of ovarian cancer in young women <30 years of age in not changing (APC=-0.1%). [1]
Prevalence	The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 35.5 and 24.2 in 2015. [2]
Mortality	The crude mortality rate and the age-standardized mortality rate per 100,000 was 2.1 and 1.2 in 2015. [2]
Gender	Not applicable
Age	Incident: 0-9: 5 cases (0.2%) 10-19: 53 cases (2.2%), 20-29: 87 cases (3.6%), 30-39: 178 cases (7.3%), 40-49: 529 cases (21.7%), 50-59: 694 cases (28.4%), 60-69: 425 cases (17.4%), 70-79: 329 cases (13.5%), over 80: 143 cases (5.9%) [2]
Regional distribution	Seoul: 509 cases (20.8%), Busan: 192 cases (7.9%), Daegu: 106 cases (4.3%), Incheon: 153 cases (6.3%), Gwangju: 62 cases (2.5%), Daejeon: 65 cases (2.7%), Ulsan: 52 cases (2.1%), Sejong: 5 cases (0.2%), Gyeonggi: 572 cases (23.4%), Gangwon: 83 cases (3.4%), Chungbuk: 68 cases (2.8%), Chungnam: 88 cases (3.6%), Jeonbuk: 87 cases (3.6%), Jeonnam: 75 cases (3.1%), Gyeongbuk: 146 cases (6.0%), Gyeongnam: 148 cases (6.1%), Jeju: 32 cases (1.3%) [2]
Clinical phenotypes/ classification	Among 360 patients with stage III-IV epithelial ovarian cancer, five (1.4%), 23 (6.4%), 256 (71.1%), and 76 (21.1%) had stage IIIA, IIIB, IIIC, and IV diseases, respectively. Serous carcinoma was identified in 276 (76.7%) patients while endometrioid, clear cell, mucinous, undifferentiated, and mixed carcinomas were observed in 29 (8.1%), 20 (5.6%), 13 (3.6%), seven (1.9%), and 15 (4.2%) patients, respectively. [3] In a retrospective study of 38 patients with recurrent epithelial ovarian cancer treated with radiation therapy, most patients were FIGO stage III (n=27/38) with serous adenocarcinoma (n=26/38). [4] - Serous 87 cases (66.4%) - Clear cell 18 cases (13.7%) - Mucinous 9 cases (6.9%) - Endometrioid 9 cases (6.9%) - Seromucinous 2 cases (1.5%)

	- Serous borderline tumor 1 cases (0.8%) - Squamous cell 2 cases (1.5%) - Sertoli-Leydig cell 1 cases (0.8%) - Carcinosarcoma 1 cases (0.8%) - Large cell neuroendocrine 1 cases (0.8%) [5]
Clinical manifestation	N/A
Risk factor	Forty-five cases of ovarian cancer were analyzed in a case-control study conducted at a single center between August 1996 and March 1997. Increasing risks were seen in earlier age at first menarche. Statistically significant associations were found in postmenopausal women (odds ratio [OR]: 8.5). Nutritional factors, western lifestyle factors, some changes in reproductive factors, such as nulliparity [6]
Diagnosis	Most patients with borderline ovarian tumors underwent laparatomy and more half underwent conservative surgery. Omentectomy, multiple peritoneal biopsies, washing cytology, appendectomy and pelvic lymph node evaluation were performed in 61 (29%), 13 (6%), 161 (77%), 97 (46%), and 31 (15%) patients, respectively. Most patients had a non-serous and/or early-stage tumor. [7] Laparatomy/conservative surgery, omentectomy (29%), multiple peritoneal biopsies (6%), washing cytology (46%), appendectomy and pelvic lymph node evaluation (15%) [6]
Treatment	Among the patients with borderline ovarian tumors, stage 1C or greater was associated with treatment failure. Most recurrent persistent diseases was confined to the peritoneal cavity. [4] Thirty-eight patients with recurrent epithelial ovarian cancer were treated with radiation therapy between January 1997 and December 2007. Their median age was 51.5 years. Most patients were FIGO stage III (n=27/38) with serous adenocarcinoma (n=26/38). All patients had received at least one regimen of platinum-based chemotherapy; 24 were sensitive to the first chemotherapy, while the others were resistant. Lymph node and the abdominopelvic wall were the most common sites of radiation therapy. The response rate was 65.0% (16 complete and 10 partial remissions), and the median regression rate was 78.8% (range, -66.6 to 100.0). The median progression-free survival was 7.2 months (range, 1.0-66.6). Among 28 patients with had a solitary relapse site from the radiographic finding at the time of radiation therapy, the progression-free survival was 10.7 months (range, 1.8-66.6). Grade 3~4 hematologic or intestinal toxicities were observed. The prognostic factors were sensitivity to platinum and the site treated with radiation therapy. [4] Radiation therapy and platinum-based chemotherapy [5]

Prognosis	Of 360 patients with stage III-IV epithelial ovarian cancer, underweight status after treatment was associated with poor OS compared to those with normal weight, while overweight/obesity (mean value, 44.9 vs. 78.867.4 months) was also an unfavorable factor for OS (adjusted hazard ratio: 2.29, 95% CI: 1.08-4.85). [3]
Genetic information	Among the 61 *BRCA1* mutation carriers in the 42 families and 47 *BRCA2* mutation carriers in 31 families identified at 5 academic breast clinics. By the age 70, the risk for the *BRCA1* and *BRCA2* mutation carriers was 24.6%, 11.1%. [8] The high-penetrance ovarian cancer susceptibility genes *BRCA1* and *BRCA2* are tumor suppressor genes located at 17q21.31 and 13q13.1, respectively. In a recent prospective cohort study, the cumulative risks of ovarian cancer by age 80 were 44% and 17% for *BRCA1* and *BRCA2* mutation carriers, respectively. [5]
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Pancreatic Cancer

Incidence	The incidence of pancreatic cancer (PC) in Korea has increased over time, with about 3,000 cases annually. [1] In a 10-year prospective cohort study of 446,407 Korean men aged 40 to 65 years in 1992, 863 incident cases of PC occurred among men during the 10 years of follow-up. During this period, the incidence of PC was 22.8 for current smokers. [2] The crude incidence rate and the age-standardized incidence rate per 100,000 was 12.4 and 7.0 in 2015. [3]
Prevalence	The prevalence of PC in diabetes mellitus (DM) patients was 1.6%, while that of DM in PC patients was 40.6%. [4] The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 18.7 and 11.1 in 2015. [3]
Mortality	In a 10-year prospective cohort study of 446,407 Korean men aged 40-65 years in 1992 of 816 patients with PC died during the 10 years of follow-up. [2] The crude mortality rate and the age-standardized mortality rate per 100,000 was 10.7 and 5.7 in 2015. [3]
Gender	The portion of men was 73.7% (n=28/38) and 70% (n=35/50) in PC patients with and without chronic pancreatitis (CP), respectively. [1] In a retrospective study for 192 pancreatic patients with or without diabetes, the percentage of male patients was 52.6% (n=41/78) and 59.6% (n=68/114) in PC with DM group and PC without DM group, respectively. [4] The male-to-female ratio was 1.8:1. [3]
Age	Incident: 10-19: 7 cases (0.1%), 20-29: 16 cases (0.2%), 30-39: 77 cases (1.2%), 40-49: 215 cases (3.3%), 50-59: 1,063 cases (16.5%), 60-69: 1,687 cases (26.2%), 70-79: 2,001 cases (31.1%), over 80: 1,186 cases (18.4%) [5]
Regional distribution	Seoul: 1,204 cases (19.0%), Busan: 448 cases (7.1%), Daegu: 268 cases (4.2%), Incheon: 310 cases (4.9%), Gwangju: 171 cases (2.7%), Daejeon: 161 cases (2.5%), Ulsan: 106 cases (1.7%), Sejong: 16 cases (0.3%), Gyeonggi: 1,284 cases (20.2%), Gangwon: 260 cases (4.1%), Chungbuk: 239 cases (3.8%), Chungnam: 310 cases (4.9%), Jeonbuk: 302 cases (4.8%), Jeonnam: 327 cases (5.2%), Gyeongbuk: 404 cases (6.4%), Gyeongnam: 438 cases (6.9%), Jeju: 56 cases (0.9%) [5]
Clinical phenotypes/ classification	According to p-AJCC stage classification, stage IIB was most common (n=50/82), followed by IIA (n=31/82) and III (n=1/82). [3] According to p-AJCC stage classification, stage IV was most common in both PC with DM and PC without DM (64.1% vs. 67.5%) at the time of diagnosis. [4]
Clinical manifestation	N/A

Risk factor	Compared with PC without CP, PC with CP patients were younger at the time of the diagnosis of PC (57.42 vs. 63.94 years, P=0.01), a greater percentage difference in smokers (71.1% vs. 50.0%, P=0.047), and there was pancreatic duct dilatation without a mass on CT findings (15.8% vs. 2.0%, P=0.018). There was no difference in clinical presentation at the time of PC diagnosis and the CA 19-9 level was elevated in most patients in both groups. [2] In a 10-year prospective cohort study of 446,407 Korean men aged 40 to 65 years in 1992, current smoking was associated with an increased risk of incidence (relative risk [RR]: 1.7, 95% confidence interval [CI]: 1.6-1.9) and mortality (RR: 1.6, 95% CI: 1.4-1.7) from PC. The RR for PC increased with both duration and amount of smoking. Diabetes was also associated with an increased risk of both incidence (RR: 1.8, 95% CI: 1.5-2.2) and mortality (RR: 1.7, 95% CI: 1.4-2.1). Recent-onset DM was frequent in PC patients (less than two-years duration). [2]
Diagnosis	The most common location of PC was the pancreas head (57.9% in PC with CP patients and 64.0% in PC without CP patients), followed by the body and tail. [1]
Treatment	Compared with PC without CP, there was no difference between the groups in terms of resectability (39.5% vs. 26.0%, P=0.179) preoperative stage however, a greater proportion of the PC with CP group underwent surgery (34.2% vs. 16.0%, P=0.047). [1] Of 340 unresectable locally advanced, metastastic PCs (from 1998-2005), 105 patients received chemotherapy only and 59 received concurrent chemoradiotherapy (CCRT). Stage III patients treated by CCRT (median overall survival [OS]: 10.4 months) chemotherapy alone (11.3 months) showed survival benefit over supportive care (6.4 months), and stage IV patients treated by chemotherapy alone (6.4 months) showed survival benefit over supportive care (3.1 months). [6]
Prognosis	In a study of 340 unresectable locally advanced metastatic PC at a single center (1998 to 2005), initial CA 19-9 level, American Joint Committee on Cancer stage, and treatment modality were independent prognostic factors of OS. [6]
Genetic information	Low miR-21 expression was associated with a benefit from adjuvant treatment (for death, hazard ratio [HR]: 0.316, recurrence HR: 0.521) in two independent cohorts of pancreatic ductal adenocarcinoma (PDAC) cases, and anti-miR-21 increased anticancer drug activity in vitro. These data provide evidence that miR-21 may allow stratification for adjuvant therapy and represents a potential target for therapy in PDAC. [3]

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Prostate Cancer

Incidence	The crude incidence rate and the age-standardized incidence rate per 100,000 was 20 and 11.2 in 2015. [1]
Prevalence	The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 136.3 and 71.3 in 2015. [1]
Mortality	The crude mortality rate and the age-standardized mortality rate per 100,000 was 3.3 and 1.6 in 2015. [1]
Gender	Not Applicable
Age	The median age of 675 patients was 68.7 years between 2006 and 2015. [2] Incident: 0-9: 7 cases (0.0%), 10-19: 174 cases (0.7%), 20-29: 1,545 cases (6.2%), 30-39: 4,943 cases (19.7%), 40-49: 7,171 cases (28.7%), 50-59: 6,779 cases (27.1%), 60-69: 3,116 cases (12.4%), 70-79: 1,093 cases (4.4%), over 80: 201 cases (0.8%) [3]
Regional distribution	Urban: 316 cases (78.4%), Rural: 87 cases (21.6%) [4] Seoul: 2,105 cases (20.6%), Busan: 745 cases (7.3%), Daegu: 478 cases (4.7%), Incheon: 409 cases (4.0%), Gwangju: 157 cases (1.5%), Daejeon: 253 cases (2.5%), Ulsan: 157 cases (1.5%), Sejong: 27 cases (0.3%), Gyeonggi: 2,191 cases (21.5%), Gangwon: 398 cases (3.9%), Chungbuk: 330 cases (3.2%), Chungnam: 495 cases (4.8%), Jeonbuk: 498 cases (4.9%), Jeonnam: 479 cases (4.7%), Gyeongbuk: 656 cases (6.4%), Gyeongnam: 607 cases (5.9%), Jeju: 119 cases (1.2%) [5]
Clinical phenotypes/ classification	Classification of prostate cancer cases according to stage included 43.5% cases of localized prostate cancer (LPC), 36% cases of locally advanced prostate cancer (LAPC), and 20.4% cases of advanced prostate cancer (APC). [6]
Clinical manifestation	N/A
Risk factor	Periodontal disease was associated with a 14% increased risk of PC (hazard ratio [HR]: 1.14, 95% confidence interval [CI]: 1.01–1.31, P=0.042). [4] Family history was not a risk factor for overall survival (OS). In an analysis of patients who underwent radical prostatectomy (median prostate-specific antigen, 7.40 ng/mL; median follow-up, 40.5 months), no differences in pathologic characteristics were found between patients with (n=39, 93.5%) and without (n=567, 6.4%) a family history. [7]
Diagnosis	Cancer screening might play a major role in the increase of thyroid cancer incidence. Of all 2,000 participants from the 2009 Korea National Cancer Screening Survey, 13.2% (8.4% men and 16.4% women) underwent thyroid ultrasonography. On multiple analyses, age, residence, belief in cancer screening, regular health check-ups, smoking, alcohol drinking, and exercise

	were associated with thyroid cancer screening. Subjects who underwent other cancer screening, such as gastric, colorectal, breast, cervical, were more likely to have had a thyroid ultrasonogram that those who did not get screened. [8]
Treatment	There was a continuous increasing trend in surgery (including robot surgery), from 23.7% in 2003 to 48.5% in 2013. Among those who received hormone therapy as a first treatment, in the proportion of patients aged 75-79 increased annually from 20.8% in 2003 to 27.3% in 2013, and tended to increase in those aged 80 years or more. [6] The treatment options for prostate cancer included active surveillance (1.6), radical prostatectomy (37.9), radiotherapy + androgen deprivation therapy (ADT, 42.8), and ADT (17.7) [4]
Prognosis	High alkaline phosphatase (ALP) levels, shorter time to PSA nadir, and pain were associated with an increased risk of progression to castration-resistant prostate cancer (CRPC), while high ALP levels, ECOG-PS ≥1, and higher PSA nadir independently predicted cancer-specific survival. [9]
Genetic information	The minor G allele significantly decreased the risk of prostate cancer (adjusted odds ratio [OR]: 0.57, 95% confidence interval [CI]: 0.35-0.93, P=0.025). In patients expression *AMACR*, *AGGG* genotype was also significantly associated with prostate cancer risk (adjusted OR: 0.47, 95% CI: 0.26-0.87, P=0.017). Furthermore, the GGCGG haplotype consisted of five coding SNPs (rs2278008, rs34677, rs2287939, rs10941112, and rs3195676) which decreased the risk of prostate cancer (P=0.047). [10]
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Thyroid Cancer

Incidence	The crude incidence rate and the age-standardized incidence rate per 100,000 was 49.1 and 35.2 in 2015. [1]
Prevalence	The crude prevalence rate and the age-standardized prevalence rate per 100,000 was 696.8 and 464.9 in 2015. [1]
Mortality	The crude mortality rate and the age-standardized mortality rate per 100,000 was 0.7 and 0.3 in 2015. [1]
Gender	Women accounted for 82.9% of patients. The male to female ratio increased from 1:6 to 1:4.5. [2]
Age	The mean age of the patients was 46.8±13.2 years. The age at diagnosis increased from 39.6±12.9 to 48.6±12.4 years. [1] Incident: 0-9: 7 cases (0.0%), 10-19: 174 cases (0.7%), 20-29: 1,545 cases (6.2%), 30-39: 4,943 cases (19.7%), 40-49: 7,171 cases (28.7%), 50-59: 6,779 cases (27.1%), 60-69: 3,116 cases (12.4%), 70-79: 1,093 cases (4.4%), over 80: 201 cases (0.8%) [3]
Regional distribution	Seoul: 4,881 cases (19.5%), Busan: 2,164 cases (8.6%), Daegu: 1,602 cases (6.4%), Incheon: 1,430 cases (5.7%), Gwangju: 778 cases (3.1%), Daejeon: 795 cases (3.2%), Ulsan: 682 cases (2.7%), Sejong: 73 cases (0.3%), Gyeonggi: 5,568 cases (22.2%), Gangwon: 476 cases (1.9%), Chungbuk: 568 cases (2.3%), Chungnam: 893 cases (3.6%), Jeonbuk: 809 cases (3.2%), Jeonnam: 1,147 cases (4.6%), Gyeongbuk: 1,245 cases (5.0%), Gyeongnam: 1,682 cases (6.7%), Jeju: 233 cases (0.9%) [3]
Clinical phenotypes/ classification	Papillary carcinoma accounted for 90.3% (higher in Korea than in other countries) of total thyroid cancer, followed by follicular carcinoma in 7.7% of cases (slightly decreased). The proportion of small (<1 cm) tumors increased from 6.1% to 43.1%, and the proportion of cancers with lymph node (LN) involvement and extrathyroidal extension (ETE) decreased from 76.4% to 44.4% and from 65.5% to 54.8%, respectively. Although there were decreases in the proportion of LN involvement and ETE, these decreasing rates were not proportional to the expected rates based on the decreased proportion of large tumors. [2]
Clinical manifestation	N/A
Risk factor	The high prevalence of papillary thyroid cancer (PTC) may be attributed to regional characteristics within Korea, including an iodine-rich diet. [2]

Diagnosis	Cancer screening might play a major role in the increased thyroid cancer incidence. Of all 2,000 participants of the 2009 Korea National Cancer Screening Survey, 13.2% (8.4% men and 16.4% women) underwent thyroid ultrasonography. On multiple analyses, age, residence, belief in cancer screening, regular health check-ups, smoking, alcohol drinking, and exercise were associated with thyroid cancer screening. Subjects who underwent other cancer screening, such as gastric, colorectal, breast, cervical, were more likely to have had a thyroid ultrasonogram that those who did not get screened. [4]
Treatment	The median follow-up duration was 4.8 years (mean 7.0±5.8 years, range 1-43 years). The proportions of surgery were 73.9% for total thyroidectomy, which increased over time; 11.6% for subtotal thyroidectomy; 12.7% for lobectomy; and 1.2 % for others. The percentage of radioactive iodine remnant ablation was 55.7%. [2]
Prognosis	The overall recurrence and mortality rates were 13.3% and 1.4%, respectively. The five-year recurrence rate decreased significantly (from 11% to 5.9%), and the five-year mortality also improved (from 1.5% to 0.2%). [2]
Genetic information	The rates of patients with *BRAF V600E* mutations are higher (58-81%) (19-21) than the average rate (49.2%) in other countries. The prevalence of a family history of thyroid cancer is twice that in other countries. [2]
References	[1] Cancer Statistics in Korea: Incidence, Mortality, Survival, and Prevalence in 2015 [2] Changes in the Clinicopathological Characteristics and Outcomes of Thyroid Cancer in Korea over the Past Four Decades. ***Thyroid*** (2013) 23(7): 797-804 [3] Annual report of cancer statistics in Korea in 2015 [4] Current Status of Thyroid Cancer Screening in Korea: Results from a Nationwide Interview Survey. ***Asian Pacific J Cancer Prev.*** (2011) 12: 1657-1663

Rare Disease

Acromegaly

Incidence	From 2003 to 2007, the average annual incidence of acromegaly was 3.9/1,000,000 in a nationwide survey of 74 secondary or tertiary medical institutions. [1, 2]
Prevalence	The prevalence of acromegaly increased from 12.5/1,000,000 in 2003 to 27.9/1,000,000 in 2007. [1, 2]
Mortality	The findings of several retrospective cohort studies suggest that the mortality in acromegaly is at least twice that in the general population. [3]
Gender	Of 1,350 total patients, 627 were male (46.4%) and 723 were female (53.6%). [1]
Age	The mean age was 44.1±13.0 years. The mean age of men (42.2 years) was less than that of women (45.5 years). [1]
Regional distribution	Seoul 25% (n=331), Busan 5% (n=69), Daegu 5% (n=69), Incheon 6% (n=80), Daejeon 4% (n=57), Gwangju 2% (n=25), Ulsan 2% (n=29), Gyeonggi 25% (n=332), Gangwon 3% (n=46), Chungbuk 3% (n=39), Chungnam 3% (n=45), Jeonbuk 2% (n=30), Jeonnam 2% (n=32), Gyeongbuk 5% (n=74), Gyeongnam 6% (n=79), and Jeju 1% (n=11) [1]
Clinical phenotypes/ classification	The distribution of modified Hardy classifications were I (n=75), II (n=55), IIIA (n=22), IIIB (n=82), and IV (n=48). [4]
Clinical manifestation	Acromegaly is a disease caused by the production of excess growth hormone (GH), often from pituitary tumors. Patients with acromegaly report enlargements of their face and/or extremities and other complications involving cardiovascular, metabolic and respiratory systems. [1]
Risk factor	The baseline mean serum GH and insulin-like growth factor 1 (IGF-1) levels of all valid patients were 42.4±74.9 μg/L and 985.4±504.7 μg/L, respectively. [1]
Diagnosis	N/A
Treatment	Among 1,137 patients, the primary treatments included transsphenoidal adenoidectomy (TSA) (n=1,028, 90.4%), radiotherapy (n=9, 0.8%) and gamma knife surgery (GKS) (n=44, 3.9%). Following unsatisfactory results of TSA, the secondary treatments included radiotherapy (n=87, 7.7%), GKS (n=60, 5.3%), and radiotherapy with GKS (n=2, 0.2%). Among the 55 patients who had received neither surgery nor radiotherapy, 28 were prescribed these medications as the primary treatment. Most of these medications, including somatostatin analogues (n=242, 34.5%) and dopamine agonists (n=79, 11.3%), were prescribed as the secondary treatment following surgery radiotherapy. Among 344 patients who were not in remission at 3 months after TSA, 157 (45.6%) received medical treatment, while the remaining 187 patients (54.4%) did not. [1]

