Beyond consumption and expenditure information (see Chapter 2), prescribing can be used as an indicator of health care quality. Antibiotics, for example, should be prescribed only where there is an evidence-based need, to reduce the risk of resistant bacteria. Quinolones and cephalosporins are considered second-line antibiotics in most prescribing guidelines and their use should be restricted in order to ensure their availability, should first-line antibiotics fail. The total volume of antibiotics prescribed and the proportion of second-line antibiotics prescribed have been validated as markers of quality in the primary care setting. In the context of rising antibiotic resistance, the European Commission has requested that the ECDC develop draft EU guidelines on the prudent use of antimicrobials in human medicine.

Figure 6.6 shows volume of all antibiotics prescribed in primary care, with volumes of second-line antibiotics embedded within the total amount. During 2010-14, overall antibiotic consumption in the community within the European Union showed a significant increasing trend but the cross-country variation in antibiotic consumption remained. Total volumes vary more than three-fold across countries with the Netherlands, Estonia and Latvia reporting the lowest volumes and France, Romania and Greece reporting volumes roughly 1.5 times the EU average. Volumes of second-line antibiotics vary more than 18-fold across EU countries. The Nordic countries along with the United Kingdom and the Netherlands report the lowest volumes of these antibiotics, while Cyprus, Greece and Romania report the highest. Variation is likely to be explained, on the supply side, by differences in the regulation, guidelines and incentives that govern primary care prescribers and, on the demand side, by cultural differences in attitudes and expectations regarding antibiotic use and prescription.

Prescribing in primary care is particularly important in the case of chronic disease. In diabetic patients with hypertension, angiotensin-converting enzyme inhibitors (ACE-I) or angiotensin receptor blockers (ARB) are recommended in most national guidelines as first-line medications to reduce blood pressure, since they are most effective at reducing the risk of cardiovascular disease and renal disease. Figures 6.7 and 6.8 show that, with the exception of the Slovak Republic which reported 27% of diabetic patients being given prescriptions for cholesterol-lowering medication and 12% of these patients with a prescription for antihypertensive agents in the last year, EU countries were relatively homogeneous on these indicators.

Benzodiazepines are often prescribed for elderly patients for anxiety and sleep disorders, despite the risk of adverse side effects such as fatigue, dizziness and confusion. A meta-analysis suggests that the use of benzodiazepines in elderly people is associated with more than doubling the risk of developing such adverse effects compared with placebo (Sithamparanathan et al., 2012). Figures 6.9 and 6.10 indicate a wide range of rates of elderly patients who receive long-term prescriptions for benzodiazepines and related drugs (365 defined daily doses in one year), or who receive at least one prescription for a long-acting benzodiazepine or related drugs within the year across several EU countries.

The *Choosing Wisely* campaign was launched in 2012 to reduce the potentially harmful overuse and misuse of medicines, diagnostic tests and procedures. This campaign communicates evidence-based information to clinicians and patients on when medications and procedures may be inappropriate including antibiotic and benzodiazepines (*www.choosingwisely.org*). Since 2012, countries and medical organisations around the globe have participated or become partners.

Definition and comparability

Defined daily dose (DDD) is the assumed average maintenance dose per day for a drug used for its main indication in adults. DDDs are assigned to each active ingredient(s) in a given therapeutic class by international expert consensus. For instance, the DDD for oral aspirin equals 3 grams, which is the assumed maintenance daily dose to treat pain in adults. DDDs do not necessarily reflect the average daily dose actually used in a given country. DDDs can be aggregated within and across therapeutic classes of the Anatomic Therapeutic Classification (ATC). For more detail, see *www.whocc.no/atcddd*.

In Figure 6.6, data for Luxembourg and Slovenia exclude drugs prescribed in hospitals, non-reimbursed drugs and OTC drugs. Data for Iceland, Lithuania, the Slovak Republic, Slovenia and Cyprus refer to all sectors, not just primary care. Data for Portugal include OTC and non-reimbursed drugs. Data for Turkey refer to outpatient health care. Data from Slovenia include reimbursed and non-reimbursed drugs (ccommunity pharmacy market prescriptions) prescribed in outpatient care. Data for Sweden exclude OTC drugs and drugs administered in hospitals.

Denominators comprise the population held in the national prescribing database, rather than the general population (with the exception of Belgian data on benzodiazepines, which come from a national health survey).

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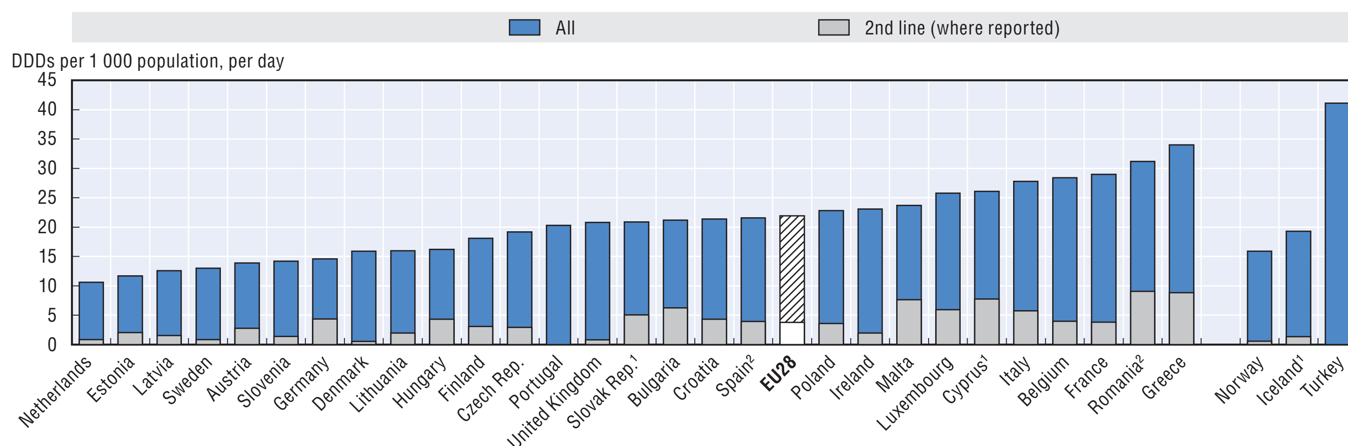
6.6. Overall volume of antibiotics prescribed, 2014 (or nearest year)

