

EDITION 2008



Primary care management of
adults and adolescents
with chronic asthma
and chronic obstructive pulmonary disease
for doctors and pharmacists

DIAGNOSIS

Exclude TB

ASTHMA

Consider if:

- Symptoms started during childhood or early adulthood (usually before the age of 20yrs)
- History of hayfever, eczema and/or allergies
- Family history of asthma or other allergic conditions
- Symptoms are intermittent with periods of normal breathing in between
- Symptoms are usually worse at night or in the early hours of the morning or during an upper respiratory tract infection
- It may be precipitated by seasonal changes, airborne allergens, or pollutants, emotional factors or occupational hazards (consider occupational asthma)
- Symptoms improve or disappear after using inhaler or oral steroids

COPD*

Consider if:

- Symptoms start later in life (usually after the age of 40yrs)
- Symptoms slowly worsen over a long period of time
- Long history of daily or frequent cough and sputum production (usually starts long before the onset of shortness of breath)
- Symptoms are persistent rather than only at night or during the early hours of the morning
- History of heavy smoking (more than 20 cigarettes/day for 15yrs or more), previous tuberculosis, heavy cannabis use or prolonged exposure to the burning of biofuels

OTHER/DIFFERENTIAL DIAGNOSIS

Cardiac Disease

Presents with shortness of breath and/or wheeze due to pulmonary congestion/oedema

- Usually associated with leg swelling and/or orthopnoea
- Can be associated with valvular heart disease, hypertension, ischaemic heart disease and/or diabetes mellitus

Other Respiratory Diseases

A variety of less common diseases, such as tumours, may compress the trachea, larynx or bronchi and cause obstruction with localized wheezing or stridor.

CONFIRM THE DIAGNOSIS

- The medical history (see features above) makes the most important contribution
- A previous diagnosis of asthma or COPD may help, but is not always reliable
- A chest radiograph is usually normal in asthma and COPD, but may be useful to exclude other pathology e.g. TB, carcinoma
- Reversibility of the airway obstruction (see tests below) is helpful when demonstrated and supports the diagnosis of asthma. A lack of reversibility does not exclude asthma. The following tests can be used:
 - Increase in PEF (> 20%) 15-30 minutes following inhalation of 200-400 µg beta agonist (salbutamol) via a spacer
 - Increase in PEF (> 20%) after a 2-week trial of prednisone 40mg daily
 - Decrease in PEF (> 20%) immediately after running for 5 minutes
 - Variability of PEF (> 20%) over a 1-2 week period. A PEF meter is taken home and the PEF recorded morning and night. The daily variation (%) is calculated as $(\text{Maximum PEF} - \text{Minimum PEF}) \div (\text{Maximum PEF} + \text{Minimum PEF}) \times 100$
- In COPD there is little or no reversibility (no symptomatic improvement or <20% increase in PEF) to inhaled beta agonists and/or a 2-week trial of oral corticosteroids

CLASSIFICATION OF SEVERITY IN COPD

	Dyspnoea / additional features	FEV ₁ (% predicted)
Mild	Limits strenuous activity e.g. running, climbing stairs	60-79%
Moderate	Limits activities performed at normal pace e.g. walking	40-59%
Severe	Impairs activities of daily living e.g. washing, dressing Cannot walk more than 200m Repeated hospitalization for exacerbations, right heart failure	<40%

*COPD: Chronic obstructive pulmonary disease.

EXPLANATION AND PLANNING FOR ASTHMA

GOALS OF ASTHMA EDUCATION

It is the responsibility of the facility as a whole to organise comprehensive asthma education on:

- The nature of asthma and its inflammatory/allergic basis
- The different classes of drugs and their purpose in treatment (i.e. as-needed “relievers” and regular “controllers”)
- Advice on preventive measures
- The correct choice and use of inhalers and the opportunity to practice under supervision
- The importance of regular follow-up and when to request earlier review
- How to recognize worsening asthma
- Potential side-effects of drugs

PREVENTATIVE MEASURES

Avoidance of triggers wherever possible helps to minimize asthma severity and reduce exacerbations. Practical measures include:

1. Avoid exposure to personal and second hand tobacco smoke
2. Avoid contact with furry animals
3. Reduce pollen exposure
4. Reduce exposure to burning of biofuels
5. Use appropriate mattress and pillow covers
6. Avoid dust and fume exposure which aggravate or cause asthma, especially in the workplace
7. Avoid food and beverages containing preservative
8. Avoid drugs that aggravate asthma (Beta blockers (including eye drops), Aspirin and NSAIDs)
9. Explore psychosocial and emotional factors

KEY COMPONENTS OF A SELF-MANAGEMENT PLAN

A written self-management plan is useful, particularly in those requiring stabilization or who have had a recent exacerbation. The plan should include:

- Realistic goals of treatment in terms of symptoms relief and/or PEF
- Advice on how to recognize changes in the asthma (via symptoms and/or peak flow rates) and when to make adjustment to treatment according to a predetermined schedule
- Instructions on the class, name, strength, dose and frequency of each of the asthma medications prescribed
- Instruction on when and how to initiate short courses of oral prednisone
- Details on when and how to obtain access to medical care in emergencies
- Arrangements for a Medic-Alert badge for patients with severe asthma, known drug hypersensitivities (like aspirin and penicillin) and brittle asthma

Key messages:

Reliever —

Use only when needed to relieve acute attacks.

Controller —

Use regularly, every day, even if you feel well. They work slowly to control the underlying disease.
Do not use to relieve acute attacks!

MANAGEMENT OF ASTHMA

The aim of asthma management is to obtain complete control of all features of asthma:

- No daytime or night time asthma symptoms (cough, short of breath, tight chest or wheezing)
- No need for reliever medication
- No limitation of daily activities
- No exacerbations
- Normal PEF

TREATMENT OF NEWLY DIAGNOSED PATIENTS

Start most patients at treatment Step 2 when daytime symptoms > 2/week or night-time symptoms > 1/month
In the few patients with symptoms less frequent than this, start at treatment Step 1.

ASSESSMENT OF CONTROL

Determine level of control at each visit according to asthma symptoms during the last 4 weeks

Criteria	Well-controlled All of the criteria	Partly controlled Any one criteria	Uncontrolled
Daytime symptoms	≤twice per week	>twice per week	Three or more features of partly controlled asthma present
Night time symptoms/early morning awakening	none	any	
Limitation of daily activities	none	any	
Need for reliever treatment	≤twice per week	>twice per week	
Exacerbations that required attention of a health care worker	none	>one in the last year	
PEF (% of predicted or personal best)	≥80%	<80%	

MANAGEMENT PLAN

Well-controlled	Partly controlled/Uncontrolled
<ul style="list-style-type: none"> • Continue current medication • Reassess in 3 months • If complete control at next visit, consider stepping down treatment: reduce oral steroids first and inhaled corticosteroids last 	<ul style="list-style-type: none"> • Check inhaler technique (see page 7) • Check adherence and understanding of medication • Consider aggravation by: <ul style="list-style-type: none"> • Exposure to triggers or allergens at home or work (see page 2) • Co-morbid conditions: Gastro-oesophageal reflux disease, rhinitis, sinusitis or cardiac disease • Other medication: Beta blockers, NSAID's, Aspirin • Consider stepping up treatment • Consider need for a short course of oral prednisolone • Review self-management plan (see page 2)

TREATMENT STEPS FOR ASTHMA IN THE PUBLIC SECTOR

Reliever Medication	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
	Inhaled beta-agonist (salbutamol) 2 puffs when needed					
Controller Medication in Primary Care		ICS* 200µg-400µg/day	ICS 800µg/day	ICS 800µg/day plus SR theophylline	ICS 800µg/day plus SR theophylline plus Long-term oral corticosteroids AND Refer to specialist	Refer to specialist as no further treatment options available in primary care
Controller Medication in Specialist Care		ICS 200µg-400µg/day	ICS 800µg/day	ICS 800µg/day plus SR theophylline	ICS >800µg-1200µg/day plus Salmeterol +/- SR theophylline	ICS >800µg-1200µg/day plus Salmeterol plus SR theophylline +/- Long-term oral corticosteroids