Prognosis	N/A
Genetic information	The *d3-GHR* polymorphism was potentially associated with higher body mass index (BMI) in a cross-sectional study of 30 patients diagnosed with acromegaly from 2008 to 2012. [5]
References	[1] Nationwide survey of acromegaly in South Korea. ***Clinical Endocrinology*** (2013) 78: 577-585 [2] Characteristics of acromegaly in Korea with a literature review. ***Endocrinology and Metabolism*** (2013) 28: 164-168 [3] Surgical Results of Growth Hormone-Secreting Pituitary Adenoma. ***J Korean Neurosurg Soc.*** (2009) 45: 271-274 [4] Surgical and endocrinological outcomes in the treatment of growth hormone-secreting pituitary adenomas according to the shift of surgical paradigm. ***Neurosurgery*** (2012) 71: 192-203 [5] Association between the Growth Hormone Receptor Exon 3 Polymorphism and Metabolic Factors in Korean Patients with Acromegaly. ***Endocrinol Metab.*** (2015) 30: 312-317

Amyloidosis

Incidence	N/A
Prevalence	N/A
Mortality	At three years' follow-up of patients with systemic amyloidosis, death had occurred in 36 of 62 patients with cardiac involvement and in 25 of 67 patients without cardiac involvement. [1]
Gender	Among 129 patients newly diagnosed with systemic amyloidosis between 1999 and 2011, 76 (58.9%) were male and 53 (41.1%) were female. [1] Of 84 patients with primary amyloidosis, 47 (56%) were male and 37 (44%) were female. [2]
Age	The mean age was 57.2±11.5 years. [1] The median age was 59.5 years (range, 31-79). [2]
Regional distribution	N/A
Clinical phenotypes/ classification	Light chain (AL) amyloidosis was present in 127 (98.4%) and familial amyloidosis (positive *TTR* gene mutation finding) in two (1.6%) subjects. [1]
Clinical manifestation	Amyloidosis is a clinical disorder caused by the extracellular deposition of insoluble abnormal fibrils, derived from the aggregation of misfolded normally soluble proteins. [1] The symptoms include edema (n=22, 26.2%), dyspnea (n=21, 25.0%), proteinuria foamy urine (n=11, 13.1%), fatigue/weakness (n=9, 10.7%), diarrhea (n=5, 6.0%), dizziness/syncope (n=3, 3.6%), peripheral neuropathy (n=2, 2.4%), epigastric discomfort (n=2, 3.3%), gastrointestinal bleeding (n=2, 3.3%), and others (n=7, 8.2%). [2]
Risk factor	Hypertension was observed in 34 patients (26.4%), diabetes mellitus in 11 patients (8.5%), dyslipidemia in seven patients (5.4%), and chronic kidney disease (CKD) in 25 patients (19.4%). Two patients (1.6%) had a smoking history. [1]
Diagnosis	Among patients with AL amyloidosis, 32 (25.2%) and 75 (59.1%) had the kappa and lambda light chain types, respectively. The presence of monoclonal gammopathy was noted in the serumurine protein electrophoresis (PEP) in 43 of 120 (35.8%), serumurine immunoelectrophoresis/immunofixation electrophoresis (IEP/IFE) in 43 of 103 (41.7%), and serum free light chain (FLC) assay in 81 of 84 (96.4%) patients. [1]

Treatment	Among 100 patients with systemic amyloidosis, 82.3% were administered with chemotherapy, 19.4% received autologous stem cell transplantation, and 4.8% underwent cardiac transplantation. [1] The 73 patients were administered 119 lines of chemotherapy, with a median lines of treatment of one (range 1-4). Dexamethasone-based regimens were used most commonly (36.3%), including VAD (vincristine/doxorubicin/dexamethasone), high-dose dexamethasone, cyclophosphamide with dexamethasone, and melphalan with dexamethasone alkylating agent (melphalancyclophosphamide) with prednisolone (35.5%), thalidomide combinations (18.5%), and bortezomib combinations (8.9%) including thalidomide (n=33) and bortezomib (n=10). Autologous stem cell transplantation was administered to eight patients. [2]
Prognosis	A response to chemotherapy was observed in 59.6% of patients with AL amyloidosis (complete response: 19.2%, very good partial response: 2.0%, partial response: 12.1%, and no response: 26.3%) and in 57.7% of patients with AL amyloidosis with cardiac involvement (complete response: 17.6%, very good partial response: 3.9%, partial response: 13.7%, and no response: 23.5%). [1] Hematologic responses were documented in 23 patients (31.5%) including eight complete responses (11.0%). Organ responses occurred in 19 treated patients (26.0%). Among those who underwent autologous stem cell transplantation, 50% and 12.5% hematologic and organ response, respectively. The median overall survival (OS) from diagnosis was 22.6 months (range 0.3-87.2 months). [2]
Genetic information	*TTR* mutations associated with familial amyloidosis were observed in two of 129 subjects (1.6%). [1]
References	[1] Incidence, diagnosis and prognosis of cardiac amyloidosis. ***Korean Circculation Journal*** (2013) 43: 752-760 [2] Clinical features and treatment outcome of primary systemic light-chain amyloidosis in Korea: Results of multicenter analysis. ***American Journal of Hematology*** (2013) 88: 52-55

Crohn's Disease

Incidence	The incidence rates of Crohn's disease (CD) have been increasing rapidly in Korea, especially among the younger population. The mean annual incidence rate of CD increased from 0.05 per 100,000 in 1986-1990 to 1.34 per 100,000 in 2001-2005. [1] The incidence rate per 100,000 of CD in a nationwide population-based study using Health insurance review and assessment services (HIRA) claims database was as follow: 2006 (3.6), 2007 (3.2), 2008 (3.3), 2009 (3.4), 2010 (3.2), 2011 (2.9) and 2012 (3.1), remaining relatively stable during the 2006-2012 period. [2]
Prevalence	The adjusted prevalence rate of CD per 100,000 inhabitants was 11.24. [1] The prevalence of CD increased 1.9-fold (from 16.0 per 100,000 in 2009 to 29.6 per 100,000 in 2016) in a study using data from the HIRA (2010-2016). [3]
Mortality	Patients with CD was significantly lower (96.9% vs 98.5%) in 5-year survival, the standardized mortality ratio (SMR) was 1.9 compared with general population in Korea. Of the 243 CD deaths, 28.0% died of cancer, 20.8% died of gastroenterological diseases, and 11.1% died of disease of circulatory system. For patients with CD, the SMR for cancer mortality was 1.8, for cardiovascular mortality was 1.1, and gastrointestinal diseases mortality was 8.1. [2]
Gender	The male to female ratio was 2.5-2.8. Unlike Western data, there is a male predominance in Korean CD. [1] Males and females peaked in the same age group, but the male peak was almost three times higher than that of females. CD showed higher incidence in men than in women. The male-to-female ratio was 2.0. Gender differences were prominent around the peak age in CD. [2]
Age	The age at diagnosis of Korean CD was lower than that of Western CD. The median age at diagnosis was 21.5 in a population-based study, similar to the 22.4 reported in a nationwide cohort study of 465 CD patients. [1] CD incidence showed a peak in age 15-19, steadily decreasing thereafter. [2] The prevalence of CD peaked in the age 20-29. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	In a large single-center study, 11.5% of patients were in remission at diagnosis (Crohn's Disease activity index (CDAI)<150), 21.6% had mild (150 to 220), 58.6% moderate (220 to 450), and 8.3% severe activity (≥450). [1] In 418 CD patients, disease location at diagnosis was ileal in 104 patients (24.9%), colonic in 39 (9.3%), and ileocolonic in 275 (65.8%). Disease behaviour at CD diagnosis was inflammatory in 339 patients (81.1%), stricturing in 34 (8.1%), and penetrating in 45 (10.8%). Perianal fistula/abscess was present in 43.3% (n=181/418) before or at CD diagnosis in a 30-year longitudinal study to investigate temporal trends in CD with 418 patients. [4]

Clinical manifestation	Among disease locations, L3 was the most common (53% to 71%), followed by L1 (21% to 32%) and L2 (7% to 14%). In contrast, L2 was the most common in Western studies. According to disease behavior, 60% to 77% of Korean CD is categorized as B1, 10% to 25% as B2, and 12% to 30% as B3 at the time of diagnosis. The risk of CD complications, such as stricture and fistula, increases gradually with disease progression. Perianal lesions are more prevalent in Korea than that in Western countries. The cumulative frequency of perianal fistula was 40.7% after one year, 46.1% after five years, 49.7% after 10 years, and 54.3% after five years when including perianal fistula that resolved before the diagnosis of CD. [1] Age- and sex-standardized prevalence ratios of the extraintestinal manifestations using a random sample of the entire Korean population as the reference population was as follows: Iridocyclitis (1.92), cholelithiasis (4.06), sclerosing cholangitis (7.46), acute pancreatitis (4.94), aphthous stomatitis (1.23), psoriasis (1.30), erythema nodosum (9.91), pyoderma gangrenosum (4.43), rheumatoid arthritis (2.28), psoriatic arthritis (14.59), ankylosing spondylitis (5.28), sacroiliitis (3.37) and osteoporosis (2.67). [5]
Risk factor	The frequency of family history in CD patients is 1.4%-2.9%, lower than that in Western countries. [1] But the frequency of a positive first-degree family history of Inflammatory bowel disease (IBD) among Korean patients increased from 1.3% in 2001 to 4.7% in 2013 during the same period, there was a 4.7-fold rise in the prevalence of IBD. This finding suggests that the relatively low rate of familial aggregation among Korean patients with IBD is partly due to the low prevalence of IBD in Korea. [6]
Diagnosis	The median interval from symptoms to diagnosis was 12 months (range, 0.5-198) in a population-based study and five months (range, 1-126) in a more recent nationwide cohort study. The cohort in which the diagnosis was made in 1981-2000 had a median time to diagnosis of 24 months (range, 0-287), whereas the cohort in which the diagnosis was made in 2006-2012 had a median time of 14 months (range, 0-270). In a nationwide cohort study of 342 CD patients, 20 (4.3%) had been previously misdiagnosed with ulcerative colitis. In a single-center study, almost 50% of patients received anti-tuberculosis medication prior to CD diagnosis. However, the proportion has decreased markedly during the last decade, probably due to greater clinical experience among physicians. [1]
Treatment	In the case of CD, 47.4% of patients received medication in 2010, but in 2014, it increased to 60.8% (22,420 patients with CD and 13,638 patients with prescription drugs). In the treatment of IBD, we can see the tendency of pharmacotherapy to be actively administered based on Korean National Health Insurance Claims Data (2010-2014).

	The proportion of 5-aminosalicylic acid use was the highest (85-91%), but the use of immunomodulator was higher than corticosteroid (48-57% vs 29-35%). Anti-TNF-α was used in 11-23% of patients. Mesalamine was the most frequently used among the 5-aminosalicylic acid family and prednisolone was the most frequently used among the corticosteroids. Among the immunomodulators, azathioprine was used the most and infliximab was the most used among the anti TNF-α. [7]
Prognosis	Although it has been generally accepted that the clinical course of Korean CD is milder than that in Western countries, recent studies have shown a comparable rate of intestinal resection in Korean and Western CD patients. [1] All incident cases (11,267 CD) were followed-up for a maximum of 7 years for bowel resection rates. 862 CD cases (7.7%) underwent bowel resection. The actuarial bowel resection rates for CD were 5.0% at 1 year and 9.1% at 5 years. Of the 862 bowel resections, 75.9% were performed during the first 2 years after diagnosis. Of the 862 cases with CD undergoing bowel resection, 115 (13.3%) cases underwent the second operation, 20 (2.3%) underwent the third operation, and 3 (0.3%) underwent the fourth surgery. [2]
Genetic information	Genome-wide association studies have confirmed that genetic variants in *TNFSF*$_{15}$, *IL-*$_{23}$*R*, and *IRGM*, but not *ATG*$_{1}$*6L*$_{1}$, were associated with CD susceptibility in the Korean population. [1]
References	[1] Crohn's disease in Korea: past, present, and future. ***Korean J Intern Med.*** (2014) 29(5): 558-570 [2] Incidence and Natural Course of Inflammatory Bowel Disease in Korea, 2006–2012: A Nationwide Population-based Study. ***Inflamm Bowel Dis.*** (2015) 21(3): 623-630 [3] Emerging trends of inflammatory bowel disease in South Korea: A nationwide population-based study. ***Journal of Gastroenterology and Hepatology*** (2019) 34(6): 1018-1026 [4] A 30-year Trend Analysis in the Epidemiology of Inflammatory Bowel Disease in the Songpa-Kangdong District of Seoul, Korea in 1986–2015. ***Journal of Crohn's and Colitis*** (2019) [5] Prevalence of extraintestinal manifestations in Korean inflammatory bowel disease patients. ***PLoS ONE*** (2018) 13(7): e0200363 [6] How Does the Epidemiology of Inflammatory Bowel Disease Differ between East and West? A Korean Perspective. ***Inflamm Intest Dis.*** (2017) 2(2): 95-101 [7] Medication Use and Drug Expenditure in Inflammatory Bowel Disease: based on Korean National Health Insurance Claims Data (2010-2014). ***Korean J Clin Pharm.*** (2019) 29(2): 79-88

Cystic Fibrosis

Incidence	Cystic fibrosis (CF) is quite rare in Asian populations and an epidemiological study in a Japanese population found an incidence of CF of about 1 in 350,000. CF is also extremely rare in the Korean population and only 10 patients with CF have been reported thus far, of which seven cases were confirmed by genetic analysis. [1]
Prevalence	N/A
Mortality	N/A
Gender	Among 9 patients, 2 patients were male and 7 patients were female. [1]
Age	The mean ages of nine patients at diagnosis and at symptom presentation were 13 and 2.8 years, respectively. [1]
Regional distribution	CF is a relatively common recessive genetic disease in white people, with an incidence of 1/3,500 in North America and 1/2,000-1/3,000 in Europe. However, the incidence rate in Asia is very low, at 1/40,000-1/100,000 in India and 1/100,000- 1/350,000 in Japan. [2]
Clinical phenotypes/ classification	N/A
Clinical manifestation	Respiratory symptoms in CF patients include chronic cough (n=7, 78%), sputum (n=4, 44%), sinusitis (n=4, 44%), recurrent persistent pneumonia (n=7, 78%), and bronchiectasis (n=5, 56%). Infections related to CF included pulmonary tuberculosis (n=5, 56%); aspergillosis (n=1, 11%); and infections with nontuberculous mycobacteria (NTM) (n=1, 11%), *Staphylococcus aureus* (n=5, 56%), *Pseudomonas aeruginosa* (n=4, 44%), and *Stenotrophomonas maltophilia* (n=1, 11%). Other symptoms observed in CF patients were a history of failure to thrive (n=1, 11%), steatorrhea (n=3, 33%), clubbed fingers (n=1, 11%), fatty liver (n=2, 22%), pancreatic atrophy (n=1, 11%), and meconium ileus (n=2, 22%). [1]
Risk factor	N/A
Diagnosis	Patients with CF are diagnosed on classical clinical phenotypes and high sweat chloride concentration (>60mEq/L). [1]
Treatment	N/A
Prognosis	N/A
Genetic information	Mutation of *CFTR* gene [1, 3]

References	[1] Heterogeneous spectrum of *CFTR* Gene mutations in Korean patients with cystic fibrosis. ***Korean Journal of Laboratory Medicine and Genetics*** (2011) 31: 219-224 [2] Chest CT Features of Cystic Fibrosis in Korea: Comparison with Non-Cystic Fibrosis Diseases. ***Korean journal of radiology*** (2017) 18: 260-267 [3] The L441P mutation of cystic fibrosis transmembrane conductance regulator and its molecular pathogenic mechanisms in a Korean patient with cystic fibrosis. ***J Korean Med Sci.*** (2010) 25: 166-171

Epilepsy

Incidence	N/A
Prevalence	The National Health Insurance Service (NHIS) reported 134,820 patients were treated for epilepsy in 2015. [1]
Mortality	N/A
Gender	In 2015, about 75,140 men (56%) and 59,680 women (44%) were treated for epilepsy. [1]
Age	The age-specific prevalence was highest in teenagers (2.84/1,000). The prevalence of women decreased with age, whereas the prevalence of men tended to increase gradually between their 40s and 70s. [2]
Regional distribution	Regional distribution was highest in Jeju (7.41/1,000), followed in order of prevalence by Jeonnam, Jeonbuk, Gangwon, Chungnam, Gwangju, and Chungbuk. Ulsan had the lowest prevalence (4.02/1,000). The prevalence was lower in metropolitan (4.55/1,000) than in other (5.04/1,000) areas. [3]
Clinical phenotypes/ classification	Epilepsy is classified into generalized and partial seizures. Partial seizures begin at the local area of the cerebrum, and include simple and complex partial seizures. Generalized seizures, including absence, generalized tonic-clonic, myoclonic, and atonic seizures, occur throughout the brain. [4] Among patients who consecutively visited epilepsy clinics at secondary- and tertiary-care hospitals in Daegu (n=684), temporal lobe epilepsy was reported in 250 (36.5%), extra-temporal-lobe epilepsy in 275 (40.2%), generalized epilepsy in 129 (18.9%), and unknown in 30 (4.4%) patients. [5]
Clinical manifestation	The main symptom of an epilepsy is epileptic seizure. The signs of seizure can be difficult to detect and may occur suddenly. The patient may yawn, lose consciousness, make strange behaviors such as saying something unintelligible, and have severe seizures. [6]
Risk factor	The most common cause of symptomatic epilepsy was trauma (10.0%), followed by stroke (9.6%), central nervous system (CNS) infection (5.7%), and hippocampal sclerosis (4.9%). [7] Aneurysmal subarachnoid hemorrhage [8] and fever [9] were reported risk factors of epilepsy in Korean.
Diagnosis	Electroencephalograms (EEGs) are important for an epilepsy diagnosis. In addition, various neuroimaging methods such as MRI, PET, and SPECT are used to identify the causes and lesions of epilepsy. [7]

Treatment	Epilepsy can be controlled by antiepileptic drugs (AEDs) in up to 70% of patients. [10] Valproate, carbamazepine, and topiramate were the most commonly prescribed medications in all patients. [5] More than 30% of patients with epilepsy have intractable epileptic seizures that are not controlled despite treatment with two more drugs. For such intractable epilepsy, surgery is one of the most effective treatment methods. [11]
Prognosis	A significant number of epilepsy patients experience alleviation of their symptoms over time. The five-year remission rates were 65% for 10 years and 76% for 20 years after diagnosis. In addition, the prognosis of epilepsy was different according to the cause. The remission rate of partial seizures tended to be lower than that of generalized seizures. [6] In the first year after diagnosis of epilepsy, the average life expectancy is decreased by about 25.9% for men and 22.2% for women; however, five years, the decrease is lowered to 19.9% in men and 17.6% in women. [12]
Genetic information	Genetic polymorphisms of *ZC4H2* [13], *KCNA5* [14], *CLCN2* [15], and *KCNQ2* [16] were associated with epilepsy in the Korean population.
References	[1] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015) http://kosis.kr/ [2] The Economic Burden of Epilepsy in Korea, 2010. ***J prev med and public health*** (2013) 46: 293-299 [3] Prevalence of Treated Epilepsy in Korea Based on National Health Insurance Data. ***J Korean Med Sci.*** (2012) 27: 285-290 [4] A Critical Review on the Epilepsy-related Classification Systems Delineated in the Literatures both Western and East Asian Medicine : A Suggestion to Develope a New Classification. ***Kor J Oriental Preventive Medical Society*** (2010) 14: 135-148 [5] Suicidality and its Risk Factors in Korean People with Epilepsy: A MEPSY Study. ***Journal of Clinical Neurology*** (2015) 11: 32-41 [6] Epilepsy : Epidemiology and Classification. ***Journal of the Korean Medical Association*** (2003) 46: 265-278 [7] Clinical characteristics of patients with treated epilepsy in Korea: a nationwide epidemiologic study. ***Epilepsia*** (2014) 55: 67-75 [8] Seizures and Epilepsy following Aneurysmal Subarachnoid Hemorrhage : Incidence and Risk Factors. ***J Korean Neurosurg Soc.*** (2009) 46: 93-98 [9] Lamotrigine Decreased Hippocampal Damage and Improved Vascular Risk Markers in a Rat Model of Pentylenetetrazole Induced Kindling Seizure. ***The Korean journal of physiology & pharmacology*** (2014) 18: 269-278

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Familial Adenomatous Polyposis

Incidence	N/A
Prevalence	From June 1985 to April 2005 in a university hospital, familial adenomatous polyposis (FAP) was diagnosed in 40 patients, 0.67% of 5,960 colorectal cancer patients who were diagnosed with colorectal cancer and underwent surgery. [1]
Mortality	N/A
Gender	The male-to-female ratio was 28:12 in study performed on 40 patients who were diagnosed as having FAP and who underwent surgery due to FAP from June 1985 to April 2005. [1]
Age	The average age of the patients who have family history was 32.9 and the average age of the patients without family history was 41.4. [1]
Regional distribution	N/A
Clinical phenotypes/ classification	35 cases among total 40 cases had more than 100 polyps and 5 cases (12.8%) with less than 100 polyps (attenuated adenomatous polyposis) had an average age of 62.2 and all had no family history. The distribution of cancer in 40 cases are as follow: Rectal (15), ascending colon (2), transverse colon (1), descending colon (1), sigmoid colon (2). In 6 patients, cancer occurred concurrently. [1]
Clinical manifestation	17 cases of those 40 had a family history, 23 cases did not know their family history or did not conduct tests. The main symptoms were bloody stool, diarrhea, mucus discharge, constipation and abdominal pain. 5 cases were asymptomatic. [1]
Risk factor	Testing for *MUTYH* mutation was done for FAP patients in whom no mutation in the *APC* gene was identified. Three novel mutations (c.1654_1663delTCTTGGCGAG, c.3709COT, and c.6092_6094delinsTT) and three previously reported mutations (c.3631_3632de-lAT, c.4438COT, and c.4612_4613delGA) were detected. The *MUTYH* mutation was not detected in any of the four FAP patients without an *APC* mutation. This finding of three novel mutations in a group of Korean FAP patients broadens the spectrum of *APC* mutations. [2]
Diagnosis	Extracolonic manifestations include retinal epithelial hyperplasia, mandibular tumor, thyroid cancer, intraabdominal desmoid tumor and duodenal adenoma. Fundus examination was performed in 9 cases, and in 3 cases (33%), there was retinal epithelial hyperplasia. Gardner syndrome with a mandibular tumor was diagnosed by cervical computed tomography (CT) in 2 cases (5%) out of 40 cases. Extracolonic tumor were diagnosed by thyroid ultrasonography and cervical CT in 2 cases (5%) of thyroid cancer and 3 cases (7.5%) of desmoid tumor were found in abdominal cavity by abdominal CT. [1]

