Bwrdd Iechyd Addysgu Powys
Powys Teaching Health Board

Bronllys Hospital, Bronllys, Brecon, Powys, LD3 0LU

This Patient Group Direction (PGD) must only be used by registered health professionals who have been named and authorised by their organisation to practice under it. The most recent and in date final signed version of the PGD should be used. Health professionals should always access the PGD via the PTHB internet to ensure that they are always working to the most up to date version

Patient Group Direction

for the administration of

Ipratropium bromide 250 micrograms in 1 ml or **Ipratropium bromide 500 micrograms in 2 ml nebuliser solution**

for

emergency treatment of acute exacerbations of asthma in patients from 2 years old

or

acute exacerbation of respiratory symptoms in adults

by

registered healthcare professionals

in Powys Teaching Health Board

Version number: PGD 0167A

Bwrdd Iechyd Addysgu Powys yw enw gweithredol Bwrdd Iechyd Lleol Addysgu Powys

Powys Teaching Health Board is the operational name of Powys Teaching Health Board

Reference Number: PGD0167 A
Valid from: 01/04/2024
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Expiry date: 31/03/2027

Change history

Version number	Change details	Date
PGD0167	Initial version	01/04/2021
PGD 0167 A	Review in line with references – minor changes to format to promote consistency with other PTHB PGDs	01/04/2024

PGD authorisation

Name	Job title and organisation	Signature	Date
Senior Doctor Dr Kate Wright	Lead Doctor for PTHB	DocuSigned by: Kate Wright 1F267952823F473...	4/1/2024
Chief Pharmacist Jacqui Seaton	Chief Pharmacist for PTHB	DocuSigned by: Jacqui Seaton 71E8089DE3634C4...	3/19/2024
Clinical Governance Lead Amanda Edwards	Clinical Governance Lead for PTHB- Assistant Director for Innovation and Improvement	DocuSigned by: Amanda Edwards 74A4E51A42E9473...	4/2/2024
Senior Representative of Professional Group using the PGD Claire Roche	Executive Director of Nursing and Midwifery for PTHB	DocuSigned by: Claire Roche FC9C4C63FC374A7...	3/25/2024

Appendix A provides a staff accreditation sheet. Individual practitioners must be authorised by name to work to this PGD.

Those using this PGD must ensure that it is organisationally authorised and signed by an appropriate authorising person, relating to the class of person by whom the product is to be supplied, in accordance with Human Medicines Regulations 2012 (HMR2012)[1]. **The PGD is not legal or valid without signed authorisation in accordance with** HMR2012 Schedule 16 Part 2**.**

The final authorised copy of this PGD should be kept by PTHB for 25 years after the PGD expires. Provider organisations adopting authorised versions of this PGD should also retain copies for 25 years after the PGD expires.

[1] This includes any relevant amendments to legislation.

PGD adoption by the provider

Name	Job title and organisation	Signature	Date

Training and competency of registered health professionals

	Requirements of registered health professionals working under the PGD
Qualifications and professional registration	Registered professional with one of the following bodies: • nurses and midwives currently registered with the Nursing and Midwifery Council (NMC) • paramedics and physiotherapists currently registered with the Health and Care Professions Council (HCPC) Practitioners must also fulfil the additional requirements listed below. Check Appendix A – Staff Accredited to use this Patient Group Direction to confirm whether all the registered practitioners listed above have organisational authorisation to work under this PGD.

Initial training	• The administration of ipratropium bromide 250 microgram/1 ml and 500 microgram/2 ml nebuliser solution and knowledge of its uses, contraindications and adverse effects Additionally, practitioners: • must be authorised by name as an approved practitioner under the current terms of this PGD before working to it • must have undertaken appropriate training for working under PGDs for administration of medicines. Recommended training eLfH PGD elearning programme. PTHB staff to access via ESR. • must be competent in the use of PGDs (see NICE Competency framework for health professionals using patient group directions). • must be competent in the administration of adrenaline and have up to date Intermediate Life Support (ILS) skills. • must have completed locally required training (including updates) in safeguarding children and vulnerable adults or a minimum of level 2 safeguarding or the equivalent. • must have received training and be competent in the recognition, management of, and reporting of recognised adverse reactions, including anaphylaxis. • must be familiar with ipratropium bromide nebuliser solution and alert to changes in the BNF (https://bnf.nice.org.uk) and Summary of Product Characteristics. • must have undertaken training appropriate to this PGD as required by local policy. • must have access to the Patient Group Direction and associated online resources. **THE PRACTITIONER MUST BE AUTHORISED BY NAME, UNDER THE CURRENT VERSION OF THIS PGD BEFORE WORKING ACCORDING TO IT.**

