

RESPIRATORY INFECTIONS IN CHILDREN

LEARNING OBJECTIVES:

- Describe the diagnostic differences between upper and lower respiratory infections.
- Develop an effective treatment plan for respiratory infections, with appropriate use of antibiotics.
- Identify high risk groups that need referral to a specialist or hospital
- Understanding the impact of the disease on the child, parents, and the community.

TEACHING STRATEGIES:

- Review the anatomy and the physical examination of the upper and lower respiratory system.
- Use of lecture or informal presentation for material
- Use small group discussion or role play for prevention, counseling and patient education issues.

MATERIALS AND EQUIPMENT NEEDED:

- White board or flip chart and markers for summarizing major points
- If available, pulse oximeter to demonstrate oxygen saturation measurement

LEARNING POINTS:

- Introduction
 - Acute respiratory tract infections (ARI) are one of the most common causes of death in children in developing countries. They are responsible for more than 4 million deaths that occur in children under five years of age each year. Two-thirds of these deaths are in infants. 30-50% from the out patient clinic patients and about 30-40% of child hospital admissions are caused by ARI.
 - Pneumonia cases estimated to be one from each fifty ARI cases, and the mortality rate from pneumonia among children is 10-20%.
 - In Jordan 33% of outpatient and primary health care visits are ARI cases. About 28% from pediatric hospital admission are ARI cases. 21% of deaths among hospitalized children under 5 were from ARI (pneumonia).
- Acute upper respiratory infections include:
 - Common cold
 - Rhinitis
 - Sore throat
 - Otitis media
- Acute lower respiratory infections include:

- Pneumonia
 - Bronchitis
 - Bronchiolitis
- Danger signs of a respiratory infection
 - Difficulty breathing
 - Rapid respiratory rate for child's age
 - Inability to drink
 - General deterioration or toxicity
 - Evaluation of respiratory infection – Essential questions of **history**
 - a. Is the child complaining from a **Cough**, and the duration?
 - b. Can the child **Drink**?
 - c. Does the child have a **Fever**?
 - d. Has the child had **Convulsions**?
 - e. What is the **Vaccination** history?
 - Evaluation of respiratory infection – Essential elements of **physical examination**
 - a. Calculation of **Respiratory Rate**
 - b. Check for **Chest Indrawing**
 - c. Listen to **Chest Wheezing**
 - d. Listen to **Stridor**
 - Management of respiratory infection – Different presentations in children age 2 months to 5 years
 - Child with Common cold or Rhinitis:

Typical Case: Ali is a 3 year old boy who was less active in play than usual 3 days ago, and that evening began coughing occasionally. He has had a very runny nose for 2 days, with occasional coughing after running, and decreased appetite. He is taking fluids well.

Examination: He looks well. Temp – 37.5, RR- 20, P – 88. No difficulty breathing or chest indrawing. Chest – no wheezing, rales, stridor.

Typical Symptoms of cold:

- Cough, but NO difficult breathing
- No Increase in Respiratory rate
- No chest indrawing
- No danger signs

Management of child with cold or rhinitis:

- Mother can take counseling and education on home care.
- No antibiotic needed.
- Give remedy fluid, like: Lemon with honey, or fruit juice
- Give antipyretic if child has a fever

- Child with mild to moderate pneumonia:

Typical Case: Nisreen is a 4 year old girl who developed a typical cold 4 days ago, with mild cough, sore throat, and fever. However, the past 24 hours her cough has become more severe and frequent and is awakening her from sleep. Her appetite is decreased, and she is fussy and does not want to play.

Examination: She looks somewhat ill, with frequent coughing. Temp. – 38.5, RR – 28, P – 92. She is taking fluids well, has no obvious difficulty breathing or chest indrawing, has normal color. Chest – no wheezing, but few coarse rales and rhonchi in the right chest.

Typical Symptoms:

- Cough or difficult breathing
- Increase in Respiratory rate
- No chest indrawing
- No danger signs

Management of child with mild to moderate pneumonia:

- Give Antibiotic to be used at home.
 - a. Erythromycin 15 mg/kg/dose given three times daily for 7-10 days **OR**
 - b. Amoxicillin 20 mg/kg/dose given three times daily for 7-10 days
- Mother can take counseling and education on home care.
- Come back after 2 days for follow up.