Treatment	Operation methods in 40 cases are as follow: Total proctocolectomy with end ileostomy (48.7%), total colectomy with ileorectal anastomosis (5.1%), total proctocolectomy with ileal J-pouch anal anastomosis (43.6%), palliative operation (ileal transverse colostomy) (2.6%) [1] Laparoscopic proctocolectomy with an ileal pouch anal anastomosis (IPAA) was performed successfully without severe complications in 9 patients. The mean operation time of the laparoscopic group was 352 min, and this was significantly longer than that of the conventional group (252 min). The mean intra-operative blood loss, time to first flatulance, the hospital stay and the time to starting an oral diet were not significantly different from that of the open group. Laparoscopic IPAA is a feasible and safe procedure due to the reduced trauma and pain and a more favorable cosmetic result. [3] Non-steroidal anti-inflammatory drugs (NSAIDs), such as sulindac, and selective COX-2 inhibitor, such as celecoxib, have shown a positive effect on FAP by causing polyp regression in some patients. A case of FAP was reported in a 9-year-old female whose polyposis regressed markedly after six months-treatment with celecoxib. [4]
Prognosis	Although it is not more likely to become cancer than adenomas that occur in sporadic colorectal cancer, there are hundreds and thousands of adenomas, and the likelihood of developing colon cancer is greatly increased. Untreated FAP is known to cause colorectal cancer in all patients. [5] Mean follow-up period was 35.1 months and postoperative recurrence was 5 cases. 2 cases showed local recurrence, 1 case of local recurrence and hepatic metastasis, 1 case of lung metastasis and 1 case of liver metastasis. These were all patients who underwent surgery after cancer was identified rather than preventative resection. [1]
Genetic information	*APC* gene were analyzed for germline mutations in 83 unrelated Korean FAP patients and investigated genotype-phenotype correlations. Germline *APC* mutations were identified in 59 (71%) of the cases, including 34 frameshift mutations, 19 nonsense mutations, and six splice site mutations. Among 59 patients with the identified germline mutation of the *APC* gene, 37 had been reported previously and were included in the genotype-phenotype analysis. In the other 22 patients, they identified seven novel mutations: c.1438C>T, c.2232_2233dupCT, c.3426delT, c.3739_3769del31, c.3931_3935delATTGG, c.4332dupA, and c.4722_4725delACTA. Desmoid tumors were identified in 6 of the examined FAP patients, five of whom had *APC* germline mutations; these mutations involved codons 849, 864, 1309, 1444 and 1464, respectively (c.2547_2548delTA, c.2592_2593insCT, c.3927_3931delAAAGA, c.4332dupA and c.4391-4394delAGAG). Four of the included FAP patients had papillary thyroid cancers; all were female and had germline *APC* mutations (c.1863_1865delTTAincCT, c.2805C>A, c.3183_3187delACAAA and c.3927_3931delAAAGA). [6]

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Gaucher Disease

Incidence	Total 56 patients with Gaucher disease from 1997-2006. [1]
Prevalence	36 patients were survived with Gaucher disease. [1]
Mortality	17/56 patients died in 2006. [1]
Gender	Of 20 patients with detailed clinical data, 9 patients are male, and 11 patients were female. [2]
Age	The mean ages at diagnosis in one study were 20.8±18.2 years (range, 1.4-57 years) for the non-neuronopathic type, and 8.8 ±5.1 years (range, 2.5 to 15.8 years) for the chronic neuronopathic type. [2]
Regional distribution	N/A
Clinical phenotypes/ classification	The 20 patients enrolled in the study were classified into three types: non-neuronopathic type (n=11), acute neuronopathic type (n=2), and chronic neuronopathic type (n=7). [2]
Clinical manifestation	Patients with non-neuronopathic type (n=11) had splenomegaly (n=10, 90.9%) and thrombocytopenia (n=8, 72.7%). Skeletal manifestations such as short stature, scoliosis, and multiple fractures (n=5, 45.5%) were also observed, as well as B-cell lymphoma without hepatosplenomegaly (9.1%). Bone marrow biopsies performed as a staging work-up revealed typical Gaucher cells. Among patients with the chronic neuronopathic type (n=7), splenomegaly (n=4/7, 57.1%), hepatomegaly (n=3/7, 42.9%), thrombocytopenia (n=5/7, 71.4%), and skeletal manifestations (n=4/7, 57.1%) were noted and all of these patients had experienced neurological manifestations since 8.7±4.3 years of age (range, 0.2 to 13.7 years), including epilepsy (n=4/7, 57.1%), impaired eye movement (n=3/7, 42.8%), intension tremor (n=2/7, 28.6%), and cognitive deficits (n=2/7, 28.6%). [2]
Risk factor	Accumulation of toxic lipid in bone marrow, spleen, and liver. [1]
Diagnosis	Platelet counts had decreased markedly in all patients, to 72.25±30.06×103/ mm^3 (range, 16-315×103/mm^3). Hemoglobin: 12.1±1.7 mg/dL (range, 9.4 to 14.6 mg/dL). Serum aspartate transaminase: 53.9±50.0 IU/L (range, 11 to 225 IU/L) Alanine transaminase (ALT) levels: 25.9±16.7 IU/L (range, 7 to 58 IU/L) Plasma chitotriosidase (normal range, 4 to 76 nmol/hr/mL) was markedly increased in 13 of 17 patients (76.5%) but was normal in the remaining four (23.5%) patients. The median activity was 3,331.8±2,486.6 nmol/hr/mL (range, 9.4 to 15,918.1 nmol/hr/mL).

	Angiotensin-converting enzyme (ACE) levels increased in 10 of 13 patients (76.9%) with a median activity of 145.3±88.2 U/L (range, 28.3 to 324.6 U/L). Acid phosphatase in 13 patients (100%) with median activity of 31.9±18.7 IU/L (range, 11.5 to 73.2 IU/L). These findings were identical in all subtypes. Histological examination the liver (n=5) or bone marrow (n=15), revealed typical Gaucher cells in 18 of 20 patients. β-glucocerebrosidase (GBA) activity was decreased in all patients, at 5.7±3.2 pmol/min/mg (range, 0.2 to 11.6 pmol/min/mg normal range, 20-80 pmol/min/mg). [2]
Treatment	Seventeen patients, excluding two and one with acute neuronopathic and chronic neuronopathic types whose parents refused treatment, were treated with recombinant GBA, imiglucerase. Enzyme replacement treatment (ERT) (30 to 60 unit/kg q 2 weeks) was started at 1 7.6±16.0 years of age (range, 2.1-45.0 years), at 1.1±0.8 years after diagnosis. [2]
Prognosis	Platelet levels increased to 92.9±75.0×103/mm^3 (range, 49-393×103/mm^3), and normalized in 58.3% of patients within six months of therapy. Chitotriosidase, acid phosphatase, and ACE levels all decreased to 659.8±280.7 mmol/mL/hr (range, 32.1-2,542.9 mmol/mL/hr), 9.6±6.1 IU/L (range, 1.5-22.7 IU/L), and 44.6±29.1 U/L (range, 14.2-117.3 U/L) within one year of therapy, respectively. Patients with incomplete data were excluded. [2]
Genetic information	GBA mutation analysis was conducted in 16 of 20 patients. In nine patients with the non-neuronopathic type, *L444P* (9/18 alleles, 50.0%) and *G46E* (5/18, 27.8%) were common mutations. Other mutations incuded *D409H* (2/18, 11.1%) and *R277C* (1/18, 5.6%). *R277C* had not been previously reported. One patient with the acute neuronopathic type presented with hydrops fetalis and harbored *c.630delC* and *R257Q* mutations. In five patients with the chronic neuronopathic type, *L444P* was identified in four alleles (40%), and *N188S, R257Q,* and *F213I* were detected in two alleles (20%) each. [1] Homozygous duplication of a 24bp region in exon 10 of *CHIT1*. [3]
References	[1] Helpline, Korea Centers for Disease Control and Prevention. Incidence, prevalence, and mortality of gaucher disease. http://helpline.nih.go.kr/cdchelp/index.gst [2] Clinical and genetic characteristics of Gaucher disease according to phenotypic subgroups. ***Koreans Journal of Pediatric*** (2012) 55: 48-53 [3] Allele frequency of a 24 bp duplication in exon 10 of the *CHIT1* gene in the general Korean population and in Korean patients with Gaucher disease. ***J Hum Genet.*** (2014) 59: 276-279

Hereditary Ataxia

Incidence	N/A
Prevalence	The prevalence of hereditary ataxia was 4.99 per 100,000 in a population-based epidemiological study using the Korea Health Insurance Review and Assessment Service data of 2009. [1]
Mortality	N/A
Gender	As of 2009, the male-to-female ratio was 57.2:27.8. [1]
Age	Age distribution of number of patients (prevalence) was as follow: 0-9 years: 226 cases, 10-19 years: 149 cases, 20-29 years: 202 cases, 30-39 years: 272 cases, 40-49 years: 352 cases, 50-59 years: 454 cases, 60-69 years: 423 cases, ≥70 years: 324 cases. 35.3% (n=849/2,402) were under 40. [1]
Regional distribution	Distribution in 351 cases from 55 hospitals which have neurology department in Korea was as follow: Seoul-Incheon_Gyeonggi: 172 cases, Jeonnam-Gwangju: 47 cases, Chungnam-Daejeon: 33 cases, Gyeongnam-Ulsan-Busan: 33 cases, Gyeongbuk-Daegu: 24 cases, Jeju: 16 cases, Chungbuk: 14 cases, Gangwon: 10 cases, Jeonbuk: 4 cases. [1]
Clinical phenotypes/ classification	Distribution of diagnositic code in hereditary ataxia was as follow: G11.0 (Hereditary ataxia) (5.2%), G11.1 (Early-onset cerebellar ataxia) (27.4%), G11.3 (Cerebellar ataxia with defective DNA repair) (6.0%), G11.8 (Other hereditary ataxia) (4.5%), G11.9 (Hereditary ataxia, unspecified) (56.9%) [1]
Clinical manifestation	Barthel Index for Activities of Daily Living (ADL) were checked in 34 hereditary ataxia patients who were collected by random sampling. Score range was 0 (dependent) to 20 (independent). 23.3% were 20 points, 30% were over 15 points and 17.6% were under 10 points. [1]
Risk factor	N/A
Diagnosis	Four novel mutations (one splicing, one truncating, and two missense mutations) were identified which were distributed throughout the *SYNE1* gene in two patients. The phenotype was mainly pure cerebellar ataxia in both cases. However, axonal neuropathy, mild frontal dysfunction, and autonomic dysfunction were also revealed. The age of disease onset was relatively late and the disease course was only mildly progressive. These results indicate that *SYNE1* mutations are not an uncommon cause of recessive ataxia with additional clinical features in the Korean population. [2]
Treatment	N/A

Prognosis	Modified Rankins scales (disease severity index) were checked in 34 hereditary ataxia patients who were collected by random sampling. 38.2% were grade 1 (no significant disabilities despite symptoms). 14.7% were grade 2 (slight disability). 11.7% were grade 3 (moderate disability), 17.6% were grade 4 (moderately severe disability). 14.7% were grade 5 (severe disability). [1]
Genetic information	Subtypes in 351 cases from 55 hospitals which have neurology department in Korea were as follow: SCA1 (8.3%), SCA2 (27.9%), SCA3 (23.1%), SCA6 (22.8), SCA7 (7.1%), SCA8 (1.1%), SCA17 (5.1%), DRPLA (4.0%), 16q ADCA (0.6%) [3]
References	[1] Investigation of Hereditary Ataxia Prevalence in Korea. Korea Centers for Disease Control and Prevention (2009) [2] Identifying *SYNE1* ataxia and extending the mutational spectrum in Korea. ***Parkinsonism and Related Disorders*** (2019) 58: 74-78 [3] SCA in Korea and its regional distribution: A multicenter analysis. ***Parkinsonism and related disorders*** (2011) 17(1): 72-75

Huntington's Disease

Incidence	Based on resident registration data, the mean calculated crude annual incidence was 0.06±0.01/100,000 persons. [1]
Prevalence	The estimated crude prevalence of Huntington's disease (HD) was 0.41/100,000 persons, based on the cumulative number of HD cases in the Rare Diseases Registry (RDR) database (n=208) and the size of the Korean population (n=51,141,463) as of December 2013. The estimated crude prevalence based on the National Health Insurance (NHI) database was 0.38±0.04. [1]
Mortality	Twenty-five of 47 patients with HD who visited Seoul National University Hospital from 1994 to 2015 were deceased. [2]
Gender	According to the NHI database, a mean of 190.60±19.86 HD patients received medical services annually between 2009 and 2013 (range: 171-222), with a mean of 43.42±4.48% male patients. [1] Of 36 patients with HD, 13 were men (36%) and 23 were women (64%). [3]
Age	The mean age of 68 HD patients at initial symptom onset was 44.16±14.08 years, and the mean interval from initial symptom onset to HD diagnosis was 4.30±2.96 years. [1] The mean age of onset was 46.5±12.7 years (range 24-69 years). The mean age at the first visit to the hospital was 48.6±13.7 years (range: 27-80 years) and the mean duration from symptom onset to hospital visit was 3.8±2.6 years (range: 0-11 years). [3]
Regional distribution	N/A
Clinical phenotypes/ classification	N/A
Clinical manifestation	Among 68 patients, chorea (n=41, 60.3%) was the most frequent initial symptom followed by psychiatric symptoms (n=19), gait disturbance (n=13), dysarthria (n=9), cognitive impairment (n=8), parkinsonism (n=2), and urinary symptoms (n=1). The causes of hospital visits (chief complaints) included chorea (n=58, 85.3%), gait disturbance (n=18), psychiatric symptoms (n=16), cognitive impairment (n=12), dysarthria (n=10), parkinsonism (n=4), tremor (n=3), limb ataxia (n=2), dysphagia (n=1), and dystonia (n=1). [1] Of 36 patients, chorea was the most frequent symptom at their first visit to the hospital (n=32, 89%). The other types of motor symptom included dystonia (n=1, 3%) and parkinsonism (n=3, 8%). Thirteen subjects (36%) had cognitive decline. Ten subjects (28%) had psychiatric symptoms. [3]
Risk factor	N/A

Diagnosis	Clinical evaluations - Clinicians should focus on atypical manifestations, such as the initial symptoms of ataxia, movement abnormalities of Parkinsonism, dystonia, tics (even sporadic cases), juvenile patients with initial symptoms of seizures, intellectual decline, walking instability, tics in limbs, etc. - Genetic testing can confirm CAG repeat expansion in *HTT* but cannot precisely predict the age of onset (AAO); as a result, the precise onset time of gene-positive individuals remains difficult to predict. A variety of additional data have identified cognitive decline, subtle motor signs, reduced white matter volumes, and subjective complaints of noticeable change. In addition, new approaches have been utilized to detect the time of clinical onset, including, functional MRI, structural-MRI, electroencephalography, and event-related potentials. However, research in this area remains scarce in Asia. [2]
Treatment	N/A
Prognosis	N/A
Genetic information	Genetic analysis of 36 subjects revealed a mean expanded CAG repeat size of 45.4±4.7 (range 40-58). All subjects were heterozygous. The mean normal CAG repeat size was 18.9±2.2 (range 15-24). Most patients had normal CAG repeat size of 17 to 21 and expanded CAG repeat size of 40 to 52. A negative correlation was found between expanded CAG repeat size and age of onset. [3]
References	[1] Current status of Huntington's disease in Korea: A national wide survey and national registry analysis. ***JMD.*** (2015) 8: 14-20 [2] Huntington's disease in Asia. ***Chinese Medical Journal*** (2015) 128: 1815-1819 [3] Preliminary analysis of Huntington's disease in South Korea. ***Journal of Huntington's Disease*** (2013) 2: 83-87

Idiopathic Pulmonary Fibrosis

Incidence	The incidence rate of idiopathic pulmonary fibrosis incidence (IPF) was 12.9/100,000 persons in 2012. [1]
Prevalence	The prevalence of IPF was 35.0/100,000 persons in 2013. [1]
Mortality	From 2003 to 2007, 196/1,228 patients were died. [2]
Gender	In 2012, the incidence of IPF was higher in men (16.3/100,000) than that in women (9.6/100,000). [1]
Age	The incidence of IPF tended to increase with age. In 10-year age groups, the incidence was highest for those ≥70 years (men=147.6, women=56.0/100,000), followed by those in their 60s (men=56.0, women=20.9/100,000), 50s (men=14.2, women=9.9/100,000), and 40s (men=4.1, women=3.9/100,000). [1]
Regional distribution	N/A
Clinical phenotypes/ classification	According to the gender, age, physiology (GAP) scores, four clinical variables were examined: sex (woman: 0 points, man: 1 point), age (0-2 points), forced vital capacity (FVC) (%) (0-2 points), and carbon monoxide diffusion capacity (DLCO) (%) (0-3 points). The prevalence of GAP stages I , II, and III were 60.2% (n=760/1262), 36.1% (n=455/1262), and 3.7% (n=47/1262), respectively [2]
Clinical manifestation	Cough (n=8/42, 65.8±6.5 weeks) and sputum (n=26/42, 63±8.0 weeks) [3] Dyspnea of exertion (n=842/1,228), cough (n=725/1,228), sputum (n=408/1,228), hemoptysis (n=27/1,228), chest pain (n=77/1,228), and asymptom (n=56/1,228) [2]
Risk factor	Tuberculosis (n=9/42), diabetes (n=14/42), hypertension (n=20/42), cardiac disease (n=10/42), cerebral disease (n=2/42), and lung cancer (n=3/42) [3]
Diagnosis	The FVC (72±17 %), DLCO (65±20%), difference between the initial and follow-up FVC values (dFVC, -7±18%), difference between the initial and follow-up DLCO values (dDLCO, -11±25%) [4]
Treatment	Forty-nine patients (56%) received specific treatment with cyclophosphamide (n=25, 28%), corticosteroids (n=15, 17%), interferon-gamma (n=3, 3%), azathioprine (n=1, 1%), and more than one drug (n=5, 6%). The remaining 39 patients (44%) were managed with symptomatic supportive care only. [5]

Prognosis	Survival analysis showed that age, pulmonary function parameters, pulmonary oxygen tension, honeycombing change, and combined lung cancer significantly influenced patient prognosis. However, there was no significant difference in prognosis between clinically-diagnosed IPF (cIPF) and surgically-diagnosed IPF (sIPF) after adjusting for GAP stage. The patients with sIPF had better clinical features than those in patients with cIPF. However, after adjusting for GAP stage, the sIPF group showed similar prognoses as those in the cIPF group. This study showed similar prognosis in patients with IPF after adjusting for GAP stage, regardless of the diagnostic method used. [6]
Genetic information	*ADAM33* rs628977G was marginally associated with a decreased risk of IPF. [4] ACE -5538T[C and -5508A[C significantly associated with risk of IPF in Korea. [7]
References	[1] Incidence and prevalence of idiopathic interstitial pneumonia and idiopathic pulmonary fibrosis in Korea. ***Int J Tuberc Lung Dis.*** (2016) 20: 978-984 [2] Predicting survival of patients with idiopathic pulmonary fibrosis using GAP score: a nationwide cohort study. ***Respir Res.*** (2016) 17: 131 [3] Annual Change in Pulmonary Function and Clinical Characteristics of Combined Pulmonary Fibrosis and Emphysema and Idiopathic Pulmonary Fibrosis: Over a 3-Year Follow-up. ***Tuberc Respir Dis.*** (2014) 77: 18-23 [4] ADAM33 gene polymorphisms are associated with the risk of idiopathic pulmonary fibrosis. ***Lung*** (2014) 192: 525-532 [5] Prognostic factors and causes of death in Korean patients with idiopathic pulmonary fibrosis. ***Respiratory Medicine*** (2006) 100: 451-457 [6] Comparisons of Prognosis between Surgically and Clinically Diagnosed Idiopathic Pulmonary Fibrosis Using Gap Model: A Korean National Cohort Study. ***Medicine (Baltimore).*** (2016) (11):e3105 [7] Angiotensin-converting enzyme (ACE) gene polymorphisms are associated with idiopathic pulmonary fibrosis. ***Lung*** (2013) 191: 345-351

Multiple Sclerosis

Incidence	N/A
Prevalence	The crude multiple sclerosis (MS) prevalence was 3.5-3.6/100,000 individuals between 2000 and 2005. The estimated number of MS patients by the linear regression equation was 1,640 and the prevalence was 3.5 per 100,000 individuals. [1]
Mortality	152 deaths under cause of death G35 between 1990 and 2003. According to the search for the 1,352 patients in the MS registry whose personal identifier was available, 54 deaths were identified and eliminated. [1]
Gender	Of 105 patients, in one study, 70 were female and 35 were male. [2]
Age	The mean age of onset and mean disease duration were 30.4±9.8 and 5.4±4.8 years, respectively. [2]
Regional distribution	The highest prevalence is in North America, Northern Europe, and Australia, at 100-200/100,000 population, whereas Asian and African countries generally have a low prevalence of less than 5/100,000. [3]
Clinical phenotypes/ classification	Among 86 patients with clinically-definite MS (CDMS), 75 (87%) had relapsing-remitting MS (RRMS), eight (9%) had secondary progressive MS (SPMS), and three (3%) had primary progressive MS (PPMS). [2]
Clinical manifestation	Sensory abnormalities (35%), weakness in one more limb (30%), brainstem symptoms (27%), vision decrease (25%), bladder/bowel dysfunction (9%) and cerebellar symptoms (7%) were chief the complaints. Optic neuritis tended to occur more commonly in younger patients, while motor deficits were more common in older patients. [2]
Risk factor	Vitamin D deficiency was also associated with an increased risk of MS. Activation of autoreactive pro-inflammatory T cells, humoral autoimmunity, and cytokine level were closely related to MS. [4]
Diagnosis	IgG index > 0.7 (n=47/77), oligoclonal band (OCB) (n=22/55) and IgG index > 0.7OCB (n=53/77) in cerebrospinal fluid (CSF) study, and spinal cord lesions (n=58/78) in MRI assessment were used for diagnosis. [2] IgG indices above 0.7 were observed in 13 patients (52.0%), while a positive response to myelin basic protein was detected in only five patients, spinal cord MRI (a relatively longer spinal segment), and brain MRI scans (high-signal-intensity lesions in T2-weighted images in 20/37 patients (54.1%)), and an abnormal evoked potentials (Visual Evoked Potential, VEP: 29 patients (64.4%), Brainstem Auditory Evoked Potential, BAEP 5 patients (extremely low, 12.2%), and sensory evoked potential, SEP 28 patients (relatively high, 60.9%) were also used for diagnosis. [5]

