



National Prescribing Service Limited

Indicators of Quality Prescribing in Australian General Practice

A manual for users

Foreword

The development of the *Indicators of Quality Prescribing in Australian General Practice* is an important step forward for the fostering of quality in general practice. The National Prescribing Service is to be commended on their development. They have been drawn from all available evidence and actively integrated a substantial amount of general practitioner input. The indicators are sensibly spread across both structure and process, emphasising the need for a combined approach to improving the quality use of medicines in general practice. The structural indicators are aimed at the overall practice and include access to available and up-to-date guidelines, and product information on prescription and non-prescription drugs. I liked the emphasis on the development of practice policies around use of samples and prescriptions of benzodiazepines and opiates. The importance of the indicator identifying patients at risk of medicine misadventure is innovative and visionary.

The process indicators will be very useful to all general practitioners. They cover common everyday conditions — upper respiratory tract infections, acute otitis media, diabetes, patients with myocardial infarction, hypertension and heart failure. If we can improve the quality of care of people with these common conditions using interventions involving these indicators then the overall health of the community will improve. The good prescribing indicator involving the ‘triple whammy’ of the combination of ACE inhibitors, diuretics and nonsteroidal anti-inflammatory drugs is a welcome addition to this list. It is a situation that often is only identified within these types of audits. It will always be useful to document and reflect on patients over 65 years old on regular benzodiazepines and those on long-acting beta agonists without an inhaled corticosteroid.

I recommend these indicators to all general practitioners, their practices and the local divisions. They can be used individually and at a practice level to examine the quality of prescribing. The development work has been careful and thoughtful and I look forward to further examination of their effect on general practice and the quality use of medicines. I believe that if they are used effectively and consistently the quality of our prescribing will improve and create long-term benefits for our patients and community.

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Foreword

Congratulations NPS and to those GPs and GP practices who use these indicators of quality prescribing in general practice. Prescribing is such an important activity that continual effort to improve our performance is warranted. Prescribing is becoming more complex as our population ages, comorbidities are more commonly seen in our elderly patients, the range of pharmacological options continues to widen and more medicines are used in primary and secondary prevention. It is a fact that GPs are responsible for most prescribing in our community, even that initiated by specialists, who unfortunately may be unaware of all of the medications the patient is taking. Keeping abreast of advances in therapeutics and optimising the quality of prescribing is a difficult task for any GP not only because of the numbers of new medicines appearing but also the constant deluge of information about individual medicines and the latest guidelines for treating the broad range of conditions dealt with by GPs.

Time-efficient, effective and interesting ways of 'keeping up' and improving our standards beyond what is available already should be welcomed. These indicators fit into this category. They are an excellent way of improving prescribing quality based on reflection and discussion around a GP's own cases. The indicators are carefully focussed on the illnesses and situations most GPs confront daily. This was ascertained in an effective and reassuring way by surveys and discussions with GPs, pharmacists and patients. The rationale for each is short and clear and immediately brings the GP up to date in that area. The data collection and evaluation methods are brief, practical and easy to use. Most importantly, each indicator has been very carefully validated and refined to work well in the field of routine general practice.

The indicators are divided into structural and process indicators. The structural indicators remind us of what policies we and/or our practice should have in place if we want to assure ourselves, our patients and accreditation and standards organisations of the high quality of our prescribing. These policies and procedures come from the evidence accumulated about the characteristics that identify 'good prescribing'. For example, there should be good 'prescribing decision support' information easily available, such as *Therapeutic Guidelines: Antibiotic*. The structural indicator around samples policy for the practice is interesting and I suspect an area where we all need to improve our performance.

The process indicators recommended are excellent. They focus on national health priority areas such as prescribing for type 2 diabetes and capitalise on the almost universal use of electronic prescribing in general practice. These indicators compare our prescribing against 'best practice' or 'guidelines'. Easy-to-follow guidance on how to extract relevant data on individual patients from the various GP prescribing packages is given. The possibility of working with colleagues in the same practice using a local area computer network is canvassed. The opportunity to have a practice administrator assist in assembling the data at regular intervals immediately comes to mind. Another way these indicators might be helpful is to discuss them with patients and share some of the results — I suspect many patients would be pleased to know of your regular use of these indicators and more likely to continue their various medications post infarction or be happier to accept that cephalexin is not needed for an URTI!

I commend these indicators to you. Getting into the habit will be good for you and your patients. I hope my GP becomes a regular and enthusiastic user!

Richard Day
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Contents

Introduction	4
Background	4
Development	4
Evaluation and validation	5
Using the indicators	5
Structure indicators	6
Indicator 1: Antibiotic guidelines	7
Indicator 2: Product information (prescription drugs)	8
Indicator 3: Product information (non-prescription drugs)	9
Indicator 4: Sample medications	10
Indicator 5: Prescribing drugs of addiction	11
Indicator 6: Disseminating information	12
Indicator 7: Identifying medicine misadventure	13
Indicator 8: Keeping accurate medication records	15
Process indicators	16
Data collection	17
Comparing data	17
Sample size	17
Using your computer prescribing software	17
Indicator 9: Antibiotics (non-specific URTI)	18
Indicator 10: Antibiotics (acute otitis media)	19
Indicator 11: Antibiotics (cephalexin)	21
Indicator 12: Diabetes and ACE inhibitors	22
Indicator 13: Myocardial infarction	24
Indicator 14: Hypertension and target blood pressure	26
Indicator 15: Heart failure and ACE inhibitors	28
Indicator 16: Good prescribing (avoiding the 'triple whammy')	30
Indicator 17: Good prescribing (children)	32
Indicator 18: Good prescribing (dosing instructions)	33
Indicator 19: Benzodiazepines (long term use)	34
Indicator 20: Asthma (long acting beta2-agonists)	36
Indicator 21: Reason for prescribing recorded	37
Appendix: Results	38
References	42

National Prescribing Service Limited (NPS) is a member-based organisation providing accurate, balanced, evidence-based information and services to health professionals and the community on Quality Use of Medicines (QUM). To achieve this we work in partnership with GPs, pharmacists, specialists, other health professionals, government, pharmaceutical industry, consumer organisations and the community. NPS is an independent non-profit organisation funded by the Australian Government Department of Health and Ageing.

Introduction

The indicators of quality prescribing in this manual have been developed for use by individual general practitioners using their own patient data. They have been developed as tools for prescribers to gain insight into their own prescribing and to facilitate quality improvement.

This manual describes the rationale behind each indicator, which data to collect and the relevance of the results. Using this set of indicators will assist GPs to review aspects of their prescribing and their practices against best practice standards. They are not intended for comparisons between GPs on either a divisional or national level.

Background

Quality indicators can be divided into three basic types:

- **Structure indicators** provide qualitative information on the activities or infrastructure that contributes to quality prescribing. They do not evaluate how well the process is being carried out or whether it is effective, e.g. 'Do you have a method of identifying, recording and following patients with a history of myocardial infarction?'
- **Process indicators** provide quantitative information about achievement of objectives. They evaluate how well a process is being carried out and whether it is effective, at least in an intermediate sense. They can assess and quantify changes over time. When process indicators are evidence based they may be used as surrogates for outcome indicators that are more difficult to measure, e.g. number of patients with a history of myocardial infarction who have not been prescribed a beta blocker, antiplatelet agent (or anticoagulant) and statin.
- **Outcome indicators** provide information about progress towards the goal of quality prescribing and reflect changes in health outcomes, e.g. number of deaths caused by myocardial infarction.

Outcome indicators cannot generally be measured at an individual practice or prescriber level because at this level the number of patient outcomes is low. For this reason the focus of this set of indicators is on process and structural indicators, both of which can be assessed using practice- or prescriber-level data.