TREATMENT STEPS FOR ASTHMA IN THE PRIVATE SECTOR

Reliever Medication	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
	Inhaled beta-agonist (salbutamol) 2 puffs when needed					
Option 1		ICS 200µg-400µg/day (BDP equivalent)	ICS 200µg-400µg/day plus Long-acting beta-2-agonist	ICS >400µg-800µg/day plus Long-acting beta-2-agonist	ICS >800µg-1200µg/day plus Long-acting beta-2-agonist +/- Leukotriene modifiers	ICS >800µg-1200µg/day plus Long-acting beta-2-agonist plus Leukotriene modifiers plus SR theophylline +/- Long-term oral corticosteroids
Option 2			ICS >400µg-800µg/day	ICS >400µg-800µg/day plus SR theophylline	ICS >800µg-1200µg/day plus Long-acting beta-2-agonist +/- SR theophylline	
Option 3			ICS 200µg-400µg/day plus Leukotriene modifiers	ICS >400µg - 800µg/day plus Leukotriene modifiers		

*ICS: Inhaled cortico-steroids.

MANAGEMENT OF COPD

1. Smoking cessation

- Ask each patient about their smoking status and advise each smoker to quit
- Provide behaviour change counselling as described on page 8
- Consider use of nicotine replacement or bupropion (not available in public sector)
- Refer to cessation support group if available and acceptable

2. Improvement of breathlessness

- See the recommended treatment steps for different severity of disease on page 6

3. Improvement of quality of life

- Provide verbal and written information on COPD, smoking cessation and management options
- Offer referral to an exercise programme e.g. physiotherapy (if available)
- Advise regarding optimal nutrition and weight
- Consider long term domiciliary oxygen in patients with severe disease, persistent hypoxaemia (saturation <90% at rest) when stable and who are non-smokers. Refer for specialist assessment only if all 3 criteria are met.

4. Prevention and treatment of exacerbations

- An exacerbation presents as increased breathlessness, often accompanied by wheezing, chest tightness and increased cough and sputum (sputum often changes in volume and colour). Exacerbations are usually precipitated by an infection.
- Exacerbations should be distinguished from other causes such as pneumonia, pneumothorax, congestive cardiac failure, arrhythmia and pulmonary embolism.
- Prevention involves annual vaccination for influenza and 5-yearly pneumococcal vaccination
- Outpatient treatment involves 4-6 hourly use of inhaled beta-agonists and/or anticholinergics via nebuliser or MDI/spacer, a 7-day course of 40mg of oral prednisone and antibiotic therapy such as Amoxycillin 500mg tds or Doxycycline 100mg BD for 10-days. Hospitalisation may be required if there is no improvement on treatment.

5. Treatment of complications

- Right heart failure (oedema, raised JVP, ascites, hepatomegaly). Treat any precipitating causes (acute respiratory infection, worsening airflow obstruction) and reduce oedema with a diuretic such as furosemide 40mg. Avoid over-diuresis, which may cause hypotension. Advise salt and water restriction

TREATMENT STEPS FOR COPD IN THE PUBLIC SECTOR

	Step 1	Step 2	Step 3	Step 4
Initiation of treatment according to severity	Mild	Moderate	Severe	
Medication in primary care	Inhaled Salbutamol 2 puffs 6-hrly	Inhaled Salbutamol 2 puffs 6-hrly plus Inhaled Ipratropium bromide 40-80 µg 6-hrly	Inhaled Salbutamol 2 puffs 6-hrly plus Inhaled Ipratropium bromide 40-80 µg 6-hrly plus SR theophylline	Refer to specialist if frequent exacerbations, rapid deterioration or for a trial of steroids

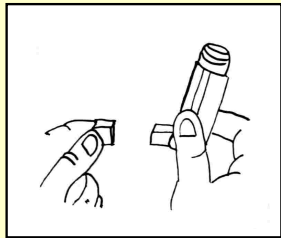
TREATMENT STEPS FOR COPD IN THE PRIVATE SECTOR