Treatment	Interferon (IFN)-β increases the expression and concentration of anti-inflammatory cytokines. IFN-β treatment reduces the relapse rate in MS. Mitoxantrone, cyclophosphamide, azathioprine, and temsirolimus are considered for the treatment of MS. [4] According to a nationwide multi-center study assessing the clinical characteristics and outcome of MS patients in Korea, 89 patients (85%) were treated with IFNβ (IFNβ 1b 250 μg IFNβ 1a 44 μg). Of these, 59 patients initiated IFNβ therapy upon RRMS diagnosis, 26 at clinically-isolated syndrome (CIS) suggestive of MSa McDonald MS state, one at SPMS, and three at PPMS. [2]
Prognosis	Disability progression, measured by the Expanded Disability Status Scale (EDSS), was observed after IFNβ treatment in 14 (16%) patients, and eight (13%) patients changed IFNβ treatment or added other treatments due to ongoing relapses or disability progression. Of the 26 patients who initiated IFNβ therapy at CIS suggestive of MSa McDonald MS state, 12 (46%) converted to CDMS after a mean of 17.1 ± 13.3 months. [2]
Genetic information	In human MS lesions, confocal imaging also demonstrated that the expression of *PRDX6* and increased expression in *GFAP*-positive cells. [6]
References	[1] Prevalence of multiple sclerosis in Korea. ***Neurology*** (2010) 75: 1432-1438 [2] Clinical characteristics and outcome of multiple sclerosis in Korea: does multiple sclerosis in Korea really differ from that in the Caucasian populations? ***Multiple Sclerosis Journal*** (2013) 19: 1493-1498 [3] Differential Diagnosis between Multiple Sclerosis and Neuromyelitis Optica Spectrum Disorder. ***Journal of the Korean Neurological Association*** 34.4 (2016): 290-296 [4] Multiple sclerosis***. Journal of the Korean Medical Association*** 56.8 (2013): 702-708 [5] Preliminary studies on the clinical feature of multiple sclerosis in Korea. ***Journal of Clinical Neurology*** (2006) 2: 231-237 [6] *PRDX6* controls multiple sclerosis by suppressing inflammation and blood brain barrier disruption. ***Oncotarget*** (2015) 6: 20875-20884

Myasthenia Gravis

Incidence	The crude incidence rate per 100,000 was 0.55 in 2014. [1] The age-standardized incidence rate per 100,000 was 2.44 in 2011. [2]
Prevalence	The crude prevalence rate per 100,000 was 12.99 in 2014. [1] The age-standardized prevalence rate per 100,000 was 10.66 in 2011. [2]
Mortality	N/A
Gender	The number of myasthenia gravis (MG) cases was approximately 1.5 times higher in women than in men. [1]
Age	The prevalence was higher in older (≥50 years) age groups than that in younger (<50 years) age groups (9.26 vs. 19.24/100000; relative risk [RR]: 2.077; 95% confidence interval [CI]: 1.976–2.183; P<0.001]. [1]
Regional distribution	N/A
Clinical phenotypes/ classification	MG subgroups 1) early-onset myasthenia gravis with AChR antibodies 2) late-onset MG with AChR antibodies 3) thymoma-associated myasthenia gravis 4) MUSK-associated MG 5) LRP4-associated MG 6) antibody-negative generalized MG [3]
Clinical manifestation	The single most important clinical feature of MG is weakness of skeletal muscle worsened by exercise and relieved by rest. Without this feature there can be no diagnosis. [4]
Risk factor	N/A
Diagnosis	The clinical diagnosis of MG is often confirmed by observing the electrical responses of a muscle to repetitive supramaximal stimulation of its motor nerve. [4]
Treatment	Rapid induction therapy includes intravenous immunoglobulin (IVIg) and plasma exchange (PE), which produce improvement within a few days after initiation. High-dose prednisone has been more universally preferred for remission induction, but acts more slowly than IVIg and PE, commonly only after a delay of several weeks. Slow tapering of steroids after a high-dose pulse offers a method of maintaining the state of remission. [5]
Prognosis	N/A
Genetic information	Early-onset MG have is defined as the onset of the initial symptoms before 50 years of age. Early-onset MG is associated with *HLA-DR3* and *HLA-B8*. Patients with late-onset MG are defined as having their first onset of symptoms after 50 years of age. In late-onset MG, weak HLA associations occur with *HLADR2, HLA-B7,* and *HLA-DRB1*15:01*. [3]

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Neuromyelitis Optica

Incidence	N/A
Prevalence	The crude prevalence rate per 100,000 was 3.6; 1,873 treated patients were claimed in 2017. [1]
Mortality	N/A
Gender	Neuromyelitis optica (NMO) is up to nine times more prevalent in women than men. [2]
Age	The median age of onset is 39 years. However, NMO also occurs in children and elderly people. [2]
Regional distribution	N/A
Clinical phenotypes/ classification	Ocular pain with loss of vision, and myelitis with severe symmetric paraplegia, sensory loss below the lesion, and bladder dysfunction are typical features of NMO. [2]
Clinical manifestation	N/A
Risk factor	N/A
Diagnosis	Prior NMO diagnostic criteria required optic nerve and spinal cord involvement but more restricted or more extensive central nervous system involvement may occur. The new nomenclature defines the unifying term NMO spectrum disorders (NMOSD), which is stratified further by serologic testing (NMOSD with or without AQP4-IgG). The core clinical characteristics required for patients with NMOSD with AQP4-IgG include clinical syndromes or MRI findings related to optic nerve, spinal cord, area postrema, other brainstem, diencephalic, or cerebral presentations. More stringent clinical criteria, with additional neuroimaging findings, are required for the diagnosis of NMOSD without AQP4-IgG or when serologic testing is unavailable. [3]
Treatment	Intravenous corticosteroid therapy is commonly the initial treatment for acute attacks of optic neuritis or myelitis. Patients who did not respond promptly to corticosteroid treatment benefited from seven treatments of plasmapheresis exchange over a period of two weeks in a randomized, controlled, crossover trial. [2]

Prognosis	Relapsing episodes of optic neuritis and myelitis rather than a monophasic course occur in 80–90% of patients with NMO. Relapse occurs within one year in 60% of patients and within three years in 90% of patients. Within five years of disease onset, more than 50% of patients with relapsing NMO are blind in one or both eyes or require ambulatory help. The predictors of a worse prognosis include the number of relapses in the first two years of disease, the severity of the first attack, and, possibly, also having systemic lupus erythematosus or a related non-organ-specific autoimmune disorder or autoantibodies. [2]
Genetic information	Genetic variations in *CD58* may be associated with susceptibility to NMO in the Korean population. The A allele of rs2300747 may decrease *CD58* RNA expression, thus increasing NMO risk. Also, the G allele of rs1016140 caused increased T cell activity, which in turn eased the access of *AQP4* antibody into the central nervous system, ultimately leading to NMO. [4]
References	[1] Korea National Health Insurance Service Database [2] The spectrum of neuromyelitis optica. ***Lancet Neurol.*** (2007) 6(9): 805-15 [3] International consensus diagnostic criteria for neuromyelitis optica spectrum disorders. ***Neurology*** (2015) 85(2): 177-189 [4] *CD58* polymorphisms associated with the risk of neuromyelitis optica in a Korean population. ***BMC Neurology*** (2014) 14:57

Paroxysmal Nocturnal Hemoglobinuria (PNH)

Incidence	N/A
Prevalence	N/A
Mortality	During a median follow-up period of 6.6 years (range: 0-28.8 years), 43 (14.3%) patients died. Paroxysmal nocturnal hemoglobinuria (PNH) patients with hemolysis had a 4.8-fold higher mortality rate compared to that in the age- and sex-matched general population (P<0.001). [1]
Gender	Of 301 patients, 152 and 149 were men and women, respectively. [1]
Age	A median age of 36.5 years (24-61 years) [2] The median patient age was 37 years (range: 8 to 88 years) and median PNH duration was 7.8 years. [1, 3]
Regional distribution	N/A
Clinical phenotypes/ classification	Hemoglobinuria (56.1%) and abdominal pain (46.8%). [1]
Clinical manifestation	Fatigue was assessed by using the Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-Fatigue) instrument. Improvement in fatigue was noted in four patients (67%). The FACIT-Fatigue scores improved by a median of 8 points during the first 24 weeks of eculizumab therapy, and only one patient had decreased scores after therapy. [1] The most frequently reported clinical symptoms were hemoglobinuria (56 %), pain (56 %), abdominal pain (47 %), dyspnea (36.9%), and chest pain (13%). [4]
Risk factor	History of aplastic anemia and myelodysplastic syndrome were reported in 42% and 6.3% of patients, respectively. [1]
Diagnosis	Flow cytometry was reported for 236 patients (78.4%), Ham's and sucrose tests for 56 patients (18.6%), Ham's test only for seven patients (2.3%), and sucrose test only for two patients (<1%). [1]
Treatment	Eculizumab was administered intravenously at a dose of 600 mg/week (±2 days) for the first 4 weeks and 900 mg at week 5 and 2nd weekly thereafter. Two weeks before therapy initiation, all patients were vaccinated against *Neisseria meningitidis*, because the inhibition of omplement C5 increases the risk of developing neisserial infections. [2]
Prognosis	Reduction of lactate dehydrogenase (LDH) levels began after receiving a single dose of eculizumab. After treatment with eculizumab for 12 and 24 weeks, improvement in fatigue was noted in four patients (67%). After therapy, significant improvement in abdominal pain was noted in the three patients who had severe abdominal pain before treatment. [2]

Genetic information	N/A
References	[1] Predictive Factors of Mortality in Population of Patients with Paroxysmal Nocturnal Hemoglobinuria (PNH): Results from a Korean PNH Registry. ***J Korean Med Sci.*** (2016) 31: 214-221 [2] The use of the complement inhibitor eculizumab (Soliris) for treating Korean patients with paroxymal nocturnal hemoglobinuria. ***The Korean Journal of Hematology*** (2010) 45: 269-274 [3] Association between elevated hemolysis at diagnosis and early mortality and risk of thrombosis in paroxysmal nocturnal hemoglobinuria (PNH) patients with cytopenia. ***Blood*** (2010) 116: 4241 [4] Clinical signs and symptoms associated with increased risk for thrombosis in patients with paroxysmal nocturnal hemoglobinuria from a Korean Registry. ***International Journal of Hematology*** (2013) 97: 749-759

Pemphigus Vulgaris

Incidence	Pemphigus is the most common immunobullous disease in Korea, varying in incidence from 0.1 to 0.5 cases per 100,000 people per year.
Prevalence	N/A
Mortality	During the 16-year follow-up period, eight patients died of sepsis (3 cases), hepatic failure, lung cancer, esophageal cancer, gastric perforation, and suicide.
Gender	Of 104 patients with pemphigus vulgaris (PV), 51 were male and 53 were female.
Age	The mean age of onset was 47.0 years ranged 19-75 years.
Regional distribution	N/A
Clinical phenotypes/ classification	Disease severity was categorized based on the extent of disease and intensity of therapy as mild (GMFCS E&R level III, n=17/104), moderate (GMFCS E&R level III, n=44/104), severe (GMFCS E&R level IVV, n=43/104).
Clinical manifestation	Oral mucosa involvement appeared in 102 patients (98.1%) with PV, and 95.2% had skin lesions.
Risk factor	Treatment regimens were determined based on pemphigus subtype, disease severity and other associated diseases, such as diabetic mellitus, renal dysfunction and hepatic failure.
Diagnosis	N/A
Treatment	Systemic corticosteroids are the mainstay of treatment. - The initial dose of oral Pd (prednisolone) was 25.4±15.3 mg. - 12 patients received Pd alone - 92 patients received adjuvant therapies : Azathioprine (n=48, 52.2%), Cyclophosphamide (n=25, 27.2%), mycophenolate mofetil (n=28, 30.4%), Cyclosporine A (n=15, 16.3%), and Dapsone (n=2, 2.2%) - MPd (methylprednisolone) pulse therapy (n=36, 35%) - IVIG (n=9, 9%) - Rituximab (n=15, 14 %)
Prognosis	Regarding treatment outcomes and prognoses, OR was induced in 42.3, 77.2 and 93.5% of PV patients two, five and 10 years after diagnosis, respectively.
Genetic information	N/A
References	[1] Long-term prognosis of pemphigus in Korea: retrospective analysis of 199 patients. ***Dermatology*** (2010) 223: 182-188

Pulmonary Arterial Hypertension

Incidence	The incidence rate of Pulmonary Arterial Hypertension (PAH) was 19/100,000 in a multicenter, prospective study of 2008. [1]
Prevalence	The prevalence of PAH was 10.8% in the screening program from April 2013 to December 2015. [2]
Mortality	N/A
Gender	Of total 625 patients, 112 patients were male (19.5%) and 513 patients were female (80.5%). [1]
Age	The mean age enrollment was 47.6±5.7 years. [1]
Regional distribution	N/A
Clinical phenotypes/ classification	Connective tissue disease (CTD) (n=311, 49.8%), followed by congenital heart disease (CHD) (n=159, 25.4%) and idiopathic PAH (IPAH) (n=145, 23.2%). WHO functional classes II, III, and IV corresponded to 218 (34.9%), 240 (38.4%), and 31 patients (5.0%), respectively. [1]
Clinical manifestation	Clinically, the most significant symptoms of pulmonary hypertension are shortness of breath and fatigue. As the disease progresses, right ventricular dysfunction causes chest pain, swelling, edema, ascites, and syncope. [3]
Risk factor	In one study, approximately 19.4% of patients had essential hypertension, 8.2% had diabetes, 15.3% were obese and only 4.2% were current smokers. [1]
Diagnosis	PAH Group 1 PH was defined as a mean pulmonary artery pressure (PAP) of >25 mmHg and a mean pulmonary capillary wedge pressure (PCWP) of <15 mmHg in right heart catheterization (RHC). When RHC could not be performed, Doppler echocardiography was used to confirm the diagnosis. The diagnostic criteria by Doppler echocardiography were as follows: pulmonary artery systolic pressure (PASP) > 40 mmHg calculated using a maximal systolic velocity (Vmax) of tricuspid regurgitation jet mean PAP > 25 mmHg calculated based on the acceleration time of the pulse Doppler spectral wave on the right ventricular outflow tract, and normal LV systolic and diastolic function and normal left arterial volume. [1]
Treatment	All patients (n=625) and incidence patients (n=297) in the Korean Registry of Pulmonary Arterial Hypertension (KORPAH). Among the 297 incidence patients, 182 (61.3%) were treated by PAH-specific medical therapies. Of those, 154 (84.6%) were prescribed single medications, including bosentan (n=93), beraprost (n=23), sildenafil (n=21), and inhaled iloprost (n=17). Twenty-eight (15.4%) patients received combination therapy. [1]

Prognosis	The first-, second-, and third-year estimated survival rates were 90.8%, 87.8%, and 84.4%, respectively. [1]
Genetic information	Korean PAH patients had a significantly greater frequencies of the *HLA-DRB1**0406 allele, and the *DRB1**0406-*DQB1**0302 haplotype, compared to those in the normal Korean control group. [4]
References	[1] Baseline characteristics of the Korean registry of pulmonary arterial hypertension. ***J Korean Med Sci.*** (2015) 30: 1249-1438 [2] Prevalence of Pulmonary Arterial Hypertension in Korean Adult Patients with Systemic Sclerosis: Result of a Pilot Echocardiographic Screening Study. ***J Cardiovasc Ultrasound*** (2016) 24(4): 312-316 [3] Design and Protocol Development of Idiopathic Pulmonary Arterial Hypertension Cohort (2012) Korean Center for Disease Control. [4] Association of HLA class II genes with idiopathic pulmonary arterial hypertension in Koreans. ***Lung*** (2007) 185: 145-149

Sarcoidosis

Incidence	The annual incidence rates showed increasing trends from 0.85 per 100,000 at risk in 2009 to 0.97 per 100,000 at risk in 2015 using nationwide claims data from the Korean Health Insurance Review and Assessment Service. [1]
Prevalence	The sarcoidosis prevalence was 9.37 per 100,000 people and was highest between ages 60–69 years. [1]
Mortality	The all-cause mortality rate was 13.1 per 1,000 sarcoidosis patients using data of the National Health Insurance Service database. The standardised mortality ratio of sarcoidosis patients to the general population was 1.7. [2]
Gender	A total of 4,791 patients (male: n=1,864, female: n=2,927) had at least one visit with a sarcoidosis-related KCD-7 and RID code during the study period. The female to male ratio was 1.57. [1]
Age	The mean age of prevalent cases was 53.2±13.9 years (males: 48.9±15.0 years, females: 56.1±12.3 years). The peak prevalence of the total population was 60– 69 years. When stratified by sex, the highest prevalence in females was seen in those aged 60–69 years; the prevalence in males showed bimodal peaks, with one at 30–39 years and another at 70–79 years. [1]
Regional distribution	The prevalence and incidence rates by race and region are very different. In western countries like Scandinavia and Ireland, incidence rate of 5 to 40 people per 100,000, while in Japan it is estimated to have a 1.01 incidence rate per 100,000. [3]
Clinical phenotypes/ classification	According to radiological studies at the time of diagnosis, prevalence for stages of sarcoidosis was as follows: Stage I (42.4%), stage II (55.6%), and stage III (2%). There was no case with radiologic findings of stage IV features such as fibrotic bands, bullae, hilar retraction, bronchiectasis, or diaphragmatic tenting in a study using electronic medical records of Chonnam National University (CNU) Hospital and CNU Hwasun Hospital (CNUHH) were searched for confirmed cases of sarcoidosis diagnosed between 1996 and 2014. [4]
Clinical manifestation	Of the 2,999 incident cases, 32.0% had an accompanying diagnosis code including erythema nodosum (L52, 1.2%), heart failure (I50, 5.9%), and Bell's palsy (G51.0, 1.6%), respectively. Respectively, 8.3% and 0.3% of incident cases had codes of uveitis (H20.0, H22.0) and multiple cranial nerve palsies in sarcoidosis (G53.2). [1] Clinical manifestations using a regional hospital between 1996 and 2014, dermatological involvement 11.1%, ocular lesions 15.2% (uveitis 14.1%, conjunctival lesion 1.0%), electrocardiographic changes 4.0% (right bundle branch block 1.0%, left ventricular hypertrophy 1.0%, first degree atrioventricular block 2.0%) [4]

Risk factor	Because Korea is a racially homogeneous country, environmental factors may be another cause for increased age at diagnosis. As industrialization progresses, there is a greater chance of encountering substances that generate granulomatous immunological reactions, including metal, inorganic, and organic dust. Accumulation of exposure to substances over time may be associated with the higher incidence of sarcoidosis in higher age group. [1]
Diagnosis	Diagnostic bronchoscopy was conducted in 50.6% of incident cases before or after 3 months of the first claim. The proportion of patients with claims for bronchoscopy increased from 44.0% in 2009 to 56.4% in 2015. A total of 935 (51.3%) incident cases had claims for biopsy including surgical lung biopsy (19.1%) and skin biopsy (13.1%). [1]
Treatment	The data showed claims for systemic steroids at least once within a year of the first claim in 78% of incident cases. Of these, 1527 (50.9%) received systemic steroid for > 30 days (initial 30 days mean prescribed doses: 33.0±25.7 mg based on prednisolone equivalents). Topical steroid (20.9%), other immunosuppressant (8.8%), and hydroxychloroquine (4.1%) were also claimed within a year of the earliest sarcoidosis claim. Most medication was initiated within 4 months of the index date, with the exception of topical steroid. [1]
Prognosis	Natural course of sarcoidosis cases among 99 patients with confirmed disease codes of sarcoidosis, spontaneous remission 33.3%, progressed 24.2% (Steroid treatment for any reason 23.2%, progressed but not treated with steroids 1.0%), stable disease 42.5% (Stable 37.4%, lost to follow-up after diagnosis 5.1%) [4] Overall clinical outcome of patients were: improved (74%), stable (19%) and unfavorable (7%) in a single tertiary university hospital retrospective study between 1995 and 2007 (total 103 patients). [5]
Genetic information	Ninety-one sarcoidosis subjects (58 with and 33 without uveitis) and 104 healthy controls were genotyped for eleven *IL23R* SNPs. Three *IL23R* SNPs, rs7517847 (intron 6), rs11465804 (intron 8), and rs11209026 (exon 9, c.1142G>A, p.Arg381Gln) were associated with sarcoidosis in this population ($P<0.05$): rs7517847 showed increased frequencies in sarcoidosis compared to controls, but rs11465804 and rs11209026 were decreased. Two of these SNPs were associated with the uveitis subgroup compared to controls: rs11465804 (0.9% vs. 7.2%, odds ratio [OR]: 0.11, $P=0.013$) and rs11209026 (1.8% vs. 7.3%, OR: 0.23, $P=0.038$). This finding indicates the association of *IL23R* polymorphism with sarcoidosis, especially with sarcoid uveitis. [6]

References	
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	[2] Prevalence, incidence, and mortality of sarcoidosis in Korea, 2003–2015: A nationwide population-based study. ***Respiratory Medicine*** (2018) 144: S28-S34
	[3] Sarcoidosis in Korea: Revisited. (2008) ***J Korean Med Assoc.*** 51(10): 925-932
	[4] Review of Sarcoidosis in a Province of South Korea from 1996 to 2014. ***Tuberc Respir Dis.*** (2017) 80(3): 291-295
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	[6] Association of interleukin 23 receptor gene with sarcoidosis. ***Disease Markers*** (2011) 31(1): 17-24

