Ischaemic heart diseases and stroke were the two major causes of death in Asia-Pacific in 2016, accounting for 34.8% of total deaths in South East Asia and 25.2% of all deaths in the Western Pacific region (WHO, 2018[10])$_1$; (see indicator "Mortality from cardiovascular diseases" in Chapter 3). Additionally, both are associated with significant health, social and non-financial costs, because of the persistent disabilities suffered by many survivors. Treatment following acute myocardial infarction (AMI) and stroke has advanced greatly over the past decades. Until the 1990s, treatment focused on prevention of complications and rehabilitation but since then great improvements in AMI survival rates were achieved with thrombolysis (Gil et al., 1999[11]). Treatment for ischaemic stroke has also advanced dramatically over the last decade, through early identification of suspected ischaemic stroke patients and timely acute reperfusion therapy. Dedicated cardiac care and stroke units offering timely and proactive therapy achieve better survival than conservative care (Seenan, Long and Langhorne, 2007[12]), although studies have shown that a considerable number of patients fail to receive high-quality, evidence-based care (Eagle et al., 2005[13]). Moreover, due to COVID-19, access to high-quality care was hampered in some cases. In Hong Kong, China, for instance, there was an increase in the delayed access to high-quality care among patients suffered from AMIs because of hospitals following additional precautionary measures to prevent infection and/or patients fearing from infection (Tam et al., 2020[14]).

For both AMI and stroke, the case-fatality rate is a useful measure of acute care quality. It reflects the processes of care, such as effective medical interventions, including early thrombolysis or treatment with aspirin when appropriate, and catherterisation as well as co-ordinated and timely transport of patients. For AMI, crude and age-sex standardised in-hospital case-fatality rates within 30 days of admission vary widely, with the lowest rates reported in Australia (3.8%) and New Zealand (4.7%) (Figure 7.4). Singapore had the highest reported case-fatality rate at 10.5%. Beyond the quality of care provided in hospitals, differences in hospital transfers, average length of stay, emergency retrieval times and average severity of AMI and stroke may influence reported 30 day-case fatality as this indicator captures the functioning of the entire cardio-vascular care pathway.

For ischemic stroke, the lowest case-fatality rates were reported in Japan (3.0%) and the Republic of Korea (3.2%), while New Zealand reported the highest rate of 7.7% (Figure 7.5). Fatality rates for haemorrhagic stroke are significantly higher than for ischemic stroke, and countries that achieve better survival for one type of stroke also tend to do well for the other. Again, the lowest case-fatality rates for haemorrhagic stroke were reported in Japan (11.9%) and the Republic of Korea (16.9%), with New Zealand reporting the highest rate of 23.6% (Figure 7.6). Given the initial steps of care for stroke patients are similar, this suggests that system-based factors play a role in explaining the differences across countries. Low rates in Japan are due in part to recent efforts dedicated to improving the treatment of stroke patients, through systematic blood pressure monitoring, major material investment in hospitals and establishment of stroke units (OECD, 2015[15]).

Data presented here do not take account of patients that are transferred to other hospitals during their care or reflect patients dying out of hospitals within 30 days. Through the use of a unique patient identifier (UPI) patient, data can be linked across hospitals and with death registers to generate more robust indicators for national monitoring and international comparison. Although 14 Asia-Pacific countries (Australia, Bangladesh, Brunei Darussalam, China, Japan, Malaysia, Mongolia, Myanmar, New Zealand, the Philippines, the Republic of Korea, Singapore, Thailand and Viet Nam) have a UPI number in hospital inpatient datasets and in mortality datasets (OECD/WHO, 2015[16]), only a few of them such as New Zealand and the Republic of Korea are able to track patients in this way.

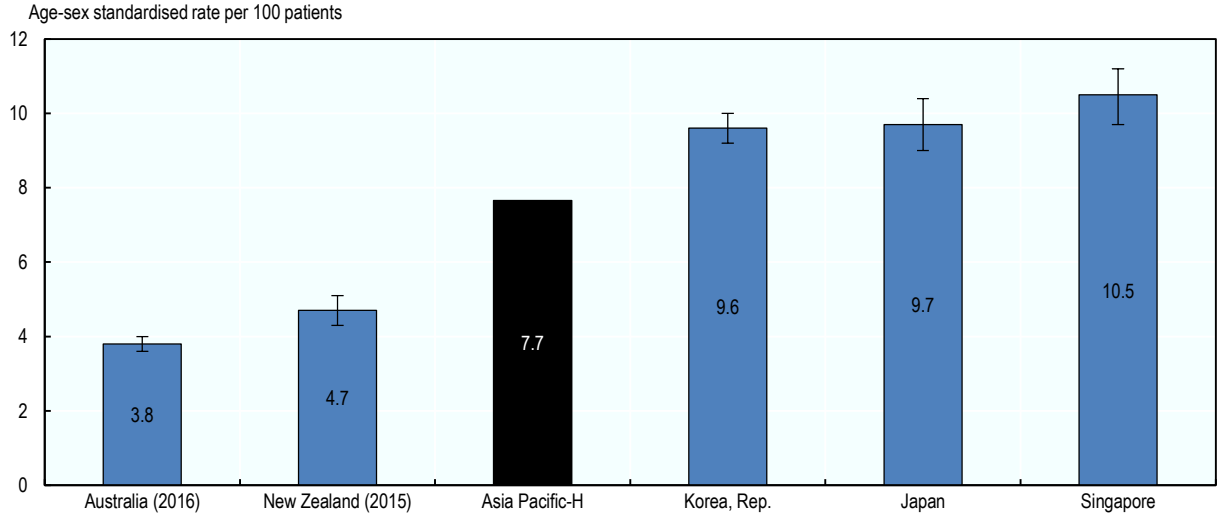
National measures for AMIs and stroke are affected by within-country variations in performance at the hospital level. Reducing this variation is key to providing equitable care and reducing overall mortality rates. Although monitoring and reporting of hospital-level performance is becoming increasingly important in Asia-Pacific, only the Republic of Korea is regularly reporting hospital-level performance (OECD, 2019[17]). Multiple factors contribute to variations in outcomes of acute care, including hospital structure, processes of care and organisational culture. Recent research points to higher total numbers of hospital patients as being significantly related to higher performance; this may support national movements towards concentration of care services (Lalloué et al., 2019[18]).