	Step 1	Step 2	Step 3	Step 4
Initiation of treatment according to severity	Mild	Moderate	Severe	
Option 1	Inhaled short- OR long- acting beta-agonist regularly	Inhaled short- OR long- acting beta- agonist regularly plus Inhaled short- OR long- acting anticholinergic regularly	Inhaled short- OR long- acting beta-agonist regularly plus Inhaled short- OR long- acting anticholinergic regularly plus SR theophylline	Inhaled short- OR long- acting beta- agonist regularly plus Inhaled short- OR long- acting anticholinergic regularly plus SR theophylline plus ICS 800 µg/day in selected patients*
Option 2	Inhaled short- OR long- acting anticholinergic regularly	Inhaled short- OR long- acting beta- agonist OR anticholinergic regularly plus SR theophylline		

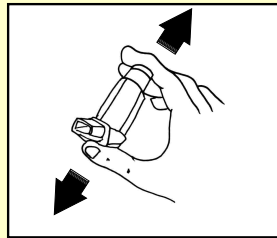
* frequent exacerbations (>2/year) or rapid deterioration or where a 2-week trial of responsiveness to oral corticosteroids and/or bronchodilator shows >15% or 200ml improvement in FEV₁

INHALER/SPACER TECHNIQUE

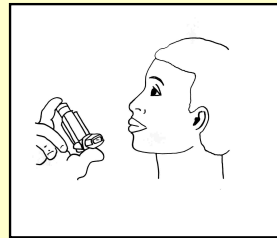
ASSESSMENT OF GOOD INHALER TECHNIQUE



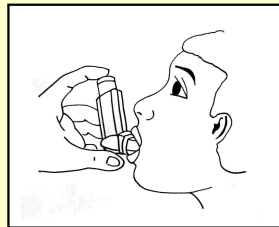
1. Remove mouthpiece cap



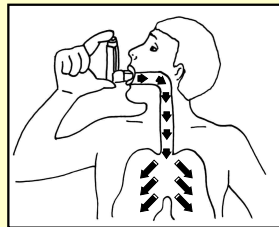
2. Shake



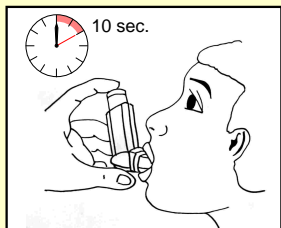
3. Hold pump upright



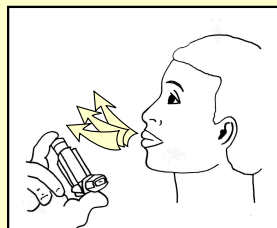
4. Form a seal with your lips around the mouthpiece



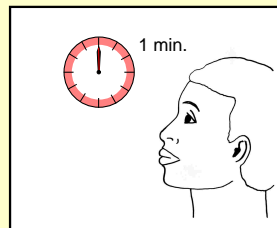
5. Press the inhaler once at the beginning of the breath.*
Breathe in deeply and slowly.



6. Hold breath for 10 seconds or as long as possible



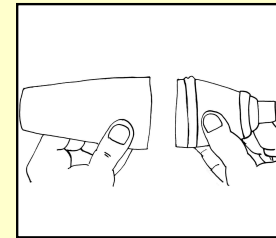
7. Remove inhaler from mouth and breathe out slowly



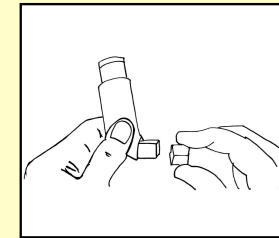
8. Wait for 1 minute and then repeat steps 2-7 for second puff

* Step 5 is the most important and the use of a spacer should always be considered if the patient cannot do this.