As new research is constantly changing our ideas about what is considered quality use of medicines, it is important to acknowledge that, like clinical guidelines, indicators are dynamic resources. For the indicators to remain a relevant and useful tool, regular re-evaluation and revision is needed.

Development

The indicators of quality prescribing described in this document have been developed after consultation with GPs, other health professionals, consumers and policy makers.

A series of focus groups held in 2000 provided an understanding of what GPs, pharmacists and consumers believed to be the key elements of quality prescribing for a range of therapeutic areas. Subsequently literature reviews and workshops were used to further develop and refine the indicators.

Evaluation and validation

The indicators covered in this document have undergone validation and evaluation to ensure that they are:

- expressed in clear and concise terms (consistently interpreted, unambiguous)
- feasible — are the indicator data able to be collected in a useable form in a reasonable time frame?
- relevant and useful to GPs
- reliable and reproducible
- structurally and contextually valid.

The proposed indicator set was field tested with 19 Australian GPs in 2005 to ensure that the indicators are clear, reliable, valid and useful. The evaluation involved GPs using the indicators by themselves then discussing their experience with a project officer, using a structured questionnaire.

Using the indicators

Successful use of this set of indicators requires commitment to a quality-improvement cycle. The quality-improvement cycle should include a planning stage in which a specific goal and the actions required to reach the goal are defined. Initially the goal may be as simple as assessing how many patients who use an antihypertensive are not at their target blood pressure, and the action would be to measure indicator 14. In later cycles, the aim may be, for example, to reduce the proportion of patients using an antihypertensive who are not at target blood pressure. The strategies required might include the practice nurse recording current blood pressure and medication compliance for these patients, the doctor reviewing medication, the pharmacist conducting a Home Medicines Review and the practice nurse following up the patients more frequently.

After these strategies have been in place for a reasonable time (e.g. 4 months), re-examine the indicator results compared with previous results. Identify other changes that might need to be made next time to achieve your goal and continue with the improvement cycle.

GPs can examine their results individually or during discussion with their peer group or practice meeting. In both instances discussion may be facilitated by a trained NPS visitor. Whichever method is used, it is recommended that data collection is repeated and results discussed again and compared with previous results. Tables for entering responses (see Appendix, p.43) are included to allow comparison over time.

Although the indicators cover a diverse range of conditions commonly seen in general practice, the particular demographics of some practices may mean that not all indicators are applicable (e.g. the good prescribing for children indicator).

Structure indicators

The strategies for good prescribing identified by our consultation process were:

- to include non-drug and lifestyle measures
- to communicate clearly and effectively
- to use good-quality decision support for prescribing
- to have processes for monitoring therapy appropriately
- to have practice policies and systems that support quality use of medicines.

Structure indicators investigate whether you or your practice has policies and procedures in place that support the quality use of medicines. They do not, and are not intended to, measure whether these policies and procedures are adhered to.

INDICATOR 1: ANTIBIOTIC GUIDELINES

Do you have access to a copy of *Therapeutic Guidelines: Antibiotic* that is 3 years old or less?

QUM strategy

To use good-quality decision support for prescribing.

Rationale

One of the principles underlying quality use of medicines is the responsibility for health practitioners to use objective information and resources to make decisions regarding drug use.¹

Therapeutic Guidelines: Antibiotic is an evidence-based guideline that combines a consensus approach to best practice, with critical appraisal of the evidence. The guidelines are prepared by an expert writing group experienced in therapeutics, pharmacology and use of antibiotics. Therapeutic Guidelines Limited is independent of government and licensing authorities and of any form of commercial sponsorship.²

Access is defined as the guidelines being available on the computer used for prescribing or as a book kept in the consulting room.

Information source for response

Practice policy, your desktop computer and your professional habits.

Limitations

Access to information is only part of the process. A habit of checking guidelines is also essential.

Response

- No, and not considering change.
- No, but considering change.
- Yes, but resource not used.
- Yes, and resource used when needed.

INDICATOR 2: PRODUCT INFORMATION (PRESCRIPTION DRUGS)**Do you have access to up-to-date product information for prescription drugs?****QUM strategy**

To use good-quality decision support for prescribing.

Rationale

Good decision making requires good information about the drug being prescribed. The approved product information is one source of reputable information. Up-to-date product information can be obtained from some prescribing software packages, from the *MIMS Annual*, the *Australian Prescription Products Guide* or the *Australian Medicines Handbook*. These must be the most recent editions to ensure that the information is up to date.

Product information refers to information about medicines. It should include indications, contra-indications, adverse effects, interactions, dosage, presentation, pack size, etc. Access is defined as information being available on the computer used for prescribing, or as a book kept in the consulting room.

Information source for response

Practice policy, your desktop computer and your professional habits.

Limitations

Access to information is only part of the process. A habit of checking product information is also essential.

Response

- No, and not considering change.
- No, but considering change.
- Yes, but resource not used.
- Yes, and resource used when needed.

INDICATOR 3: PRODUCT INFORMATION (NON-PRESCRIPTION DRUGS)

Do you have access to up-to-date product information for non-prescription drugs?

QUM strategy

To use good-quality decision support for prescribing.

Rationale

Good decision making requires good information about the drug being prescribed and about other drugs the patient may be taking. Some non-prescription drugs have approved product information or are included in traditional information sources, such as some prescribing software, the *MIMS Annual*, the *Australian Prescription Products Guide* or the *Australian Medicines Handbook*. If a non-prescription medication is not listed in these sources the NPS Therapeutic Advice and Information Service (phone 1300 138 677) or your local pharmacist may be able to assist.

Non-prescription drugs include 'Pharmacy Medicine', 'Pharmacist only', 'Pharmacy only' and complementary medications. Product information refers to information about medicines. It should include indications, contraindications, adverse effects, interactions, dosage, presentation, pack size, etc. Access is defined as information being available on the computer used for prescribing or as a book kept in the consulting room.

Information source for response

Practice policy, your desktop computer and your professional habits.

Limitations

Access to information is only part of the process. A habit of checking product information is also essential.

Response

- No, and not considering change.
- No, but considering change.
- Yes, but resource not used.
- Yes, and resource used when needed.

INDICATOR 4: SAMPLE MEDICATIONS

Does the practice have a policy on receiving, storing, dispensing and recording use of sample medications?

QUM strategy

To have practice policies that promote quality use of medicines.

Rationale

Prescription medicines are governed by a strict set of rules that cover their distribution, storage, dispensing and record of use. These legal requirements vary from state to state in Australia. Your practice should have a policy that outlines who it receives drug samples from; how they are logged, stored and dispensed; records of supply to patients; and how the practice disposes of unwanted or out-of-date samples.

Use of samples can undermine quality use of medicines if the sample is not adequately labelled with the patient's name and directions for use, or if the convenience of the sample means that the patient is not prescribed usual first-line therapy. There is an increased obligation for the doctor to supply information about the medicine, including side effects and potential interactions. If possible a consumer medicine information (CMI) leaflet should be supplied to reinforce your verbal advice.

Sample medications are samples provided by pharmaceutical manufacturers. The policy should be an official practice policy. Informal policies are ones followed by the individual GP and staff and should be formalised if possible.

Information source for response

Practice policy and your professional habits.

Limitations

Practice policies should be implemented consistently by all practice staff and reviewed regularly.

Response

- No, and not considering change.
- No, but considering change.
- Yes, but policy not followed.
- Yes, and policy followed when appropriate.

INDICATOR 5: PRESCRIBING DRUGS OF ADDICTION

Does the practice have a policy on prescription of benzodiazepines and opioids?

QUM strategy

To have practice policies that promote quality use of medicines.

Rationale

Commonly prescribed medications with potential for addiction and abuse include benzodiazepines and opioids.³ A unified practice approach supports individual GPs to prescribe these drugs appropriately. When the policy is made clear to patients it may decrease the likelihood of other drug-seeking patients presenting to the practice.

