Surgical complications

Patient safety remains one of the most prominent issues in health policy and public debate. High rates of error during the delivery of medical care have been demonstrated repeatedly, including the landmark report by the Institute of Medicine which estimated that more people die from medical errors than from traffic injuries or breast cancer (Kohn et al., 2000). Robust comparison of performance with peers is fundamental to securing improvement. Two types of patient safety event can be distinguished for this purpose: never events, those events that should never occur, such as failure to remove surgical foreign bodies at the end of a procedure; and *adverse* events, such as post-operative sepsis, which can not be avoided in all cases given the high-risk nature of some procedures, although increased incidence at an aggregate level may indicate a systemic problem.

Figure 8.16 shows rates for two related adverse events, pulmonary embolism (PE) or deep vein thrombosis (DVT) after hip or knee replacement surgery. These are high risk procedures most commonly associated with postoperative DVT and PE complications. PE and DVT cause unnecessary pain and in some cases death, but can be prevented by anti-coagulants and other measures before, during and after surgery. Figure 8.17 shows rates for another adverse event, sepsis after abdominal surgery. Abdominal surgery is also a high risk procedure. Likewise, sepsis after surgery, which may lead to organ failure and death, can in many cases be prevented by prophylactic antibiotics, sterile surgical techniques and good postoperative care. Figure 8.18 illustrates a never event (events that should never occur), rates of foreign body left in during procedure. The most common risk factors for this never event are emergencies, unplanned changes in procedure, patient obesity and changes in the surgical team; preventive measures include counting instruments, methodical wound exploration and effective communication among the surgical team.

The left panel of Figures 8.16, 8.17 and 8.18. shows the rate of the three respective postoperative complications based on the surgical admission, the hospital admission when the surgery took place. The right panel of these figures shows rates based on the surgical admission and all subsequent re-admissions to hospital within 30 days, whether at the same hospital or in another hospital. The use of a unique patient identifier is required to calculate the indicator rates in the right panel, which is currently not available in some countries.

Caution is needed in interpreting the extent to which these indicators accurately reflect international differences in patient safety rather than differences in the way that countries report, code and calculate rates of adverse events (see "Definition and comparability" box).

Definition and comparability

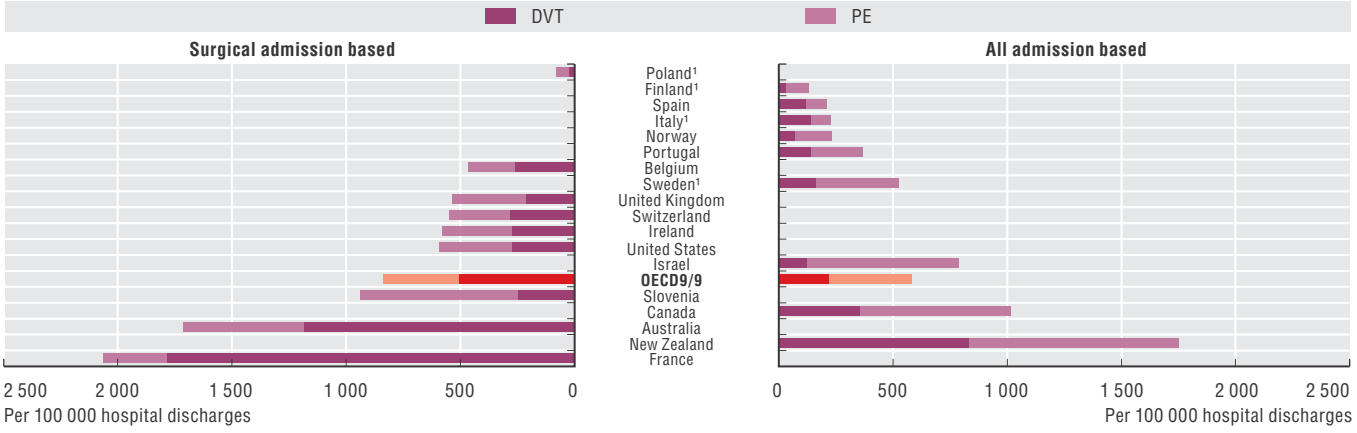
Surgical complications are defined as the number of discharges with ICD codes for complication in any secondary diagnosis field for the "surgical admission" and any diagnosis field for any subsequent related re-admission within 30 days, divided by the total number of discharges for patients aged 15 and older. Contrary to the data presented in *Health at a Glance 2013*, the indicator rates have *not* been adjusted by the average number of secondary diagnoses, given a strong positive correlation between the number of secondary diagnoses and indicator rates reported by countries was not evident in the most recent data.

A fundamental challenge in international comparison of patient safety indicators centres on the quality of the underlying data. Variations in how countries record diagnoses and procedures and define hospital admissions can affect calculation of rates. For example differences in the use of the present on admission flag for diagnosis and disease (e.g. ICD-9-CM and ICD-10-AM) and procedure classification systems are known to affect data comparability. In some cases, higher adverse event rates may signal more developed patient safety monitoring systems and a stronger patient safety culture rather than worse care. Recent analysis of dispersion of postoperative PE or DVT rates across hospitals within OECD countries revealed extremely large variations in reported rates, including implausibly high and low rates for hospitals in the same country even after risk adjustment. Hence, differences in the national rates presented here are likely to reflect differences in coding and recording practices both between and within countries and mask true differences in care quality. There is a need for greater consistency in reporting of patient safety events across countries and significant scope exists for improved data quality within national patient safety programs. Wider analysis of coding comparability will inform future strategies for improvement.