Competency assessment	• Evidence of ongoing PGD training to be submitted to Line Manager annually. • Practitioners must be competent, recognise their own limitations and personal accountability and act accordingly. • Staff operating under this PGD are encouraged to review their competency using the NICE Competency Framework for health professionals using patient group directions. • Individuals operating under this PGD must be assessed as competent (see Appendix A) or complete a self-declaration of competency in their Personal Appraisal and Development Review (PADR). • Evidence of training in ILS, anaphylaxis and safeguarding.
Ongoing training and competency	• Individuals operating under this PGD are personally responsible for ensuring they remain up to date with the use of all medicines and guidance included in the PGD - if any training needs are identified these should be addressed and further training provided as required. • Updating at least every 2 years on the use of PGDs and ipratropium bromide nebuliser solution. • Practitioners must ensure they are up to date with relevant issues and clinical skills and management of anaphylaxis, ILS, with evidence of appropriate Continued Professional Development (CPD). • Compliance with all mandatory NHS training including safeguarding at the level relevant to the role (if relevant). • Evidence of ongoing / refresher training to be submitted to line manager annually. **It is the responsibility of the healthcare professional to maintain their own competency to practice within this PGD. The decision to administer any medication rests with the individual registered healthcare professional who must abide by the PGD and any associated organisational policies.**

Clinical condition

Clinical condition or situation to which this PGD applies	• Emergency treatment of acute exacerbation of asthma in patients 2 years of age and over, or acute exacerbation of respiratory symptoms in adults (symptoms suggesting acute airways obstruction in adults with known COPD) whilst awaiting medical assistance • May be administered in conjunction with inhaled beta$_2$ agonists for the treatment of reversible airways obstruction as in acute asthma. Refer to PGDs for salbutamol inhaler and salbutamol nebules. **NB Patients should be managed in line with NICE/ MIU guidelines.** **It is the responsibility of the administering healthcare professional to ensure that the patient is within the inclusion criteria, and that there are no reasons for exclusion before proceeding with the treatment. If there is any reason for concern, seek medical advice.**
Inclusion Criteria	• Patient with acute asthma: ○ aged 2 years or over ○ who has had initial poor response to administration of inhaled salbutamol ○ with a previous diagnosis of asthma (Refer to Appendix B (Adults) and Appendix C (Children) for a full list of symptoms and severity of exacerbation of asthma) **OR** acute exacerbation of respiratory symptoms (severe or life-threatening asthma) ○ **IMPORTANT: patients with severe or life-threatening asthma attacks may not appear distressed and may not display all of the symptoms- the presence of ANY symptom should alert the practitioner to act. Regard each emergency asthma consultation as being for severe acute asthma until shown otherwise.** OR Adult patient with acute exacerbation of respiratory symptoms (symptoms suggesting acute reversible airways obstruction in adults with a known diagnosis of COPD), presenting with acute onset of a sustained worsening of symptoms beyond the patients' usual day-to-day variation, commonly reported symptoms include:

	○ Worsening breathlessness ○ Cough ○ Increased sputum production ○ Change in sputum colour ○ Wheeze ○ Fever without an obvious source ○ Upper respiratory tract infection in the past 5 days ○ Increased respiratory rate or heart rate increase 20% above baseline • Medical and drug history taken, no reason for exclusion • Informed consent from the individual or a person legally able to act on their behalf, must be obtained for administration and recorded appropriately. The patient information leaflet should be available to inform consent. Where a person lacks capacity, in accordance with the Mental Capacity Act 2005, a decision to treat may be made in the individual's best interests. NB Refer to PTHB Consent to Treatment and Examination Policy. The individual should be informed they are being treated using a PGD. **Consent to treatment** - if the patient is unable to give consent due to a life-threatening situation, or if parent/guardian/carer is not present, ipratropium bromide should be administered where treatment is judged to be in the best interests of the patient. In case of any doubt, contact medical team or emergency services.
Exclusion criteria (Exclusion under this PGD does not necessarily mean the medication is contraindicated, but it would be outside its remit and another form of authorisation will be required)	• Under 2 years of age • Known allergy or hypersensitivity to ipratropium bromide, atropine (or its derivatives) or any of the excipients listed in the SPC -see www.medicines.org.uk • Refusal of treatment/no valid consent, if able to give consent. Refer to section 'action to be taken if the individual or carer declines treatment' • Contraindications listed in SPC and BNF • Conditions outside of the clinical situations criteria such as breathlessness due to physical obstruction caused by a foreign body, heart failure or pneumothorax Refer to section 'action to be taken if the individual is excluded'

Cautions /reasons for seeking further advice from a prescriber	NB. Bronchodilation should not be the only or main treatment for patients with severe, unstable or life-threatening asthma. Support should always be requested. Consideration should also be given to the need for hospital admission for adults with an acute exacerbation of COPD. • Pregnancy or breastfeeding. • In patients predisposed to, or with narrow-angle glaucoma. • Ocular complications (mydriasis, increased intra-ocular pressure, narrow-angle glaucoma, eye pain) have been reported when nebulised ipratropium bromide, either alone or in combination with an adrenergic beta$_2$ agonist, has come into contact with the eyes during therapy. Care should be taken to protect the patient's eyes from nebulised drug(s). Patients should be warned not to let the solution or mist enter the eye. Aerosolised ipratropium bromide in contact with eyes may cause eye pain, discomfort, blurred vision, visual halos or coloured images in association with red eyes from conjunctival congestion and corneal oedema- these may be signs of acute narrow-angle glaucoma, and specialist advice should be sought immediately. • Pre-existing urinary outflow tract obstruction, e.g.Prostatic hyperplasia, or bladder outflow obstruction. • Paradoxical bronchospasm- as with other inhalation therapy, inhalation induced bronchoconstriction may occur with an immediate increase in wheezing after dosing. This should be treated straight away by discontinuing ipratropium, starting a fast-acting inhaled bronchodilator, assessing the patient and, if necessary, referring to a prescriber for an alternative treatment. The patient should be advised to report any reduced response so medical advice can be sought. • Cystic fibrosis due to GI mobility disturbances. • Check for any other medications that the patient is taking, including topical or inhaled products, food supplements and herbal or homeopathic products- also see interactions section. • Refer to BNF/SPC for complete information. • Discuss with appropriate medical/independent non-medical prescriber if the individual has multiple allergies, or any medical condition or medication of which the healthcare professional is unsure or uncertain. Under Section 128 and 130 of the Social Services and Wellbeing (Wales) Act 2014, staff have a duty to inform the Local Authority if they have reasonable cause to suspect that an adult or child is at risk. Any vulnerable adult or child

	protection concerns should be referred to Safeguarding and PTHB safeguarding policies followed. Consider discussing with GP. Any safeguarding concerns need to be directed to Safeguarding Hub: • To generic email address: PowysTHB.Safeguarding@wales.nhs.uk And • Central Safeguarding number: 01686 252806 • Out of hours: 0345 0544847 Advice can also be sought from local Safeguarding leads