There are different types of drug-seeking patients. Patients known to the practice are more likely to be older and want a continuous supply of benzodiazepines or opioids. Patients unknown to the practice are likely to be younger and may also use, or be dependent on, illicit substances.³

A different approach will be needed for each of these groups. General principles for the managing drug dependency include:^{3,4}

- prevent misuse by careful prescribing
- refuse to prescribe
- prescribe a drug appropriate for the reported symptoms but different to the one requested
- prescribe for a limited term, e.g. 2–3 days
- reduce harm associated with drug use, e.g. needle exchange programs
- treat physical complications of drug use, e.g. constipation
- offer general medical care, e.g. hepatitis immunisation
- refer to an appropriate treatment centre, e.g. methadone program
- treat within the practice, e.g. gradual withdrawal of benzodiazepines.

The policy may be an official practice policy or an informal one followed by the individual GP and staff.

Information source for response

Practice policy and your professional habits.

Limitations

Practice policies should be implemented consistently by all practice staff and reviewed regularly.

Response

- No, and not considering change.
- No, but considering change.
- Yes, but policy not followed.
- Yes, and policy followed when appropriate.

INDICATOR 6: DISSEMINATING INFORMATION

Does the practice have a mechanism for disseminating information about medicine withdrawals, recalls and significant events?

QUM strategy

To have systems that support quality use of medicines.

Rationale

Doctors are constantly bombarded with information. The practice should have a system in place that facilitates the dissemination of important information. Important information may include medicine withdrawals, recall or significant events such as research findings reported in consumer media.

Information source for response

Practice policy and your professional habits.

Limitations

Practice policies should be implemented consistently by all practice staff and reviewed regularly.

Response

- No, and not considering change.
- No, but considering change.
- Yes, but mechanism not implemented.
- Yes, and mechanism implemented when appropriate.

INDICATOR 7: IDENTIFYING MEDICINE MISADVENTURE

Does the practice or GP have a system for identifying and managing patients at high risk of medicine misadventure?

QUM strategy

To have systems that support quality use of medicines.

Rationale

Medication misadventure includes problems resulting from prescribing, dispensing and administering medications. In the community the doctor, pharmacist and patient all need to be responsible for identifying and reporting medication misadventure. Feedback allows mistakes to be identified and addressed.⁵

In Australia medication misadventure is estimated to be responsible for 15% of all hospital admissions, 35% of unplanned hospital readmissions, and 35% of nursing-home admissions. Medication misadventure is estimated to cost the Department of Health and Ageing \$36 million a year.⁶

GPs can minimise medication misadventure by minimising prescribing errors. Prescribing errors can occur because the prescription is inappropriate for the patient or because of failure to communicate essential information. Prescriptions may be considered inappropriate when:

- there are contraindicated existing medical conditions
- there are potential drug interactions.
- there are known documented allergies
- the wrong dose is prescribed
- there is inadequate monitoring
- two drugs are prescribed for a patient when only one is necessary
- when a drug is prescribed for which there is no indication.

Failure to communicate essential information can result from true mistakes, using non-standard abbreviations, or omitting the route of administration, strength or dosing schedule.⁷

Identifying patients at risk can minimise medication misadventure. After identifying patients, consider what can be done to minimise potential medication misadventure, for example, written information in an appropriate language or home medication review (HMR). Patients most likely to benefit from HMR are those:

- at risk of medication-related problems because of their comorbidities, age or social circumstances, the characteristics of their medicines (e.g. warfarin) or the complexity of their medication treatment regimen
- recently discharged from hospital with multiple changes in therapy
- with suspected non-compliance or difficulties managing medication-related therapeutic devices.

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Information source for response

Practice policy and your professional habits.

Limitations

Practice policies should be implemented consistently by all practice staff and reviewed regularly.

Response

- No, and not considering change.
- No, but considering change.
- Yes, but system not implemented.
- Yes, and system implemented when appropriate.

INDICATOR 8: KEEPING ACCURATE MEDICATION RECORDS

Do you have a routine practice of reviewing current medication lists of patients, including medicines from other prescribers, over-the-counter medications and complementary medications?

QUM strategy

To have practice policies that promote quality use of medicines.

Rationale

Safe and rational prescribing relies on complete and accurate records of current medications. In a study of incidents of potential or actual harm to general practice patients, 51% of reported incidents were medication-related and the majority of these were preventable.⁸

Accurate medical records (both electronic and paper based) are essential. They should allow a medical practitioner to quickly review previously recorded information, which improves interactions with patients and management of chronic conditions. Accurate medical records are also important in medicolegal proceedings.

Your policy may be formal or informal, personal or practice policy.

Information source for response

Practice policy and your professional habits.

Limitations

Practice policies should be implemented consistently by all practice staff and reviewed regularly.

Response

- No, and not considering change.
- No, but considering change.
- Yes, there is a policy but it is not implemented.
- Yes, and policy implemented when appropriate.

Process indicators

The objectives of quality prescribing identified in consultation process were:

- to prescribe judiciously
- to prescribe appropriately
- to prescribe safely
- to tailor prescribing for the individual patient
- to have clear and complete medical records
- to monitor therapy appropriately.

Data collection

The process indicators are designed to require retrospective audit of patient records. For each indicator a specific patient group is selected, then patients who satisfy the indicator's criteria are recorded. All indicators are designed to identify prescribing at variance with best practice or established guidelines. For example, an indicator result of 10% suggests that prescribing supports quality use of medicines, whereas a result of 90% indicates a need to explore that particular prescribing habit or patient group.

These indicators may be calculated at an individual or practice level. At the practice level, either the indicators can be calculated by individuals and then aggregated, or the practice as a whole can be studied as if it were an individual prescriber. Your practice's ability to do this will depend on whether the prescribing software is networked and whether access is allowed to other prescribers' notes within the practice.

Comparing data

If comparing data over time, be aware of seasonal variations. It is best to compare a similar period each year. If comparing data between GPs, indicator values may vary because of differences in patient demographics or record keeping. For these reasons it is not recommended that these indicators are used to compare individual GPs or GP practice groups.

Sample size

Sample size estimates are a guide only. There will be great variation among practitioners in baseline behaviour and numbers of available patients. For indicators where the total pool of patients is small it is best to use all of your available patients, while for other indicators it will be better to select a reasonable number, for example, 30–60.

The most effective way of limiting the number of patients retrieved is to limit the time frame. We suggest that you initially limit your search to one month and then increase or decrease this period as required. If you are using a networked computer be aware that a large data request may slow the entire computer network.

Sample size is important when comparing data and varies depending on the magnitude of the change that you want to detect and the baseline values. For example, * to detect a change in result over time from 30% to 10%, at least 72 patients would be required in the total pool of patients at each time point. To detect a change in result from 90% to 40%, only 17 patients are required in each of the two pools of patients.⁹

Using your computer prescribing software

Computer programs and the way they are used varies between practitioners. Use the help instructions associated with your software to assist you. The following are tips for using the search functions of some commonly used programs:

- **Medical Director:** access search function from main menu Search > Databases. Useful topics within the help file include 'searching for patients', 'using dose calculator' and 'using clinical measurements window'.
- **Locum:** use searches under Tools > Reports to search by patient characteristics, medication or problems.
- **Genie:** from the 'Patients' screen the 'Rx' button can be used to search for all patients taking a particular drug or a particular drug class (see 'searching prescriptions' in the manual). Queries/searches can also be run from Records > Search or by using the 'Presenting Problems' button (see 'queries and searches' in the manual).
- **IBA Spectrum/Plexus:** to run searches go to Practice Management > Reporting > Other Reports > Patient Reports.

* Using a two-sided test, assuming normal distribution, a significance at $p < 0.05$ and power of 0.80.