References

Kohn, L.T., J.M. Corrigan and M.S. Donaldson (Editors) (2000), *To Err Is Human: Building a Safer Health System*, Institute of Medicine, National Academy Press, Washington, DC.

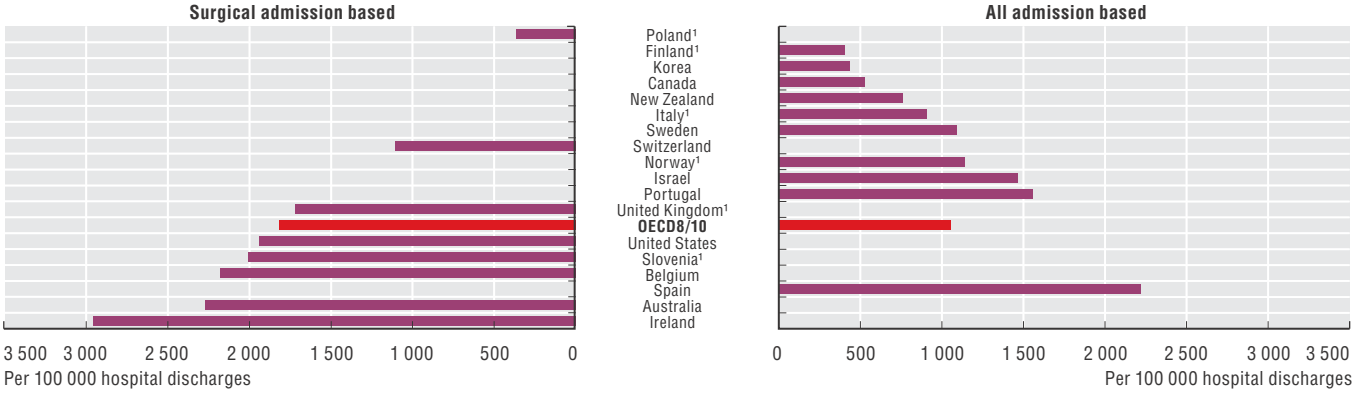
8.16. Postoperative pulmonary embolism (PE) or deep vein thrombosis (DVT) in hip and knee surgeries, 2013 (or nearest year)



Note: Rates have not been adjusted by the average number of secondary diagnoses.
1. The average number of secondary diagnoses is < 1.5.
Source: OECD Health Statistics 2015, *http://dx.doi.org/10.1787/health-data-en.*

StatLink http://dx.doi.org/10.1787/888933281167

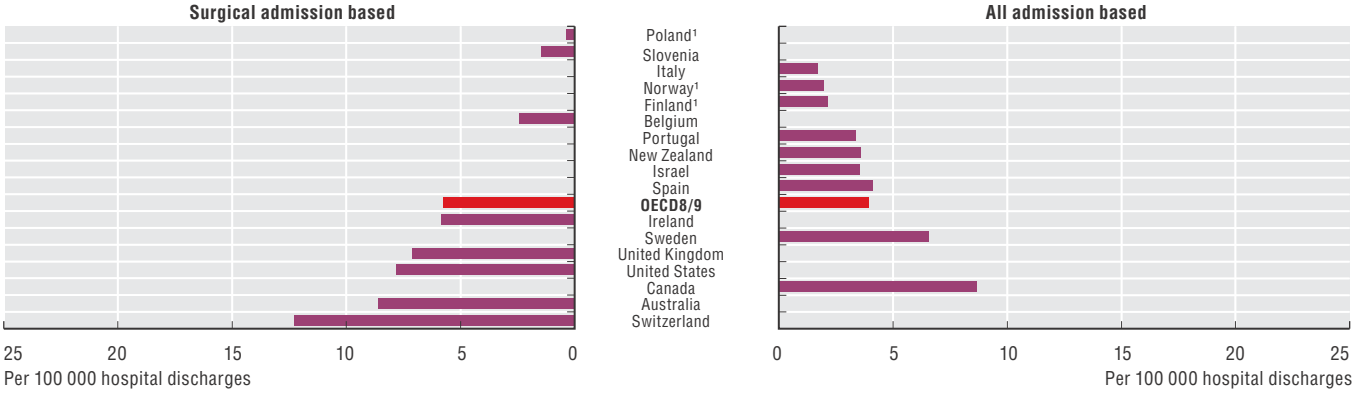
8.17. Postoperative sepsis in abdominal surgeries 2013 (or nearest year)



Note: Rates have not been adjusted by the average number of secondary diagnoses.
1. The average number of secondary diagnoses is < 1.5.
Source: OECD Health Statistics 2015, *http://dx.doi.org/10.1787/health-data-en.*

StatLink http://dx.doi.org/10.1787/888933281167

8.18. Foreign body left in during procedure, 2013 (or nearest year)



Note: Rates have not been adjusted by the average number of secondary diagnoses.
1. The average number of secondary diagnoses is < 1.5.
Source: OECD Health Statistics 2015, *http://dx.doi.org/10.1787/health-data-en.*

Information on data for Israel: *http://oe.cd/israel-disclaimer*

StatLink http://dx.doi.org/10.1787/888933281167