Arrangements for referral for medical advice	**Seek medical or paramedic support for all patients** • Bronchodilation should not be the only or main treatment for patients with severe, unstable or life-threatening asthma. Medical and urgent paramedic support should always be requested (dial 999). Document actions taken. • Children with severe or life-threatening asthma should be transferred to hospital urgently. • Consider the need for immediate transfer to hospital, in line with NICE CKS: Acute exacerbation of asthma, NICE CKS: Acute exacerbation of COPD and BTS/ SIGN 158 British Guideline on the Management of Asthma guidelines. • If attack resolved, inform the individual's GP, to enable a review assessment to be held within 2 working days.
Action to be taken if individual excluded	• Transfer to emergency services/medical support -call ambulance immediately (dial 999). Use a pulse oximeter to monitor blood oxygen levels; if appropriate administer oxygen to maintain SpO2 in target range. Where appropriate, encourage patient to use their reliever medication through a spacing device. • Consider and refer to PGD 0046C (salbutamol nebuliser) • Explain reason to patient/carer and document in the consultation record.
Action to be taken if the individual or carer declines treatment	• Explain consequences of refusing treatment, discuss alternative sources of treatment. • Document refusal and advice given in patient's record/Discharge Against Advice Form • Refer to a medical practitioner without delay/call 999 as appropriate • Inform or refer to GP/follow local procedures as appropriate. Where appropriate, complete the letter on the WPAS system and send to the GP.
Details of the Medicine	
Name, form and strength of medicine	Ipratropium bromide 250 microgram/1 ml nebuliser solution Ipratropium bromide 500 microgram/2 ml nebuliser solution
Legal category	Prescription-only medicine (POM)

Off-label use	Manufacturers state that ipratropium bromide should be administered no more frequently than 6 hourly in children aged 2-4 years. The BTS/ SIGN 158 British Guideline on the Management of Asthma recommends that a repeat dose of ipratropium bromide nebules may be given after 20-30 minutes for acute asthma in children. BNFC states that when 250 microgram of nebulised ipratropium bromide is given to children 2-4 years of age for the management of severe or life-threatening asthma, the dose may be repeated after 20-30 minutes.
Route/method of administration	• Preferably administer via a mouthpiece. If this is not available, a tightly fitting nebuliser mask may be used to avoid solution or mist entering the eye. • When used for treatment of asthma, the nebuliser should be driven by high flow oxygen (starting with 6 L/min). • Do not mix the ipratropium bromide solution with any other nebuliser solutions. • Do not use ipratropium nebule if the solution is cloudy. • As the product contains no preservative, a fresh vial should be used for each dose and the vial should be opened immediately before administration. Any solution left in the vial should be discarded. • Nebules must only be used by inhalation with a suitable nebulising device, to be breathed in through the mouth, and must not be injected or swallowed. • Nebulisers should be used in a well-ventilated room as it is usual for some nebulised drug to be released into the local environment.
Dose and frequency	• Children aged 2 to 5 years: 125 - 250 microgram • Children aged 6 to 12 years: 250 microgram • Children over 12 years and adults: 250 - 500 microgram Frequency: One dose. If medical assistance is delayed and it is necessary for the treatment of severe asthma, a second dose may be administered after 20-30 minutes. The effects of treatment should last for 4 to 6 hours.
Quantity to be administered	• Children 2 to 5 years of age: half to one vial of 250 microgram in 1ml (0.5-1ml) • Children 6 to 12 years of age: one vial of 250 microgram in 1ml • Children over 12 years and adults: one vial of 250 microgram in 1ml or one vial of 500 microgram in 2ml

Maximum or minimum treatment period	Duration of treatment: A second dose may be administered after 20-30 minutes if medical assistance is delayed and it is necessary for the treatment of severe asthma. Maximum total of **two** doses only.
Storage	• Do not store above 25°C • Do not refrigerate or freeze • Store in the original package/carton to protect from light • The ampoule should be opened immediately before use and any solution remaining after use should be discarded in accordance with local requirements
Drug interactions	All concomitant medications should be checked for interactions. • Administration with beta-adrenergic drugs and xanthine preparations may produce an additive bronchodilatory effect • Both clozapine and ipratropium can cause constipation; concurrent use might increase the risk of developing intestinal obstruction- manufacturer advises caution This list is not exhaustive -a detailed list of drug interactions is available in the BNF https://bnf.nice.org.uk and SPC http://www.medicines.org.uk Refer to a prescriber if any concern of a clinically significant drug interaction.
Identification and management of adverse effects	The following possible adverse effects are commonly reported: • Non-respiratory: headache, nausea (with or without vomiting), dryness of the mouth, gastro-intestinal motility disorder, dizziness • Respiratory: cough, throat irritation This list is not exhaustive- a detailed list of adverse reactions is available in the SPC, which is available from the electronic Medicines Compendium website: www.medicines.org.uk and BNF https://bnf.nice.org.uk. Hypersensitivity reactions are uncommon. Immediate hypersensitivity reactions have been demonstrated by cases of urticaria, angioedema, rash, bronchospasm, oropharyngeal oedema and anaphylaxis.In the case of an acute anaphylactic reaction occurring, adequate treatment provision must be available for immediate use:

	Anaphylaxis and resuscitation equipment including adrenaline (1 in 1000) injection and a working telephone must be available. In case of anaphylaxis:- • Refer to adrenaline PGD 0017 and anaphylaxis policy • Request medical assistance urgently. If the GP is not immediately available, dial 999 to transfer to A&E • Ensure reaction is fully documented in patient notes • Ensure all patient records are marked **ALLERGIC TO IPRATROPIUM BROMIDE** • The patient may be advised to wear a Medic Alert or similar device to alert other healthcare providers • Healthcare professionals and patients/carers are encouraged to report suspected adverse reactions to the Medicines and Healthcare products Regulatory Agency (MHRA) using the Yellow Card reporting scheme on: http://yellowcard.mhra.gov.uk or search for MHRA Yellow Card in the Google Play or Apple App Store. For established medicines, serious adverse events in adults or all suspected adverse reactions in children that may be attributable to the medication should be reported. Guidance on the yellow card system is available at the back of the BNF, or using the above link. • Record all adverse drug reactions (ADRs) in the patient's medical record and the individual's GP should be informed. • All significant adverse drug reactions should be reported via the Once for Wales Reporting System. • Report any suspected adverse reactions to a doctor.
Records to be kept	Record consultation details as required by local procedures. In addition, record: • Relevant past and present medical and drug history taken, including any allergies and previous adverse events • Name of the patient, address, date of birth and GP with whom the patient is registered • Any reasons for exclusion or referral, including actions taken and any referral arrangements made. • Any advice received from medical cover and advice given to patient/carer, including advice given if excluded or declines treatment • Advice given about the medication including side effects, benefits, and what to do if any concerns • That valid informed patient consent to treatment was obtained (if applicable). Record name of representative who gave consent if appropriate.

	• That the drug is being administered in accordance with a PGD- record PGD number and version. • Date and time of administration. • Name, form, strength and dose of drug administered. • Route of administration • Expiry date(s) • Details of any adverse reactions and actions taken. The record must include the printed name and signature (or a password controlled e-records) of the healthcare professional responsible for administration. The record must be kept securely for a defined period in line with local policy. All records should be clear, legible and contemporaneous. A record of all individuals receiving treatment under this PGD should be kept for audit purposes in accordance with local policy.

Patient information

Written and verbal information to be given to patient or carer	• Explain course of action. • Supply patient information leaflet and draw patient/ representative's attention to this information. • Explain mode of action, risks and benefits of the medicine, possible side effects and their management. • The patient should be advised to seek medical advice should a reduced response become apparent. • Advise the patient to protect eyes during administration - the solution or mist must not enter the eyes. • If appropriate, give advice on driving and performance of skilled tasks- if patient experiences dizziness or vision disorders, they should not drive or operate machinery. • Give appropriate advice if medication is used off-label.
Follow-up advice to be given to patient or carer	• Seek medical or paramedic support for all patients • All children should be referred for follow-up with GP or respiratory team • Adults with moderate exacerbation and poor response to ipratropium bromide should be referred to emergency services

	• Arrange admission to hospital for all patients with features of a life-threatening asthma exacerbation, those with any features of a severe asthma attack persisting after initial bronchodilator treatment, or people with a moderate asthma exacerbation with worsening symptoms despite initial bronchodilator treatment and/or who have had a previous near-fatal asthma attack, or those who require a lower threshold for admission.
	• Advise patient/representative to:
	  ○ contact emergency services if relapse occurs in 3-4 hours (this will usually require hospitalisation)
	  ○ seek medical advice immediately if they have any unexpected reaction or other cause for concern. Contact GP via surgery or emergency on-call service
	• If appropriate, advise patient to monitor peak flow readings with peak flow meter