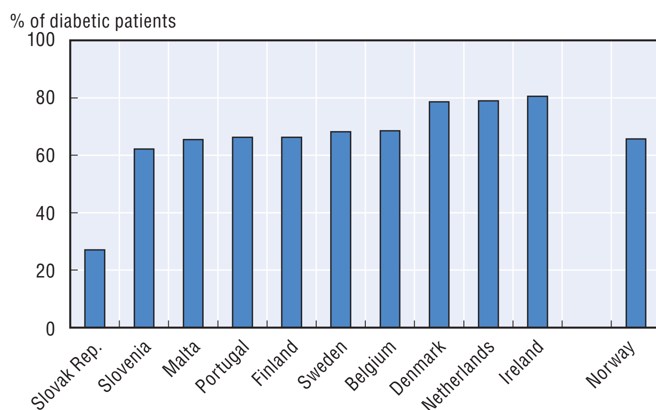


1. Data refer to all sectors (not only primary care).
2. Reimbursement data (not including consumption without a prescription and other non-reimbursed antibiotics).

Source: European Centre for Disease Prevention and Control (2016); *OECD Health Statistics 2016*.

StatLink http://dx.doi.org/10.1787/888933429416

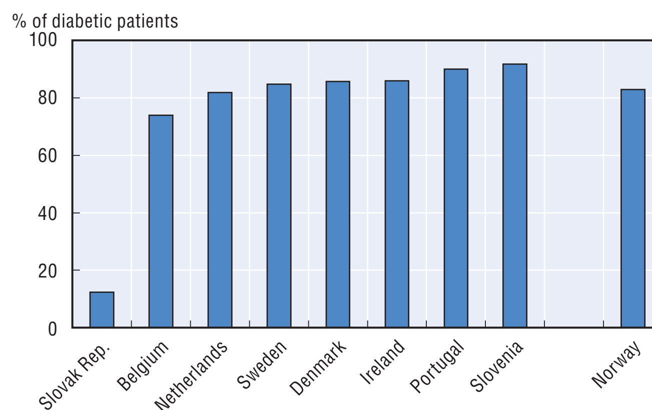
6.7. People with diabetes with a prescription of cholesterol lowering medication in the past year, 2013 (or nearest year)



Source: *OECD Health Statistics 2016*.

StatLink http://dx.doi.org/10.1787/888933429422

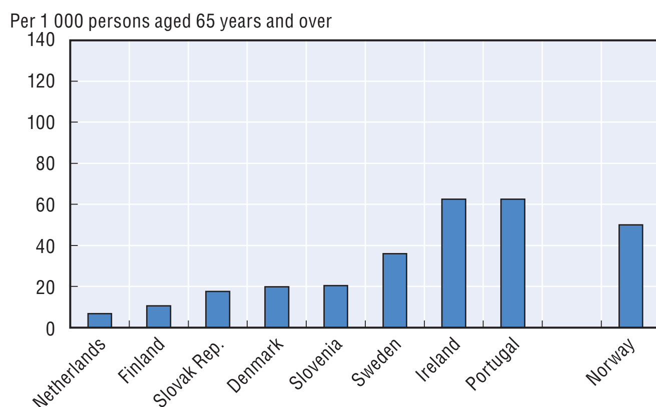
6.8. People with diabetes with a prescription of antihypertensive medication in the past year, 2013 (or nearest year)



Source: *OECD Health Statistics 2016*.

StatLink http://dx.doi.org/10.1787/888933429434

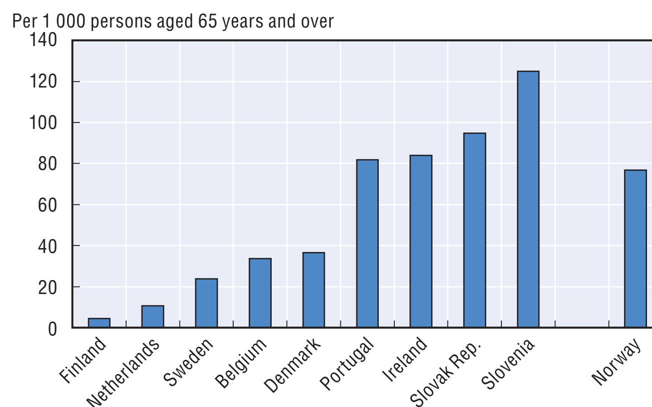
6.9. Elderly people prescribed long-term benzodiazepines or related drugs, 2013 (or nearest year)



Source: *OECD Health Statistics 2016*.

StatLink http://dx.doi.org/10.1787/888933429440

6.10. Elderly people prescribed long-acting benzodiazepines or related drugs, 2013 (or nearest year)



Source: *OECD Health Statistics 2016*.

StatLink http://dx.doi.org/10.1787/888933429455

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