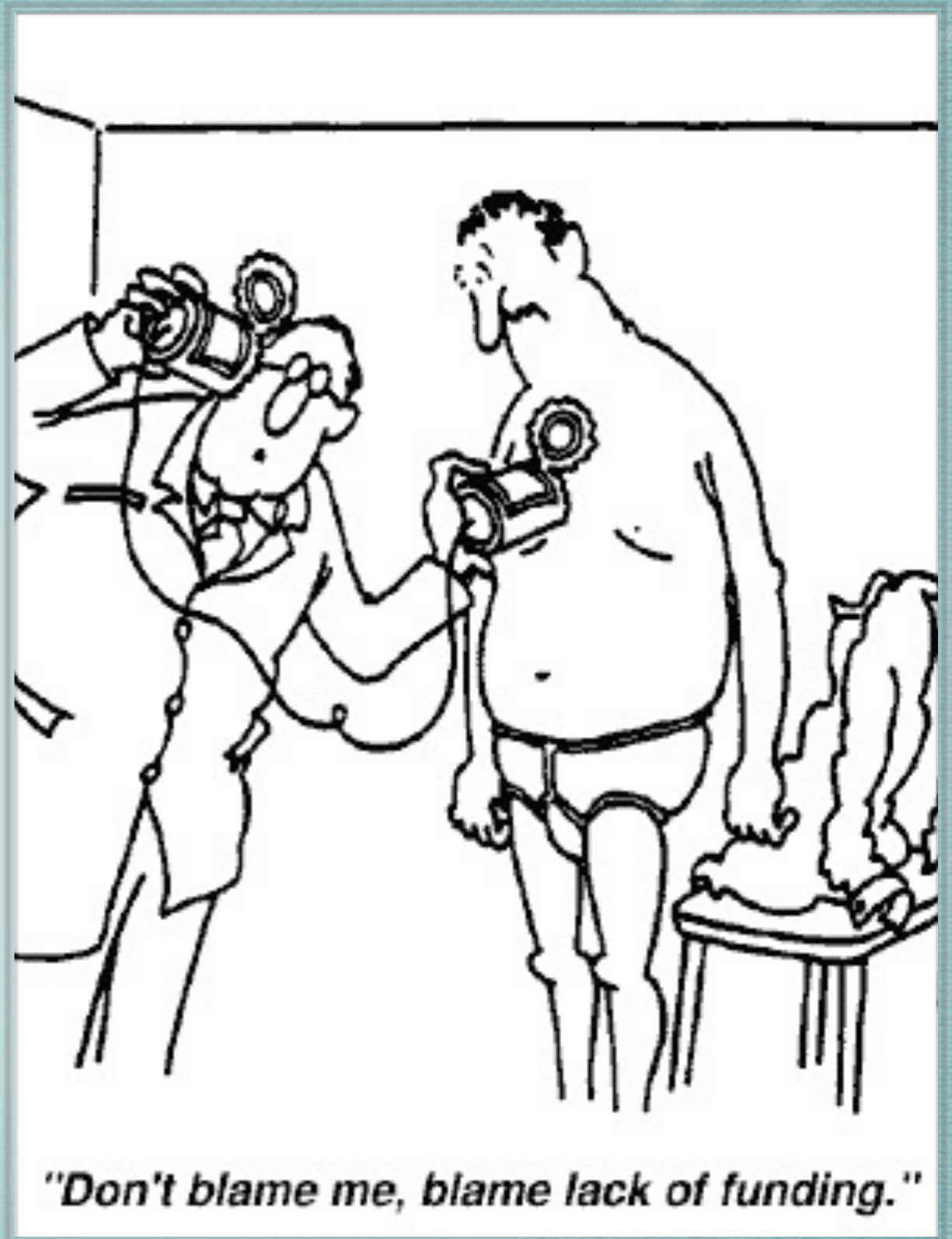


# ASTHMA

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# Objectives

Understand the:

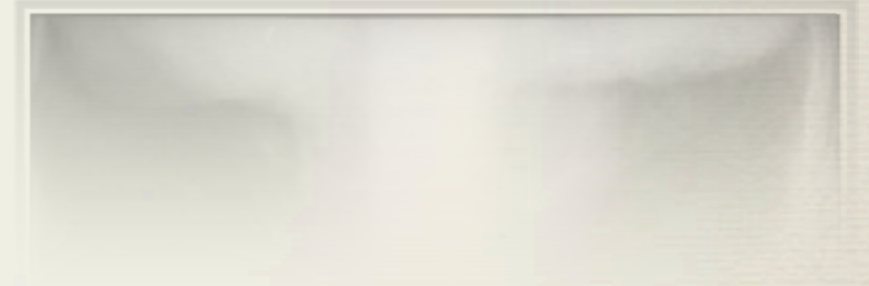
- ✦ Pathophysiology of asthma
- ✦ Clinical presentation
- ✦ Complications
- ✦ Follow BTS treatment Guidelines
- ✦ Departmental proforma
- ✦ Safe disposal of patients





# Introduction

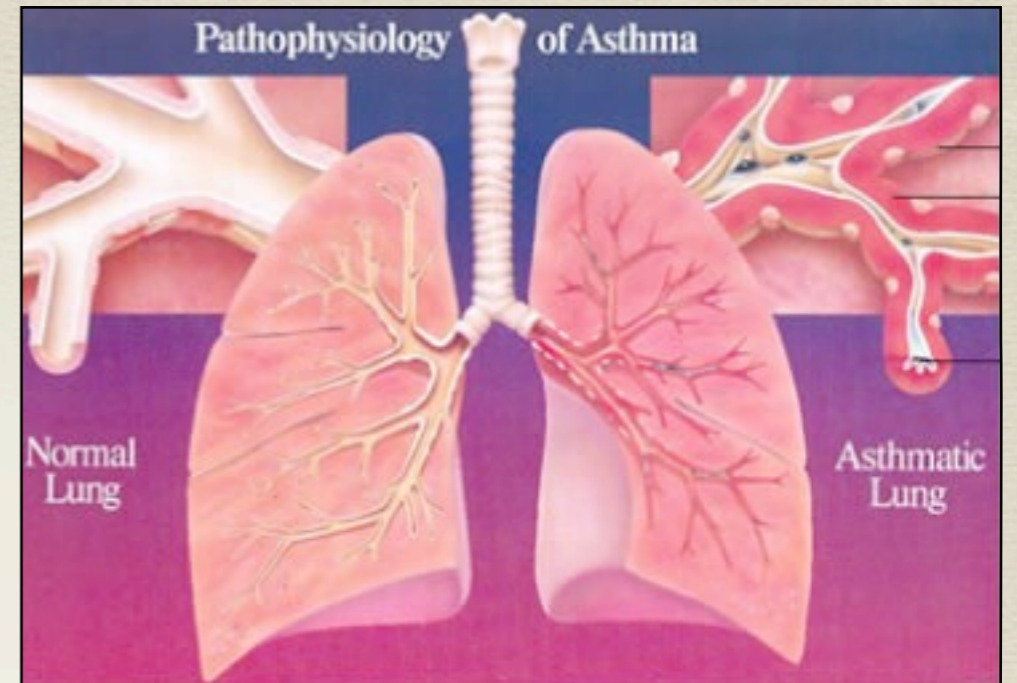
- \* Common: 5.2 million in UK,
- \* Causes deaths: 1381 deaths 2004 (40<14yrs)
- \* Correct treatment has a big impact, 75% admissions considered avoidable
- \* BTS Guidelines



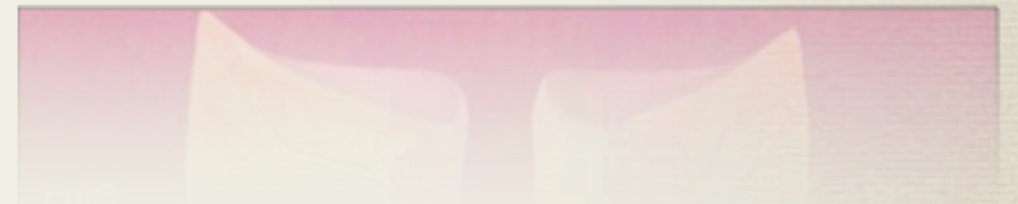


# Pathophysiology

- ✱ Reduced airway diameter from smooth muscle contraction, vascular congestion, bronchial wall oedema and secretions
- ✱ Micro: eosinophils/mono's
- ✱ Mucus plugging, air trapping
- ✱ Antigen/mast cell mediated
- ✱ Reversible muscle spasm



