

5.5. In-hospital mortality following stroke

Stroke remains the third most common cause of death and disability in industrialised countries (WHO, 2002). Estimates suggest that it accounts for 2-4% of health care expenditure and also for significant costs outside of the health care system due to its impact on disability (OECD, 2003a). In ischemic stroke, representing about 85% of cases, the blood supply to a part of the brain is interrupted, leading to a necrosis of the affected part. In hemorrhagic stroke, rupture of a blood vessel causes bleeding into the brain, usually causing more widespread damage.

Treatment for ischemic stroke has changed dramatically over the last decade. Until the 1990s, it was largely accepted that the damage to the brain was irreversible and treatment focused on prevention of complications and rehabilitation. But following the spectacular improvements in AMI survival rates that were achieved with early thrombolysis, clinical trials (starting in Japan in the early 1990s) demonstrated clear benefits of thrombolytic treatment for ischemic stroke (Mori *et al.*, 1992). Dedicated stroke units, modelled after the very successful Cardiac Care Unit, were introduced in many countries, particularly in Nordic countries, to facilitate timely and aggressive diagnosis and therapy of stroke victims. A recent meta-analysis of 18 studies showed that stroke units achieved about 20% better survival than usual care (Seenan *et al.*, 2007).

Large randomised clinical trials in the United States (*e.g.* NINDS, 1995) and Europe (*e.g.* Hacke *et al.*, 1995) have unambiguously demonstrated the impact of thrombolytic therapy for ischemic stroke on survival and disability. However, adoption of this practice is met with resistance due to factors related to the organisation of health services (Wardlaw *et al.*, 2003; Wahlgren *et al.*, 2007). Stroke case-fatality rates have been used for hospital benchmarking within and between countries (OECD, 2003; Sarti *et al.*, 2003).

While the average standardised case fatality rate for ischemic stroke is 5%, there is nearly a fourfold difference between the highest rate in the United Kingdom (9.0%) and the lowest rates in Iceland (2.3%) and Korea (2.4%) (Figure 5.5.1). Figure 5.5.2 shows the age and sex standardised and crude rates for hemorrhagic stroke. The average rate is 19.8%, about four times greater than the rate for patients with ischemic stroke, which reflects the more severe effects of intracranial bleeding. There is more than a threefold difference in reported rates between Luxembourg (30.3%) and the Slovak Republic (29.3%), and Finland (9.5%).

Figure 5.5.3 illustrates that case-fatality rates for ischemic and hemorrhagic stroke are correlated; that is, countries that achieve better survival for one type of stroke tend to also do well for the other type. Given the initial steps of care for stroke patients are similar, this suggests that systems-based factors play a role in explaining the differences across by countries. For example, a cluster of Nordic countries (Finland, Sweden, Norway, Denmark and Iceland) lie below the OECD average for both ischemic and hemorrhagic stroke. These countries have been at the forefront of establishing dedicated stroke units in hospitals.

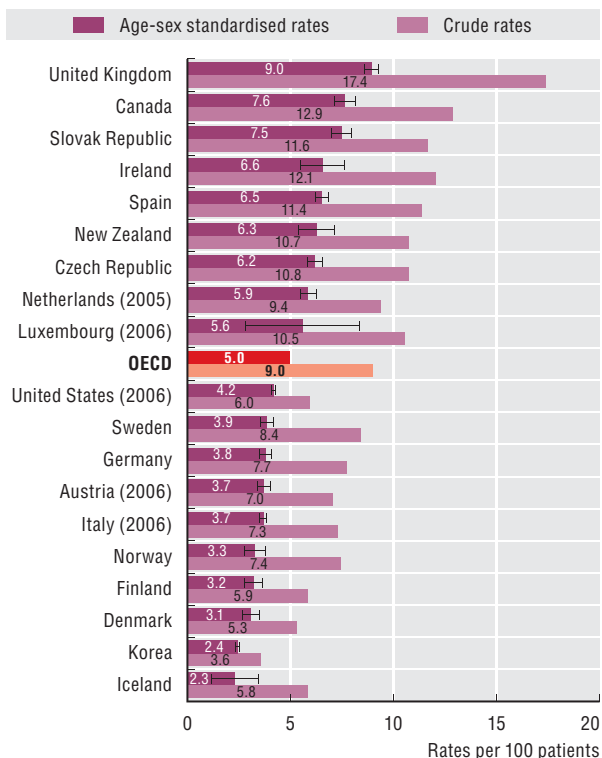
Figure 5.5.4 demonstrates that case-fatality rates for both hemorrhagic and ischemic stroke have declined by around 15% across OECD countries between 2002 and 2007, with all countries recording a decrease in both forms of stroke. This suggests widespread improvement in the quality of care.