Key references

- British National Formulary (BNF) – online: https://bnf.nice.org.uk, accessed 03/01/2024
- British National Formulary for Children online: https://bnfc.nice.org.uk/ accessed 03/01/2024
- Ipratropium bromide 250 microgram microgram/1 ml and 500 microgram/2ml Nebuliser Solution, Accord UK
    - Summary Product Characteristic, last updated 15/04/2021
    - PIL, last updated April 2021
- Atrovent 250 UDVs - single dose unit contains 0.025 % w/v ipratropium bromide i.e. 250 micrograms in 1 ml and 500 micrograms in 2 ml, Boehringer Ingelheim Limited UK
    - Summary Product Characteristic, last updated 22/03/2021
    - PIL, last updated August 2020
- Ipratropium Bromide 250 microgram/1ml Steri-neb and 500 microgram/2ml Steri-neb, Norton Healthcare Limited T/A IVAX Pharmaceuticals UK
    - Summary Product Characteristic, last updated 11/01/2023
    - PIL, last updated June 2022
- CKS: Scenario: acute exacerbation of asthma. Last revised October 2023
- CKS: Scenario: Acute exacerbation of chronic obstructive pulmonary disease. Last revised September 2023.
- BTS/ SIGN 158 British Guideline on the Management of Asthma. Updated July 2019
- NICE guideline [NG115]: Chronic obstructive pulmonary disease in over 16s: diagnosis and management Published date: December 2018 Last updated: July 2019
- NICE QS25: Quality standard for asthma. Last updated 2018
- All Wales paediatric asthma management and prescribing guideline. AWMSG. June 2023
- All Wales Guideline for the Acute management of asthma and wheeze in children aged > 2 years. Accessed 21/11/23. Respiratory Health Implementation Group, Paediatric Respiratory Medicine, UHW, Cardiff
- NICE guideline [NG9]: Bronchiolitis in children: diagnosis and management Published date: June 2015
- NICE Medicines practice guideline "Patient Group Directions" https://www.nice.org.uk/guidance/mpg2

Appendix A – Staff accredited to use this Patient Group Direction

Authorising Manager: I confirm that the practitioners named below have declared themselves suitably trained and competent to work under this PGD. I give authorisation on behalf of Powys Teaching Health Board or a Powys GP Practice for the named healthcare professionals below who have signed the PGD to work under it. *The authorising manager may wish to use the competency checklist (below).*

Practitioner: By signing this PGD you are indicating that you agree to its contents and that you will work within it. PGDs do not remove inherent professional obligations or accountability. It is the responsibility of each professional to practise only within the bounds of their own competence and professional code of conduct.

I confirm that I have read and understood the content of this Patient Group Direction and that I am willing and competent to work to it within my professional code of conduct.

Printed name of registered health professional	Signature of registered health professional	Printed name of senior representative authorising health professional	Signature of senior representative authorising health professional	Date

The authorising manager should retain a copy of the list and a copy must be sent to the Medicines Management Team, PTHB, Bronllys Hospital, Powys LD3 0LU for audit purposes. This list should be kept by PTHB, or the provider organisation adopting this PGD, for 25 years after the PGD expires.

The healthcare professional should retain a copy of the document after signing.

Competency check list for manager or senior team lead to use as part of the authorising process for health professionals to work to a Patient Group Direction (PGD). Review of authorisation will take place on each PGD update and at the individual's annual PADR.