0 0 0 0 0 0 0 0 0 0





# Emergency Assessment Acute Asthma

Please complete this asthma proforma in addition to the usual medical notes

Name :		Hosp. No :
Date of Birth :	Date of Admission :	Ward :

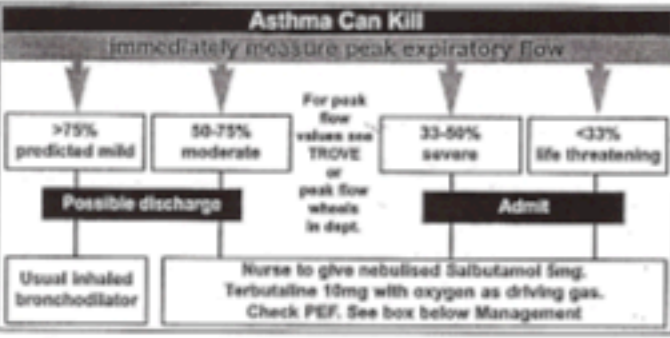


## Immediate Assessment

Are life-threatening features present? (tick  Yes or No)

This assessment must be performed on arrival in the Department. This may be completed by the E.D. doctor or by a senior nurse.

Too breathless to talk	Yes <input type="checkbox"/> No <input type="checkbox"/>	Describe : .....
Fatigue ( getting tired breathing )	Yes <input type="checkbox"/> No <input type="checkbox"/>	( Exhaustion is a critical finding requiring assessment by ICU team )
Tachycardia >115 bpm or Bradycardia < 60 bpm	Yes <input type="checkbox"/> No <input type="checkbox"/>	Pulse ..... bpm
Hypotension <90/60	Yes <input type="checkbox"/> No <input type="checkbox"/>	BP ..... / .....
Respiratory Rate above 30 per minute	Yes <input type="checkbox"/> No <input type="checkbox"/>	Resp Rate ..... breathes per minute
Silent Chest	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Hypoxaemia	Yes <input type="checkbox"/> No <input type="checkbox"/>	Check Oximetry, SaO <sub>2</sub> on air ..... % / O <sub>2</sub>
Peak Flow below 130 L/min or less than 33% predicted	Yes <input type="checkbox"/> No <input type="checkbox"/>	PEF on arrival ..... L/min PEF post neb ..... L/min



Patient stable, check oximetry after 5 minutes breathing air. Patient deteriorating on air or if oximetry falls, then restart high dose oxygen and check blood gases. Record FIO<sub>2</sub> with results.

Check blood gases if SaO<sub>2</sub> is less than 92% on air no risk factors present, omit blood gases.

Remember that most asthma patients with acute asthma have a low pCO<sub>2</sub>. A normal or rising pCO<sub>2</sub> may indicate exhaustion.

## Immediate Management of Asthma

1. Nebulised Bronchodilators (Salbutamol 5 mg 4 hourly. Add Ipratropium Bromide 0.5 mg if severely ill. Repeat nebulised treatment a few times in first few hours if necessary).
2. I.V. magnesium sulphate 1.2-2g over 20 min in 100mls of saline.
3. Steroid : Usually Prednisolone EC 40 mg now, then 40mg daily for 10 days (no need for taper). If vomiting or severely ill give IV Hydrocortisone 200 mg until stable.
4. High dose oxygen at least 40%.
5. If patient is not responding or if they appear likely to need IV bronchodilators or mechanical ventilation, then discuss case with senior staff .
6. If IV Bronchodilator is needed, IV Salbutamol is probably more effective than IV Aminophylline (and safer). Discuss with senior staff if either seem to be necessary.
7. Remember that all asthma patients need PEF charts, inhaler device assessment and asthma management plans.
8. Antibiotics are not needed in most cases. (See B.T.S. Guidelines). Give only if sputum purulent. Temperature above 38 degrees or raised white cell count or pneumonia on CXR (follow Trust Antibiotic Policy - see TROVE).