Definition and deviations

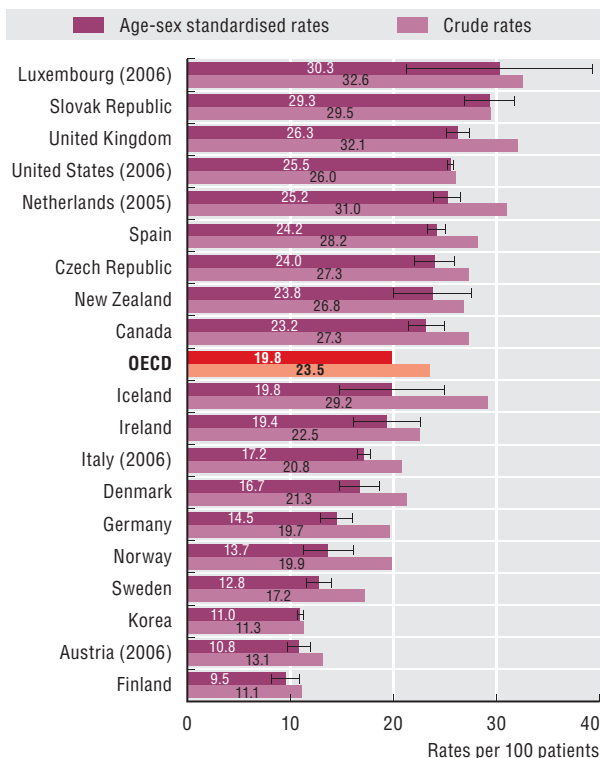
The in-hospital case-fatality rate following ischemic and hemorrhagic stroke is defined as the number of people who die within 30 days of being admitted (including same day admissions) to hospital. Ideally, rates would be based on individual patients, however, not all countries have the ability to track patients in and out of hospital, across hospitals or even within the same hospital given 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. Differences in practices in discharging and transferring patients may influence the findings.

Both crude and age and sex standardised rates are presented. Standardised rates adjust for differences in age (45+ years) and sex and facilitate more meaningful international comparisons. Crude rates are likely to be more meaningful for internal consideration by individual countries and enable a more direct comparison with the crude rates presented for this indicator in *Health at a Glance 2007*.

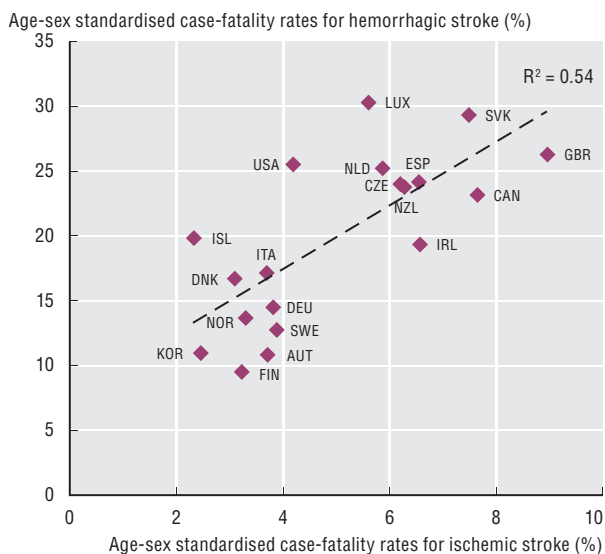
5.5.1 In-hospital case-fatality rates within 30 days after admission for ischemic stroke, 2007



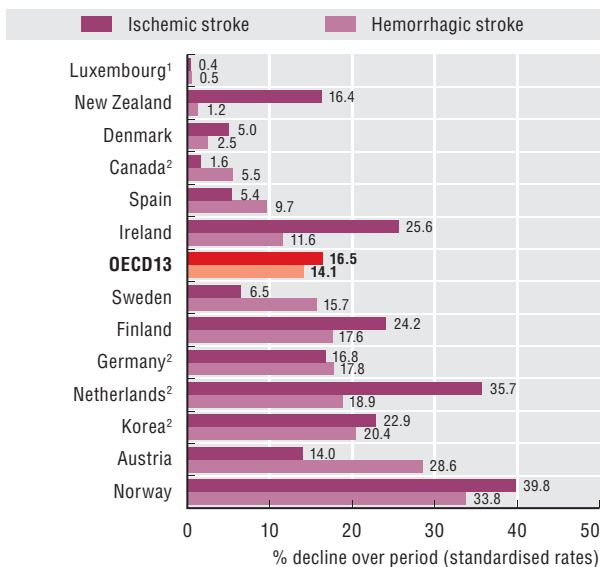
5.5.2 In-hospital case-fatality rates within 30 days after admission for hemorrhagic stroke, 2007



5.5.3 In-hospital case-fatality rates within 30 days after admission for ischemic and hemorrhagic stroke, 2007



5.5.4 Reduction in in-hospital case-fatality within 30 days after admission for stroke, 2002-07



1. Based on 2002-03 to 2006. 2. Based on 3-year period only.

Source: OECD Health Care Quality Indicators Data 2009. Rates are age-sex standardised to 2005 OECD population (45+). 95% confidence intervals are represented by I—I.

StatLink <http://dx.doi.org/10.1787/718755164764>



From:
Health at a Glance 2009
OECD Indicators

Access the complete publication at:
https://doi.org/10.1787/health_glance-2009-en

Please cite this chapter as:

OECD (2009), "In-hospital mortality following stroke", in *Health at a Glance 2009: OECD Indicators*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/health_glance-2009-52-en

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to rights@oecd.org. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at info@copyright.com or the Centre français d'exploitation du droit de copie (CFC) at contact@cfcopies.com.