Systemic Lupus Erythematosus

Incidence	The overall incidence was 2.5/100,000 in 2008 and 2.8/100,000 in 2009. [1]
Prevalence	The overall systemic lupus erythematosus (SLE) prevalence increased significantly each year from 20.6/100,000 in 2006 to 26.5/100,000 in 2010. [1]
Mortality	Among 1,010 patients with SLE who visited Seoul Saint Mary's Hospital in 1997-2007, the five-year survival rate was 97.8%. [2]
Gender	There were 10,080 prevalent SLE patients (1,339 males, 8,741 females) in 2006. The magnitude of prevalent SLE increased to 13,316 patients (1,914 males, 11,402 females) in 2010. [1]
Age	The SLE incidence increased significantly with age to 30-39 years and then decreased slowly [1]. By 10 year age groups, the incidences of 10's, 20's, 30's, 40's, 50's, 60's and 70's were 1.9 (95% confidence interval [CI]: 1.6-2.2), 3.6 (95% CI: 3.2-4.0), 3.9 (95% CI: 3.5-4.3), 3.1 (95% CI: 2.7-3.5), 2.3 (95% CI: 1.9-2.7), 2.3 (95% CI: 1.8-2.8), and 1.1 (95% CI: 0.7-1.5) per 100,000, respectively. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	SLE patients with anti-RNP (n=35) and SLE without anti-RNP (n=36) [4] When SLE patients were divided into three groups according to the age at SLE diagnosis (juvenile-onset SLE [JSLE], adult-onset SLE [ASLE], and late-onset SLE [LSLE]), 27 (14.4%), 149 (74.1%), and 25 (12.4%) of 201 patients were JSLE, ASLE, and LSLE, respectively. Early onset SLE was related to a higher frequency of renal involvement and severe disease stage. [5]
Clinical manifestation	Manifestation (% of 53 male vs. 150 female): malar rash (37.7% vs. 41.5%), discoid rash (17.0% vs. 38.2%), photosensitivity (13.2% vs. 24.3%), oral ulcer (17.0% vs. 20.0%), arthritis (60.4% vs. 59.3%), serositis (35.8% vs. 27.4%), renal disorder (62.3% vs. 33.6%), neurologic disorder (13.2% vs. 5.9%), fever at onset (41.5% vs. 43.9%), alopecia (22.6% vs. 42.8%), myalgia (15.1% vs. 11.9%), raynaud phenomenon (20.8% vs. 28.1%), livedo reticularis (3.8% vs. 3.7%), lymphadenopathy (17.0% vs. 9.7%), hematologic disorder (83.0% vs. 86.6%), and immunologic disorder (90.6% vs. 93.3%) [3]
Risk factor	Hematologic disorder (n=55), nephritis (n=37), serositis (n=20), mucocutaneous disorder (n=18), musculoskeletal disorder (n=16), neuropsychiatric disorder (n=13), lymphadenopathy (n=9), pulmonary hypertension/interstitial lung disease (n=5), and enteritis/colitis (n=5). Infection (n=44): herpes zoster (n=10), bacterial pneumonia (n=8), influenza (n=6), urinary tract infection (n=6), and infectious colitis (n=5). [4]
Diagnosis	The SLE disease activity index (SLEDAI) score >12, hemoglobin level (<10 mg/dl), albumin level (<3.5 mg/dl), and anti-Ro/SS-A (antibody positivity). [4]

Treatment	1. High-dose corticosteroids (62.7% vs. 32.7%) 2. Immuno suppressive drugs (74.5% vs. 46.7%) : Cyclophosphamide - intravenous and oral : Mycophenolate mofetil (MMF) (36.0% vs. 20.7%) : Cyclosporine (23.5% vs. 11.3%) : Azathioprine (26.0% vs. 19.3%) : Tacrolimus (8.0% vs. 2.7%) 3. Antimalarial agent - hydroxychloroquine (88.2% vs. 93.3%) [3]
Prognosis	The overall cumulative probabilities of survival at 5, 10 and 15 years after SLE diagnosis were 97.8%, 94.9%, and 90.1%, respectively. [2]
Genetic information	*ADAM33* polymorphisms were associated with susceptibility to SLE and the development of clinical disease manifestations in the Korean population. [6]
References	[1] Prevalence and incidence of systemic lupus erythematosus in South Korea. ***Rheumatology International*** (2014) 34: 909-917 [2] The causes of death in Korean patients with systemic lupus erythematosus over 11 years. ***Lupus*** (2011) 20: 989-997 [3] Clinical characteristics of male and female Korean patients with systemic lupus erythematosus: a comparative study. ***Koreans J intern Med.*** (2015) 30: 242-249 [4] The rate of and risk factors for frequent hospitalization in systemic lupus erythematosus: results from the Korean lupus network registry. ***Lupus*** (2016) 25: 1412-1419 [5] Comparison of clinical and serological differences among juvenile-, adult-, and late-onset systemic lupus erythematosus in Korean patients. ***Lupus*** (2015) 24: 1342-1349 [6] *ADAM33* polymorphisms are associated with susceptibility to systemic lupus erythematosus in a Korean population. ***J Rheum Dis.*** (2016) 23: 88-95

Respiratory

Asthma

Incidence	Studies suggest a higher incidence of asthma in children than in adults. [1]
Prevalence	The prevalence of physician-diagnosed asthma increased from 1998 (0.7%) to 2008 (2.0%). The prevalence of asthma medication usage also increased from 1998 (0.3%) to 2008 (0.7%), however, the prevalence of wheezing decreased from 1998 (13.7%) to 2008 (6.3%). A similar trend was observed after estimating the prevalence of asthma with age and gender standardization. [2] The prevalence of asthma in Korean adults was 2.4% in a representative population-based sample of 19,659 men and women, aged 19-64 years, using data from the fourth and fifth Korean National Health and Nutrition Examination Survey (KNHANES), 2007-2011. [3]
Mortality	According to the Korea National Statistical Office data, the death rate from chronic lower respiratory diseases (including asthma) decreased from 15.4 deaths per 100,000 in 2007 to 13.2 deaths per 100,000 in 2017. [4] The mortality rate associated with asthma and an accurate estimate of the total number of asthma cases has not been reported in Korea. Mortality caused by chronic lower respiratory diseases including asthma decreased from 22.6 cases per 100,000 in 2002 to 15.6 cases per 100,000 in 2012. [5]
Gender	The 484 patients treated for asthma included 172 (48.8%) men and 312 (51.2%) women. [3]
Age	In two different local population surveys in Korea, current asthma (defined by current wheeze and positive airway hyperresponsiveness) was consistently more prevalent among the elderly (12.7–15.3%). [6]
Regional distribution	In adults patients, the asthma prevalence was higher in urban (79.8%) than in rural (20.2%) areas. [3]
Clinical phenotypes/ classification	Atopic asthma, non-atopic asthma, asthma with fixed airflow limitation, asthma with obesity [7]
Clinical manifestation	Cough, dyspnea, wheezing, chest tightness [7]
Risk factor	Genetic factors, obesity (It is known that asthma prevalence is high in obese people, especially women with abdominal obesity.), sex (Men are a risk factor for childhood asthma. The asthma prevalence for boys before the age of 14 is about twice as high as for girls. As growing older, this gender gap is going to decrease, and adult prevalence is higher in women.), environmental factors (allergen, infection, occupational stimulant, in/outdoor air pollution, smoking). [5]

Diagnosis	History of variable respiratory symptoms (wheezing, shortness of breath, chest tightness, and coughing), confirmed variable expiratory airflow limitation (documented excessive variability in lung function and documented airflow limitation), positive bronchodilator (BD) reversibility test (more likely to be positive if BD medication is withheld before test: SABA≥4 hours, LABA≥15hours), excessive variability in twice-daily peak expiratory flow (PEF) over 2 weeks, significant increase in lung function after 4 weeks of anti-inflammatory treatment, positive exercise challenge test, Positive bronchial challenge test, excessive variation in lung function between visits (less reliable) [5]
Treatment	Treatments related prescription rates among asthma patients are as follow: Prescription of Inhaled corticosteroids (ICS) (30.62%), prescription of anti-inflammatory controllers for asthma such as leukotriene receptor antagonists and ICS (63.65%), prescription of long acting β2-agonists without ICS (16.77%), prescription of short acting β2-agonists without ICS (12.92%), prescription rate of oral-corticosteroids without ICS (28.20). [8]
Prognosis	If asthma patient do not have asthma symptoms and asthma attacks for a long period of time while maintaining medication, he can reduce the drug by one step. Acute exacerbations can occur if exposed to a variety of exacerbated elderly people including colds, flu, antigens, and stress. [7]
Genetic information	Genes associated with asthma by GWAS studies between 2007-2010 are as follow: *CTNNA3* (OR=1.85), *IL1RL1* (OR=1.16) [9]
References	[1] The Current Status of Asthma in Korea. ***J Korean Med Sci.*** (2006) 21(2): 181-187 [2] Increased Prevalence of Self-Reported Asthma Among Korean Adults: An Analysis of KNHANES I and IV Data. ***Lung*** (2013) 191(3): 281-288 [3] Association Between Kimchi Intake and Asthma in Korean Adults: The Fourth and Fifth Korea National Health and Nutrition Examination Survey (2007-2011). ***J Med Food.*** (2014) 17(1): 172-178 [4] Korean Statistical Information Service Mortality Data (2013). Korean Statistical Information Service (2013) http://kosis.kr/ [5] Korean Asthma Guideline 2014: Summary of Major Updates to the Korean Asthma Guideline 2014. ***Tuberc Respir Dis.*** (2016) 79(3): 111-120

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Chronic Obstructive Pulmonary Disease (COPD)

Incidence	N/A
Prevalence	According to the Korean National Health and Nutrition Examination Survey (KNHANES), the prevalence of chronic obstructive pulmonary disease (COPD) was 13.4% in 2015. [1] The National Health Insurance Service (NHIS) indicated that 210,420 patients were treated for COPD in 2015. [2]
Mortality	The mortality rate in 2015 was 10.2/100,000 population. [3] COPD was associated with an increased risk of all-cause mortality after adjusting for potential confounding variables (hazard ratio [HR]: 1.43, 95% confidence interval [CI]: 1.33-1.55, P<0.001). [4]
Gender	Of 8,969 total patients, 3,867 were male and 5,102 were female. [2] According to the KNHANES, the prevalence of COPD in men and women were 13.4% and 5.8%, respectively. [1]
Age	The mean age of the patients was 45.5±19.1 years (21 to 74 years). [5] The prevalence of COPD tended to increase with age, at 4.1%, 9.7%, 21.2%, and 30.6% for participants in their 40s, 50s, 60s, and 70s, respectively. [1]
Regional distribution	N/A
Clinical phenotypes/classification	The severity of COPD is divided into four stages: stage 1 (mild; forced expiratory volume in 1 second [FEV1] ≥ 80%), stage 2 (moderate; FEV1 50%-80%), stage 3 (severe; FEV1 30%-50%), and stage 4 (very severe; FEV1 <30%). [5] Among 8,969 individuals, the prevalence of those with Global Initiative for Chronic Obstructive Lung Disease (GOLD) stage 1 was 6.5%, stage 2 was 6.6%, stage 3 was 0.5%, and stage 4 was 0.1%. Among subjects diagnosed with COPD, the prevalence of stage 1 was 47.4%, stage 2 was 48.5%, stage 3 was 3.6%, and stage 4 was 0.5%. [6]
Clinical manifestation	N/A
Risk factor	After adjusting for asthma and tuberculosis, multiple regression analysis revealed that COPD occurred significantly more frequently in men (odds ratio [OR]: 2.86; 95% CI: 2.04-3.99), older individuals (OR: 4.20; 95% CI: 3.44-5.14), and in heavy smokers (OR: 3.29; 95% CI: 2.40-4.51). However, COPD occurred significantly less frequently in individuals with a high educational level (OR: 0.34; 95% CI: 0.25-0.46) and a high body mass index [BMI] (OR: 0.28; 95% CI: 0.16-0.51). [6]

Diagnosis	The presence of COPD was based on the airflow limitation criteria (FEV1/forced vital capacity [FVC] of <0.7), as suggested by GOLD. The GOLD criteria categorizes COPD severity into four stages: stage 1 (mild, FEV1 ≥80%), stage 2 (moderate, FEV1 50%-80%), stage 3 (severe, FEV1 30%-50%), and stage 4 (very severe, FEV1 <30%). [6] The FEV1 and the FEV1/FVC ratio were significantly lower in the COPD group (51.7±12.6% and 68.4±25.6%) than those in the control group (80.0±7.4% and 104.3±16.7%). [7]
Treatment	Prescription for the treatment of COPD in 2013 included methylxanthine (63.4% of patients with COPD), systemic beta-agonist (31.8%), while inhaled medications (long-acting beta-2 agonist [LABA] and long-acting muscarinic agonist) and inhaled corticosteroid plus LABA were prescribed to relatively low proportions of patients with COPD. [8]
Prognosis	N/A
Genetic information	A case-control study demonstrated a significant association between *CHRNA3* rs6495309C>T on chromosome 15q25 and the risk of COPD. [7] *PDE4D* polymorphisms might be involved in COPD susceptibility, especially in patients who are non-emphysematous. [9] *GC2* variants are a risk factor for vitamin D deficiency in COPD patients. [10]
References	[1] Recent Trends in the Prevalence of Chronic Obstructive Pulmonary Disease in Korea. ***Tuberculosis and respiratory diseases*** (2017) 80: 226-229 [2] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015) http://kosis.kr/ [3] Korean Statistical Information Service. Mortality of COPD (2015). http://kosis.kr/ [4] Relation of Chronic Obstructive Pulmonary Disease to Cardiovascular Disease in the General Population. ***Am J Cardiol.*** (2017) 120: 1399-1404 [5] Prevalence of chronic obstructive pulmonary disease in Korea: The Fourth Korean National Health and Nutrition Examination Survey, 2008. ***Respirology*** (2011) 16: 659-665 [6] Prevalence of chronic obstructive lung disease in Korea using data from the fifth Korea National Health and Nutrition Examination survey. ***Korean Journal of Family Medicine*** (2015) 36: 128-134 [7] A functional polymorphism in the *CHRNA3* gene and risk of chronic obstructive pulmonary disease in a Korean population. ***Journal of Korean Medical Science*** (2012) 27: 1536-1540

[8] Trend of cost and utilization of COPD medication in Korea. ***International Journal of COPD.*** (2017) 12: 27-33

[9] Polymorphisms in *PDE4D* are associated with a risk of COPD in non-emphysematous Koreans. ***COPD.*** (2014) 11: 652-658

[10] Relationship between vitamin D-binding protein polymorphisms and blood vitamin D level in Korean patients with COPD. ***Int J Chron Obstruct Pulmon Dis.*** (2016) 11: 731-738

Pneumonia

Incidence	N/A
Prevalence	The National Health Insurance Service (NHIS) indicated that 1,570,507 patients were treated for pneumonia in 2015. [1]
Mortality	The crude mortality rates of pneumonia was 28.9/100,000 persons in 2015 (men 29.8, women 28.0/100,000 persons). [2]
Gender	Of 693 patients with pneumonia, 397 (57.3%) were male and 296 (42.7%) were female. [3] The 1,570,507 patients treated for pneumonia included 740,943 (47%) men and 829,264 (53%) women. [1]
Age	The mean age of the patients was 70.1±10.5 years over 50-year-old. [3]
Regional distribution	N/A
Clinical phenotypes/ classification	Disease severity was assessed according to the Confusion-Urea-Respiratory Rate-Blood pressure (CURB)-65 score, as follows: The mean CURB-65 score in all pneumonia patients was 1.16 points Low, moderate, and high severity were observed in 482 (69.6%), 161 (23.2%), and 50 (7.2%) patients, respectively. [3] Viral pneumonia (n=11,146 29.0%), bacterial pneumonia (n=2,039, 5.3%), mycoplasmal pneumonia (n=1,732, 4.5%), aspiration pneumonia (n=490 1.3%), and tuberculosis (n=173, 0.5%). [4]
Clinical manifestation	Severe Community-Acquired Pneumococcal Pneumonia (P-SCAP) (n=23/94), non-P-SCAP (n=17/94), and SCAP with no organism identified (n=54/94). [4] The most frequent symptom at the time of emergency department admission was fever (61.5%), followed by cough (17.2%), dyspnea (2.1%), seizures (1.7%), and abdominal pain (1.3%). [4]
Risk factor	The factors associated with increased severity were male sex, age, high-risk factors among underlying diseases (malignancy, human immunodeficiency viruses [HIV] infection, chronic renal failure), and a co-morbid condition of immuno-suppressive state. [3]
Diagnosis	A pathogen was identified in 288 patients (32.9%). Of all pneumonia patients, *Streptococcus pneumoniae* was identified in 51 pneumonia patients (7.4%). Among patients with identified pathogen, *S. pneumoniae* accounted for 22.4% of cases, 49% (n=25) were men. The mean age of patients was 69.6 years. Of all pneumonia patients, 83.4% (n=578) had an underlying disease. [5]
Treatment	Beta-lactam + macrolide (40.4%) and beta-lactam + quinolone (34.0%) [4]

Prognosis	Patients with P-SCAP had a lower rate of treatment failure (P=0.048) and tended to have lower in-hospital and 30-day mortalities compared with those with non-P-SCAP. [4]
Genetic information	23S rRNA gene mutations are related to pneumonia in Korea. [6]
References	[1] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015). http://kosis.kr/ [2] Korea Statistical Information Service. Statistics of mortality. Cause of mortality (236 classification) by sex, age (5-year), Mortality rate (2017). http://kosis.kr/ [3] Economic burden and epidemiology of pneumonia in Korean adults aged over 50 years. ***Journal of Korean Medical Science*** (2013) 28: 888-895 [4] Incidence and Clinical Characteristics of Severe Community-Acquired Pneumococcal Pneumonia: Comparisons with Non-Pneumococcal Pathogens. ***Korean J Med.*** (2012) 82: 52-59 [5] Disease burden of pneumonia in Korean adults aged over 50 years stratified by age and underlying diseases. ***Korean J Intern Med.*** (2014) 29: 764-773 [6] Differences in the frequency of 23S rRNA gene mutations in *Mycoplasma pneumoniae* between children and adults with community-acquired pneumonia: clinical impact of mutations conferring macrolide resistance. ***Antimicrobial agents and chemotherapy*** (2012) 56: 6393-6396

EPIDEMIOLOGY IN KOREA

Others

Androgenetic Alopecia

Incidence	Among 75,471 patients who newly visited the dermatologic clinic in Chung-Ang University Hospital from 2006 to 2015, 4-8% were diagnosed with alopecia. Of these androgenetic alopecia (AGA) was diagnosed in 68% (n=2,733) of all alopecic patients. [1]
Prevalence	Among 10,132 subjects (5,531 men and 4,601 women) who visited the Health Examination Centre at Kyung Hee University Hospital for regular health examination between December 1997 and July 1999, the prevalences of AGA was 14.1% and 5.6% for men and women, respectively. [2]
Mortality	N/A
Gender	Males accounted for nearly two-thirds of AGA patients (men=1,883 women=1,231). [3]
Age	AGA occurred mainly in those in their 30's, affecting 945 men (50.2%) and 426 women (34.6%). The mean age of onset was later in women than that in men (33.6 and 29.8 years, respectively). [3]
Regional distribution	N/A
Clinical phenotypes/ classification	The basic (BA) types are classified into four groups (L, M, C and U). 'L' means 'linear', whereas the shapes of the other letters represent the shape of the anterior hairline. The specific (SP) types represent the density of hair on distinct areas: frontal (F) and vertex (V). The prevalence of the BA types differed between sexes, as follows: M (82.2%), C (7.5%), L (7.3%), U (3.0%) in men and M (52.7%), L (36.9%), C (10.1%), and U (0.3%) in women. [3] Among the 3,114 patients, 2378 (76.4%) had a specific type of hair loss. [3]
Clinical manifestation	The progressive miniaturization of hair follicles is characteristic, and the hair on the front and top parts of the scalp gradually tapers and the hair line retreats. [2]
Risk factor	Paternal family history is the most important causative factor, while drinking [3], eating habits [4], smoking [5], and stress [6] have also been associated with the severity of AGA in male patients.
Diagnosis	Hair density and thickness are measured via computer software-assisted phototrichogram (PT). [7]
Treatment	Finasteridedutasteride, which inhibits 5 alpha-reductase, is effective in treating AGA. Minoxidil is also widely used to promote hair growth. [8] If medication is not effective, fractional photothermolysis laser [9] and hair transplantation [10] are also used.
Prognosis	Treatment should be started early and regularly, and as hair loss may resume if treatment is stopped. [11]

Genetic information	Family history was present in 75.2% of male patients and 57.5% of female patients. [2] Polymorphisms including CAG repeats in the androgen receptor [12] and steroid 5-alpha-reductase type 1 and 2 genes [13] are associated with AGA in Koreans.
References	[1] An Epidemiological Study of Alopecia in 4,012 Korean Patients: 10-Year Follow Up. ***Chung-Ang J Med.*** (2016) 41: 1-10 [2] The prevalence and types of androgenetic alopecia in Korean men and women. ***Br J Dermatol.*** (2001) 145: 95-99 [3] An epidemiological study of androgenic alopecia in 3114 Korean patients. ***Clin Exp Dermatol.*** (2014) 39: 25-29 [4] Analysis of Lifestyle in Androgenetic Alopecia Patients. ***Korean J Dermatol.*** (2013) 51: 878-884 [5] Association of androgenetic alopecia with smoking and its prevalence among Asian men: a community-based survey. ***Arch Dermatol.*** (2007) 143: 1401-1406 [6] Characterization of Male Pattern Alopecia and Generation of Alopecia Index. ***Journal of Investigative Cosmetology*** (2013) 9: 249-258 [7] The changing patterns of hair density and thickness in South Korean women with hair loss: clinical office-based phototrichogram analysis. ***Int J Dermatol.*** (2009) 48: 14-21 [8] Hair characteristics and androgenetic alopecia in Koreans. ***J Korean Med Assoc.*** (2013) 56: 45-54 [9] Fractional photothermolysis laser treatment of male pattern hair loss. ***Dermatol Surg.*** (2011) 37: 41-51 [10] Survival rate according to grafted density of Korean one-hair follicular units with a hair transplant implanter: Experience with four patients. ***Dermatol Surg.*** (2006) 32: 815-818 [11] Hair characteristics and androgenetic alopecia in Koreans. ***J Korean Med Assoc.*** (2013) 56: 45-54 [12] A Study on CAG Repeat Polymorphisms of the Androgen Receptor in Korean Androgenetic Alopecia : Preliminary Report. ***Korean J Dermatol.*** (2009) 47: 772-776 [13] Analysis of genetic polymorphisms of steroid 5alpha-reductase type 1 and 2 genes in Korean men with androgenetic alopecia. ***J Dermatol Sci.*** (2003) 31: 135-141