## Inhaled Drug History for Asthma Patients

( Record oral medication in A&E notes )

Inhaled Medication	Drug	Dose	Device	Frequency
1				
2				
3				

What device(s) ? MDI  MDI Large Volume Spacer  Dry Powder Inhaler  Breath-Activated Inhaler

Does the patient remember to take his/her preventative inhaler regularly ? Yes  No

Inhaler Technique: Good  Poor  Not Assessed

Other Therapy Issues ( Oxygen, steroids, home nebulisers, etc ) .....

## Asthma History

( History of present attack is recorded in your emergency department notes )

Usual exercise tolerance : Flights of stairs ..... Metres walked .....

Nocturnal waking due to asthma Never  Occasional  Most nights  Every night  Several times per night

Usual PEF if known : Average PEF: Best recent PEF..... Worst recent PEF ..... PEF not known .....

Previous hospital admissions : Yes  No  Details : .....

Previous ITU Admissions : Yes  No  Details : .....

Oral steroid use long term : Yes  No  maintenance dose : ..... mg .....

Recent course of oral steroids ? Yes  No  Details : .....

## Outcome of Emergency Department Assessment / Treatment

1. Patient discharged to care of his/her GP  2. Patient admitted to hospital

Indications for referral to R.M.O. : Brittle asthma Yes  No

Previous ITU admission of life-threatening asthma Yes  No

If peak flow < 75% of best after 2hrs (BTS guidelines) refer to R.M.O Yes  No

Recurrent recent exacerbation's of asthma (2 A&E attendance in 6Mth) Yes  No

PEF < 60% predicted or best despite therapy in A&E Yes  No

\* If the patient is discharged from A&E please ensure that the following are done \*

1. Supply or prescribe a course of steroids (and inhaled steroid) unless this was a very minor episode or just due to missed Inhalers. Steroid given (prednisolone 30/40mg for 7 days) Yes  No  already on a course from GP
2. Checked inhaler technique. Can the patient use inhalers ? Yes  No  Yes  after demonstration in dept
3. Arranged GP follow-up (or tell patient to see practice nurse) Yes  No  (refer all asthmatics to Chest Physician for follow-up)
4. Copy of this summary and emergency department notes sent to GP Yes  No
5. Referred to Dr Miles or Dr Hoyle for follow-up. Appointments made with receptionist before leaving department. Yes  No
6. Informed all patients that they will be contacted for follow-up by chest physician Yes  No
7. Asthma treatment card with contact number Yes  No

**File with Casualty Card**

Appointment Made at Reception Next Available Clinic  
Fax this form to Dr Hoyle/Miles Sec with Casualty Card ext 42741



# History



- \* Current illness
- \* Classic symptoms
- \* Previous attacks/  
admissions and ICU
- \* Early am/exercise etc
- \* Inhalers what/when  
and compliance
- \* Inhaler technique
- \* Steroid use
- \* Best PEFr
- \* Asthma nurse/GP etc
- \* Family Hx
- \* Atopy Hx

