INDICATORS OF THE QUALITY OF PRESCRIBING

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1. Use of antibiotics

1a. overall volume of antibiotics prescribed

1b. volume of cephalosporins and quinolones as a proportion of all antibiotics prescribed
2. Treatment of diabetes

2a. appropriate use of cholesterol lowering treatments

2b. use of recommended antihypertensives

*Diabetic patients are defined as chronic users of glucose regulating medication (A10B). Chronic users use > 270 DDDs/days of A10B per year.
Prescribing quality indicators

3. Inappropriate use of benzodiazepines in elderly patients

3a. chronic use of benzodiazepines

3b. use of long-acting benzodiazepines
4. Prescribing safety

4a. Aspirin at a dose > 80 mg daily for ≥ 1 month ≥ 65 years

4b. Any anticoagulant in combination with an oral NSAID
International consensus

"valid" whether sufficient evidence exists that the prescribing pattern described is harmful.

"useful" whether knowing the extent of the prescribing pattern described could conceivably lead to policy change.

"feasible" whether mechanisms exist to collect data on the prevalence of the prescribing pattern described.
5. QUALITY OF CARE
5.2. Prescribing in primary care

Beyond consumption and expenditure (see Indicators 4.10 “Pharmaceutical consumption” and 7.4 “Pharmaceutical expenditure”), information on prescribing can be used as an indicator of health care quality. Two related indicators are shown: the total volume of antibiotics and, more specifically, the volume of quinolones and cephalosporins prescribed as a proportion of all antibiotics.

There is a clear correlation between the volume of antibiotics prescribed at community level and prevalence of resistant bacterial strains (Bronwasser et al., 2005; Grossen et al., 2005). Infections caused by resistant microorganisms often fail to respond to conventional treatment, resulting in prolonged illness, greater risk of death, and higher costs. Reduced prescribing in primary care has been associated with reductions in antibiotic resistance (Rutten et al., 2007).

Antibiotics, therefore, should only be prescribed where there is an evidence-based need, avoiding use in mild throat infections, for example, which are nearly always viral (Cochrane Collaboration, 2013). Whilst an optimal level of prescribing is difficult to establish, variations in prescribing volume are a good indicator of healthcare quality in the primary care setting (Conen et al., 2007).

Quinolones and cephalosporins are considered second-line antibiotics in most prescribing guidelines. Their use should be restricted to ensure availability of effective second-line therapy should first-line antibiotics fail. Again, although an optimal level of prescribing of these antibiotics is difficult to establish, there is widespread evidence that these antibiotics are prescribed unnecessarily where no, or a more standard, antibiotic would suffice. Their volume as a proportion of the total volume of antibiotics prescribed has also been validated as a marker of quality in the primary care setting (Adriaenssens et al., 2013).

Figure 5.2.1 shows volumes of antibiotics prescribed in primary care at national level. Volumes vary more than three-fold across countries, with Chile, Estonia and the Netherlands reporting the lowest volumes and Greece, Luxembourg and Belgium reporting volumes around 1.5 times the OECD average. 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 the natural history and optimal treatment of infective illness (Keller et al., 2005; Keller et al., 2013).

Figure 5.2.2 shows the volume of quinolones and cephalosporins as a proportion of all antibiotics prescribed in primary care. The ten-fold variation across countries is much greater than for total antibiotic prescribing volume: Denmark, Norway and the United Kingdom report the lowest proportions, whilst Greece, Germany and the Slovak Republic report volumes approaching double that of the OECD average. There is some association in countries’ ranking across these two indicators: Greece and Luxembourg report high volumes and the Nordic countries relatively low volumes, for example. Germany, Austria and Hungary, however, report low total prescribing volumes but relatively high proportions of quinolone and cephalosporin use.

Total use may well exceed the volumes reported here given that, in some countries, self-medication is prevalent (Grigorjan et al., 2006). Reducing use is a pressing, yet complex problem, likely to require multiple co-ordinated initiatives including surveillance, regulation and education of professionals and patients. Many such programmes are underway, including a European Union Joint Programme launched in 2008 (JHME) and the World Health Organisation’s Global Strategy for the Containment of Antimicrobial Resistance, as well as initiatives at national level, many of which have been shown to be effective (Hattner et al., 2010).

5.2.2. Cephalosporins and quinolones as a proportion of all antibiotics prescribed, 2010 (or nearest year)

Definition and comparability
See Indicator 4.10 for a description of the defined daily dose (DDD). Data generally refer to outpatient consumption except for Chile, Canada, Greece, Korea, Israel, Iceland where data also include consumption in hospitals and other institutions beyond primary care. Data are from 2010 except for the United States (2004), Israel (2009) and the Slovak Republic (2009). Data for Chile only include drugs dispensed by private pharmacies. Data for Canada only cover Manitoba and Saskatchewan, provinces for which population level data were available, representing 6.7% of the population.

1. Data refer to all sectors (not only primary care).
Adequate use of cholesterol lowering treatment in diabetics

**Data from pilot study.**

*Do not reference as OECD Health Data or share further.*
Appropriate choice of antihypertensive in diabetics

Data from pilot study.
Do not reference as OECD Health Data or share further.
Use of long-acting benzodiazepines in people older than 65

Data from pilot study.
Do not reference as OECD Health Data or share further.

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovakia (Union HI)</td>
<td>168.0</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>103.2</td>
</tr>
<tr>
<td>Spain (Catalonia)</td>
<td>102.5</td>
</tr>
<tr>
<td>Norway</td>
<td>88.1</td>
</tr>
<tr>
<td>Canada</td>
<td>45.0</td>
</tr>
<tr>
<td>Germany</td>
<td>32.8</td>
</tr>
<tr>
<td>Sweden</td>
<td>27.3</td>
</tr>
<tr>
<td>Finland</td>
<td>23.2</td>
</tr>
</tbody>
</table>
Long term use of benzodiazepines in people aged over 65

Data from pilot study.

Do not reference as OECD Health Data or share further.
Challenges

• **Representativity of the data**
  – link to reimbursement, regional data, SES bias

• **Comparability of data-sources**
  – definitions of ambulatory care, PHC, nursing homes etc.

• **Comparability of data**
  – volume measures (DDD/days/boxes), ATC code use fairly standardized comparable with ICD
Current and future work

• 8 prescribing quality indicators will be part of 2014/15 HAG data-collection

• An expert advice panel is being assembled to steer on-going work

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