

# Stroke Epidemiology and Acute Stroke Management in Korea



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Every year,  $\approx 105,000$  Korean people experience a new or recurrent stroke and more than 26,000 die of stroke, indicating that every 5 minutes stroke attacks someone and every 20 minutes stroke kills someone in Korea. In 2005 nationwide survey,  $\approx 795,000$  Koreans have a stroke with an age-standardized stroke prevalence in population aged  $\geq 30$  years of 1.59%. DALY lost to stroke was  $\approx 344,000$  in 2002. In Korea, stroke is the second leading cause of death after cancer, and accounts for  $\approx 1$  of every 10 deaths. Fortunately, the stroke mortality rate substantially decreased by 28.3% during the first decade of the 21st century from 74.2/100,000 in 2001 to 53.2/100,000 in 2010, which further decreased to 50.3/100,000 in 2013. For risk factors, one in 3-4 Korean adults has hypertension, one in 10 diabetes, one in 7 hypercholesterolemia, and one in 3 obesity. Over the last 10 years, the prevalence of hypertension slightly decreased, diabetes and obesity slightly increased, and hypercholesterolemia remained stable. Smoking prevalence in women remained low as less than 10%, but in men, although it has decreased over the last 10 years, it is still high as 48%.

Acute stroke management in Korea has substantially improved. According to a nationwide annual assessment of acute stroke care for about 200 centers between 2005 and 2013, the proportion of patients who arrived within 3 hours from stroke onset was about 45% for any stroke and about 40% for ischemic stroke. For patients who arrived within IV-TPA time window, the rate of neuroimaging within 1 hour from arrival was more than 95% in 2011 and 2012. Regarding thrombolysis, the IV-TPA rate among patients with ischemic stroke increased from 4.7% in 2005 to 8.9% in 2011. Particularly, TPA use for eligible patients greatly increased from 21.7% in 2005 to 87.3% in 2011. In 2011, the median onset-to-needle and door-to-needle times were 121.5 min and 49.0 min, and 81.9% were treated within 1 hour after arrival. Stroke Unit has increased from 2 in 2005 to 60 in 2013, and currently 42 centers have been formally endorsed by the Korean Stroke Society. Performance measured by quality indicators has steadily improved since 2005, and the performance rates for most indicators were greater than 90% in 2010. According to the OECD Health Care Report, Health At a Glance, for ischemic stroke, Korea had the lowest in-hospital 30-day case-fatality rate (crude rate, 2.5%; age-sex standardized rate, 1.8%) in 2009 and the lowest 30-day in- and out-of-hospital case-fatality rate of 5.4% in 2011. For patients who admitted to secondary or tertiary hospital via ER, the in-hospital and 30-day in- and out-of-hospital case-fatality rates in 2012 were 3.8% and 6.9% for ischemic stroke and 15.1% and 20.9% for hemorrhagic stroke, which have steadily decreased since 2005. For 3-month modified Rankin Scale (mRS) outcome from several hospital-based studies, 50-66% achieved excellent outcome (mRS 0-1), 63-80% good outcome (mRS 0-2), and 3-7% dead outcome.