Anticoagulant (warfarin)-associated Intracranial Hemorrhage

Incidence	In Korea, there has been no population-based study on the trend of the Intracranial Hemorrhage (ICH) incidence. Estimation based on nationwide health insurance database indicates that the incidence of hemorrhagic stroke in Korean people aged between 35-74 years decreased annually by 1.82% from 1995 to 2003. [1].
Prevalence	Warfarin-associated ICH occurred in 50 of 2,511 total patients (2.0%). [2]
Mortality	Eleven deaths occurred in the major bleeding group. The patients who died in the major bleeding group were younger than those in the major bleeding group who survived (58 vs. 63 years). [3] The 30-day mortality in warfarin-associated ICH patients was 40% compared to 13% in non-warfarin-associated ICH patients. [2]
Gender	The male-to-female ratio was 1:1.3. [3]
Age	Mean age was 62.1 years. [3]
Regional distribution	ICH accounts for approximately 10-20% of all strokes, 8-15% in western countries like USA, UK and Australia, and 18-24% in Japan and Korea.
Clinical phenotypes/ classification	A total of 150 patients who met the study inclusion criteria and had acute hemorrhagic complications (the major group: n=90 and the minor group: n=60). [3]
Clinical manifestation	The underlying diseases included prosthetic heart valve surgery in 52 (46.0%), atrial fibrillation/flutter in 46 (30.7%) and stroke in 16 (10.7%) patients. Aspirin, anticoagulant, and nonsteroidal anti-inflammatory drugs (NSAIDs) use were reported by 25 (16.7%), 9 (6.0%), and 45 (30.0%) patients, respectively. [3]
Risk factor	An initially higher international normalized ratio (INR) showed a greater risk of major bleeding, but not fatalities. [3] Of 98 patients, 39 (39.8%) showed an INR elevation of ≥15.0% after adding an NSAID to warfarin therapy. Multivariate analysis showed that a high maintenance dose (>40 mg/week) of warfarin (P=0.001), the presence of co-administered medications (P=0.024), the use of meloxicam (P=0.025), and a low baseline INR value (P=0.03) were risk factors for INR increase in respect to NSAID-warfarin interaction. [4]
Diagnosis	Among subjects with major hemorrhage, the frequent sites of bleeding were the gastro-intestinal system (n=40), lung (n=14), and intracranial (n=7). In the emergency room, the major hemorrhage group showed a higher initial INR of the activated prothrombin time than that in the minor group (P=0.02). [3]

Treatment	Hemorrhage was reversed in warfarin-associated ICH and non-warfarin-associated ICH groups following the administration of vitamin K (53% vs. 8.3%, P<0.0001), fresh frozen plasma (6.0% vs. 2.1%, P=0.0947), and cryoprecipitate (0% vs. 0.2%, P=1.000). [2]
Prognosis	In Korea, the case-fatality rate of ICH estimated from the nationwide insurance database was high as 35% in 2004. However, the in-hospital 30-day case-fatality rate in 2009 was much lower as 10.2%. [1] The bleeding sites of fatal cases included the gastro-intestinal system (n=3), lung (n=3) and intracranial (n=3). The percentage of fatality was highest for intracranial bleeding. [3] There were significant differences in the rates of recurrent ICH and overall mortality (recurrent ICH: 8% vs. 2%, P=0.0199; overall mortality: 40% vs. 13.3%, P<0.0001). Warfarin-associated ICH patients had a higher 30-day mortality compared with that in non-warfarin-associated ICH patients. [2]
Genetic information	A total of 66 patients were evaluated for *CYP2C19* polymorphism. Among them, 25 patients (37.9%) were homozygous wild-type. Four patients (6.1%) had heterozygous mutations at both loci. Others had mutations on either *CYP2C19*2*3* locus. Higher genetic variation was observed for *CYP2C19*2* than for *CYP2C19*3* among Korean patients on warfarin therapy. There was a higher incidence of bleeding complications in patients with a higher *CYP2C19* allele frequency. [5]
References	[1] Epidemiology, Risk Factors, and Clinical Features of Intracerebral Hemorrhage: An Update. ***Journal of Stroke*** (2017) 19(1):3-10 [2] Warfarin-associated intracranial hemorrhage during anticoagulation therapy. ***ERJ*** (2014) 44(Suppl 58): 2401 [3] The Clinical Characteristics and Mortality Factors of Patients with Hemorrhagic Complications after Anticoagulation Therapy with Warfarin***. J Korean Soc Clin Toxicol.*** (2009) 7(2): 164-171 [4] Risk Factors of Drug Interaction between Warfarin and Nonsteroidal Anti-Inflammatory Drugs in Practical Setting. ***J Korean Med Sci.*** (2010) 25: 337-341 [5] *CYP2C19* Polymorphism in Korean Patients on Warfarin Therapy. ***Archives of pharmacal research*** (2007) 30(3): 344-349, 0253-6269

Cataract

Incidence	The average incidence for 5 years with 19,953 participants was 11.1% (10-49 years), 35.7% (50-59 years), 71.8% (60-69 years), and 94.2% (over 70 years). [1]
Prevalence	The prevalence of cataracts was 39.4% among 11,076 adults aged 40 years and older based on the Korean National Health and Nutrition Examination Survey (KNHANES) (2008-2010). [2]
Mortality	N/A
Gender	The prevalence of cataract among adults aged 40 and over was 37.1% for men and 41.6% for women. [2]
Age	The cataract prevalence tended to increase with age: 40-49 years 10.4%, 50-59 years 33.1%, 60-69 years 69.4%, 70-79 years 91.2%, ≥80 years 97.9%. [3]
Regional distribution	Estimated patients of cataract surgery: Seoul 6.8% (n=1,511,437), Busan 9.3% (n=2,067,293), Daegu 7.0% (n=1,561,955), Incheon 6.4% (n=1,410,532), Daejeon 3.6% (n=794,370), Gwangju 7.4% (n=1,630,841), Ulsan 4.6% (n=1,023,977), Gyeonggi 7.0% (n=1,550,914), Gangwon 9.6% (n=2,120,905), Chungbuk 7.9% (n=1,747,180), Chungnam 10.3% (n=2,293,218), Jeonbuk 10.9% (n=2,422,921), Jeonnam 12.0% (n=2,656,011), Gyeongbuk 7.9% (n=1,762,272), Gyeongnam 9.0% (n=2,002,130) and Jeju 5.3% (n=1,171,801). [4]
Clinical phenotypes/ classification	Cortical cataract (n=473), nuclear cataract (n=1,138), Anterior subcapsular cataract (n=60), posterior subcapsular cataract (n=22), mixed cataract (n=328) [5]
Clinical manifestation	N/A
Risk factor	Ocular trauma history (n=2), hypertension (37.5%), and diabetes mellitus (25%). [6] Obesity (n=357/11,591), hypercholesterolemia (n=1,695/11,591), hypo- low-density lipoprotein (HDL)-cholesterolemia (n=3,122/11,591), hypertriglycemia (n=1,547/11,591), anemia (n=1,150/11,591), metabolic syndrome (n=4,809/11,591), hypertension, diabetes mellitus, osteoarthritis, rheumatoid arthritis, atopic dermatitis, asthma, smoking, stress, alcohol user, and sun exposure. [3]
Diagnosis	Ophthalmic examinations are performed by slit lamp biomicroscopy and indirect ophthalmoscope fundus examination after the pupil is maximally dilated with 1.0% tropicamide (mydriacyl) and 2.5% phenylephrine hydrochloride (neosynephrine). [7]

Treatment	Thirty-two patients diagnosed with dry eye syndrome after surgery were administered with cyclosporine (0.05%) twice daily for three months. [8]
Prognosis	At three months after treatment, there was an improvement in the tear break-up time as well as significant improvements in symptom intensity, frequency, and aggravation. [8]
Genetic information	*TDRD7* loss of function mutations, and lower expression of *TDRD* mRNA has been reported in patients. [6] The intergenic SNP rs10240278 between *ARL4A* and *RPL26P21* on chromosome 7 showed a suggestive association with age-related cataracts. [9]
References	[1] The incidence of cataract in Koreans in recent 5 years. The Korean Journal of Vision Science. (2014) Spring conference abstract. 44 [2] Gender difference in the association of metabolic syndrome and its components with age-related cataract: the Korea National Health and Nutrition Examination Survey 2008-2010. ***PLoS ONE*** (2014) 9: e85068 [3] Cataract subtype risk factors identified from the Korea National Health and Nutrition Examination survey 2008-2010. ***BMC Ophthalmology*** (2014) 14: DOI: 10.1186/1471-2415-14-4 [4] Current Status and Future Expectations of Cataract Surgery in Korea: KNHANES IV. ***J Korean Ophthalmol Soc.*** (2014) 55: 1772-1778 [5] Prevalence of Cataract with Different Type of Lens Opacity in the Korean Population. ***J Korean Oph Opt Soc.*** (2013) 18: 53-59 [6] Comparative Quantification of Plasma *TDRD7* mRNA in Cataract Patients by Real-time Polymerase Chain Reaction. ***Korean J Ophthalmol.*** (2014) 28: 343-350 [7] Prevalence and risk factors for cataracts in persons with type 2 diabetes mellitus. ***Korean Journal of Ophthalmology*** (2006) 20: 201-204 [8] The Effect of Topical Cyclosporine 0.05% on Dry Eye after Cataract Surgery. ***Korean J Ophthalmol.*** (2013) 27: 167-171 [9] A pilot exome-wide association study of age-related cataract in Koreans. ***J Biomed Res.*** (2016) 30: 186-190

Diabetic Retinopathy

Incidence	The rate of development to diabetic retinopathy (DR) from no DR was 32.1/1,000 person-years, and the rate of progression from non-proliferative DR (NPDR) to proliferative DR (PDR) was 26.2/1,000 person-years. [1]
Prevalence	The weighted prevalence of DR was 0.9% (0.7-1.1) in the whole adult population and 11.2% (8.9-13.6) in the adult population with diabetes (2008-2009). [2] The prevalence of any DR was 15.8% (95% confidence interval [CI]: 14.1-17.5) among Koreans 40+ years of age. [3]
Mortality	N/A
Gender	The prevalence of DR was 10.0% (95% CI: 7.4-13.4) in men with diabetes and 12.3% (95% CI: 9.2-16.1) in women with diabetes. [2]
Age	The mean age of 371 patients with type 2 diabetes mellitus (DM) was 56.2±12.2 years (range, 34-75 years). [1]
Regional distribution	The overall prevalence of DR was 18.0% in rural Korean patients with type 2 diabetes. [4]
Clinical phenotypes/ classification	No DR (n=140, 37.7%), mild NPDR (n=152, 41.0%), moderate NPDR (n=40, 10.8%), and severe NPDR (n=39, 10.5%). [1]
Clinical manifestation	The Early Treatment for Diabetic Retinopathy Study (ETDRS) severity scale indicates several symptoms: microaneurysms (MAs), hemorrhages, cotton wool spots (CWSs), intraretinal microvascular abnormalities (IRMAs), hard exudates (HEs), venous beading, and new vessels. [5]
Risk factor	A longer duration of diabetes (hazard ratio [HR]: 1.130, P=0.010) and a higher mean glycated hemoglobin (HbA1c) level (HR: 1.163, P=0.006) were significant risk factors for the development of DR. A higher mean HbA1c level (HR: 1.190, P=0.005), a higher standard deviation (SD) of HbA1c (HR: 1.160, P=0.020), and a higher urine albumin-to-creatinine ratios (UACR) (HR: 1.224, P=0.004) were significant risk factors for progression to PDR. [1]
Diagnosis	Diabetes duration (odds ratio [OR]: 1.08 per year increase), higher HbA1c (OR: 1.52 per 1% increase), higher systolic blood pressure (OR: 1.02 per 1 mmHg increase), higher creatinine (OR: 2.65 per 1 mg/dL increase), and lower body mass index (BMI) (OR: 0.91 per 1 unit). [3]
Treatment	IVB (intravitreal bevacizumab injection): 31 patients PRP (panretinal photo-coagulation): 35 patients IVB-PRP: 35 patients [5]
Prognosis	N/A

Genetic information	The c.2518A/A genotype in *MCP-1*: is a susceptibility gene that predisposes Koreans with type 2 diabetes to the development of PDR. [6]
References	[1] Development and progression of diabetic retinopathy and associated risk factors in Korean patients with type 2 diabetes: the experience of a tertiary center. ***J Korean Med Sci.*** (2014) 29: 1699-1705 [2] Prevalence and factors associated with diabetic retinopathy in a Korean adult population: The 2008-2009 Korea National Health and Nutrition Examination Survey. ***Diabetes Research and Clinical Practice*** (2013) 218-224 [3] Prevalence and risk factors for diabetic retinopathy: the Korea National Health and Nutrition Examination Survey 2008-2011. ***Invest Ophthalmol Vis Sci.*** (2013) 54: 6827-6833 [4] Prevalence and Associated Factors of Diabetic Retinopathy in Rural Korea: The Chungju Metabolic Disease Cohort Study. ***J Korean Med Sci.*** (2011) 26(8): 1068-1073 [5] Changes of choroidal thickness after treatment for diabetic retinopathy. ***Curr Eye Res.*** (2014) 39: 736-44 [6] Association of monocyte chemoattractant protein-1 (MCP-1) 2518A/G polymorphism with proliferative diabetic retinopathy in Korean type 2 diabetes. ***Yonsei Med J.*** (2013) 54: 621-625

Dry Eye Syndrome

Incidence	N/A
Prevalence	According to a study of 11,666 subjects in the Korean National Health and Nutrition Examination Survey (KNHANES) 2010-2011, the overall prevalence of dry eye syndrome (DES) was 8.0% (95% confidence interval [CI]: 7.3-8.7). [1]
Mortality	N/A
Gender	The prevalence of DES was approximately three times higher in women than that in men (adjusted odds ratios [ORs]: 2.8, 95% CI: 2.1-3.7). [1]
Age	The prevalence of DES was highest (9.1%) among participants in their 60s and 8.9% among those in their 50s followed by 8.3% and 7.8% among those in their 20s and 30s, respectively. [1]
Regional distribution	The risk of DES was not different between urban and rural areas. [1]
Clinical phenotypes/ classification	DES was defined as “a disease of the ocular surface that is associated with tear film abnormalities”. [2] There are two main categories: hyposecretive and evaporative, although these two classes are not completely exclusive. [3] In addition, there is Sjogren’s syndrome, which is a chronic autoimmune disease characterized by systemic disease, ocular dryness, and dry mouth due to lymphocyte infiltration of the exocrine glands. [4]
Clinical manifestation	The most common symptoms of DES include irritation, burning sensation, mucus secretion, and temporary blurred vision. Less common symptoms include itching, glare, and fatigue/heavy feeling. In addition, the eyes may be slightly congested. Thread-shaped keratitis may cause severe pain when blinking. [3] According to the KNHANES 2010-2011, the prevalence of DES symptoms was 14.4% (95% CI: 13.1-15.7). [1]
Risk factor	The incidence of DES was significantly higher in patients with hypertension, dyslipidemia, osteoarthritis, rheumatoid arthritis, depression, and renal failure. The incidence was higher in non-smokers, non-drinkers, and those with shorter sleep time. [5] Cataract surgery [6], total cholesterol and lipoprotein composition [7], smartphone use [8, 9], contact lens use [10], and higher blood mercury level [11] were also risk factors for DES in Koreans.
Diagnosis	Patients were diagnosed with dry eye disease when he/she has at least one symptom and one objective sign. Dry eye symptoms in the diagnosis guidelines included ocular symptoms (dryness, discomfort, foreign body sensation, and pain) and visual symptoms (blurring vision fluctuation). Conjunctival injection; lid problems such as blepharitis, trichiasis, keratinization, symblepharon; and tear film abnormalities such as debris, decreased tear meniscus, and mucus clumping, were considered signs of ocular surface inflammation. [2]
Treatment	Until recently, treatment for DES focused on maintaining a minimum volume of tears by conservative methods such as supplementation with artificial tears and temporarily or permanently blocking the tear path. Current, DES treatments focus on the treatment of inflammation on the surface of the eye, for which drugs such as cyclosporine are used. [12]

Prognosis	DES is often exacerbated by exposure to air conditioning, wind, central heating and when the frequency of blinking is reduced by long-term reading. [3] If the dry eye is too severe, the cornea will dry out and the vision will be severely impaired. [13]
Genetic information	rs1143634 of *IL1B* and rs8192284 of *IL6R* may act as susceptibility variations in Korean patients with non-Sjogren dry eye. [14]
References	[1] Prevalence of and risk factors associated with dry eye: the Korea National Health and Nutrition Examination Survey 2010-2011. ***Am J Ophthalmol.*** (2014) 158: 1205-1214 [2] Korean guidelines for the diagnosis and management of dry eye: development and validation of clinical efficacy. ***Korean J Ophthalmol.*** (2014) 28: 197-206 [3] The literatual Study on the etiology of dry eye syndrome. ***The Journal of Korean Oriental Medical Ophthalmology & Otolaryngology & Dermatology*** (2009) 22: 188-195 [4] Review of Sjogren's Syndrome for Primary Physicians. ***Korean Journal of Medicine*** (2015) 89: 291-294 [5] Analysis of Prevalence and Risk Factors for Dry Eye Syndrome in Korean Adults Based on the 5th National Health and Nutrition Examination Survey (2012). ***Korean Journal of Vision Science*** (2017) 19: 19-27 [6] Dry eye after cataract surgery and associated intraoperative risk factors. ***Korean J Ophthalmol.*** (2009) 23: 65-73 [7] Total cholesterol and lipoprotein composition are associated with dry eye disease in Korean women. ***Lipids Health Dis.*** (2013) 12: 84 [8] Smartphone use is a risk factor for pediatric dry eye disease according to region and age: a case control study. ***BMC Ophthalmol.*** (2016) 16: 188 [9] Effect of Temperature and Relative Humidity Changes on Dry Eye Induction by Using Smartphone. ***Korean Journal of Vision Science*** (2014) 16: 397-407 [10] The Influence of Office Indoor Air Qualitys on the Dry Eye Symptom of Contact Lens Wearers. ***J Korean Oph Opt Soc.*** (2012) 17: 215-222 [11] Are higher blood mercury levels associated with dry eye symptoms in adult Koreans? A population-based cross-sectional study. ***BMJ Open*** (2016) 6: e010985 [12] Effect of hyaluronic acid monotherapy and cyclosporine A combination therapy on tear film in dry eye syndrome. ***J Korean Ophthalmol Soc.*** (2013) 54: 231-236 [13] Clinical Effect of Combined Therapy with Heparin and Phospholipid in Severe Dry Eye. ***J Korean Ophthalmol Soc.*** (2010) 51: 1047-1053 [14] Proinflammatory gene polymorphisms are potentially associated with Korean non-Sjogren dry eye patients. ***Mol Vis.*** (2011) 17: 2818-2823

Glaucoma

Incidence	In a hospital-based study, the overall incidence of glaucoma was 4.7% of new patients visiting the ophthalmology outpatient clinic. [1]
Prevalence	The prevalence of glaucoma in patients ≥40 years of age increased from 0.79% in 2008 to 1.05% in 2013. [2] The National Health Insurance Service (NHIS) indicated that number 768,016 patients were treated for glaucoma in 2015. [3]
Mortality	N/A
Gender	The prevalence was higher in men (1.6%) than in women (1.1%) in the Korean National Health and Nutrition Examination Survey (KNHANES) 2008-2009. [4]
Age	The prevalence of glaucoma tended to increase with age. In 10- year age groups, the highest prevalence was observed among subjects in their 70s (4.9%), followed by those in their 60s (2.2%), 50s (2.3%), and 40s (1.0%). [4]
Regional distribution	N/A
Clinical phenotypes/ classification	In Group A (n=62), had primary open-angle glaucoma (77 eyes, 71.9%) and had angle-closure glaucoma (11 eyes, 10.3%), Uveitis glaucoma (4 eyes, 3.7%), and other 15 eyes (14%). In Group B, 80.5% (n=74) had open-angle glaucoma (74 eyes, 80.5%) and 9.8% (n=9) had angle-closure glaucoma. [2]
Clinical manifestation	Korean Normal-Tension Glaucoma (NTG) patients showed steeper cup shapes, higher RNFL thickness by stratus optical coherence tomography, and thinner central corneal thickness compared to those of Western NTG patients with similar visual field loss. [5]
Risk factor	High myopia (odds ratio [OR]: 3.54, 95% confidence interval [CI]: 1.34-9.39, P=0.011), and fasting capillary glucose ≥200 mg/dL (OR: 12.65, 95% CI: 2.63-60.94, P=0.002) and low high-density lipoprotein cholesterol (HDL-C) (OR: 0.96, 95% CI: 0.94-0.99, P=0.015) were associated with an increased risk of open-angle glaucoma with normal baseline intraocular pressure. [6]
Diagnosis	Intraocular pressure (52.6 mmHg ranged 40-80 mmHg) Participants in one study were classified into the following groups: normal, primary open angle glaucoma (POAG) with low intraocular pressure (IOP) (IOP ≤ 21 mmHg), POAG with high IOP (IOP > 21 mmHg), primary angle closure glaucoma (PACG), and secondary glaucoma. [2]
Treatment	Maximum tolerable medical therapy (MTMT) followed by laser iridotomy (n=77/77). [1]

Prognosis	Eyes with no subsequent increase in IOP after laser iridotomy (46/77 eyes), and subsequent increase in IOP after laser iridotomy (31/77 eyes). [7]
Genetic information	Mutations of *CYP1B1* and *MYOC* genes [8], and SNPs in the *END1* and *ENDR* [9] were associated with glaucoma in Korean patients.
References	[1] Prevalence and Characteristics of Glaucoma among Korean Adults. ***Korean J Ophthalmol.*** (2011) 25(2): 110-115 [2] Estimated Prevalence of Glaucoma in South Korea Using the National Claims Database. ***J Ophthalmol.*** (2016) 2016: DOI:10.1155/2016/1690256 [3] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015). http://kosis.kr/ [4] Prevalence of eye diseases in South Korea: data from the Korea national health and nutrition examination survey 2008-2009. ***Korean Journal of Ophthalmology*** (2011) 25: 421-433 [5] Comparison of Clinical Characteristics Between Korean and Western Normal-Tension Glaucoma Patients. ***Am J Ophthalmol.*** (2013) 155(5): 852-857 [6] Risk factors for open-angle glaucoma with normal baseline intraocular pressure in a young population: the Korea National Health and Nutrition Examination Survey. ***Clin Exp Ophthalmol.*** (2014) 42: 825-832 [7] Prognostic factors for the success of laser iridotomy for acute primary angle closure glaucoma. ***Korean J Ophthalmol.*** (2009) 23: 286-290 [8] Mutation spectrum of *CYP1B1* and *MYOC* genes in Korean patients with primary congenital glaucoma. ***Molecular vision*** (2011) 17: 2093 [9] Investigations on the association between normal tension glaucoma and single nucleotide polymorphisms of the endothelin-1 and endothelin receptor genes. ***Molecular vision*** (2006) 12:1016-21