Definition and comparability

The in-hospital case-fatality rate following AMI, ischemic and haemorrhagic stroke is defined as the number of people who die within 30 days of being admitted (including same day admissions) to hospital. Ideally, rates would be based on individual patients, however not all countries have the ability to track patients in and out of hospital, across hospitals or even within the same hospital because they do not currently use a unique patient identifier. Therefore, this indicator is based on unique hospital admissions and restricted to mortality within the same hospital, and hence, differences in practices in discharging and transferring patients may influence the findings.

Standardised rates adjust for differences in age (45+ years) and sex of the OECD population with AMI or ischaemic stroke, and facilitate more meaningful international comparisons. Lower and upper bounds of 95% confidence intervals are presented.

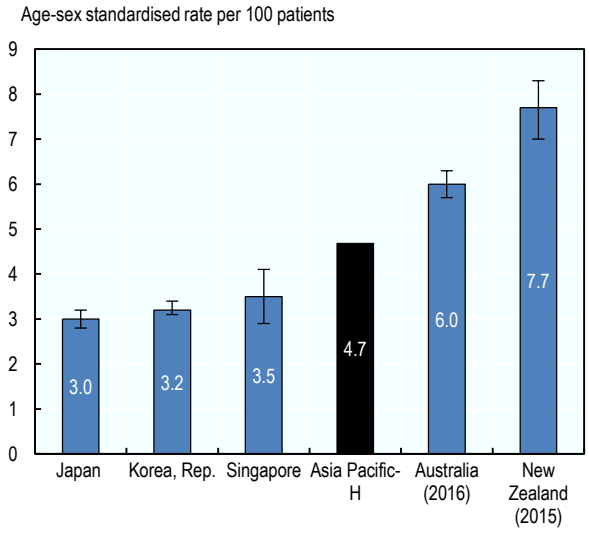
Figure 7.4. **In-hospital case-fatality rates within 30 days after admission for AMI, patients 45 years old and over, 2017 (or latest year available)**



Source: OECD Health Statistics 2020, https://doi.org/10.1787/health-data-en.

StatLink https://stat.link/7k62ar

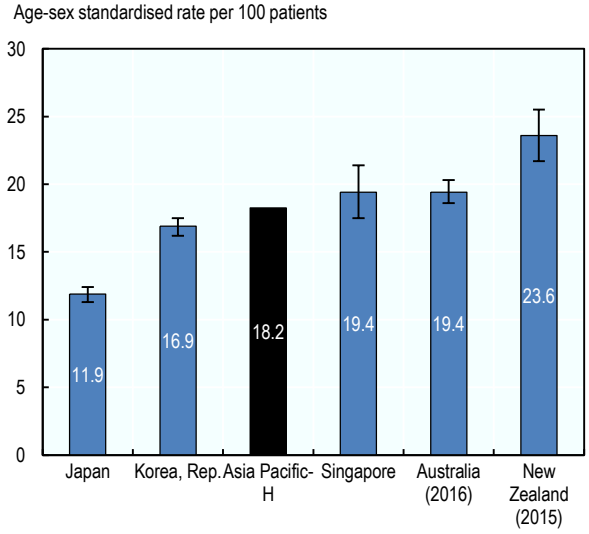
Figure 7.5. **In-hospital case-fatality rates within 30 days after admission for ischemic stroke, patients 45 years old and over, 2017 (or latest year available)**



Source: OECD Health Statistics 2020.

StatLink https://stat.link/9qk2cr

Figure 7.6. **In-hospital case-fatality rates within 30 days after admission for haemorrhagic stroke, patients 45 years old and over, 2017 (or latest year available)**



Source: OECD Health Statistics 2020.

StatLink https://stat.link/rz6pk8