INDICATOR 9: ANTIBIOTICS (NON-SPECIFIC URTI)**Percentage of patients prescribed an antibiotic for a non-specific upper respiratory tract infection (URTI)****QUM objective**

To prescribe judiciously.

Rationale

The cause of non-specific URTI is usually viral. Most symptoms subside within 5–7 days, although cough may persist for several weeks.

Purulent secretions from throat or nose are common in uncomplicated URTI. They do not predict bacterial infection or benefit from antibiotic treatment.² Many children with viral URTIs have accompanying mild inflammation of the middle ear, with visible redness and dulling of the tympanic membrane.² Patients should be given advice about how to manage symptoms.

Definitions

Non-specific URTI: includes patients with the common cold and rhinosinusitis.

Data collection

Sample selection: patients diagnosed with a non-specific URTI.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Through your prescribing software, identify patients diagnosed with a non-specific URTI. Include those with infections thought to be either viral or bacterial in origin.
 - Using 'coded' (pick from list) data when recording a reason for prescription or reason for consultation will help locate patients via search functions.
2. From your patient records identify how many patients were prescribed an antibiotic for the URTI.

To calculate the indicator

$$\frac{\text{Number of patients who had a non-specific URTI and were prescribed an antibiotic}}{\text{Number of patients who had a non-specific URTI}} \times 100 = \%$$

Interpretation

This indicator should ideally be zero (antibiotics are not indicated for non-specific URTI). However, a decreasing rate of prescription of antibiotics is acceptable.

Factors that may increase the rate of your antibiotic prescribing for non-specific URTI are the use of 'delayed prescriptions' and patient demographics, e.g. the changed risk–benefit relationship in patients with significant comorbidities or difficulty accessing follow-up may make antibiotics appropriate.

INDICATOR 10: ANTIBIOTICS (ACUTE OTITIS MEDIA)

Percentage of children prescribed an antibiotic for acute otitis media

QUM objective

To prescribe judiciously.

Rationale

Acute otitis media may be either viral or bacterial, but in either case is usually a self-limiting disease. A Cochrane review showed that two-thirds of children with acute otitis media were pain free within 24 hours whether or not they had received antibiotics.¹⁰ Provision of adequate and regular analgesia is necessary, whether or not antibiotics are prescribed. A compound preparation of codeine plus paracetamol may be used for more severe pain.²

Antibiotic therapy provides modest benefit — it is estimated that 15 children require treatment at first presentation to prevent 1 child experiencing pain at 2–7 days.¹⁰ Suppurative complications such as mastoiditis are now rare — a recent review of trials from 1966–99 estimated that the incidence of mastoiditis is 1:1000 in children with untreated otitis media.² For patients aged 2 years and older without systemic symptoms (marked fever and vomiting) antibiotics are not routinely recommended.

In certain groups such as Aboriginal and Torres Strait Islander communities suppurative complications of otitis media are common, and antibiotic therapy should be given at the first presentation.²

Definition

Acute otitis media: infection in the middle-ear.

Systemic symptoms: fever and vomiting.

Data collection

Sample selection: patients aged 2–12 years diagnosed with acute otitis media.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Identify patients aged 2–12 years diagnosed with acute otitis media through your prescribing software.
 - Using 'coded' (pick from list) data when recording a reason for prescription or reason for consultation will help locate patients via search functions.
2. From your patient records identify those who had acute otitis media for less than 2 days without systemic symptoms.
3. Of these patients, record how many received a prescription for an antibiotic.

(continued next page)

To calculate the indicator

Number of patients aged 2–12 years prescribed an antibiotic who had acute otitis media for less than 2 days without systemic symptoms

Number of patients aged 2–12 years who had acute otitis media for less than 2 days without systemic symptoms

× 100 = %

Interpretation

This indicator should be close to zero (antibiotics are not indicated in children 2–12 years old with acute otitis media for less than 2 days without systemic symptoms).

Areas with large Aboriginal or Torres Strait Island communities should have a higher figure. Practices with a policy in place regarding 'delayed prescribing' (i.e. when a prescription is provided to be filled at a later specified date if symptoms persist) will also have higher values for this indicator.

INDICATOR 11: ANTIBIOTICS (CEPHALEXIN)

Percentage of prescriptions for cephalexin for which the indication was non-specific URTI, pharyngitis, tonsillitis, acute otitis media, sinusitis or acute bronchitis

QUM objective

To prescribe judiciously.

Rationale

Non-specific URTI, pharyngitis, tonsillitis, acute otitis media, sinusitis and acute bronchitis are usually viral in origin. Purulent secretions from throat or nose are common in uncomplicated URTI. They do not predict bacterial infection or benefit from antibiotic treatment.² Evidence has accumulated that the benefits of antibiotic therapy in pharyngitis and/or tonsillitis, non-suppurative otitis media and sinusitis are more limited than previously thought. Consequently, routine use of antibiotics in these conditions should be avoided, to limit potential adverse effects and to reduce selection of bacterial resistance, both in individuals and in the community. In acute bronchitis, antibiotic therapy provides no overall benefit to the patient and may cause harm.² Cephalexin is not a recommended treatment for any of these conditions. Even when the causative organism is bacterial, cephalexin does not provide as much coverage of the likely organisms as the recommended treatments.²

Definitions

Non-specific URTI: includes patients with the common cold and rhinosinusitis.

Data collection

Sample selection: patients who received a prescription for cephalexin.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Identify patients prescribed cephalexin through your prescribing software.
2. From your patient records identify how many had non-specific URTI, pharyngitis, tonsillitis, acute otitis media, sinusitis or acute bronchitis.

To calculate the indicator

Number of patients prescribed cephalexin who had non-specific URTI,
pharyngitis, tonsillitis, acute otitis media, sinusitis or acute bronchitis

Number of patients prescribed cephalexin

× 100 = %

Interpretation

This indicator should be zero. Cephalexin is not recommended for non-specific URTI, pharyngitis, tonsillitis, acute otitis media, sinusitis or acute bronchitis.

INDICATOR 12: DIABETES AND ACE INHIBITORS

Percentage of patients with type 2 diabetes and hypertension and macroalbuminuria or proteinuria who have not been prescribed an angiotensin-converting enzyme (ACE) inhibitor or an angiotensin II-receptor antagonist

QUM objective

To prescribe appropriately.

Rationale

ACE inhibitors have been shown to reduce the progression of diabetic nephropathy.^{11, 12} There is also evidence that angiotensin II-receptor antagonists reduce the progression of nephropathy in type 2 diabetes.^{11, 13}

Strict control of both blood pressure and blood sugar levels have both been shown to prevent or delay the development of nephropathy or retard its progression.¹¹

Treatment with an ACE inhibitor or angiotensin II-receptor antagonist should be considered if there is persistent microalbuminuria.

Definitions

ACE inhibitors: captopril, enalapril, fosinopril, lisinopril, perindopril, quinapril, ramipril, trandolapril, and these drugs in combination products.

Angiotensin II-receptor antagonists: candesartan, eprosartan, irbesartan, losartan, telmisartan and these drugs in combination products.

Antidiabetic drugs: insulin, glibenclamide, gliclazide, glimepiride, glipizide, pioglitazone, rosiglitazone, acarbose, metformin, repaglinide.

Hypertension: blood pressure \geq 130/80 mmHg, (\geq 125/75 mmHg when proteinuria exceeds 1 g/day), and patients receiving treatment for hypertension.¹¹ Measurement should be < 4 months old.

Microalbuminuria: albumin excretion rate 20–200 micrograms per minute or albumin:creatinine ratio in early morning urine sample 2.5–25 mg/mmol (males) or 3.5–35 mg/mmol (females). Measurement should be < 12 months old.