Intracerebral Hemorrhage

Incidence	Age- and sex-standardized incidence rates per 100,000 of intracerebral hemorrhage (ICH) using data from Health Insurance Review Assessment Service (HIRA) are as follow: 2007 (18.0), 2008 (18.6), 2009 (15.2), 2010 (18.1), 2011 (21.0), 2012 (16.1), 2013 (14.3). The age-standardized annual incidence rates of ICH were higher in male for observation period. [1]
Prevalence	N/A
Mortality	1-year mortality of ICH patients was 32.1% using data source from Australian Shellfish Quality Assurance Program DB from the HIRA. [1]
Gender	Annual age-standardized incidence rate (per 100,000) of first-ever stroke in 2013 are 15.4 in male and 13.3 in women. Regarding prevalence proportion of male sex, 56.2% was male among ICH patients. [1]
Age	The predominant age group was 45–54 years in subarachnoid hemorrhage (SAH)(27.2%) and 65–74 years in ICH (22.2%). [1] Distributions of cases with ICH are as follow: In men, ≤44 years: 11.7%, 45-54 years: 25.1%, 55-64 years: 24.6%, 65-74 years: 21.2%, 75-84 years: 13.8%, ≥85 years: 3.6%. In women, ≤44 years: 6.1%, 45-54 years: 13.9%, 55-64 years: 17.6%, 65-74 years: 23.5%, 75-84 years: 28.1%, ≥85 years: 10.9% [1]
Regional distribution	N/A
Clinical phenotypes/ classification	Proportion by Glasgow Come Scale score at admission is as follow: Mild (≥13) (53.5%), Moderate (9-12) (16.4%), Severe (≤8) (30.1%). [1]
Clinical manifestation	Although some individuals develop ICH during exertion or sudden emotional stress, most ICHs occur during routine activity. The neurologic symptoms usually aggravate over minutes or a few hours. The most common site of ICH is the putamen, and clinical presentations vary by the size and location of ICH. Common ICH symptoms are headache, nausea, and vomiting. Headache is more common in patients with large hematomas, and is attributed to traction on meningeal pain fibers, increased. Intracranial pressure, or blood in the cerebrospinal fluid. Small, deep hematomas are rarely associated with headache. Vomiting is reported in about 50% of patients with hemispheric ICH, and more common in patients with cerebellar hemorrhages. [2]

Risk factor	Modifiable risk factors are as follow: Hypertension, current smoking, excessive alcohol consumption, decreased Low-density lipoprotein, cholesterol, low triglycerides, anticoagulation, use the antiplatelet agent, sympathomimetic drugs (Cocaine, heroin, amphetamine, phenylpropanolamine and ephedrine). Non-modifiable risk factors are as follow: Old age, male sex, Asian ethnicity, cerebral amyloid angiopathy, cerebral microbleeds, chronic kidney disease. Other factors suggested to be related the risk are as follow: Multi-parity, poor working conditions (blue-collar occupation, longer working time), long sleep duration. [2]
Diagnosis	Median score of Glasgow Coma Scale (GCS) at admission were 14 points in SAH and 13 points in ICH. The majority of patient with SAH (60.1%) and ICH (53.5%) showed mild severity (GCS score: 13-15) at admission. [1]
Treatment	Regarding interventions for hemorrhagic stroke, 28.1% of ICH cases underwent decompressive surgery within 30 days after admission. [1]
Prognosis	Patients with ICH and SAH showed steep decrease in survival probability in early period after stroke than ischemic stroke. Outcomes after ICH are as follow: Length of stay, median days (15), 1-month mortality (24.4%), 3-month mortality (27.1%), 1-year mortality (32.1%). [1]
Genetic information	Two coding region SNPs (cSNPs) [rs1884444 (Gln3His), and rs7530511 (Leu310Pro)] were selected, and genotyped in 167 ICH patients and 377 control subjects using direct sequencing. Of two cSNPs, only rs7530511 showed a significant association with ICH in codominant model (C/T vs. C/C, P=0.017, odds ratio [OR]: 4.15, 95 % confidence interval (CI): 1.27–13.58). Allele frequency analysis also revealed that rs7530511 was associated with ICH (P=0.023, OR: 3.68, 95 % CI: 1.19–11.32). The frequency of the T allele was increased in the ICH patients, compared to the control subjects. These results suggest that IL23R may contribute to the development of ICH. [3]
References	[1] Stroke Statistics in Korea 2018: A Report from the Epidemiology Research Council of the Korean Stroke Society. The Epidemiology Research Council of the Korean Stroke Society (2018) [2] Epidemiology, Risk Factors, and Clinical Features of Intracerebral Hemorrhage: An Update. ***J Stroke.*** (2017) 19(1): 3-10 [3] Association of *IL23R* polymorphism (rs7530511) with intracerebral hemorrhage in Korean population. ***Neurol Sci.*** (2016) 37(6): 983-5

Liver Transplantation

Incidence	Since 1997, the number of liver transplantations (LT) in Korea has grown annually. From 1988 to 2004, 2,345 LT were performed, including living-donor LT (LDLT) in 1,860 cases (79.3%), cadaveric donor LT (CDLT) in 485 cases (20.7%). [1] A total of 1,186 LT were performed in 2013, including 819 LDLT (69%) and 367 deceased donors LT (31%). [2] Number of LT cases using Medical insurance fee claim cases from Health Insurance Review & Assessment Service data was as follow: 942 (2008), 997 (2009), 1,079 (2010), 1,213 (2011), 1,312 (2012), 1,185 (2013), 1,239 (2014) [3]
Prevalence	A total of 9,380 LT were performed in Korea from 2000-2012. The majority (79.6%, 7,468 cases) were LDLT, while 1,912 (20.4%) were from donors with brain death. [4]
Mortality	According to a report from four transplantation centers in Korea on LT for hepatocellular carcinoma (HCC), the perioperative mortality rate after LT for HCC patients was 18.7% for the CDLT and 10.1% for LDLT. In 2007, in-hospital mortality fell to 5%; since then, LT donor mortality has not been reported. [2] Infection was the most common cause of death, accounting for 34.8% (95 of 273) in a study whose aim was to analyze survival outcomes in 1,000 consecutive LTs performed at a single institution from 1993 to April 2017. Mortality due to HCC recurrence occurred most frequently between 1 and 5 years after transplantation. Mortality rate by graft rejection was highest between 5 and 10 years after transplantation. And mortality by de novo malignancy occurred most frequently after 10 years after transplantation. The patient survival rates for the entire population at 5 and 10 years were 74.7%, and 68.6%, respectively. There was no difference in survival rate between the LDLT and DDLT groups. Cause of disease, disease severity, case period, and retransplantation had a significant association with patient survival. [5]
Gender	The male to female ratio of DDLT in 2013 was 1.96:1 and male to female ratio of LDLT in 2013 was 2.58:1. [2] Male LT operation cases are as follow: 649 (2008), 692 (2009), 746 (2010), 833 (2011), 888 (2012), 792 (2013), 806 (2014) Female LT operation cases are as follow: 281 (2008), 276 (2009), 293 (2010), 328 (2011), 342 (2012), 334 (2013), 365 (2014) [3]

Age	Age distribution of DDLT in 2013 was as follow: 0-10 years: 5.7%, 11-34 years: 6.5%, 35-49 years: 25.1%, 50-54 years: 53.1%, ≥65 years: 9.5%. Age distribution of LDLT in 2013 was as follow, 0-10 years: 3.7%, 11-34 years: 4.8%, 35-49 years: 24.7%, 50-54 years: 59.7%, ≥65 years: 7.2%. [2] Especially for men in 40s and 50s, 200 ~ 300 Patients are receiving LT annually. LT cases of men in 60s also increased steadily, so in 2014, men in 60s received more LT than men in 40s. The most common age for LT is in the 50s. Transplant cases in the 70s increased from 1 - 2 cases in each gender to more than 10 cases in 2014. Age distribution of male LT operation cases in 2014 was as follow: 0-9 years: 18 cases, 10-19 years: 4 cases, 20-29 years: 11 cases, 30-39 years: 24 cases, 40-49 years: 172 cases, 50-59 years: 388 cases, 60-69 years: 179 cases, 70-79 years: 10 cases. Age distribution of female LT operation cases in 2014 was as follow: 0-9 years: 25 cases, 10-19 years: 9 cases, 20-29 years: 10 cases, 30-39 years: 22 cases, 40-49 years: 70 cases, 50-59 years: 140 cases, 60-69 years: 78 cases, 70-79 years: 11 cases. [3]
Regional distribution	Regional distribution of DDLT cases in 2013 as follow: Seoul: 103 cases, Busan: 21 cases, Daegu: 13 cases, Incheon: 22 cases, Gwangu: 12 cases, Daejeon: 8 cases, Ulsan: 6 cases, Sejong: 1 cases, Gyeonggi: 87 cases, Gangwon: 10 cases, Chungbuk: 8 cases, Chungnam: 7 cases, Jeonbuk: 14 cases, Jeonnam: 10 cases, Gyeongbuk: 15 cases, Gyeongnam: 27 cases, Jeju: 3 cases. Regional distribution of LDLT cases in 2013 as follow: Seoul: 155 cases, Busan: 59 cases, Daegu: 49 cases, Incheon: 28 cases, Gwangu: 29 cases, Daejeon: 26 cases, Ulsan: 22 cases, Sejong: 0 cases, Gyeonggi: 200 cases, Gangwon: 24 cases, Chungbuk: 19 cases, Chungnam: 28 cases, Jeonbuk: 33 cases, Jeonnam: 43 cases, Gyeongbuk: 49 cases, Gyeongnam: 45 cases, Jeju: 10 cases. The distribution by transplantation sites in 2013 included 414 cases in Asan Medical Center, 143 cases in Seoul National University Hospital, 108 cases in Samsung Seoul Center, 88 cases in Severance Hospital, and 72 cases in Seoul St. Mary’s Hospital. [2]

Clinical phenotypes/ classification	LT cases from cadaver donor by transplantation type in 2014 were as follow: Total (376), total-right trisection (6), total-right lobe (4), split-left lateral segment (15), split–left lobe (7). LT cases from living donor by transplantation type in 2014 were as follow: Left lateral segment (16), left lobe (23), right lobe (159), extended right lobe (18), modified right lobe (588), dual graft (27) [3]
Clinical manifestation	There is a shortage of donors for LT. The annually reported brain death rate is 3.15 per 1,000,000, a very small number compared to the 10-33 reported in the West. [1] Renal dysfunction is common after LT (44% mild renal dysfunction, 44% moderate dysfunction, 12% normal function) and preoperative renal function is an important factor predicting postoperative renal dysfunction. [6] HCC at transplantation was significantly associated with hepatitis B virus (HBV) recurrence. HBV-related HCC patients who undergo LDLT require close virological monitoring. [7]
Risk factor	Disease cases that cause LT in 2008–2014 were as follow: Malignant neoplasm of liver and intrahepatic bile ducts (C22 in ICD code) (n=3,389), Transplanted organ and tissue status (Z94) (n=1,790), Fibrosis and cirrhosis of liver (K74) (n=1,167), Alcoholic liver disease (K70) (n=359), Hepatic failure (K72) (n=273), Congenital malformations of gallbladder, bile ducts and liver (Q44) (n=157), Chronic viral hepatitis (B18) (n=150). [3]
Diagnosis	Indication cases for transplantation in 2013 were as follow: Hepatitis B associated liver cirrhosis (%, no. of LDLT/DDLT) (30.6%, n=212/151), Malignant neoplasms (17.6%, n=194/15), Alcoholic liver disease (12.6%, n=78/72), Acute liver failure (4.8%, n=32/25), Hepatitis C associated liver cirrhosis (4.9%, n=36/22) [2]
Treatment	As a post-LT antiviral treatment, entecavir is more effective than lamivudine. [7] The average length of hospitalization for patients receiving a LT was 30.6 to 36.0 days. The average number of days of admission was 36.0 days in 2008, and gradually decreased to 31.4 days in 2014. [3]

Prognosis	In a study of 312 HCC patients from four Korean institutions, the three-year survival rate (70.4% overall) of patients meeting the Milan criteria was 89.9% after CDLT and 91.4% after LDLT after excluding perioperative mortality and 77.7% overall among those who met the University of California San Francisco criteria (88.1% after CDLT and 90.6% after LDLT). In another day, the one-year and five-year survival rates were 88.7% and 79.7%, respectively, after LDLT, and 76.9% and 68.9%, respectively, for LTs with brain dead donors. [2] 107 patients received LT twice or more within 7 years, accounting for 1.42% of the total number of LT patients (n=7,510). 45 patients were re-entered and transplanted in less than a year. 35 patients received re-transplantation a year later, 15 patients received re-transplantation 2 years later and 5 patients 3 years later. [3]
Genetic information	Multidrug resistance-associated protein (MRP) 2 is a glutathione conjugate in the canalicular membrane of hepatocytes. Early graft damage after LT can result in alteration of MRP2 expression. The pattern of canalicular MRP2 staining of graft was classified into 3 types: homogenous (type C0), focal (type C1), and no (type C2,) staining of the canaliculi. The median operation time was longer in patients with type C2 (562.6 minutes) than in patients with type C0 (393.8 minutes) (P=0.038). The rates of posttransplant complications were higher in patients with type C2 (100%) than in patients with type C0 (42.9%) and C1 (73.3%) (P<0.001). [8]
References	[1] Current status of hepatic surgery in Korea. ***Korean J Hepatol.*** (2009) 15(Suppl 6): S60-S64 [2] Korean Network for Organ Sharing (KONOS) report. Korea Center for Disease Control and Prevention (2013) [3] **최근 7년간 간이식 시술현황**. HIRA_정책동향. (2015) 9(4): 78-86 [4] Status of hepatocellular carcinoma in South Korea. ***Chin Clin Oncol.*** (2013) 2(4): 39 [5] Clinical outcome of 1,000 consecutive cases of liver transplantation: a single center experience. ***Ann Surg Treat Res.*** (2018) 95(5): 267-277 [6] Incidence and risk factors of renal dysfunction after liver transplantation in Korea. ***Transplantation proceedings*** (2004) 36: 2318-2320 [7] Prevention and risk factors of hepatitis B recurrence after living donor liver transplantation. ***Journal of Gastroenterology and Hepatology*** (2014) 29(1): 151-156 [8] Alteration of MRP2 expression and the graft outcome after liver transplantation. ***Ann Surg Treat Res.*** (2018) 95(5): 249-257

Macular Degeneration

Incidence	The incidence in the general population aged 40 years and older was 3.02/10000 person-years and 3.76/ and 2.34/10,000 person-years in men and women, respectively. [1]
Prevalence	The five-year (2008-2012) prevalence of exudative age-related macular degeneration (AMD) in the general population aged 40 years and older was 36.43/10,000, including 37.01 and 35.90/10,000 in men and women, respectively. [1] The Korean National Health and Nutrition Examination (KNHANES) 2008-2011 reported, the prevalence of AMD of 6.6% (95% confidence interval [CI]: 6.15-7.09) in subjects aged ≥40 years. [2]
Mortality	N/A
Gender	Of 1,129 patients with AMD, 486 were male and 643 were female. [2]
Age	In the South Korean population aged 40 years and older, 81,513 patients had exudative AMD during the five-year study period (median age: 70 years, mean age±standard deviation [SD]: 68.59±10.12 years), including 39,307 (48.2%) men (median age: 69 years, mean±SD: 67.48±10.32 years) and 42,206 (51.8%) women (median age: 71 years, mean±SD: 69.62±9.8 years). [2]
Regional distribution	N/A
Clinical phenotypes/ classification	Patients were defined as having early AMD if they met any one of the following criteria: 1) the presence of soft indistinct or reticular drusen or, 2) the presence of hard or soft distinct drusen with pigmentary abnormalities (increased pigmentation or hypopigmentation of the retinal pigment epithelium) in the absence of signs of late AMD. According to the KNHANES 2008-2011, the prevalence of early and late AMD were 6.02% (95% CI: 5.56-6.48) and 0.60% (95% CI: 0.45-0.75), respectively. [2]
Clinical manifestation	N/A
Risk factor	Age, smoking status, alcohol consumption, body mass index (BMI), total cholesterol, high-density lipoprotein [3], hypertension, diabetes mellitus, cardiovascular diseases [4], cerebrovascular disease [2], periodontal disease [5], and the levels of toxic heavy metals in blood [6] were associated with AMD in Korean populations.
Diagnosis	Mean corpuscular volume (MCV) was calculated by dividing the hematocrit (in percent) by the number of red blood cells (millions per microliter) multiplied by 10. [2]
Treatment	A total of 22 men and 9 women were administered conventional dose anti-vascular endothelial growth factor (VEGF) (CDAV) followed by high-dose anti-VEGF (HDAV) for the treatment of pigment epithelial detachment (PED). Before HDAV, the mean number and duration of CDAV rounds was 12.1±8.6 times (range: 7-34 times) and 26.1±21.2 months (range: 9-60 months). The mean number and duration of HDAV rounds (bevacizumab 5.0 mg) was 3.4±0.8 (range: 3-7 times) and 4.1±1.0 months (range: 3-7 months). [7]

	Bevacizumab (1.25 mg/0.05 mL, n=71, 71 eyes), ranibizumab (0.5 mg/0.05 mL, n=87, 87 eyes), and alflibercept (2.0 mg/0.05 mL, n=74, 74 eyes) were injected to treat neovascular AMD. [8]
Prognosis	After HDAV, the mean central foveal thickness decreased from 330.06±106.01 to 311.10±112.73 μm with no significant difference (mean thickness change, 18.79±66.83 μm). [7] Central macular thickness, sub retinal fluid, pigment epithelial detachment size, and best corrected visual acuity (log-MAR) were significantly decreased after treatment with all three anti-VEGF agents. [8]
Genetic information	*ARMS2/HTRA1* variants rs10490924 and rs11200638 are significant genetic risk factors for exudative AMD and its subtypes choroidal neovascularization and polypoidal choroidal vasculopathy in Korea. [9]
References	[1] Prevalence and incidence of exudative Age-Related Macular Degeneration in South Korea: A nationwide population-based study. ***American Academy of Ophthalmology*** (2015) 122: 2063-2070 [2] Age-related macular degeneration: prevalence and risk factors from korean national health and nutrition examination survey, 2008 through 2011. ***Ophthalmology*** (2014) 121: 1756-1765 [3] Risk Factors for Progression of Early Age-Related Macular Degeneration in Koreans. ***Ophthalmic epidemiology*** (2016) 23: 80-87 [4] Age-related macular degeneration: prevalence and risk factors from Korean National Health and Nutrition Examination Survey, 2008 through 2011. ***Ophthalmology*** (2014) 121: 1756-1765 [5] The association between periodontal disease and age-related macular degeneration in the Korea National health and nutrition examination survey: A cross-sectional observational study. ***Medicine*** (2017) 96: e6418 [6] Five heavy metallic elements and age-related macular degeneration: Korean National Health and Nutrition Examination Survey, 2008-2011. ***Ophthalmology*** (2015) 122: 129-137 [7] High Dose Intravitreal Bevacizumab for Refractory Pigment Epithelial Detachment in Age-related Macular Degeneration. ***Korean J Ophthalmol.*** (2016) 30: 265-271 [8] A comparison of responses to intravitreal bevacizumab, ranibizumab,aflibercept injections for neovascular age-related macular degeneration. ***Int Ophthalmol.*** (2016) 10.1007/s10792-016-0391-4 [9] Analysis of genetic and environmental risk factors and their interactions in Korean patients with age-related macular degeneration. ***PLoS ONE*** (2015) 10: e0132771

Myelofibrosis

Incidence	According to the 2011 Health Insurance Review Assessment service (HIRA) data, the crude incidence rate of primary myelofibrosis (MF) was 0.15/100,000. [1]
Prevalence	The crude and age-standardized prevalences were 2.60 and 1.83/100,000, respectively. [1]
Mortality	The five-year relative survival rate in patients with MF was 53.1% from 2003 to 2011. [1]
Gender	In 2011, the age-standardized prevalence was 1.72 and 1.93/100,000 in men and women, respectively. [1]
Age	A higher incidence of MF was observed in older age groups, with the highest incidence for those 70-79 years of age. [1]
Regional distribution	N/A
Clinical phenotypes/ classification	Acute panmyelosis with MF (APMF) (n=6/101), acute megakaryoblastic leuke-mia with MF (AMKL-MF) (n=7/101), primary MF (PMF) (n=44/101), and myelodysplastic syndrome with MF (MDS-MF) (n=44/101) [2]
Clinical manifestation	MF is a classical Philadelphia chromosome-negative myeloproliferative neoplasm (Ph-MPN) characterized by clonal proliferation of pluripotent stem cells, dysfunctional kinase signaling, and abnormal cytokine release. MF is a heterogeneous disease, ranging from asymptomatic to association with one or more of the following: profound anemia, splenomegaly, constitutional issues, and even rapid progression to overt leukemia. [3]
Risk factor	N/A
Diagnosis	When MF is observed in the bone marrow (BM), further with respect to splenomegaly, blood cell count, peripheral blood (PB) and BM blast count, and chromosome study will guide correct diagnosis. [2]
Treatment	In 2011, 58.7% and 8.1% of patients received hydroxyurea and phlebotomy, respectively. [1] Microvascular symptoms including migraine, erythromelagia, and atypical transient ischemic attack are often treated by aspirin. Cytoreductive therapysteroids have transient effects on general symptoms. Researchers have worked to develop medications that target the *JAK2* gene mutation responsible for MF. [3]

Prognosis	The clinical prognosis of patients with MF varies widely. The median survivals were more than 10 years in low-risk patients and 27 months in high-risk patients based on the international prognostic scoring system (IPSS). [3]
Genetic information	*CALR* mutations occur in Korean patients with Ph-MPN that lack *JAK2V617FMPL* mutations. [4]
References	[1] Incidence, survival and prevalence statistics of classical myeloproliferative neoplasm in Korea. ***Journal of Korean Medical Science*** (2016) 31: 1579-1585 [2] Differential diagnosis of myelofibrosis based on WHO 2008 criteria: acute panmyelosis with myelofibrosis, acute megakaryoblastic leukemia with myelofibrosis, primary myelofibrosis and myelodysplastic syndrome with myelofibrosis. ***Int J Lab Hematol.*** (2013) 35: 629-636 [3] Evolution of Myelofibrosis Treatment. ***The Korean Journal of Medicine*** (2016) 90: 293-297 [4] JAK2V617F, MPL, and CALR mutations in Korean patients with essential thrombocythemia and primary myelofibrosis. ***J Korean Med Sci.*** (2015) 30: 882-888

