Mortality following ischaemic stroke

Stroke is the second leading global cause of death behind heart disease and accounted for over 10% of total deaths worldwide in 2013 (American Heart Association, 2017[1]). A stroke occurs when the blood supply to a part of the brain is interrupted, leading to necrosis (cell death) of the affected part. Of the two types of stroke, about 85% are ischaemic (caused by clotting) and 15% are haemorrhagic (caused by bleeding).

Figure 6.15 shows the case-fatality rates within 30 days of hospital admission for ischaemic stroke where the death occurred in the same hospital as the initial admission (unlinked data). Figure 6.16 shows the case-fatality rate where deaths are recorded regardless of where they occurred, including in another hospital or outside the hospital where the stroke was first recorded (linked data). The indicator using linked data is more robust because it captures fatalities more comprehensively than the same-hospital indicator, but it requires a unique patient identifier and linked data, which are not available in all countries.

Across OECD countries, 7.7% of patients in 2017 died within 30 days of hospital admission for ischaemic stroke using unlinked data (Figure 6.15). The case-fatality rates were highest in Slovenia, Poland, Lithuania and Latvia, all with mortality rates over 12%. Rates were less than 4% in Norway, Korea, Japan and Costa Rica. Low rates in Japan are due in part to recent efforts dedicated to improving the treatment of stroke patients in hospitals, through systematic blood pressure monitoring, major material investment in hospitals and establishment of stroke units (OECD, 2015[2]).

Across the 23 countries that reported linked data rates, 12.3% of patients died within 30 days of being admitted to hospital for stroke (Figure 6.16). This figure is higher than the same-hospital indicator because it only counts each patient once and captures all deaths.

Treatment for ischaemic stroke has advanced dramatically over the last decade, with systems and processes now in place in many OECD countries to identify suspected ischaemic stroke patients as early as possible and to deliver acute reperfusion therapy quickly. Between 2007 and 2017, case-fatality rates for ischaemic stroke decreased substantially across OECD countries: from 10.1% to 7.7% for unlinked data rates and from 14.6% to 12.6% for linked data rates.

National measures of ischaemic 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. Figure 6.17 presents the dispersion of ischaemic stroke 30-day case-fatality rates across hospitals within countries, using both unlinked and linked data.

Reducing this variation requires high-quality stroke care for all, including timely transportation of patients, evidence-based medical interventions and access to high-quality specialised facilities such as stroke units (OECD, 2015[3]). Timely care is particularly important, and advances in technology are leading to new models of care to deliver reperfusion therapy in an even more speedy and efficient manner, whether through pre-hospital triage via telephone or administering the therapy in the ambulance (Chang and Prabhakaran, 2017[4]).

Definition and comparability

National case-fatality rates are defined in indicator "Mortality following acute myocardial infarction".

Hospital-level stroke mortality rates use a different methodology from national rates. Hospital rates are adjusted for age, sex, co-morbidity, stroke severity and previous stroke (linked data only). The reference population for hospital rates is constructed from data from participating countries. The hospital-level ischaemic stroke definition also differs from the national indicator, using only ICD-10 code I63 (cerebral infarction).

Figure 6.17 is a turnip plot that graphically represents the relative dispersion of rates. A limitation of this type of representation is the inability to detect statistically significant variations. Countries are ordered according to ascending level of dispersion as measured by the interquartile range (between the 25th and 75th percentile) of rates. Hospitals with fewer than 50 ischaemic stroke admissions were excluded from both figures to improve data reliability.

References

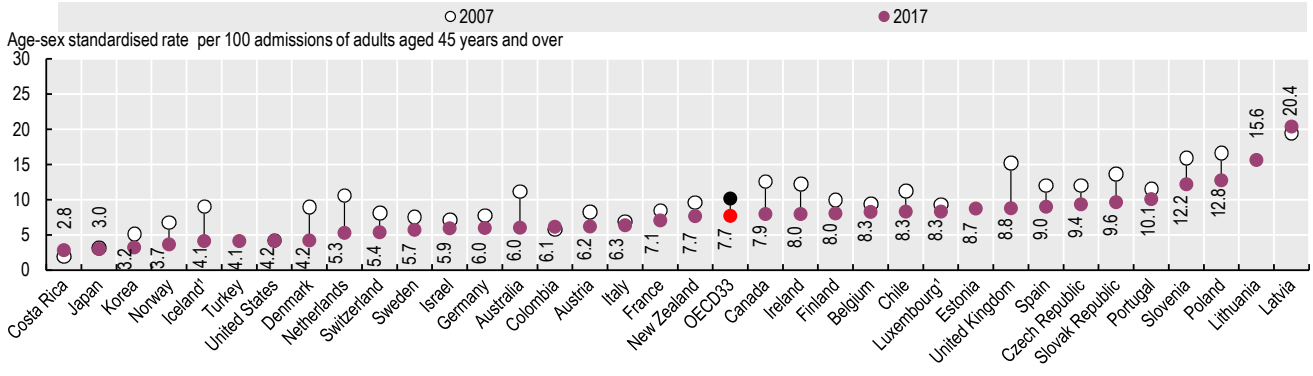
[1] American Heart Association (2017), *Heart Disease and Stroke Statistics 2017 at-a-Glance*.

