

Optimal asthma control

What is asthma control?

Asthma control is defined as the extent to which the manifestations of asthma have been reduced or removed by treatment.¹ The goals of asthma treatment are to minimise the impact of asthma, as seen by:

- No (or minimal) symptoms and need for rescue β_2 -agonist
- No night or early morning waking due to asthma
- No limitation of activity due to asthma
- Maintenance of lung function as close to normal as possible
- Avoidance of side-effects of treatment

Hence, the assessment of asthma control has two components:

1. The patient's current level of clinical asthma control
2. The patient's risk of adverse outcomes in the future, including exacerbations, accelerated decline in lung function, and side-effects of treatment.

Why should asthma control be assessed?

The assessment of asthma control is important in clinical practice for:

- Deciding whether regular anti-inflammatory treatment is needed
- Deciding whether treatment should be stepped down (once maximal improvement has been achieved) or stepped up (if asthma remains poorly-controlled despite good inhaler technique and adequate adherence)
- Documenting the patient's response to such treatment changes
- Establishing the patient's usual status, as the basis for their written asthma action plan
- Identifying patients at greater risk of future adverse outcomes, to guide the intensity of treatment and frequency of follow-up.

How should clinical asthma control be assessed?

Current clinical asthma control can be readily assessed in the clinician's office, by asking a few simple questions (see box 1).

Other tools for assessing clinical control include the RCP "3 questions",² or guidelines classifications such as Well-controlled, Partly-controlled and Uncontrolled asthma.³ These categories may vary between different guidelines, but in general, asthma is not considered to be well-controlled if symptoms and/or

Box 1: Questions to ask when you are assessing current asthma control

1. How many days a week do you have asthma symptoms?
2. Do you ever wake at night due to asthma?
3. How often do you use your reliever medication?
4. Can you walk up a flight of stairs without stopping?
5. What bothers you most about your asthma?

[Write the answers to these questions, or the patient's control score, in the patient's record for quick comparison at the next visit.]

reliever use occur more than 2-3 times per week, or if there is any night waking due to asthma. The main limitation of these simple tools is their lack of sensitivity to change.⁴

Several simple validated composite scores, e.g. Asthma Control Test, provide numerical measures of asthma control and are suitable for assessment in clinical practice. Cut-points for well-controlled and/or poorly-controlled asthma and for significant change have been published for these scores, based on comparison with physician assessment.

Because the symptoms of asthma are not specific to asthma, it is important that the diagnosis of asthma should be confirmed and any other conditions such as sinusitis, anxiety, incorrect inhaler technique or poor adherence, which may cause or contribute to symptoms should be identified before a change in medication is considered.

How can the "future risk" component of asthma control be assessed?

Patients who have clinical features of poorly-controlled asthma are at increased risk of ongoing poor asthma control or of exacerbations. In addition, some patients whose asthma appears to be well-controlled on clinical assessment may be at increased risk of adverse outcomes, for example in the following situations:

- Lack of symptoms due to poor perception of airway obstruction. Poor perception can be identified in clinical practice if the patient cannot feel the difference with a substantial change in lung function (e.g. 20% increase after bronchodilator or similar decrease after exer-

cise or during bronchial provocation testing). Perception of airway obstruction is known to improve after 2 months of regular inhaled corticosteroid treatment.

- Use of regular short or long-acting β_2 -agonist without any inhaled corticosteroid treatment. This masks the effect of underlying airway inflammation. Encourage open discussion of medication use ("Do you ever use the brown inhaler?") and look at repeat prescription records to look at how frequently prescriptions for the different inhalers have been requested.
- Discordance between symptoms and underlying airway inflammation in some types of asthma.⁵

In addition, patients who are anxious about their symptoms may be reluctant to attempt dose reduction, and may be vulnerable to side-effects of high dose inhaled corticosteroid treatment.

Features which have been found to be predictors of adverse outcomes independent of current symptoms, and which are assessable in primary care, include:

- Low lung function (increased risk of exacerbations and accelerated decline in lung function)
- Smoking (increased risk of accelerated decline in lung function, and need for higher corticosteroid doses)
- Elevated peripheral blood eosinophil count (increased risk of exacerbations)
- History of previous severe exacerbations involving hospital admissions especially if intensive care necessary
- Frequent exacerbations requiring emergency health service use.
- Adverse or challenging social or psychological circumstances.
- Chaotic or disorganised health service use.

Other independent predictors of poor clinical outcomes, such as airway hyperresponsiveness and sputum eosinophilia, can be assessed at specialist centres. Referral should be considered for patients in whom there is doubt about the diagnosis, who have persistently poor asthma control or frequent exacerbations, or whose lung function seems inconsistent with their level of symptoms (either much better or much worse).

What is the difference between asthma control and asthma severity?

In the past, there has been considerable

confusion about asthma control and asthma severity. The definitions recommended in 2008 by a Task Force of the European Respiratory Society and American Thoracic Society¹ are:

- Asthma control - the extent to which the manifestations of asthma have been reduced or removed by treatment. As indicated above, there are two components – current level of clinical control, and future risk.
- Asthma severity - the intensity of treatment required to maintain good asthma control.
 - Mild asthma is asthma which is well-controlled with low dose inhaled corticosteroid or with infrequent (twice/week or less) β_2 -agonist alone.
 - Severe asthma is asthma which requires high intensity treatment (high dose inhaled corticosteroid (>1000 g/day beclomethasone dipropionate HFA or >800 g/day budesonide or >500 g/day fluticasone) plus long-acting β_2 -agonist) to maintain good asthma control, or which is uncontrolled despite high intensity treatment.

How often should asthma control and severity be assessed?