Macroalbuminuria: albumin excretion rate > 200 micrograms per minute or albumin:creatinine ratio in early morning urine sample > 25 mg/mmol (males) or > 35 mg/mmol (females), confirmed with measurement of total proteinuria (< 0.5 g/24 hours). Measurement should be < 12 months old.

Proteinuria: protein detected by dipstick urinalysis and confirmed by 24-hour urine collection. Measurement should be < 12 months old.

Type 2 diabetes: also known as maturity-onset diabetes (MOD), late-onset diabetes or non-insulin-dependent diabetes mellitus (NIDDM).

(continued next page)

Data collection

Sample selection: patients with type 2 diabetes and hypertension and macroalbuminuria or proteinuria.

Methodology:

1. Identify patients with type 2 diabetes either through your 'diabetes register', by using 'diabetes' as a search term or by selecting patients who were prescribed an antidiabetic drug through your prescribing software.
 - Count each patient only once even though they may have multiple prescriptions.
 - Using 'coded' (pick from list) data when recording a reason for prescription or reason for consultation will help locate patients via search functions.
2. From your patient records identify those who had hypertension and macroalbuminuria or proteinuria. Record this number as the indicator denominator.
 - Make sure that these measurements are current.
 - If you do not have a current record of blood pressure and presence/absence of macroalbuminuria or proteinuria, include these patients in the denominator. You may like to make a note of patients who did not have this information recorded for follow-up.
3. Of the selected patients, identify those not currently prescribed an ACE inhibitor or an angiotensin II-receptor antagonist. Record this number as your numerator.
 - To help with interpretation, make a note of the number of patients who have been previously prescribed an ACE inhibitor or an angiotensin II-receptor antagonist but do not have a current prescription, and the reason for not continuing therapy. You may wish to follow up patients who do not have a reason for discontinuing therapy.

To calculate the indicator

Number of patients with type 2 diabetes and hypertension and macroalbuminuria or proteinuria who do NOT have a current prescription for an ACE inhibitor or an angiotensin II-receptor antagonist

Number of patients with type 2 diabetes and hypertension and macroalbuminuria or proteinuria

× 100 = %

Interpretation

Ideally, this indicator should be close to zero. ACE inhibitors or angiotensin II-receptor antagonists will be not tolerated or contraindicated in a small proportion of patients. Contraindications to ACE inhibitors include previous angioedema and renal artery stenosis (bilateral, or unilateral with a solitary kidney). Angiotensin II-receptor antagonists are contraindicated in people who have had previous hypersensitivity reactions, e.g. urticaria, angioedema and in those with renal artery stenosis (bilateral, or unilateral with a solitary kidney).¹⁴

INDICATOR 13: MYOCARDIAL INFARCTION

Percentage of patients with a history of myocardial infarction (MI) who have NOT been prescribed a beta blocker, antiplatelet agent (or anticoagulant) and statin

QUM objective

To prescribe appropriately.

Rationale

All major Australian guidelines recommend beta blockers, antiplatelet agents and statins for secondary prevention after acute myocardial infarction (MI).¹⁴⁻¹⁶

Use aspirin 75–150 mg daily long term for secondary prevention of cardiovascular events.¹⁷ A meta-analysis found a 2.5% absolute risk reduction in non-fatal MI, non-fatal stroke or vascular death in patients at high risk of occlusive vascular events (including history of MI).¹⁷ These benefits outweigh the increased risk of haemorrhagic stroke and upper gastro-intestinal bleeds. Aspirin should be continued long term in all patients with previous MI, angina, ischaemic stroke or transient ischaemic attack unless contraindicated or an anticoagulant is indicated instead.¹⁷ Clopidogrel is an alternative when aspirin is contraindicated or not tolerated.¹⁴

Meta-analysis has shown that long-term use of beta blockers in patients who have had an MI is associated with a substantial reduction in all-cause mortality (odds ratio [OR], 0.77; 95% confidence interval [CI], 0.70 to 0.85; $p < 0.0001$) and non-fatal reinfarction (OR, 0.74; 95% CI, 0.66 to 0.83; $p < 0.0001$).¹⁸

Lipid-modifying therapy is recommended in patients with angina or a previous MI to prevent future coronary heart disease (CHD) events.¹⁵ In the 4S,¹⁹ CARE²⁰, and LIPID²¹ trials, patients with CHD had their absolute risk of CHD death or non-fatal MI reduced by up to 9% over 5 years by simvastatin or pravastatin over a wide range of plasma cholesterol concentrations (4–8 mmol/L). Lipid-modifying drugs are subsidised on the Pharmaceutical Benefits Scheme for patients with CHD and a total cholesterol level > 4 mmol/L after completion of a trial of dietary therapy.²²

ACE inhibitors should be continued long term in post-MI patients with left ventricular dysfunction or heart failure.^{14, 16}

If contraindications or drug or disease interactions exist for any of these medications consider the risks and benefits, and seek specialist advice if necessary.

Definitions

Antiplatelet agent: aspirin, clopidogrel, ticlopidine, dipyridamole (for prevention of cerebral ischaemic events).

Anticoagulant: warfarin.

Beta blocker: atenolol, metoprolol and propranolol are indicated for treatment of post-MI patients.

Statin: the term 'statin' has been adopted to refer to HMG-CoA reductase inhibitors. This group includes atorvastatin, fluvastatin, pravastatin and simvastatin.

(continued next page)

Data collection

Sample selection: adult patients who have had a myocardial infarction.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Identify patients who have had a myocardial infarction.
 - Using 'coded' (pick from list) data when recording a reason for prescription or reason for consultation will help locate patients via search functions.
2. Note those who are not receiving a beta blocker, antiplatelet agent (or anticoagulant) and statin.
3. If patients are taking some but not all of the recommended medications, include them as not receiving a beta blocker, antiplatelet agent and statin.
 - To help with interpretation, make a note of the number of patients who have been previously prescribed a beta blocker, antiplatelet agent (or anticoagulant) or statin but do not have a current prescription, and the reason for not continuing therapy. You may wish to follow up patients who do not have a reason for discontinuing therapy.

To calculate the indicator

Number of adult patients who have had an MI but have
NOT been prescribed a beta blocker, antiplatelet agent
(or anticoagulant) and statin

Number of adult patients who have had an MI

× 100 = %

Interpretation

Taking absolute contraindications and withdrawals into account, this indicator would ideally be below 30%.

Your result may be artificially high if your patients are obtaining aspirin over the counter (OTC) and you have not recorded this in their records. It is important to periodically check if patients are obtaining medications OTC or from other prescribers and record these. A comprehensive list of current medications allows drug interaction software to operate effectively and referral letters to be accurate.

INDICATOR 14: HYPERTENSION AND TARGET BLOOD PRESSURE**Percentage of patients prescribed an antihypertensive agent who are NOT at their target blood pressure****QUM objective**

To monitor therapy appropriately.

Rationale

Raised blood pressure is a major risk factor for cardiovascular disease. The higher the blood pressure the higher the risk of stroke, coronary heart disease, kidney disease, heart failure and death.²³ Patients who are treated to achieve target blood pressures more successfully reduce their cardiovascular risk.²⁴

The Australian Heart Foundation *Hypertension Management Guide for Doctors 2004* recommends that during stabilisation of treatment, patients be seen at intervals that may be as short as a few days or extend up to 1–2 months, depending on the patient. In stable patients blood pressure and risk factors should be monitored every 3 months in patients at high or very high risk of cardiovascular disease, and every 6 months in patients at medium or low risk. All patients should have lifestyle modification reinforced at appropriate intervals.²³

Definitions

Antihypertensive medication: ACE inhibitors, angiotensin II-receptor antagonists, beta blockers, calcium-channel blockers, centrally acting antihypertensives, potassium-sparing diuretics, selective alpha blockers, thiazide and thiazide-like diuretics, vasodilators.

