Asthma exacerbation therapy

Asthma exacerbation

- Asthma exacerbation is epizode of dyspnea with wheezing, breathlessness or chest tightness

- Chronically inflamed airways are hyperresponsive and become obstructed

    - **Bronchoconstriction**
    - **Mucosal swelling**
    - **Mucus plugs**

Asthma exacerbation

Symptoms

- Cough, worse particularly at night
- Dyspnea
- Wheezing
- Hyperinflation
- Limited response to initial bronchodilator treatment

Asthma exacerbation – the goal of therapy

- quick relieve of symptoms
- eliminate hypoxemia
- lung function normalization
- prevention of new exacerbations

Severity of asthma exacerbation

	Mild	Moderate	Severe	Respiratory arrest imminent
Dyspnea	walking	talking infant softer shorter cry, difficulty feeding	at rest, infant stops feeding	
	can lie down	prefer sitting	hunched forward	
Talking	sentences	phrases	words	
Alertness	may be agitated	usually agitated	usually agitated	drowsy or confused
Respiratory rate	increased	increased	often:> 30/min	
Accessoroy muscles and suprasternal retractions	usually not	usually	usually	paradoxical thoraco-abdominal movement
Wheeze	moderate, often only endexspiratory	loud	usually loud	absence of wheeze
Heart rate	< 100	100 - 120	> 120	bradycardia
SaO2	> 95 %	91 – 95 %	< 90 %	

Normal values

Respiratoty rate in awake children	
< 2 months	< 60/min
2 – 12 months	< 50/min
1 – 5 years	< 40/min
6 – 8 years	< 30/min
Heart rate	
2 – 12 moths	< 160/min
1 – 2 years	<120/min
2 – 8 years	<110/min

Asthma exacerbation – dif. dg.

- **Differential diagnosis**
  - Obstructive bronchitis
  - Bronchiolitis
  - Foreign body aspiration
  - Vocal cord dysfunction

Asthma exacerbation – dif. dg.

rare diagnoses

- Laryngospasmus
- Laryngeal edema in anaphylaxis
- Tumors
- Hypokalcemia
- Posttraumatic stenosis
- External masses - goiter, masses or mediastinal infection
- Neurological impairment

„Risk" patient

- History of near fatal asthma (intubation, mechanical ventilation)
- Hospitalization for asthma attack in last year
- Treated with systemic corticosteroids
- Without inhaled corticosteroids
- High need of inhaled beta-2-agonists
- Pacients treated for psychiatric disease, with psychosocial problems
- Non compliance

Asthma exacerbation therapy

- **salbutamol** aer. through spacer 2-4 puffs
  salbutamol nebulised 0,1 -0,15 mg/kg/dose

  risk pacient
- **oral prednisolon** 0,5-1 mg/kg/day

- **saturation monitoring …. oxygen**

Asthma exacerbation – continuation of treatment

good response:

- next dose of salbutamol after 60 min
  and continuation in salbutamol every 6 hours for 24 hours

Asthma exacerbation – continuation of treatment

incomplete response

- **salbutamol** aer. or nebul. every 20 min. during 60 min
- **prednisolon** 0,5-1 mg/kg/day for 3 days

Repeat inhalation after 4 – 6 hours

Asthma exacerbation - immediate treatment of severe exacerbation / poor response

continuation with inhalation therapy salbutamol 2-4 puffs every 1-4 hours + ipratropium bromide 2-4 puffs every 2-4 hours

+ i.v. therapy

- **methylprednisolon** 1-2 mg/kg every 8-12 hours
- **theophyllin** 5 - 6 mg/kg i.v., …0,9 mg/kg/hour
  level monitoring (8-20 mg/l or 55-110 umol/l)
- **terbutaline** (Bricanyl 0,5mg/ml) continual infusion : 0,08-1 ug/kg/min
  subQ 0,01/mg/kg/dose
- (**epinephrin** subQ 0,01 mg/kg…0,01 ml/kg of 1:1000)
- **Magnesium sulfate** 25-75 mg/kg upon arrival
- oxygen, humidified air , mechanical ventilation

Medication not used in acute asthma exacerbation treatment

- sedatives
- theophylin tablets
- oral beta-2-agonists
- inhaled corticosteroids, cromones
- antibiotics
- antihistamines
- physiotherapy
- acupuncture, homeopathy etc