[4] Chang, P. and S. Prabhakaran (2017), "Recent advances in the management of acute ischemic stroke", *F1000Research*, *http://dx.doi.org/10.12688/f1000research.9191.1*.

[3] OECD (2015), *Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care*, OECD Health Policy Studies, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264233010-en*.

[2] OECD (2015), *OECD Reviews of Health Care Quality: Japan 2015: Raising Standards*, OECD Reviews of Health Care Quality, OECD Publishing, Paris, *https://dx.doi.org/10.1787/9789264225817-en*.

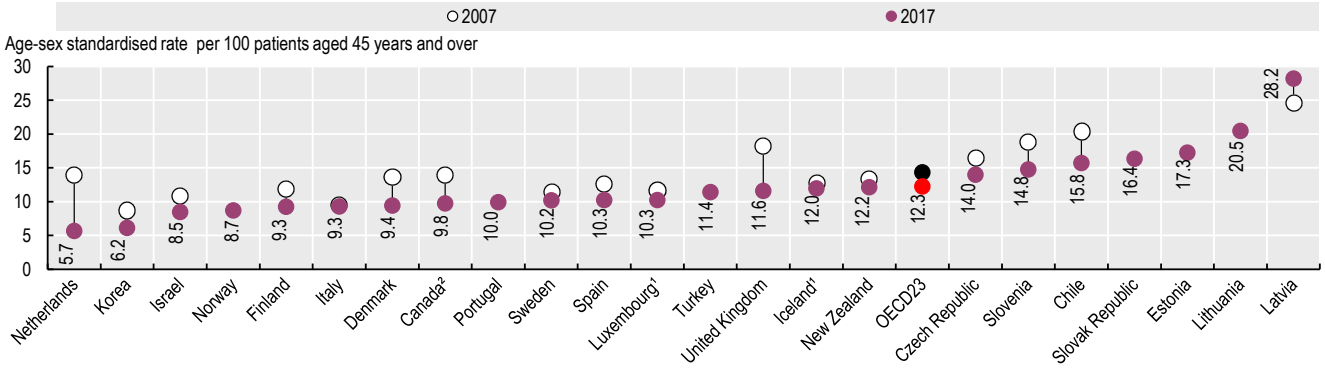
Figure 6.15. **Thirty-day mortality after admission to hospital for ischaemic stroke based on unlinked data, 2007 and 2017 (or nearest year)**



1. Three-year average.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016227

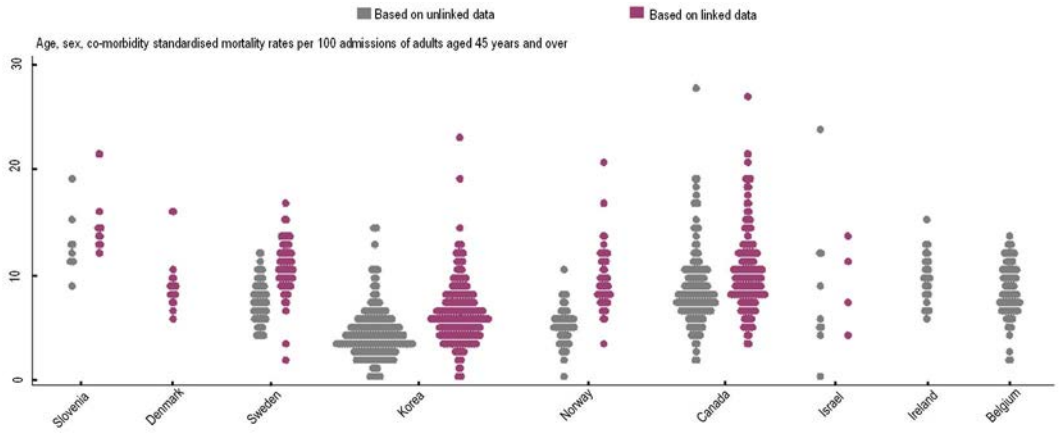
Figure 6.16. **Thirty-day mortality after admission to hospital for ischaemic stroke based on linked data, 2007 and 2017 (or nearest year)**



1. Three-year average. 2. Results for Canada do not include deaths outside acute care hospitals.
Source: OECD Health Statistics 2019.

StatLink https://doi.org/10.1787/888934016246

Figure 6.17. **Variations across hospitals in 30-day mortality after admission for ischaemic stroke using linked and unlinked data, 2015-17**



Note: The width of each line in the figure represents the number of hospitals (frequency) with the corresponding rate.
Source: OECD Hospital Performance Data Collection 2019.

StatLink https://doi.org/10.1787/888934016265