

Quality indicators assessing antibiotic use in the outpatient setting: a systematic literature review followed by a consensus procedure

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Background

The IMI international project DRIVE-AB (Driving re-investment in Research & Development and responsible antibiotic use) aims at developing a consensus concept of “responsible” antibiotic use. We present here a list of **consensually validated quality indicators of antibiotic use in the outpatient setting** (OQI, Outpatient quality indicator).

Methods

A four-step RAND-modified Delphi procedure was applied:

- **First step: systematic literature review**, to make an inventory of existing QIs. Medline (until December 12, 2014) and relevant websites from large international organizations (e.g. ECDC) and societies (e.g. ESCMID) were searched.
- **Second step: a first online survey** of an international multidisciplinary panel of stakeholders (clinical medicine, public health, R&D, payers, policy makers, regulators). Stakeholders were asked to appraise the relevance of OQIs found in the literature for assessing the quality of antibiotic use in the outpatient setting (9-point Likert scale).
- **Third step: a face-to-face meeting**. Stakeholders discussed the disagreements identified after the first survey and the newly suggested OQIs.
- **Fourth step: a second online survey**. Stakeholders were asked to accept or reject OQIs.

Results

- The search strategy is presented in Figure 1.
- Response rate was 53% to the first survey (23/43 stakeholders) and 87% to the second survey (20/23).
- The results obtained from the first survey, the face-to-face meeting and the second survey are presented in figure 2.
- At the end of the consensus procedure 32 OQIs were retained. Among these, 21 targeted general outpatient practice, 10 outpatient parenteral antibiotic treatment (OPAT) and 1 both. Twelve OQIs were process (disease or drug) indicators, 19 were structure indicators and 1 was an outcome indicator. Table 1 details all selected indicators.

Figure 1. Search strategy

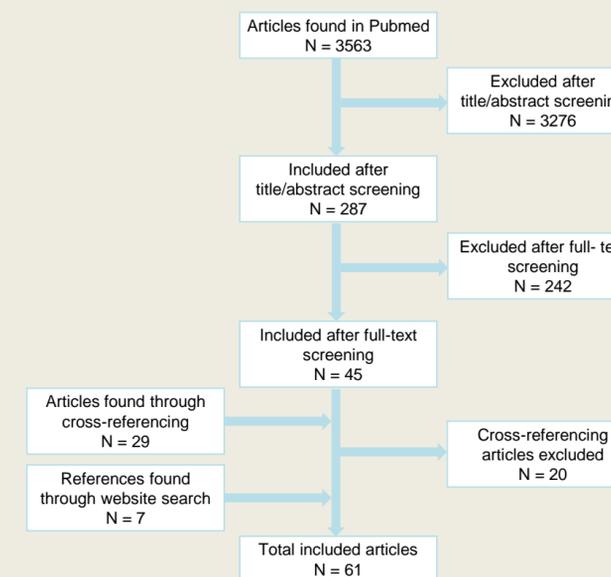


Figure 2. Four-step RAND-modified Delphi procedure

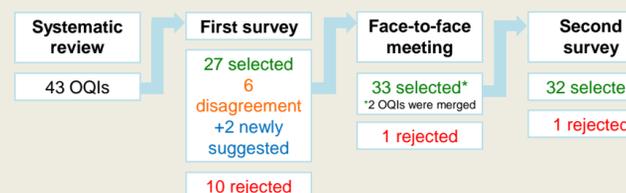


Table 1. Selected Outpatient Quality Indicators

OUTPATIENT QUALITY INDICATOR	TYPE
OQI-1 Antibiotics should be prescribed for (most) bacterial infections (e.g. acute pneumonia, urinary tract infections).	Process
OQI-2 Antibiotics should not be prescribed for (most) viral infections or self-limiting bacterial infections (e.g. acute bronchitis, influenza, acute otitis media > 2 years old).	Process
OQI-3 Outpatients should receive antibiotic therapy compliant with guidelines; this includes, but is not limited to indication, choice of the antibiotic, duration, dose and timing.	Process
OQI-4 Some antibiotics should be rarely prescribed.	Process
OQI-5 Acute upper respiratory infections and bronchitis should not be treated with antibiotics within the first three days, unless there is documented indication for treatment.	Process
OQI-6 Outpatients with acute tonsillitis/pharyngitis should undergo a group A streptococcal diagnostic test to decide whether or not they should receive antibiotics.	Process
OQI-7 Outpatients with an acute tonsillitis/pharyngitis and positive group A streptococcal diagnostic test should be treated with antibiotics.	Process
OQI-8 Antibiotics for an acute tonsillitis/pharyngitis should be withheld, discontinued or not prescribed if an outpatient presents a diagnostic test (rapid antigen test or throat culture) negative for group A streptococci.	Process
OQI-9 Prescribed antibiotics should be chosen from an essential list/formulary.	Process
OQI-10 Possible contraindications should be taken into account when antibiotics are prescribed.	Process
OQI-11 Antibiotics from the list of essential antibiotics should be available in health facilities that dispense antibiotics.	Structure
OQI-12 Key antibiotics should not be out of stock in health facilities that dispense antibiotics.	Structure
OQI-13 Antibiotics in stock should not be beyond the expiry date.	Structure
OQI-14 Antibiotics that are dispensed to outpatients should be adequately labelled (patient name, antibiotic's name, when antibiotics should be taken)	Structure
OQI-15 Antibiotics should be adequately conserved and handled in health facilities.	Structure
OQI-16 Health facilities should keep adequate records of dispensed key antibiotics.	Structure
OQI-17 A copy of the essential antibiotics list should be available in health facilities.	Structure
OQI-18 Standard antibiotic treatment guidelines should be available in health facilities.	Structure
OQI-19 Health facilities should have access to the SPC (Summary of Product Characteristics) of prescribed antibiotics, written in a local language.	Structure
OQI-20 Antibiotics should not be sold without prescription.	Structure
OQI-21 Outpatients and OPAT (Outpatient Parenteral Antibiotic Treatment) patients with an antibiotic prescription should be educated on how to take it, on the dosage, on expected side effects, and on the natural history of the disease.	Structure
OQI-22 The treatment plan should be agreed between the OPAT (Outpatient Parenteral Antibiotic Treatment) team and the referring clinician before start of treatment.	Structure
OQI-23 All OPAT plans should include dose, frequency of administration and duration of therapy.	Structure
OQI-24 OPAT antibiotics should be correctly stored, prepared, reconstituted, dispensed and administrated.	Structure
OQI-25 Administered doses of OPAT intravenous therapy should be documented on a medication card.	Structure
OQI-26 The first dose of a new antibiotic in an OPAT should be administered in a supervised setting.	Process
OQI-27 OPAT antibiotics should be regularly reviewed to optimize speed of intravenous to oral switch.	Process
OQI-28 Each OPAT centre should monitor quality indicators on OPAT antibiotics.	Structure
OQI-29 An expert in OPAT should work in each OPAT centre.	Structure
OQI-30 The OPAT plan should be communicated to the general practitioner (GP) at discharge.	Structure
OQI-31 The OPAT program should be accredited or certified.	Structure
OQI-32 In an OPAT program, clinical and/or microbiological outcomes including treatment failure and adverse events (including <i>Clostridium difficile</i> infections) should be recorded.	Outcome

Conclusions:

This set of consensually validated indicators assessing the quality of antibiotic use in the outpatient setting will be useful for benchmarking and will help building an international conceptual framework on antibiotic stewardship.