Non Cystic Fibrosis Bronchiectasis

Incidence	N/A
Prevalence	Of 1,409 patients aged 23-86 years screened for respiratory disease by chest CT in a health promotion center in 2008, 129 (9.1%) were diagnosed with bronchiectasis. [1] There remains no specific information about the prevalence of non-cystic fibrosis bronchiectasis (non-CF bronchiectasis) in Korea.
Mortality	N/A
Gender	The prevalence of bronchiectasis was higher in women than that in men (11.5% vs. 7.9%). [1]
Age	The prevalence of bronchiectasis tended to increase with age. [1] Mean age at diagnosis was 59.6±9.1 years among 155 patients with non-CF bronchiectasis. [2]
Regional distribution	N/A
Clinical phenotypes/ classification	N/A
Clinical manifestation	Respiratory symptoms were present in 53.7% of subjects with bronchiectasis (n=95). The common symptoms were cough and/or sputum (37.9%, n=36/95), dyspnea on exertion (26.3%, n=25/95), dyspnea at rest (7.4%, n=7/95), and hemoptysis (1.0%, n=1/95). [1]
Risk factor	The risk factors of bronchiectasis were age (odds ratio [OR]: 2.49, 95% confidence interval [CI]: 1.56-3.98) and history of pulmonary tuberculosis (OR: 4.61, 95% CI: 2.39-8.88) in multivariate model adjusted for gender, smoking status, and diagnosed asthma. [1]
Diagnosis	The diagnosis of bronchiectasis was made by high-resolution CT in subjects with a compatible clinical history. The morphologic criteria of high-resolution CT included i) a larger size of the bronchial internal diameter than the accompanying pulmonary artery and ii) a lack of tapering of the bronchi in the peripheral lungs. [3]
Treatment	N/A
Prognosis	During mean follow-up time of seven years (n=155), the radiologic progression of non-CF bronchiectasis based on Bhalla score change was associated with lower body mass index (BMI) and isolation of *Pseudomonas aeruginosa* in respiratory specimens after adjusting for age at diagnosis, FEV1, and isolation of nontuberculous mycobacteria in respiratory specimens. [2]

Genetic information	N/A
References	[1] High Prevalence of Bronchiectasis in Adults: Analysis of CT Findings in a Health Screening Program. ***The Tohoku journal of experimental medicine*** (2010) 222: 237-242 [2] Factors associated with radiologic progression of non-cystic fibrosis bronchiectasis during long-term follow-up. ***Respirology*** (2016) 21: 1049-1054 [3] Serum Albumin and Disease Severity of Non-Cystic Fibrosis Bronchiectasis. ***Respiratory care*** (2017) 62: 1075-1084

Otitis Media

Incidence	N/A
Prevalence	Based on the National Health Insurance Service (NHIS), 1,561,095 patients were treated for otitis media in 2015, making it the 50th most common illness in Korea. [1] According to a study of 16,063 adults in Korean National Health and Nutrition Examination Survey (KNHANES) 2010-2012, the prevalence of chronic otitis media (COM) was 3.8%. [2]
Mortality	N/A
Gender	Of the 1,561,095 patients in 2015, 801,446 (51.3%) were women and 759,649 (48.7%) were men, with slightly higher prevalence of otitis media in women. [1] Based on the KNHANES 2010-2012, women had a 44% increased risk of COM than that in men (adjusted odds ratio [OR]: 1.44, 95% confidence interval [CI]: 0.94-2.21). [2]
Age	The prevalence of COM tended to increase with age. It was highest in subjects aged of 70 years and over, followed by those in their 60s, 50s, and 30s (prevalence was 1% for those in their 30's). [2]
Regional distribution	The prevalence of COM was 3.5% in a rural area and 4.6% in an urban area. [2]
Clinical phenotypes/ classification	COM can be divided into acute otitis media (AOM) and otitis media with effusion (OME). Both are accompanied by middle ear effusion (MEE) resulting from the inflammation of the mucous membranes of the middle ear. [3] Among 683 outpatients who visited seven hospitals in Korea, 18% (n=122) and 82% (n=561) were diagnosed with AOM and OME, respectively. [4] Without appropriate treatment, OM may become chronic, resulting in various complications. COM can be classified based on the involvement of active inflammations associated with cholesteatoma. [2] According to a study of 1,102 outpatients with otorrhea who visited the otorhinolaryngology at six hospitals in Korea, 25% (n=279) and 75% (n=823) had COM with and without cholesteatoma. [5]
Clinical manifestation	Fever is relatively common, and if a perforated eardrum can result in pus in the ear. [3]
Risk factor	The major cause of AOM is infection, caused by various bacteria and viruses. The major pathogens are *Staphylococcus aureus* (53.2%, 163/306) and *Streptococcus pneumonia* (8.5%, 72/306). [4] A history of pulmonary tuberculosis, chronic rhinosinusitis [2], smoking, bronchiolitis, low socioeconomic status [6], childhood obesity [7], and high-fat diet [8] were reported as risk factors for OM.
Diagnosis	The diagnosis of AOM is made based on subjective symptoms and objective signs. The subjective symptoms include to 1) acute onset and 2) middle earsystemic symptoms due to acute inflammation. The objective signs include 1) tympanic membrane findings, including bulging, bullae, hyperemia, perforation with otorrhea, middle ear effusion (MEE), etc., and 2) tympanometry showing type B or C, and identification of MEE via tympanocentesis. Definite diagnosis requires both osubjective symptoms and one or more objective signs. A suspicious diagnosis is defined as fulfilling all the subjective symptoms but none of the objective signs. [9]

Treatment	The basis of AOM therapy is antibiotic therapy, with amoxicillin recommended as the primary drug. Acetaminophen and ibuprofen can be administered to reduce pain and antipyretic effects can also be expected. Ectodermal incision and eardrum puncture may be used for severe cases not controlled by drugs. [3]
Prognosis	AOM in children, it can cause hearing loss, which may delay language/speech acquisition and cognitive development. It can also cause permanent changes in the tympanic membrane, such as cholesteatoma. [9]
Genetic information	Mutations in the genes associated with immunity are highly related to otitis media, especially the expression of *hBD-2* by *IL-1α* [10], Mutations of the *Btk* [11] and *JAG1* [12] are associated with OM in Korean.
References	[1] Korea Statistical Information Service. Health Insurance Statistics. Most Frequent Diseases of Health Insurance (2015) http://kosis.kr/ [2] Prevalence and risk factors of chronic otitis media: the Korean National Health and Nutrition Examination Survey 2010-2012. ***PLoS ONE*** (2015) 10: e0125905 [3] Management of Acute Otitis Media and Acute Sinusitis: Clinical Guidelines. ***Korean J Pediatr Infect Dis.*** (2008) 15: 100-107 [4] Bacterial Species and Antibiotic Sensitivity in Korean Patients Diagnosed with Acute Otitis Media and Otitis Media with Effusion. ***J Korean Med Sci.*** (2017) 32: 672-678 [5] Bacteriology of chronic suppurative otitis media multicenter study. ***Acta Otolaryngol.*** (2007) 127: 1062-1067 [6] A Study on Risk Factors of Recurrent Otitis Media. ***Korean J Pediatr Infect Dis.*** (2010) 17: 91-100 [7] Relationship between pediatric obesity and otitis media with effusion. ***Arch Otolaryngol Head Neck Surg.*** (2007) 133: 379-382 [8] A high-fat diet is associated with otitis media with effusion. ***Int J Pediatr Otorhinolaryngol.*** (2015) 79: 2327-2331 [9] Korean clinical practice guidelines: otitis media in children. ***J Korean Med Sci.*** (2012) 27: 835-848 [10] Gene Regulatory Regions Required for β Defensin-2 Up-Regulation by Interleukin-1α in the Human Middle Ear Epithelial Cell Line. ***Korean J Otolaryngol.*** (2005) 48: 577-581 [11] A Case of X-Linked Agammaglobulinemia with Btk Gene Intron 2 Mutation. ***Tuberculosis and Respiratory Diseases*** (2008) 65: 207-211 [12] Jagged1 mutation analysis in Alagille syndrome patients. ***Korean Journal of Pediatrics*** (2006) 49: 519-522

Psoriatic Arthritis (Arthropathic Psoriasis)

Incidence	N/A
Prevalence	The total prevalence of psoriatic arthritis (PsA) was 11.2 % (n=22/196 patients with psoriasis) with 59.1% of the cases being newly diagnosed in a cross-sectional observational study between October 2013 and August 2014. [1]
Mortality	N/A
Gender	Of 32 total patients with PsA, 19 were male and 13 were female in a single center study in 1997. [2]
Age	The median age of PsA patients was 40 years ranged 20-60 years. [2] The mean age at arthritis onset of PsA was 39.4 years. [1]
Regional distribution	The incidence of PsA varied according to region and race, at 6-42% and 1-9% of patients with psoriasis in Caucasians and Asians, respectively. [3]
Clinical phenotypes/ classification	Of 148 psoriasis patients included in one study, 18 (12.2%) were diagnosed with PsA. Asymmetric oligoarthritis (n=11/18, 61.1%), spondylitis (n=4/18, 22.2%) and distal interphalangeal predominant (n=3/18, 16.7%). [4]
Clinical manifestation	PsA is an inflammatory arthropathy associated with psoriasis. [1] PsA provokes joint pain and morning stiffness lasting for more than 30 minutes, which is relieved by exercise. PsA usually affects the distal small joints and exhibits asymmetry, which is one of the typical characteristics of PsA and gives for a differential diagnosis between PsA and rheumatoid arthritis. [5] Nail changes (36%), back pain (62.5%), morning stiffness (23.1%), dactylitis (15.4%), and enthesitis (15.6%). [2]
Risk factor	Diagnoses are made primarily on the basis of clinical features as well as laboratory and radiologic findings. [2]
Diagnosis	Mean psoriasis area and severity index (PASI) of PsA patients: 11.5 erythrocyte sedimentation rate (≥ 15 mm/hr): 11/28 patients C-reactive protein (increase in ≥ 0.5 mg/dL): 3/20 patients Radiological test: sacroiliitis is most common (n=8/29), and enthesophyte (n=3/29) [2]
Treatment	The treatment of PsA usually begins with non-steroidal anti-inflammatory drugs (NSAIDs). Diseases-modifying antirheumatic drugs (DMARDs) are employed if the arthritis does not respond to NSAIDs. Introduction of tumor necrosis factor (TNF)-inhibiting agents allow physicians to achieve higher goals in the treatment of PsA. [6]
Prognosis	PsA can cause irreversible joint damage, thus, early recognition of PsA in patients with psoriasis is important for preventing disability and deformity. [4]

Genetic information	N/A
References	[1] Clinical features of psoriatic arthritis in Korean patients with psoriasis: a cross-sectional observational study of 196 patients with psoriasis using psoriatic arthritis screening questionnaires. ***Rheumatology International*** (2016) 36: 207-212 [2] Spondylitis is the most pattern of psoriatic arthritis in Korea. ***Rheumatol Int.*** (2000) 19: 89-94 [3] Article Navigation Psoriatic arthritis in Asia. Rheumatology (2009) 48(12): 1473–1477 [4] Screening for psoriatic arthritis in Korean psoriasis patients using the psoriatic arthritis screening evaluation questionnaire. ***Annels of Dermatology*** (2015) 27: 265-268 [5] Clinical Manifestations and Diagnosis of Psoriatic Arthritis. ***Korean J Med.*** (2013) 85: 250-255 [6] Management of Psoriatic Arthritis. ***Journal of the Korean Society for Psoriasis*** (2007) 4:11-15

Sleep Apnea Syndromes

Incidence	N/A
Prevalence	The prevalence of obstructive sleep apnea (OSA) syndrome was 27% and 16% in men and women, respectively in the Korean Health and Genome study of 2004. [1] According to the community survey conducted by the Korea Center for Disease Control and Prevention in 2011 of OSA using Berlin Questionnaires (BQ) (n=7,955), 12.4% of participants were at risk for OSA (BQ score ≥2). [2]
Mortality	The adjusted hazard ratio [HR] for all-cause mortality in the severe OSA group (apnea-hypopnea index [AHI] ≥ 30) vs. reference group (5 <AHI) was 2.47 (95% CI: 1.09-5.57), while the adjusted HR for cardiovascular mortality was 4.66 (95% CI: 1.03-21.08). After adjusting for treatment status, the HRs for all-cause and cardiovascular mortality in the severe OSA vs. reference groups were 2.14 (P=0.079) and 4.19 (P=0.076), respectively. [3]
Gender	Of total 140 patients with OSA syndrome, 122 were male and 18 were female. [4] According to the community survey of OSA using BQ (n=7,955), 15.7% of men (n=558/3,559) and 9.8% of women (n=431/4,396) were at risk for OSA (BQ score ≥2). [2]
Age	The mean age was 45.9±13.10 years. [4]
Regional distribution	N/A
Clinical phenotypes/ classification	Severe OSA (AHI>30) was observed in 20 patients, and one patient had moderate symptoms (AHI=25.3). [5]
Clinical manifestation	OSA syndrome is defined as a disorder of breathing during sleep characterized by prolonged partial airway obstruction and/or intermittent complete obstruction (obstructive apnea) that interrupts normal ventilation during sleep and normal sleep patterns. OSA syndrome encompasses primary snoring, upper airway resistance syndrome, and obstructive hypoventilation. [6]
Risk factor	OSA syndrome is a risk factor for a range of medical problems, including cardiovascular disease, diabetes, depression, and cognitive dysfunctions. [1] A Korean study based on OSA survey data reported that gender (male), harmful alcohol use, and comorbidities of chronic diseases were significantly associated with a high risk of OSA. [4] Another Korean study reported that alcohol consumption and atrial fibrillation were significantly related to SDB (sleep-disordered breathing). [7]
Diagnosis	Total sleep time (294±91.2 min), mean sleep latency (15.2±20.1 min), mean rapid eye movement (REM) latency (12.6±50.1), and sleep efficiency (79.6±11.4%), and apnea maximum duration (57.0±22.8 sec). [5]

Treatment	Long-term continuous positive airway pressure (CPAP) treatment (18.2±12.4 months, 8-44 months) [5] Uvulopalatopharyngoplasty (UPPP, 30 patients) and nonsurgical approaches (CPAP 16 patients and mandibular advancement devices [MAD] 10 patients) [4]
Prognosis	After CPAP treatment, there was an increasing trend in the overall volume of the cerebral cortex (t52.7 FDR50.09). No volume decrease was observed in any brain structures after treatment (FDR>0.15). No volume increase was observed in deep gray matter (GM) structures or the cerebellum (FDR>0.2). No volume increase was found in relation to the frequency or average time of CPAP use (FDR 0.1). [4] Apnea-hypopnea index and lowest oxygen saturation level improved significantly in all groups, with a better QoL after treatment in all groups. A significant increase in the Korean version of the International Index of Erectile Function questionnaire-5 (KIIEF-5) score was observed in patients who underwent UPPP. [4] Untreated sleep-disordered breathing in children is associated with various problems such as attention-deficit/hyperactivity disorder, poor academic achievement, and behavioral problems. It may even cause more serious morbidities, such as growth failure, cor pulmonale, and systemic hypertension. [6]
Genetic information	N/A
References	[1] Epidemiology and Etiology of Obstructive Sleep Apnea. ***The Korean Journal of Medicine*** (2015) 89: 6-12 [2] Prevalence and related factors for high-risk of obstructive sleep apnea in a large Korean population: results of a questionnaire-based study. ***Journal of Clinical Neurology*** (2014) 10: 42-49 [3] Mortality of Patients with Obstructive Sleep Apnea in Korea. ***J Clin Sleep Med.*** (2013), 9(10): 997-1002 [4] Effects of Surgical vs. Nonsurgical Therapy on Erectile Dysfunction and Quality of Life in Obstructive Sleep Apnea Syndrome: A Pilot Study. ***The Journal of Sexual Medicine*** (2013) 10: 2053-2059 [5] Effects of long-term treatment on brain volume in patients with obstructive sleep apnea syndrome. ***Human Brain Mapping*** (2016) 37: 395-409 [6] Obstructive sleep apnea syndrome in children: epidemiology, pathophysiology, diagnosis and sequelae. ***Korean journal of pediatrics*** (2010) 53: 863-871 [7] Interaction between Sleep-Disordered Breathing and Acute Ischemic Stroke. ***Journal of Clinical Neurology*** (2013) 9: 9-13

Subarachnoid Hemorrhage

Incidence	Age- and sex-standardized incidence rates per 100,000 of Subarachnoid Hemorrhage (SAH) are as follow: 2007 (9.7), 2008 (11.0), 2009 (9.3), 2010 (11.8), 2011 (11.8), 2012 (9.8), 2013 (9.0). In case of SAH, standardized incidence rates of female were higher than those of male. [1]
Prevalence	N/A
Mortality	1-year mortality of SAH patients was 30.2% using data source from Australian Shellfish Quality Assurance Program. [1]
Gender	Annual age-standardized incidence rate (per 100,000) of first-ever stroke in 2013 are 8.5 in male and 9.0 in women. Regarding prevalence proportion of male sex, 36.3% was male among Intracerebral Hemorrhage (ICH) patients. In case of SAH, standardized incidence rates of female were higher than those of male. Male to female ratio in age-standardized incidence rates (per 100,000) of first-ever stroke is 1:1.05. [1]
Age	The predominant age group was 45–54 years in SAH (27.2%) and 65–74 years in ICH (22.2%). Distributions of cases with SAH are as follow: In men, ≤44 years: 24.9%, 45-54 years: 33.4%, 55-64 years: 23.3%, 65-74 years: 12.4%, 75-84 years: 6.0%, ≥85 years: 0%. In women, ≤44 years: 12.6%, 45-54 years: 23.7%, 55-64 years: 23.9%, 65-74 years: 18.6%, 75-84 years: 16.9%, ≥85 years: 4.2%. [1]
Regional distribution	N/A
Clinical phenotypes/ classification	Proportion by Glasgow Come Scale score at admission is as follow: Mild (≥13) (60.1%), moderate (9-12) (8.5%), severe (≤8) (31.4%). [1]
Clinical manifestation	N/A
Risk factor	N/A
Diagnosis	Median score of Glasgow Coma Scale (GCS) at admission were 14 points in SAH and 13 points in ICH. The majority of patient with SAH (60.1%) and ICH (53.5%) showed mild severity (GCS score: 13-15) at admission. [1]
Treatment	Management of cerebral aneurysm in SAH, the proportion of operation with clip (17.2%) was higher than endovascular embolization (14.3%) in the assessment periods (2013 and 2014). [1]

Prognosis	Patients with ICH and SAH showed steep decrease in survival probability in early period after stroke than ischemic stroke. Outcomes after SAH are as follow: Length of stay, median days (18), 1-month mortality (27.0%), 3-month mortality (27.9%), 1-year mortality (30.2%). [1]
Genetic information	Patients with SAH had significantly higher levels of methylation intensity of distal intergenic region upstream of ITPR3 than those without delayed cerebral ischemia (median, 0.941 [interquartile range (IQR): 0.857–0.984]). [2]
References	[1] Stroke Statistics in Korea 2018: A Report from the Epidemiology Research Council of the Korean Stroke Society. The Epidemiology Research Council of the Korean Stroke Society (2018) [2] Correlation Between Altered DNA Methylation of Intergenic Regions of ITPR3 and Development of Delayed Cerebral Ischemia in Patients with Subarachnoid Hemorrhage. ***World Neurosurg.*** (2019) S1878-8750(19)31665-1

Venous Thromboembolism

Incidence	The incidence of venous thromboembolism (VTE) in 2008 was 13.8/100,000 population. [1]
Prevalence	The prevalence of preoperative VTE was 11.1% (n=23/208) in an observational study conducted between December 2010 and August 2014. [2]
Mortality	N/A
Gender	The relative risk (RR) of VTE was significantly lower in women (RR: 0.96, 95% confidence interval [CI]: 0.94-0.98) than that in men according to a study of the Korean Health Insurance Review Assessment service (HIRA) database. [1]
Age	VTE incidence tended to increase with age. The RRs of VTE were 14.9 for subjects ≥80 years, 12.7 in those 70-79 years, 6.0 in those 60-69 years, 2.4 in those 50-59 years, and 1.5 in those 40-49 years of age compared to that in those 30-39 years of age. [1] The mean ages of patients with VTE (n=203) was 56.07±17.79. [3]
Regional distribution	The incidence of VTE in the Korean population was 13.8/100,000 persons in 2008, approximately one-tenth to one-fifth of the incidence reported in the Caucasian population. [1]
Clinical phenotypes/ classification	Unprovoked VTE: 93 patients, provoked VTE: 110 patients. [3] VTE includes deep vein thrombosis (DVT) and pulmonary embolism (PE). The respective age- and sex-adjusted annual incidences of VTE, DVT, and PE per 100,000 individuals were 13.8, 5.31, and 7.01 in 2008 (P=0.0001). [1]
Clinical manifestation	VTE is a thrombotic disorder of the venous system, which includes DVT and PE. Approximately half of all untreated DVT cases are complicated by PE; conversely, 50-80% of all untreated PE cases are associated with DVT. [4]
Risk factor	Recent surgery, trauma/fracture, immobilization: 62 patients, malignancy (n=12), stroke (n=17), severe medical disease (n=5), autoimmune disease (n=4), pregnancy (n=4), inherited thrombophilia (n=6), and other (n=9) [3]
Diagnosis	Screening compression ultrasonography (CUS) pulmonary CT angiography can be used to detect VTE. [4]
Treatment	Anticoagulation: unfractionated heparin (UH)/Warfarin (n=3/25), low molecular weight heparin (LMWH)/Warfarin (n=3/25), LMWH (n=2/25), Warfarin (n=2/25) Surgical: Thrombectomy/thrombolysis/IVC filter/UH/warfarin (n=2/25), Thrombectomy/thrombolysis/warfarin (n=2/25), Thrombolytic therapy only (n=1/25), Catheter removal (n=4) [5]

Prognosis	Of 25 VTE patients, 12 had a complete resolution of VTE, seven had persistent VTE, and two patients died of pulmonary emboli. [5]
Genetic information	The 677C>T mutation of the *MTHFR* increased the risk of VTE in Koreans. [3]
References	[1] Incidence of venous thromboembolism in Korea: from the Health Insurance Review and Assessment Service database. ***J Thrombosis and Haemostasis*** (2010) 9: 85-91 [2] Preoperative Prevalence of and Risk Factors for Venous Thromboembolism in Patients with a Hip Fracture. ***J Bone Joint Surg Am.*** (2016) 98: 2089-2095 [3] The 677C>T Mutation of the *MTHFR* Gene Increases the Risk of Venous Thromboembolism in Koreans and a Meta-Analysis From Asian Population. ***Clinical and Applied Thrombosis/Hemostasis*** (2013) 19: 309-314 [4] Korean guidelines for the prevention of venous thromboembolism. ***Journal of Korean medical science*** (2010) 25: 1553-1559 [5] Venous thromboembolism in pediatric patients: a single institution experience in Korea. ***Blood Res.*** (2016) 51: 164-170

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