ACE inhibitors: captopril, enalapril, fosinopril, lisinopril, perindopril, quinapril, ramipril, trandolapril, and these drugs in combination products.

Angiotensin II-receptor antagonists: candesartan, eprosartan, irbesartan, losartan, telmisartan and these drugs in combination products.

Beta blockers: atenolol, carvedilol, labetalol, metoprolol, oxprenolol, pindolol, propranolol.

Calcium-channel blockers: amlodipine, felodipine, lercanidipine, nifedipine, diltiazem, verapamil.

Centrally acting antihypertensives: clonidine, methyl dopa.

Potassium-sparing diuretics: amiloride, spironolactone, triamterene, and these drugs in combination.

Selective alpha blockers: prazosin, terazosin.

Thiazide diuretics: bendrofluazide, hydrochlorothiazide.

Thiazide-like diuretics: chlorthalidone, indapamide.

Vasodilators: hydralazine, minoxidil.

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Target blood pressure:

Both systolic and diastolic measurements must be below the recommended target.

Table 1: Current recommended blood pressure targets^{11, 23}

Target blood pressure	Patient characteristics
< 140/90 mmHg	Adults \geq 65 years* (unless there is diabetes and/or renal insufficiency and/or proteinuria \geq 0.25 g/day)
< 130/80 mmHg <i>OR</i> < 130/85 mmHg	Adults of any age with diabetes and/or renal insufficiency and/or proteinuria 0.25–1 g/day Adults < 65 years*
< 125/75 mmHg	Adults of any age with proteinuria > 1 g/day

*Treat based on age if patients do not belong in a specific group.

Data collection

Sample selection: adult patients who received a prescription for an antihypertensive agent.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Identify adult patients prescribed an antihypertensive agent through your prescribing software.
2. Count each patient only once even though they may have multiple prescriptions.
3. From your patient records identify those who were not at their target blood pressure.
4. Patients who have not had their blood pressure taken in the last 3–6 months should be assumed to not be at target blood pressure.

To calculate the indicator

$$\frac{\text{Number of adult patients prescribed an antihypertensive agent who were NOT at their target blood pressure}}{\text{Number of adult patients prescribed an antihypertensive agent}} \times 100 = \%$$

Interpretation

This indicator value should be low; however, it may be affected by the following factors:

- Some patients, especially the elderly, may not tolerate the specified blood pressure targets.
- Patients not responding to antihypertensive therapy may have poor compliance, which will need to be addressed.
- Secondary hypertension is relatively resistant to standard therapy, and specialist advice should be considered.
- Newly diagnosed patients are likely to have blood pressures above their target values for some time while lifestyle interventions and drug therapy are being implemented.

This indicator does not identify patients with undiagnosed or untreated hypertension.

INDICATOR 15: HEART FAILURE AND ACE INHIBITORS**Percentage of patients with systolic heart failure NOT currently prescribed an ACE inhibitor or angiotensin II-receptor antagonist****QUM objective**

To prescribe appropriately.

Rationale

ACE inhibitors are essential therapy for heart failure; they relieve symptoms, reduce hospitalisations and improve survival in patients with systolic heart failure and should be used regardless of the severity of heart failure.^{25,26} A meta-analysis found that patients with left ventricular dysfunction or heart failure treated with an ACE inhibitor had fewer major events (defined as death, hospitalisation for heart failure or re-infarction) than those given placebo (33.8% vs 41.0%, respectively; $p < 0.0001$).²⁵ The benefits of treatment occur in all functional (New York Heart Association) classes of heart failure but are greatest in patients with more severe impairment.

Reserve use of angiotensin II-receptor antagonists for patients unable to tolerate ACE inhibitors. Angiotensin II-receptor antagonists may be used with extreme caution and under close monitoring in patients who have experienced angioedema with an ACE inhibitor, as there is a small risk of recurrence.^{14,23}

Definitions

ACE inhibitor: captopril, enalapril, fosinopril, lisinopril, perindopril, quinapril, ramipril, trandolapril, and these drugs in combination products.

Angiotensin II-receptor antagonists: candesartan, eprosartan, irbesartan, losartan, telmisartan and these drugs in combination products.

Data collection

Sample selection: adult patients with systolic heart failure.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Identify adult patients from your patient records who have systolic heart failure.
 - Using 'coded' (pick from list) data when recording a reason for prescription or reason for consultation will help locate patients via search functions.
2. Determine how many are not currently receiving an ACE inhibitor or angiotensin II-receptor antagonist.
 - To help with interpretation, make a note of the number of patients who have been previously prescribed an ACE inhibitor or an angiotensin II-receptor antagonist but do not have a current prescription, and the reason for not continuing therapy. You may wish to follow up patients who do not have a reason for discontinuing therapy.

(continued next page)

To calculate the indicator

$$\frac{\text{Number of adult patients with systolic heart failure who are NOT currently receiving an ACE inhibitor or angiotensin II-receptor antagonist}}{\text{Number of adult patients with systolic heart failure}} \times 100 = \quad \%$$

Interpretation

Ideally this indicator will be close to zero. ACE inhibitor-induced angioedema occurs infrequently but is potentially fatal and requires immediate discontinuation of the ACE inhibitor or angiotensin II-receptor antagonist. Hypotension, cough and worsening renal function may also affect a patient's ability to tolerate an ACE inhibitor or angiotensin II-receptor antagonist. Seek specialist advice in these situations.

INDICATOR 16: GOOD PRESCRIBING (AVOIDING THE 'TRIPLE WHAMMY')**Number of patients receiving a combination of ACE inhibitors (or angiotensin II-receptor antagonists), diuretics and NSAIDs (including COX-2 selective NSAIDs)****QUM objective**

To prescribe safely.

Rationale

The combination of ACE inhibitors (or angiotensin II-receptor antagonists), diuretics and NSAIDs (including COX-2 selective NSAIDs), termed the 'triple whammy', is implicated in a significant number of reports of drug-induced renal failure submitted to the Australian Drug Reactions Advisory Committee.^{27, 28} This triple whammy should be avoided if possible and extreme caution should be taken with ACE inhibitors and NSAIDs in patients with renal impairment.²⁹

Like other NSAIDs, aspirin can precipitate worsening heart failure and, in combination with an ACE inhibitor, the risk of renal impairment may be increased.³⁰ Some consider that the protective antiplatelet effects of low-dose aspirin are generally of greater benefit than the potential risks when there is a clear indication.³⁰ However, an Australian study found that taking two or more of the target drugs, (i.e. diuretics, NSAIDs [including low-dose aspirin], ACE inhibitors and/or angiotensin II-receptor antagonists) was associated with significant renal impairment.³¹

Definitions

ACE inhibitors: captopril, enalapril, fosinopril, lisinopril, perindopril, quinapril, ramipril, trandolapril, and these drugs in combination products.

Angiotensin II-receptor antagonists: candesartan, eprosartan, irbesartan, losartan, telmisartan and these drugs in combination products.

Diuretics: includes loop diuretics (bumetanide, ethacrynic acid, frusemide), potassium-sparing diuretics (amiloride, spironolactone, triamterene) and thiazide and thiazide-like diuretics (bendrofluazide, chlorthalidone, hydrochlorothiazide, indapamide).

NSAIDs: NSAIDs means all nonsteroidal anti-inflammatory drugs except aspirin ≤ 150 mg. Check and record if your patients are routinely taking NSAIDs that have been obtained over the counter. Include: diclofenac, diflunisal, ibuprofen, indomethacin, ketoprofen, ketorolac, mefenamic acid, naproxen, piroxicam, sulindac and tiaprofenic acid.

COX-2 selective NSAIDs: celecoxib, etoricoxib, lumiracoxib, meloxicam, parecoxib, valdecoxib.

