**ASTHMA**

*1. In patients of all ages with respiratory symptoms (acute, chronic, recurrent):*

*a) Include asthma in the differential diagnosis*

*b) Confirm the diagnosis of asthma by appropriate use of: Hx, PE, spirometry*

**CLINICAL FEATURES: Recurrent:**

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| Symptoms | | Signs Airway Obstruction |
| Frequent episodes breathlessness | | Wheezing |
| Chest tightness | | Tachypnea |
| Wheezing | Worse at night or early am | Decreased breath sounds |
| Cough | Accessory muscle use |
| Triggers: URTI, aeroallergens, irritants, exercise | | Supraclavicular/intercostal in-drawing |
| Improve w/ bronchodilators, ICS | | Nasal flaring |

**DIAGNOSIS:** Suspect from clinical features, objective measures of airflow obstruction for Dx:

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| --- | --- | --- |
| Pulmonary Function Measurement | Children (>6yrs) | Adults |
| Spirometry (preferred) | | |
| Reduced FEV1/FVC | <Normal lower limits (<0.8-0.9) | <Normal lower limits (<0.75-0.8) |
| AND | AND | AND |
| Increase FEV1 with Tx\* | ≥ 12% | ≥ 12% (& min ≥200 mL) |
| Peak Expiratory Flow (alternative) | | |
| Increase w/ Tx\* | ≥ 20% | 60L/min (minimum ≥ 20%) |
| OR |  | OR |
| Diurnal Variation | Not recommended | >8% based on BID readings  >20% based on multi day readings |
| Positive Challenge Test (alternative) | | |
| Methacholine challenge | PC20<4mg/mL (4-16 mg/mL = borderline, >16 mg/mL is negative)  OR  ≥10-15% decrease in FEV1 post-exercise | |
| OR |
| Exercise challenge |

\* Treatment = after bronchodilators or course of controller therapy

*2. In a child with acute respiratory distress, distinguish asthma or bronchiolitis from croup and foreign body aspiration by taking an appropriate history and doing a physical examination.*

* FB: Hx, asymmetric, monophonic wheeze (only 1 tone), unilateral hyperinflation or FB on CXR
* Croup: swelling of vocal cords 🡪 barking cough, causes: 1)viral (75% parainfluenza) 2)bacterial (diphtheria) 3)allergies/inhaled irritants 4)GERD. URTI, + nighttime, typically 5-6d

*3. In a known asthmatic, presenting with an acute exacerbation or for ongoing care, objectively determine the severity of the condition (e.g. with history, including pattern of medication use, PE, Spirometry). Don’t underestimate severity.*

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| |  |  |  |  | | --- | --- | --- | --- | | Asthma Severity (*Method of Canadian Consensus*) | | | | | Severity | Mild | Moderate | Severe | | FEV1/PEF | >80% | 60-80% | <60% | | SABA use | <Q8h | Q4-8h | Q2-4h | | Near fatal episode | - | - | + | | Hospital admission | - | - | + | | Nighttime symptoms | -/+ | + | +++ | | Daily activity limitations | -/+ | +/++ | +++ |   SABA=short acting β-agonist, FEV=forced exp volume, PEF=peak exp flow  Symptom not reported -, reported +, reported more often ++ and +++ | |  |  | | --- | --- | | Asthma Control Criteria | | | Characteristic | Frequency or Value | | Daytime symptoms | <4 days/week | | Nighttime symptoms | <1 night/week | | Physical activity | Normal | | Exacerbations | Mild, infrequent | | Work/school agonist | None | | β**-**agonist | <4 doses/week | | FEV1 or PEF | ≥90% personal best | | PEF diurnal variation | <10-15% | |

Treatment

*4. In a known asthmatic with an acute exacerbation:*

*a) Treat the acute episode (e.g.* *β-agonists repeatedly and early steroids, and avoid under-treatment).*

*b) Rule out co-morbid disease (e.g. CHF, COPD).*

*c) Determine the need for hospitalization or D/C*

*(basing the decision on the risk of recurrence or complications, and on the patient’s expectations and resources).*



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| --- | --- |
| *5. For the ongoing (chronic) treatment of an asthmatic propose a stepwise management plan including:*  *a) self-monitoring*  *b) self-adjustment of medication*  *c) when to consult back*   * Create an Asthma Action Plan   <http://www.lung.ca/_resources/asthma_action_plan.pdf>    *6. For a known asthmatic patient, who has ongoing or recurrent symptoms:*  *a) Assess severity & compliance with med regimens*  *b) Recommend lifestyle adjustments (e.g. avoiding irritants, triggers) for less recurrence & better control* |  |

*References: 1) Lougheed et.al. Canadian Thoracic Society Asthma Management Continuum-2010 Consensus Summary for children six years of age and over, and adults. Can Resp J Vol17:1;2010. 2) Colice G. Categorizing Asthma Severity: An Overview of National Guidelines. Clinical Med & Research. Vol 2(3): 155-63:2004*

**Sample Case Asthma** (18 points)

Jamie is a seven-year-old boy who is brought to your office by his mother. He has a one-month history of

dry cough, which is worse at night, and wheezing. The wheezing seems to be getting worse. His mother

states that “colds seem to go to his chest”. The chest is clear on auscultation and percussion. An X-ray

film of the chest was reported as normal.

1. Excluding family history, what additional information would be important in this child’s history? List

**SIX**.

1.

2.

3.

4.

5.

6.

2. If you were quite certain that Jamie has asthma, what would be your initial treatment/management

steps? List **FOUR**.

1.

2.

3.

4.

Despite adequate initial treatment, Jamie’s condition deteriorates and he presents at the emergency

department one week later. You determine from the history and examination that he is in *status*

*asthmaticus*.

3. In point form, give the stepwise management of status asthmaticus in this child. Arterial blood gases

and peak expiratory flow measurements have been done. The patient’s condition is being

continuously monitored and reassessed. Assume his condition continues to deteriorate throughout

treatment. List **EIGHT** steps.

1.

2.

3.

4.

5.

6.

7.

8.

**Sample Case #10 Answers**

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| --- | --- |
| **Question 1**  Child’s history of atopy  Child’s history of asthma  Child’s history of allergies  Use of medications  Recent infection  History suggestive of foreign body aspiration    **Question 2**  Patient education  Removing precipitating factors  Inhaled beta-agonist  Peak-flow meter | **Question 3**  Supplemental oxygen (O2)  Nebulized salbutamol (Ventolin)  Subcutaneous epinephrine  Intravenous (IV) steroids  IV fluids  Admission to the intensive care unit (ICU)  IV salbutamol  Intubation |