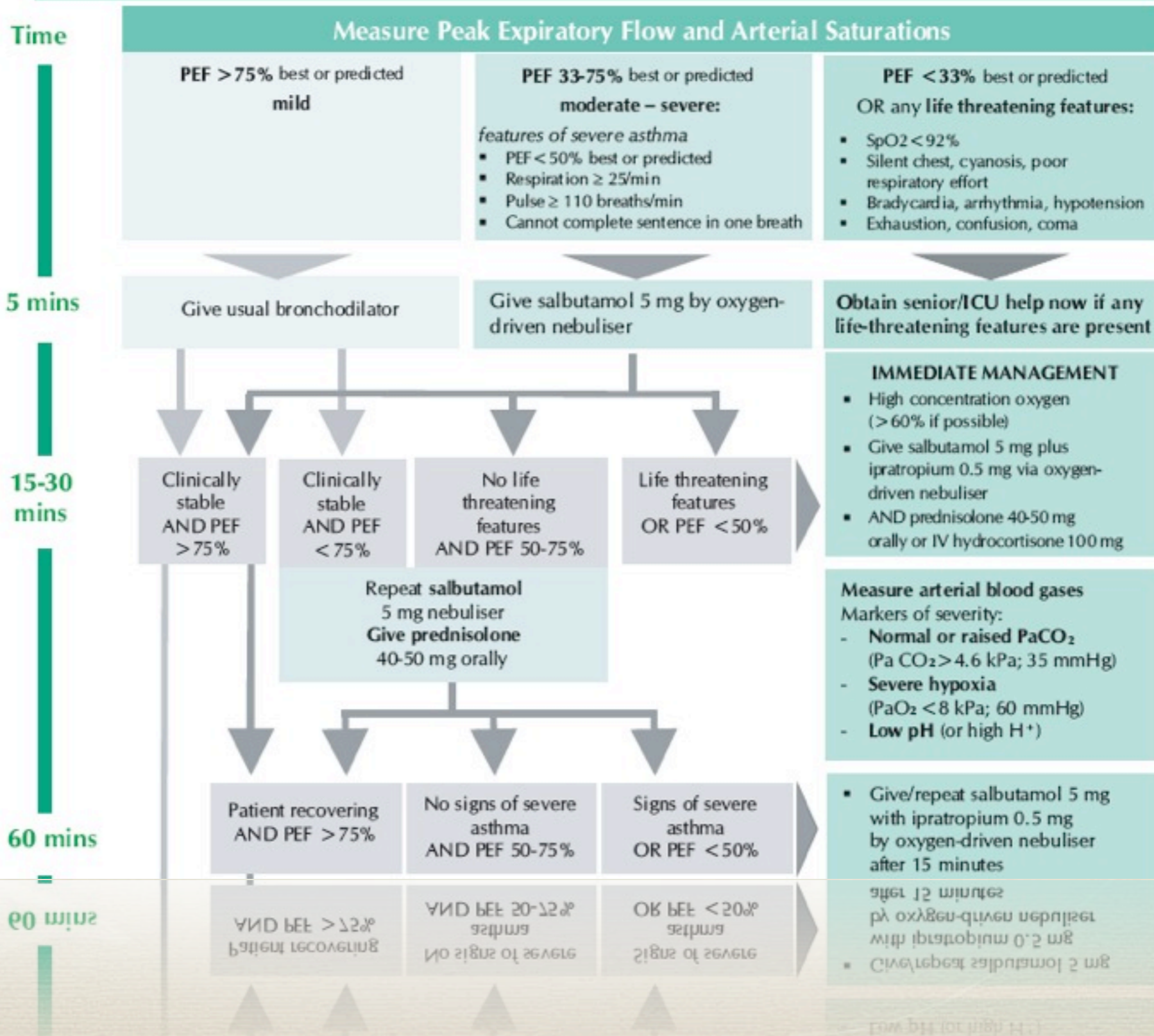


# Examination

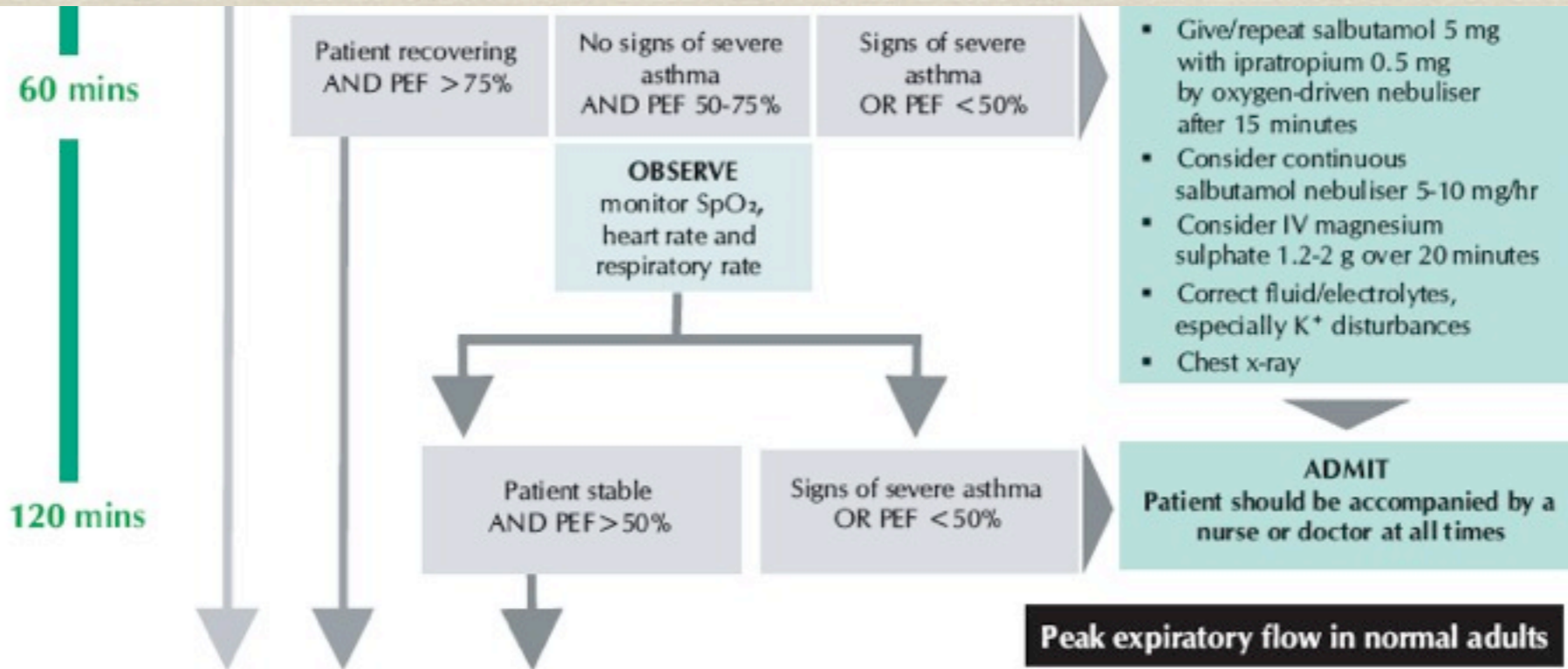
- \* ABCD assessment and treatment first if required
- \* Severe or Life Threatening features
- \* Aggressive and rapid intervention
- \* See BTS guidelines