Data collection

Sample selection: adult patients who received a prescription for ACE inhibitors (or angiotensin II-receptor antagonists).

Sample size: 30–60 (see sample size discussion on page 17).

(continued next page)

Methodology:

1. Identify adult patients prescribed ACE inhibitors (or angiotensin II-receptor antagonists) through your prescribing software.
 - Count each patient only once even though they may have multiple prescriptions.
2. From your patient records identify those who had received concurrent prescriptions for ACE inhibitors (or angiotensin II-receptor antagonists), diuretics and NSAIDs (including COX-2 selective NSAIDs).

To calculate the indicator

Number of adult patients who received concurrent prescriptions for
ACE inhibitors (or angiotensin II-receptor antagonists), diuretics and
NSAIDs (including COX-2 selective NSAIDs)

Number of adult patients prescribed ACE inhibitors or
angiotensin II-receptor antagonists

× 100 = %

Interpretation

This indicator should be close to zero.

INDICATOR 17: GOOD PRESCRIBING (CHILDREN)**Percentage of children for whom a prescription was written, but a current weight was NOT recorded****QUM objective**

To tailor prescribing for individual patients.

Rationale

While little is known about the incidence of medication errors and adverse drug events (ADEs) in the general practice paediatric population, a hospital-based study has indicated that the rate of potential ADEs is about three times higher in children than in adults.³² Medication errors and potential ADEs were found in 5.7% and 1.1%, respectively, of all drug orders for children. The most frequent types of medication errors involved a prescription being written with an incorrect dose, frequency or route.³² Another study of medication errors involving the use of dosage equations found that most involved paediatric services and 42% were rated as having the potential to result in serious or severe adverse outcomes.³³ Dosages for children are generally dependent on the weight or body surface area of the child. Ideally the child should be weighed during the visit to ensure that the dosage is based on an accurate weight.

Definitions

Children: all patients under 12 years of age.

Weight: should be recorded in kilograms.

Data collection

Sample selection: prescriptions written for children.

Exclude: prescriptions for vaccines, inhaled medication, topical preparations and other medication for which dosage is not based on weight.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Identify children who were prescribed medication through your prescribing software.
2. From your patient records identify those who did not have a current weight recorded.
 - The measurement should have been taken less than 2 weeks before the prescription was written for children younger than 1 year, and less than 6 months before the prescription was written for children older than 1 year.

To calculate the indicator

$$\frac{\text{Number of children for whom a prescription was written, but a current weight was not recorded}}{\text{Number of children for whom a prescription was written}} \times 100 = \quad \%$$

Interpretation

This indicator should be close to zero.

INDICATOR 18: GOOD PRESCRIBING (DOSING INSTRUCTIONS)

Percentage of prescriptions with non-specific dosing instructions

QUM objective

To prescribe safely and to enhance communication with patients.

Rationale

Patients frequently forget verbal instructions. Specific and individual instructions are necessary for therapy to be used effectively. Clear instructions regarding how much of the medication should be taken and how often it should be taken are essential information that should be included on every prescription.

When using directions such as 'prn' or 'take as needed' the maximum dose and minimum dose interval should be specified as well as the symptoms to be treated. The World Health Organization's *Guide to Good Prescribing* recommends that non-specific instructions such as 'as directed'/'mdu' or 'as before' should not be used when prescribing.³⁴

Definitions

Non-specific instructions: 'as directed', 'as before', 'mdu' or the complete absence of instructions.

Incomplete instructions: 'prn' or 'use when needed' without the maximum dose and minimum dose interval. Include prescriptions for medications to be given regularly that are missing the drug strength, how much of the medication should be taken or how often it should be taken.

Data collection

Sample selection: all prescriptions written in a selected period.

Exclude: prescriptions written for doctor-administered medication, e.g. vaccines, contraceptive implants, antipsychotic depot injections.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Review all prescriptions written through your prescribing software for a selected period.
2. Identify prescriptions with non-specific or incomplete dosing instructions.
 - If multiple items appear on one prescription, count these as separate prescriptions.
 - If a prescription is missing more than one piece of information (e.g. no dose and no frequency), count it only once.

To calculate the indicator

$$\frac{\text{Number of prescriptions with non-specific or incomplete dosing instructions}}{\text{Number of prescriptions written}} \times 100 = \%$$

Interpretation

This indicator should be close to zero.

INDICATOR 19: BENZODIAZEPINES (LONG-TERM USE)**Percentage of patients aged over 65 years prescribed regular benzodiazepines for more than 4 weeks****QUM objective**

To prescribe safely.

Rationale

Benzodiazepines should be reserved for short-term use only (e.g. 2–4 weeks) as part of a broader treatment plan, not a sole treatment. Long-term use may result in tolerance and dependence.¹⁴ With regular night-time use of benzodiazepines, their hypnotic effectiveness may be lost after as little as 2 weeks.³⁵

Discontinuing psychotropic medications in the elderly is likely to prevent adverse effects such as falls.³⁶

Regular use of benzodiazepines for more than 2–4 weeks may result in physical dependence. Signs of dependence include drug-seeking behaviour, craving, and disturbed work and personal function.¹⁴ Suddenly stopping treatment in dependent people may produce withdrawal symptoms. Prevent or alleviate these by gradual dose reduction. Withdrawal symptoms may include anxiety, dysphoria, irritability, insomnia, nightmares, sweating, memory impairment, hallucinations, hypertension, tachycardia, psychosis, tremors and seizures. Withdrawal symptoms may not occur until several days after discontinuation of benzodiazepines and can last for several weeks or longer after prolonged use.¹⁴

For further information on how to help patients withdraw from benzodiazepines see *NPS News 4* and *NPS Prescribing Practice Review 4*, available on the NPS website (www.nps.org.au).

Definitions

Regular use: daily dosing.

Benzodiazepine (oral): alprazolam, bromazepam, clobazam, clonazepam, diazepam, flunitrazepam, lorazepam, nitrazepam, oxazepam, temazepam, triazolam.

Data collection

Sample selection: patients aged > 65 years.

Exclude: palliative and terminally ill patients.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Identify patients aged > 65 years through your prescribing software.
2. From your patient records identify those who had benzodiazepines prescribed regularly.
 - Count each patient only once even though they may have multiple prescriptions.

(continued next page)

To calculate the indicator

$$\frac{\text{Number of patients aged > 65 years prescribed regular benzodiazepines for more than 4 weeks}}{\text{Number of patients aged > 65 years}} \times 100 = \quad \%$$

Interpretation

This indicator should be very low. However, not all patients are able to be successfully withdrawn from long-term use of benzodiazepines. In terms of quality use of medicines, a decrease in this indicator over time is desirable, reflecting lower number of patients being prescribed long-term benzodiazepine treatment.

INDICATOR 20: ASTHMA (LONG-ACTING BETA₂-AGONISTS)**Percentage of patients prescribed a long-acting beta₂-agonist who are NOT using an inhaled corticosteroid****QUM objective**

To prescribe appropriately.

Rationale

Long-acting beta₂-agonists (LABAs) should always be used in combination with inhaled corticosteroids in asthma.^{14, 37} LABAs do not treat the underlying airway inflammation and are not indicated as monotherapy in asthma.³⁷

The *Asthma Management Handbook* recommends a stepwise approach to asthma management, with inhaled corticosteroids forming the cornerstone of treatment, short-acting beta₂-agonists used for relieving symptoms and preventing exercise-induced asthma, and other therapies added in when needed to achieve optimal control.³⁷

Caution is required with the regular use of LABAs in preventing exercise-induced asthma, as the initial benefits decline if they are used daily. Evidence suggests that the initial protective effects of LABA therapy may decline after 1–2 weeks of regular therapy in exercise-induced asthma.³⁸

Definitions

Long acting beta₂-agonists: eformoterol, salmeterol and these drugs in combination products.