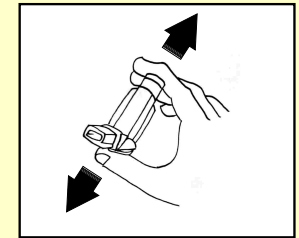
ASSESSMENT OF GOOD SPACER TECHNIQUE



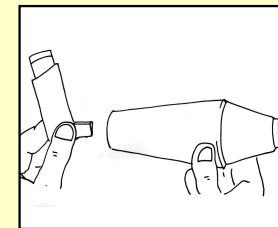
1. Assemble the spacer



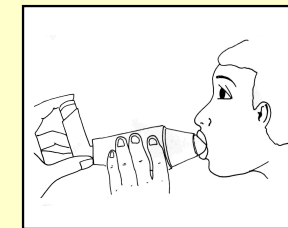
2. Remove inhaler mouthpiece cap



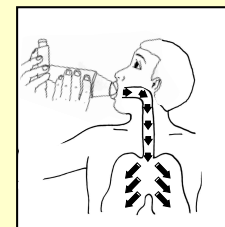
3. Shake the inhaler



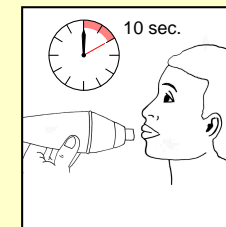
4. Place inhaler firmly into the spacer



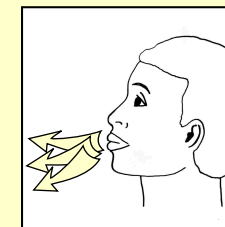
5. Remove the spacer's dust cap and form a seal with your lip around the mouthpiece. Press the inhaler with 1 puff into the spacer.



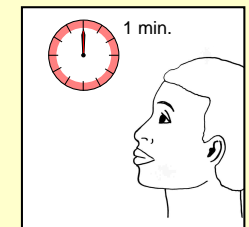
6. Breathe in deeply through the mouth



7. Remove the spacer and hold breath for 10 seconds or as long as possible



8. Breathe out slowly



9. Wait for 1 minute and then repeat steps 3-8 for second puff

RINSE MOUTH AFTER INHALATION OF CORTICOSTEROIDS

COUNSELLING TO SUPPORT ADHERENCE AND/OR A CHANGE IN LIFESTYLE

- These tips are designed for a patient who needs help to make a change in lifestyle or to adhere to a treatment plan
- The term 'adherence' implies that the patient and health worker negotiate a plan for the patient's health care. This is preferred to 'compliance', which suggests the patient obeying the instructions of the health worker.
- On average worldwide only 50% of people adhere to their prescribed chronic medication
- Reasons for non-adherence include side-effects, inconvenient frequency of dosage, poor health worker-patient relationship, alcohol or drug misuse, mental problems, or that the client has been inadequately informed about their illness, the need for treatment, or on how to take medication.

Establish Rapport

- Be honest, open and warm as this establishes trust
- Be affirming and supportive— acknowledge any achievements or abilities – as this builds confidence and self-esteem
- Be collaborative and work with the patient as someone who is an expert in their own life
- Attempt to listen to and understand the patient's perspective
- Avoid giving orders to, arguing with, judging, criticizing or blaming the patient
- Try to draw out the reasons for change from the patient rather than trying to convince them of why they must change
- Be respectful and remember that it is the patient's right to make decisions about their own health

Set the agenda

- Check the patient's willingness to discuss the topic
- If there are multiple topics discuss which one the patient is most interested in or ready to discuss
- Ask for other issues that the patient would like to discuss

Understand the patient's perspective

- Explore the patient's reasons for non-adherence or a particular behaviour – listen to the pros and cons from their viewpoint
- Listen, understand, reflect and summarise how they see things
- Ask for additional reasons

Exchange information

- Ask if the patient is interested in information – offer information that seems relevant to the individual patient
- If yes, provide the desired information neutrally, without interpretations or telling them what to do
- Invite the patient to interpret the information or make sense of it for themselves
- If necessary, exchange further information

Explore and build motivation

- How ready are you to change? – e.g. use the medications in line with the prescriptions, change your smoking – motivation includes importance (is the change necessary) and confidence (how to change or concerns about the medication)
- The patient can rate their readiness on a scale from 0 (not at all ready) to 10 (ready) or place a mark on a line with "not ready" and "ready" at each end or just explain in their own words how ready they are to change.
 - Why did you rate yourself an (x) and not (lower)?
 - What would help your (x) to become a (higher)?