# Management of acute severe asthma in adults in A&E



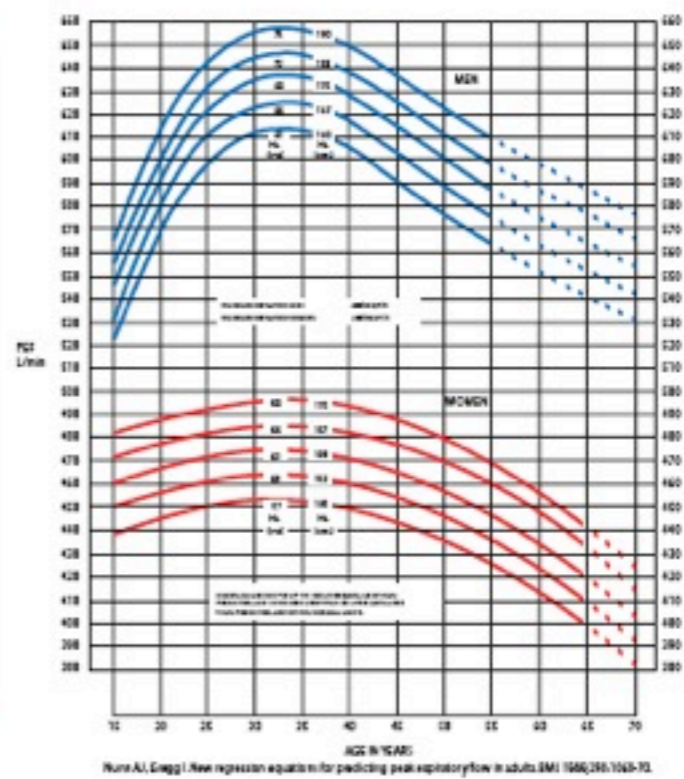




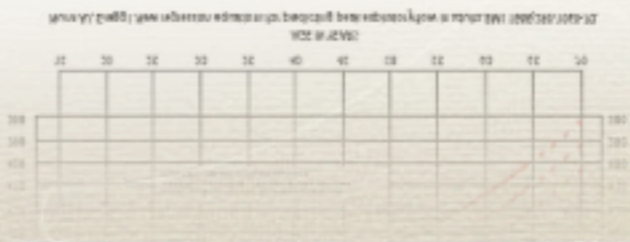
- Give/repeat salbutamol 5 mg with ipratropium 0.5 mg by oxygen-driven nebuliser after 15 minutes
- Consider continuous salbutamol nebuliser 5-10 mg/hr
- Consider IV magnesium sulphate 1.2-2 g over 20 minutes
- Correct fluid/electrolytes, especially K<sup>+</sup> disturbances
- Chest x-ray

- POTENTIAL DISCHARGE**
- In all patients who received nebulised β<sub>2</sub> agonists prior to presentation, consider an extended observation period prior to discharge
  - If PEF < 50% on presentation, prescribe prednisolone 40-50 mg/day for 5 days
  - In all patients ensure treatment supply of inhaled steroid and β<sub>2</sub> agonist and check inhaler technique
  - Arrange GP follow up for 2 days post presentation
  - Fax discharge letter to GP
  - Refer to asthma liaison nurse/chest clinic

**Peak expiratory flow in normal adults**



- Refer to asthma liaison nurse/chest clinic
- Fax discharge letter to GP





# Management of acute asthma in children in A&E

## Age 2-5 years

### ASSESS ASTHMA SEVERITY

#### Moderate exacerbation

- SpO<sub>2</sub> ≥92%
- No clinical features of severe asthma

NB: If a patient has signs and symptoms across categories, always treat according to their most severe features

#### Severe exacerbation

- SpO<sub>2</sub> <92%
- Too breathless to talk or eat
- Heart rate >130/min
- Respiratory rate >50/min
- Use of accessory neck muscles

#### Life threatening asthma

- SpO<sub>2</sub> <92%
- Silent chest
- Poor respiratory effort
- Agitation
- Altered consciousness
- Cyanosis

- β<sub>2</sub> agonist 2-10 puffs via spacer ± facemask
- Reassess after 15 minutes

- Give nebulised β<sub>2</sub> agonist: salbutamol 2.5 mg or terbutaline 5 mg with oxygen as driving gas
- Continue O<sub>2</sub> via face mask/nasal prongs
- Give soluble prednisolone 20 mg or IV hydrocortisone 50 mg

#### RESPONDING

- Continue inhaled β<sub>2</sub> agonist 1-4 hourly
- Give soluble oral prednisolone 20 mg

#### NOT RESPONDING

- Repeat inhaled β<sub>2</sub> agonist
- Give soluble oral prednisolone 20 mg

#### ARRANGE ADMISSION

(lower threshold if concern over social circumstances)

#### DISCHARGE PLAN

- Continue β<sub>2</sub> agonist 4 hourly prn
- Consider prednisolone 20 mg daily for up to 3 days
- Advise to contact GP if not controlled on above treatment
- Provide a written asthma action plan
- Review regular treatment
- Check inhaler technique
- Arrange GP follow up

#### IF LIFE THREATENING FEATURES PRESENT

Discuss with senior clinician, PICU team or paediatrician

Consider:

- Chest x-ray and blood gases
- Repeat nebulised β<sub>2</sub> agonist
- Plus:
- ipratropium bromide 0.25 mg
- Bolus IV salbutamol 15 mcg/kg of 200 mcg/ml solution over 10 minutes