Asthma control varies over time, and with external factors such as allergen exposure and medication adherence. Clinical asthma control should be assessed at each visit, based on the previous 1-4 weeks. Particular attention should be paid to documenting the patient's level of asthma control in the medical record before a treatment adjustment (step up or step down) so that subsequent improvement or deterioration can be identified. Patients will often not be aware of change if it has been gradual.

Many of the clinical features of poorly-controlled asthma are similar to the early stages of an asthma exacerbation.⁶ The main distinguishing characteristic is the time factor – an exacerbation represents an acute or subacute change from the patient's usual status. Hence, assessing a patient's usual level of asthma control is an important component of writing an asthma action plan.

The "future risk" component of asthma control should be assessed at least each year (see box 2).

For a patient with newly-diagnosed asthma, it is difficult to predict the amount of treatment which will be required to achieve good asthma control. Six months' treatment is usually required before treatment needs, and hence asthma severity, can be properly assessed. For patients already on treatment, modifiable factors such as poor adherence and poor inhaler technique should be

Box 2: Questions to ask when you are assessing future risk

1. What usually makes your asthma worse?
2. How many times have you used steroid tablets in the last year?
3. Does your asthma ever get worse very quickly?
4. Do you have any exposure to smoke?
5. Have you ever been in an intensive care unit for your asthma?

addressed, before the minimum effective dose of treatment can be established and severity assessed.

What is an acceptable level of asthma control?

Descriptors such as "acceptable" or "optimal" involve subjective judgements, and depend on whose perspective is being considered – the patient's or the clinician's. "Optimal" means "best" or "most favourable" (presumably for the patient), but it is often used by clinicians to mean "total asthma control", i.e. complete absence of symptoms or other clinical manifestations of asthma. Guidelines recommend stepping up treatment if asthma is poorly-controlled, and recommend considering stepping up treatment if asthma is partly-controlled. Most patients will be able to attain well-controlled asthma, but only a minority will achieve total asthma control even with prolonged high dose treatment,⁷ and the majority of the clinical benefit is achieved at low ICS doses.⁸ Hence, it is important to review a patient's asthma control 1-3 months after each treatment change, and, once no further improvement is achieved, to step down treatment to find the minimum effective dose.

However, clinicians should be aware that patients may have a different perspective on the importance of their symptoms, and on factors which determine whether the intended outcome of treatment is favourable or desirable. Patients often perceive the risks of asthma to be minor, and the risks of corticosteroid therapy to be substantial. Such beliefs have been shown to be associated with poor adherence with asthma medications, and patients often fail to raise these concerns or lay beliefs with their doctor through embarrassment, fear of criticism, or a perception that the health professional does not understand the issues important to the patient.⁹

Talking with patients about optimal asthma control

Several large surveys have reported that patients under-estimate the severity of their asthma, or over-estimate their level of control. However, patients may interpret the terms "control" and "severity" quite differently

from clinicians. For example, patients may interpret the question "How well-controlled is your asthma?" as a question about their self-control, the quality of their medical care, or the extent of relief they gain from their reliever medication, rather than about the frequency of their symptoms. A similar disparity between lay usage and medical jargon is seen with the term "shock", which to the lay public usually means emotional distress, but to an emergency physician refers to physical signs of circulatory collapse.

It is important to ensure that patients understand how the clinician will assess "asthma control", and how it will be used in guiding treatment. Many patients have low expectations of what can be achieved with treatment,¹⁰ and it may be helpful to use guidelines descriptions of the aims of treatment (e.g. http://www.pcrs-uk.org/asthmaguide/asthma_guide_aims.php) or the response items in validated questionnaires such as the Asthma Control Test, in order to show patients how their current clinical status compares with what is likely to be achieved with regular treatment. This conversation can be readily incorporated into a discussion about the patient's own needs, concerns and priorities relating to their asthma, and about the patient's perspective of the balance between the goals and risks of treatment. Such discussions, using brief motivational interviewing techniques, can improve adherence and treatment outcomes with only a minimal increase in consultation time.¹¹ Simple encouragement to try concordance with minimal treatment recommendations for one month to see how much it helps may be effective. Concerns about side effects of inhaled corticosteroids need to be elicited and openly discussed.

With current recognition of the importance of asthma self-management, the decision about the optimal outcome for a patient should take into account not only the medical perspective about ideal asthma control, but also the patient's individual perspective on their health beliefs and medication experiences, and their own priorities for the goals of treatment. We need to take the time to understand patients' ideas, concerns and expectations if we are to give them the best chance of optimal asthma control.

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Conflict of interest: HKR is a member of the Science Committee of the Global Initiative for Asthma. She has participated on advisory committees for AstraZeneca, GlaxoSmithKline and Novartis, is participating on a joint data monitoring committee for AstraZeneca, GlaxoSmithKline, Merck and Novartis, has provided consultancy services for GlaxoSmithKline, has spoken about asthma guidelines at symposia funded by AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline and Merck, and has received research funding from AstraZeneca and GlaxoSmithKline **Editor:** Hilary Pinnock, University of Edinburgh

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The RCP3 questions

From April 2012 the Quality and Outcome Framework indicator for an asthma review includes recording of the responses to the RCP 3 questions as part of the assessment of asthma control

IN THE LAST WEEK / MONTH	
"Have you had difficulty sleeping because of your asthma symptoms (including cough)?"	<input type="checkbox"/> <input type="checkbox"/>
"Have you had your usual asthma symptoms during the day (cough, wheeze, chest tightness or breathlessness)?"	<input type="checkbox"/> <input type="checkbox"/>
"Has your asthma interfered with your usual activities (e.g. housework, work, school, etc)?"	<input type="checkbox"/> <input type="checkbox"/>
Date _____ / _____ / _____	

- Applies to all patients with asthma aged 16 and over.
- Only use after diagnosis has been established.