▪ Child with severe pneumonia:

Typical Case: Mohammad is a 2 year old boy who began to become more fussy 2 days ago, and was noted to have a high fever that evening. Today he is not eating at all, although continues to take fluids. He vomited twice in the past 6 hours but has had no diarrhea.

Examination: Looks ill, very fussy, moderate congested cough. Temp. – 39.5, RR – 44, P – 110. Moderate indrawing of chest is noticed with respirations. Chest – very noisy with bilateral rhonchi and a few rales, no wheezing

Symptoms:

- Cough or difficult breathing
- Indrawing chest
- No danger signs

Management of child with severe pneumonia:

- Give first dose of the Antibiotic
 - a. Procaine Penicillin 600,000 to 1,200,000 Units IM
 - b. Ceftriaxone 50 mg/kg. In one dose IM
 - c. Ampicillin 50 mg/kg in one dose IM or by mouth
- Refer to the hospital immediately
- Referral form should include; assessment, findings, reason for referral, and medication received

▪ Child with severe illness, possibly sepsis:

Typical Case: Fatima is a 4 year old girl who had mild cold symptoms with a runny nose and sore throat 1 week ago. She appeared to improve somewhat, but the past 3 days she has had intermittently a high fever. She has refused all food for the past 2 days, has vomited 4 times, and is now too sleepy to drink fluids. She has had no convulsions. She is the 6th child of a family of 8 children.

Examination: Looks very thin and ill. Very sleepy and cries weakly only when examined or disturbed. Mouth is dry, no tears are noted when crying. Temp. – 39, RR – 44, P – 120. Neck shows no stiffness, Chest – bilateral fine rales and some wheezing. Abdomen is thin with persistent skin fold after pinch test.

Symptoms:

- Cough and difficulty breathing **PLUS** any of the following danger signs:
- Inability to drink
- Convulsions
- Abnormally sleepy- difficult to wake
- Malnourished
- Stridor

Management of severe ill children:

- Give the first dose of Antibiotic:
 - a. Ceftriaxone 50 mg/kg. In one dose IM **OR**
 - b. Ampicillin 50 mg/kg in one dose IM or IV **OR**
 - c. Procaine Penicillin 600,000 to 1,200,000 Units IM
 - Refer to the hospital immediately
 - Start IV hydration if hospital transfer cannot be immediately arranged
 - Referral form should include; signs, findings, reason for referral, medication received
- All children less than 2 months of age with respiratory infection should be referred to specialist or hospital for evaluation and observation

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

All mothers or caretakers are counseled for the following key messages:

- Child nutrition
 - Continued breastfeeding and proper nutrition.
 - Increase the amount of food after recovering
 - Clean the nose with warm water
- Give more fluids than usual
- Teach home remedy fluids preparation and usage, such as lemon juice with honey
- Keep child warm
- Return back immediately if:
 - a. Difficulty breathing
 - b. Increase in respiratory rate
 - c. Inability to drink
 - d. General deterioration
- Warn of dangers of exposure to passive smoking

CASE STUDY

Name of patient	Ahmad
Sex	Male
Age	2 years
Present History	He was doing well until this morning where he found by his sister blue with coughing in the kitchen. On arrival health center after 10 minutes he appeared to be normal except for moderate tachypnea. He was noted to be feverish, coughing and appeared to be somewhat short of breath.
Physical exam.	Resp. Rate - 55/min, Temp. - 39C.

Throat – mildly red, but no exudate. No adenopathy in the neck
Auscultation of lung - Right sided crackles
Heart - normal

Topics of discussion regarding case study:

1. What is current problem in this patient?
2. What important additional elements in the history should be asked?
3. What is the next step in the management of this patient?
4. What is the most important step in management of this patient?

CRITICAL INDICATIONS FOR REFERRAL

- Age less than 2 months.
- Signs of respiratory distress or moderate tachypnea
- Failure to improve with appropriate therapy after 2-4 days
- Severe or complicated pneumonia
- History of cystic fibrosis or severe asthma
- Immuno-compromised patients (AIDS, corticosteroid therapy, leukemia, lymphoma)

CRITICAL ELEMENTS OF COMPETENCE FOR EVALUATION

- Proper diagnosis of upper and lower respiratory tract infection.
- Appropriate non-pharmacological and pharmacological management of respiratory tract infection
- Appropriate patient education about respiratory tract infection, and its management plan.
- Knowledge of need for referral and hospital admission