Arrange immediate transfer to PICU/HDU if poor response to treatment  
Admit all cases if features of severe exacerbation persist after initial treatment

## Age > 5 years

### ASSESS ASTHMA SEVERITY

#### Moderate exacerbation

- SpO<sub>2</sub> ≥92%
- PEF ≥50% best or predicted
- No clinical features of severe asthma

NB: If a patient has signs and symptoms across categories, always treat according to their most severe features

#### Severe exacerbation

- SpO<sub>2</sub> <92%
- PEF <50% best or predicted
- Heart rate >120/min
- Respiratory rate >30/min
- Use of accessory neck muscles

#### Life threatening asthma

- SpO<sub>2</sub> <92%
- PEF <33% best or predicted
- Silent chest
- Poor respiratory effort
- Altered consciousness
- Cyanosis

- β<sub>2</sub> agonist 2-10 puffs via spacer
- Reassess after 15 minutes

- Give nebulised β<sub>2</sub> agonist: salbutamol 2.5 mg or terbutaline 5 mg with oxygen as driving gas
- Continue O<sub>2</sub> via face mask/nasal prongs
- Give soluble prednisolone 30-40 mg or IV hydrocortisone 100 mg

#### RESPONDING

- Continue inhaled β<sub>2</sub> agonist 1-4 hourly
- Add 30-40 mg soluble oral prednisolone

#### NOT RESPONDING

- Repeat inhaled β<sub>2</sub> agonist
- Add 30-40 mg soluble oral prednisolone

#### ARRANGE ADMISSION

(lower threshold if concern over social circumstances)

#### DISCHARGE PLAN

- Continue β<sub>2</sub> agonist 4 hourly prn
- Consider prednisolone 30-40 mg daily for up to 3 days
- Advise to contact GP if not controlled on above treatment
- Provide a written asthma action plan
- Review regular treatment
- Check inhaler technique
- Arrange GP follow up

#### IF LIFE THREATENING FEATURES PRESENT

Discuss with senior clinician, PICU team or paediatrician

Consider:

- Chest x-ray and blood gases
- Bolus IV salbutamol 15 mcg/kg of 200 mcg/ml solution over 10 minutes
- Repeat nebulised β<sub>2</sub> agonist
- Plus:
- ipratropium bromide 0.25 mg nebulised

Arrange immediate transfer to PICU/HDU if poor response to treatment  
Admit all cases if features of severe exacerbation persist after initial treatment



# Life Threatening Features

- \* SpO<sub>2</sub> <92%
- \* Silent Chest
- \* Poor respiratory effort
- \* Altered GCS
- \* Bradycardia, arrhythmias, hypotension
- \* Exhaustion
- \* Normal/raised pCO<sub>2</sub>
- \* Cyanosis



# Management

- \* Early high flow oxygen
- \* Try and calm patient-panic makes it worse
- \* Early PEFR + nebulise. Ipratropium added IF life threatening, not routinely.
- \* If severe/life threatening add steroids. IV for latter
- \* In life threatening-call anaesthetist early
- \* Waters circuit can buy time in extreme cases
- \* IV fluids, IV magnesium +/- salbutamol



# Investigation

- \* CXR: life threatening/?pneumothorax/?pneumonia
- \* Gases for  $pO_2 < 92\%$ , life threatening features
- \* Routine bloods/?ABGs/CXR if admitting patient
- \* Others as clinically indicated



# Prior to Discharge

- \* **Most** patients will need oral steroids for 3-5 days
- \* Ensure that patients have inhaled steroids & salbutamol
- \* Ensure follow up within 2 days, GP/asthma nurse
- \* Follow up also by chest physicians via reception
- \* Check inhaler technique
- \* Be wary of discharging kids after 10pm











# Summary

- \* Asthma kills so don't underestimate it
- \* Always check all observations and PEFr
- \* Early nebs and recognition of life threatening features
- \* Use the proforma
- \* Most patients need steroids
- \* All discharges must have appropriate treatment/follow up at GP and chest clinic