Name: **Role:**		Sign / Initial	Further training identified (Y/N) Specify in "comments"	Comments
1	The PGD sign off is for the following PGD:(document the exact title and PGD number) _____			
2	We have discussed the expiry of the PGD and are using a version accessed electronically			
3	The member of staff has the appropriate qualifications and professional registration as outlined in the PGD			
4	The Patient Group Direction has been read in full by the staff member			
5	The identified training has been completed as specified in the PGD and is in date			
6	We have discussed some examples of inclusion criteria and exclusion criteria			
7	The staff member is confident in the administration method and doses			

Staff member print & sign name		Date
Manager or senior team lead to print & sign name		Date

Please send a copy of this completed form to individual's line manager, to the staff member, and to medicines management department (info.medicinesmanagement.powys@wales.nhs.uk), in conjunction with the PGD Appendix A authorisation sheet. A copy of this form should also be kept by service lead in the training file.

Appendix B

Management of acute asthma in adults in general practice (Sign 158)

Annex 3

Management of acute asthma in adults in general practice

Many deaths from asthma are preventable. Delay can be fatal. Factors leading to poor outcome include:

- Clinical staff failing to assess severity by objective measurement
- Patients or relatives failing to appreciate severity
- Under use of corticosteroids

Regard each emergency asthma consultation as for acute severe asthma until shown otherwise.

Assess and record:

- Peak expiratory flow (PEF)
- Symptoms and response to self treatment
- Heart and respiratory rates
- Oxygen saturation (by pulse oximetry)

Caution: *Patients with severe or life-threatening attacks may not be distressed and may not have all the abnormalities listed below. The presence of any should alert the doctor.*

	Moderate asthma	Acute severe asthma	Life-threatening asthma
INITIAL ASSESSMENT	PEF>50–75% best or predicted	PEF 33–50% best or predicted	PEF<33% best or predicted
FURTHER ASSESSMENT	• SpO_2 ≥92% • Speech normal • Respiration <25 breaths/min • Pulse <110 beats/min	• SpO_2 ≥92% • Can't complete sentences • Respiration ≥25 breaths/min • Pulse ≥110 beats/min	• SpO_2 <92% • Silent chest, cyanosis or poor respiratory effort • Arrhythmia or hypotension • Exhaustion, altered consciousness
MANAGEMENT	Treat at home or in surgery and ASSESS RESPONSE TO TREATMENT	Consider admission	Arrange immediate ADMISSION
TREATMENT	• β_2 bronchodilator: – via spacer* If no improvement: – via nebuliser (preferably oxygen-driven), salbutamol 5 mg • Give prednisolone 40–50 mg • Continue or increase usual treatment If good response to first treatment (symptoms improved, respiration and pulse settling and PEF >50%) continue or increase usual treatment and continue prednisolone	• Oxygen to maintain SpO_2 94–98% if available • β_2 bronchodilator: – via nebuliser (preferably oxygen-driven), salbutamol 5 mg – or if nebuliser not available, via spacer* • Prednisolone 40–50 mg or IV hydrocortisone 100 mg • **If no response in acute severe asthma: ADMIT**	• Oxygen to maintain SpO_2 94–98% • β_2 bronchodilator with ipratropium: – via nebuliser (preferably oxygen-driven), salbutamol 5 mg and ipratropium 0.5mg – or if nebuliser and ipratropium not available, β_2 bronchodilator via spacer* • Prednisolone 40–50 mg or IV hydrocortisone 100 mg immediately
	Admit to hospital if any: • Life-threatening features • Features of acute severe asthma present after initial treatment • Previous near-fatal asthma Lower threshold for admission if afternoon or evening attack, recent nocturnal symptoms or hospital admission, previous severe attacks, patient unable to assess own condition, or concern over social circumstances	**If admitting the patient to hospital:** • Stay with patient until ambulance arrives • Send written asssessment and referral details to hospital • β_2 bronchodilator via oxygen-driven **nebuliser in ambulance**	**Follow up after treatment or discharge from hospital:** • Continue prednisolone until recovery (minimum 5 days) • **GP review within 2 working days** • Monitor symptoms and PEF • Check inhaler technique • **Written asthma action plan** • Modify treatment according to guidelines for chronic persistent asthma • Address potentially preventable contributors to admission

*** β_2 bronchodilator via spacer given one puff at a time, inhaled separately using tidal breathing; according to response, give another puff every 60 seconds up to a maximum of 10 puffs**

Appendix C Management of Acute Asthma and Wheeze in Children >2 Years Old