Inhaled corticosteroids: beclomethasone, budesonide, fluticasone. These may be given as a single agent or as part of a combination product.

Data collection

Sample selection: patients with asthma who received a prescription for a LABA.

Exclude: patients with chronic obstructive pulmonary disease.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Identify patients with asthma who received a prescription for a LABA through your prescribing software.
 - Count each patient only once even though they may have multiple prescriptions.
2. From your patient records identify those who did not also have an inhaled corticosteroid prescribed.

To calculate the indicator

$$\frac{\text{Number of patients with asthma prescribed a LABA who did NOT also have an inhaled corticosteroid prescribed}}{\text{Number of patients with asthma prescribed a LABA}} \times 100 = \%$$

Interpretation

This indicator should be close to zero.

INDICATOR 21: REASON FOR PRESCRIBING RECORDED

Percentage of prescriptions for which a reason for prescribing was NOT recorded

QUM objective

To have clear and complete medical records.

Rationale

Recording a reason that a prescription was written adds to the clarity of the medical notes, making it easier to review patient records for both the prescriber and anyone else who needs to use the medical records, e.g. group practices, computer-generated medical letters. Quick review of patient management is also becoming more frequent for educational and quality assurance purposes.

Definitions

Medical record: the medical record may be either electronic or handwritten.

Data collection

Sample selection: all prescriptions written in a selected period.

Exclude: vaccinations.

Sample size: 30–60 (see sample size discussion on page 17).

Methodology:

1. Review all prescriptions written through your prescribing software for a selected period.
 - If multiple items appear on one prescription, count these as separate prescriptions.
2. From your patient records identify those who did not have a reason for the prescription recorded.

To calculate the indicator

$$\frac{\text{Number of prescriptions that did NOT have a reason for the prescription recorded}}{\text{Number of prescriptions}} \times 100 = \%$$

Interpretation

This indicator should be close to zero.

Appendix: Results

When to measure the indicators: a 4-month review cycle is recommended. For each of the **structure indicators**, record a baseline response in Table 1A. Record your follow-up responses at 4-month intervals in Table 1A and 1B. For the **process indicators**, choose four or five indicators to review first, then review another four or five after 4 months, and the remainder after 8 months. Record the date and responses for the first group of four or five indicators in the first column of Table 2A. After 4 months record the date and responses for the next group of indicators in the second column, then continue adding responses every 4 months in Tables 2A and 2B. Whenever an indicator result suggests a need for improvement, the indicator should be reviewed after 4 months, otherwise a yearly review cycle for 2–3 years is recommended.

Table 1A. Structure indicator responses at baseline and 4-month follow-up

Structure indicator	ENTER DATE, THEN RECORD RESPONSE (TICK APPROPRIATE COLUMN) FOR EACH INDICATOR							
	Baseline date: / /				Follow-up date (e.g. 4 months after baseline): / /			
	No, not considering change	No, but considering change	Yes, but not used	Yes, used when needed	No, not considering change	No, but considering change	Yes, but not used	Yes, used when needed
1. Do you have access to the latest copy (≤ 3 years old) of <i>Therapeutic Guidelines: Antibiotic</i> ?								
2. Do you have access to up-to-date product information for prescription drugs?								
3. Do you have access to up-to-date product information for non-prescription drugs?								
4. Does the practice have a policy on receiving, storing, dispensing and recording use of sample medications?								
5. Does the practice have a policy on prescription of benzodiazepines and opioids?								
6. Does the practice have a mechanism for disseminating information about medicine withdrawals, recalls, etc?								
7. Do you have a system for identifying and managing patients at high risk of medicine misadventure?								
8. Do you have a policy to review current medication lists, including OTC and complementary medications?								

Table 1B. Structure indicator responses at 8-month and 12-month follow-up

Structure indicator	ENTER DATE, THEN RECORD RESPONSE (TICK APPROPRIATE COLUMN) FOR EACH INDICATOR							
	Follow-up date (e.g. 8 months after baseline): / /				Follow-up date (e.g. 12 months after baseline): / /			
	No, not considering change	No, but considering change	Yes, but not used	Yes, used when needed	No, not considering change	No, but considering change	Yes, but not used	Yes, used when needed
1. Do you have access to the latest copy (≤ 3 years old) of <i>Therapeutic Guidelines: Antibiotic</i> ?								
2. Do you have access to up-to-date product information for prescription drugs?								
3. Do you have access to up-to-date product information for non-prescription drugs?								
4. Does the practice have a policy on receiving, storing, dispensing and recording use of sample medications?								
5. Does the practice have a policy on prescription of benzodiazepines and opioids?								
6. Does the practice have a mechanism for disseminating information about medicine withdrawals, recalls, etc?								
7. Do you have a system for identifying and managing patients at high risk of medicine misadventure?								
8. Do you have a policy to review current medication lists, including OTC and complementary medications?								

Table 2A. Process indicator responses at baseline and follow-up

Process indicator	ENTER DATE, RESPONSE (%) AND TOTAL NUMBER (n) OF PATIENTS OR PRESCRIPTIONS (n = denominator of each indicator calculation)								
	Baseline			Follow up			Follow up		
	Date	%	n	Date	%	n	Date	%	n
9. % patients prescribed an antibiotic for non-specific URTI									
10. % children prescribed an antibiotic for acute otitis media (AOM)									
11. % prescriptions for cephalexin that were for non-specific URTI, pharyngitis, AOM, sinusitis or acute bronchitis									
12. % patients with type 2 diabetes, hypertension and albuminuria not prescribed an ACE inhibitor or ATRA*									
13. % patients with previous myocardial infarction not prescribed a beta blocker, antiplatelet and statin									
14. % patients prescribed an antihypertensive who are not at target BP									
15. % patients with systolic heart failure not prescribed an ACE inhibitor or ATRA*									
16. % patients on ACE inhibitor (or ATRA*) who are also on a diuretic and NSAID									
17. % prescriptions for children where current weight was not recorded									
18. % prescriptions with non-specific dosing instructions									
19. % patients over 65 years prescribed regular benzodiazepines > 4 weeks									
20. % patients with asthma prescribed a long acting beta ₂ -agonist without an inhaled corticosteroid									
21. % prescriptions where reason for prescribing was not recorded									

*ATRA = angiotensin II-receptor antagonist

Table 2B. Process indicator responses at follow-up

Process indicator	ENTER DATE, RESPONSE (%) AND TOTAL NUMBER (n) OF PATIENTS OR PRESCRIPTIONS (n = denominator of each indicator calculation)								
	Follow up			Follow up			Follow up		
	Date	%	n	Date	%	n	Date	%	n
9 % patients prescribed an antibiotic for non-specific URTI									
10. % children prescribed an antibiotic for acute otitis media (AOM)									
11. % prescriptions for cephalexin that were for non-specific URTI, pharyngitis, AOM, sinusitis or acute bronchitis									
12. % patients with type 2 diabetes, hypertension and albuminuria not prescribed an ACE inhibitor or ATRA*									
13. % patients with previous myocardial infarction not prescribed a beta blocker, antiplatelet and statin									
14. % patients prescribed an antihypertensive who are not at target BP									
15. % patients with systolic heart failure not prescribed an ACE inhibitor or ATRA*									
16. % patients on ACE inhibitor (or ATRA*) who are also on a diuretic and NSAID									
17. % prescriptions for children where current weight was not recorded									
18. % prescriptions with non-specific dosing instructions									
19. % patients over 65 years prescribed regular benzodiazepines > 4 weeks									
20. % patients with asthma prescribed a long acting beta ₂ -agonist without an inhaled corticosteroid									
21. % prescriptions where reason for prescribing was not recorded									

*ATRA = angiotensin II-receptor antagonist

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