Brainstorm and contract

- If the patient is not ready or willing to change do not try and force them
- One improvement in adherence or change in behaviour that is chosen by the patient is better than multiple changes suggested by the health worker.
- Brainstorm about potential solutions / specific changes – both patient and health worker participate
- Help the patient to select the solutions / changes that seem most useful and achievable
- Together set a reasonable target for the next visit (e.g. 90% of pills taken, half the number of cigarettes)
- Organise a follow-up visit

PEAK EXPIRATORY FLOW IN ADOLESCENTS AND ADULTS

Child and Adolescent Female

Height (cm)	107	117	123	137	145	152	162	172	182
Age 12	190	220	250	280	302	324	354	384	414
14	209	239	269	298	321	343	373	403	432
16	228	258	288	317	340	362	392	421	451
18	247	277	306	336	358	381	411	440	470

Adult Female

Height (cm)	147	152	157	163	168	173	178
Age 20	357	372	387	402	417	432	446
25	350	365	379	394	407	424	439
30	342	357	372	387	402	417	431
35	335	350	364	379	394	409	424
40	327	342	357	372	387	402	416
45	320	335	349	364	379	394	409
50	312	327	342	357	372	387	401
55	305	320	334	349	364	379	394
60	297	312	327	342	357	372	386
65	290	305	319	334	349	364	379
70	282	297	312	327	342	357	371
75	275	290	304	319	334	349	364
80	267	282	297	312	327	342	356

Child and Adolescent Male

Height (cm)	112	122	132	142	152	162	172	182	192
Age 12	159	206	254	301	349	396	444	491	539
14	178	226	274	321	369	416	464	511	559
16	198	246	293	341	389	436	484	531	579
18	218	266	313	361	408	456	503	551	599
20	238	286	333	381	428	476	523	571	618

Adult Male

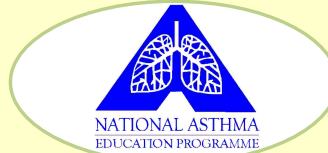
Height (cm)	160	165	170	175	180	185	190	195
Age 25	492	520	549	578	606	635	664	692
30	481	510	538	567	596	624	653	682
35	471	499	528	557	585	614	643	671
40	460	489	517	546	575	603	632	661
45	450	478	507	536	564	593	622	650
50	439	468	496	525	554	582	611	640
55	429	457	486	515	543	572	601	629
60	418	447	475	504	533	561	590	619
65	408	436	466	494	522	551	580	608
70	397	426	454	483	512	540	569	598
75	387	415	444	473	501	530	559	587
80	376	405	433	465	491	519	548	577

ACKNOWLEDGEMENTS AND FUNDERS

Acknowledgement to the following contributors:

Bob Mash	Angeni Bheekie
Elvis Irusen	Hilary Rhode
Gillian Ainslie	Ruth Cornick
Michael Pather	PALSA Plus
Pat Mayers	Louis Jenkins
Eric Bateman	

Medical Officers in the George Region



This guideline is based on the SATS 2007 Guidelines for the management of chronic asthma in adolescents and adults. SA Fam Pract 2007; 49(5): 19-31 www.safpj.co.za

Guideline for the Management of Chronic Obstructive Pulmonary Disease (COPD): 2004 Revision. SAMJ 2004; 94(7): 559-575

Websites:

Further resource materials can be downloaded from the Asthma Guidelines Implementation Project at www.pulmonology.co.za
National Asthma Education Programme – www.asthma.co.za
Allergy Society of South Africa – www.allergsa.org

Typesetting by idea (studio@ideacape.com)

ADDITIONAL DONATIONS



ASTRAZENECA



CIPLA



GLAXOSMITHKLINE



MERCK SHARP & DOHME

To obtain these materials, please contact:

National Asthma Education Programme (NAEP)

P.O. Box 72128

Parkview

2122

Tel: 011 643 2755

Fax: 088 011 678 3069

Email: naepr@netactive.co.za

Web: www.asthma.co.za