Despite advances in the development of strategies to control Acute Respiratory Infections (ARI) and the availability of newer, safer and more potent antimicrobials, ARIs continue to be a leading cause of morbidity and mortality among children in developing countries. It is estimated that more than 400 children die of ARIs every hour, day after day, worldwide. It is a pity that many of these deaths can be prevented by simple inexpensive measures such as early diagnosis and institution of appropriate antimicrobial therapy.

It is unfortunate that the widespread, often unnecessary, use of antimicrobials has resulted in the emergence of drug-resistant organisms, contributing to an already high ARI-related mortality. It is therefore of utmost importance to adhere to clear guidelines when managing children with ARIs. One must make it a habit to put on record a clear diagnosis or most likely diagnosis before starting to write a prescription, so that one would be able to justify to oneself drugs used in that prescription. If the prescription were to be scrutinized subsequently by a medical board, would I be able to stand up and justify writing each one of the products prescribed? One of the most useful prescription censors is the thought: "If this was my own child, would I be prescribing what I am prescribing?"

When a child is brought to us with cough, cold and fever he/she is suffering from an ARI. It is important to decide whether it is an Acute Upper Respiratory Infection (AURI) or an Acute Lower Respiratory Infection (ALRI) in order to plan appropriate therapy, Table 1.

<table>
<thead>
<tr>
<th>AURI</th>
<th>ALRI</th>
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</thead>
<tbody>
<tr>
<td>Common cold</td>
<td>Viral croup</td>
</tr>
<tr>
<td>Bacterial Pharyngitis or Tonsillitis</td>
<td>Bacterial Tracheitis</td>
</tr>
<tr>
<td>Otitis media</td>
<td>Epiglottitis</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>Bronchiolitis</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>Pneumonia</td>
</tr>
</tbody>
</table>

In order to arrive at a clinical diagnosis, a simple clinical approach would be to look for:

1. **Respiratory rate (RR)** > 60 in infants 0-2 mo; > 50 in infants 2-12 mo; > 40 in children 1-5 years.

   **Chest retractions.**

   **Signs of severe illness** such as
refusal of feeds, inability to feed, excessive drowsiness, expiratory grunting, wheeze/stridor in the calm state, cyanosis, convulsions or severe malnutrition. If any of the above signs are present, the child has an ALRI.

2. If none of the above are present the child has an AURI. It is important for all physicians dealing with children to be familiar with the use of an otoscope to be able to diagnose Otitis media correctly. Proper clinical assessment will allow the physician to label one of the above diagnoses.

Let us discuss the clinical picture of each of the above entities to plan appropriate antibiotic therapy.

**COMMON COLD**

The child presents with running nose, cough, conjunctivitis, hoarseness of voice and usually mild fever. There is often a history of contact with someone with a similar illness at home or at school. There may be an epidemic of common cold in town at that time. The RR is not increased, there are no chest retractions, and the child has none of the signs of severe illness. The tonsils and ear drums are not inflamed. Since the condition is viral, **no antibiotics** are indicated. The parents need to be told about the self-limiting course of the disease, why an antibiotic is not necessary and the need to bring the child for review if the child gets worse in any way.

**STREPTOCOCCAL PHARYNGITIS OR TONSILLITIS**

The child presents with high fever, throat pain, tender neck glands, enlarged and inflamed tonsils with or without follicles. The pharynx may be inflamed with or without an exudate.

1st-line antibiotics: Amoxycillin, cotrimoxazole

2nd-line antibiotics: Amoxyclav, Azithro/Clarithro/Roxithro/Erythromycin

1st or 2nd generation: Cephalexin/Cefadroxil/Cefaclor

A 10-day course of antibiotic, except with Azithromycin, is essential to prevent recurrence or Rheumatic fever.

**OTITIS MEDIA/SINUS**

The child with Otitis media presents with a mild cough and cold followed by pain in the ear or, in young infants, with continuous, excessive unexplained crying. Otoscopy reveals an inflamed, bulging ear drum. The child with sinusitis presents with a thick yellow nasal discharge and pain/tenderness over the paranasal sinuses. The organisms responsible for both are *Streptococcus pneumoniae*, *Haemophilus influenzae* or *Moraxella catarrhalis*.

<table>
<thead>
<tr>
<th>1st-line antibiotics</th>
<th>2nd-line antibiotics</th>
<th>3rd-line antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxycillin, cotrimoxazole</td>
<td>Amoxyclav Azithromycin</td>
<td>Ceftriaxone</td>
</tr>
<tr>
<td>Amoxyclav Azithro/Clarithro/Roxithro/Erythromycin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cephalexin/Cefadroxil/Cefaclor</td>
<td>Cefuroxime</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ceftriaxone</td>
<td>Cefuroxime</td>
</tr>
</tbody>
</table>
Antihistamines and decongestants are controversial. They may make some children very drowsy or irritable, thereby further reducing their food intake. They may make respiratory secretions more viscous and difficult to expel.

Decongestant nose drops are not recommended, as they may cause rebound congestion, habituation and rhinitis medicamentosa with continued use.

**DIPHTHERIA**

The child presents with sore throat, mild fever, increasing dysphagia or stridor, and marked prostration. Careful throat examination reveals an adherent membrane on the tonsil, pharynx or neighboring areas. The neck glands are enlarged and tender and the soft-tissue swelling may give a "bull-neck" appearance. IV Antitoxin must be administered as early as possible after a sensitivity test.

**Antibiotics:** Penicillin or Erythromycin for 14 days.

Eradication of *C. diphtheriae* should be documented by at least 2 negative nose-throat cultures taken 24 hours apart beginning at least 24 hours after completion of antibiotic therapy.

**BACTERIAL TRACHEITIS**

The child presents with a barking cough as in Viral Croup. High fever with respiratory distress may occur immediately or after a few days. The epiglottis is not inflamed. There are copious purulent airway secretions. *Staphylococcus aureus* is the most commonly isolated organism.

**Antibiotics:**

<table>
<thead>
<tr>
<th>1&lt;sup&gt;st&lt;/sup&gt;-line antibiotics</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt;-line antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefotaxime, Ceftriaxone.</td>
<td>Ampicillin-Sulbactum, Cotrimoxazole, Chloramphenicol</td>
</tr>
</tbody>
</table>

**VIRAL CROUP**

The child with acute viral croup presents with a sudden onset of brarking cough, stridor and respiratory distress, usually in the middle of the night. There may be mild fever. The organisms responsible are Parainfluenza virus, Phinovirus or Respiratory Synctial virus.

**Antibiotics are not indicated:** Inhaled or parenteral steroids usually provide dramatic relief. May reduce the need for hospital admission or, if given early, the need for
intubation\textsuperscript{3,4,5}.

**BRONCHIOLITIS / PNEUMONIA**

The child presents with increasing cough and respiratory distress. In developing countries most children (approximately 60%) have either bacterial or mixed bacterial-viral aetiology". It is very difficult to rule out bacterial Infection in infants suspected to have Bronchiolitis, and it is better to treat as pneumonia rather than to withhold antibiotics. The common bacteria responsible are \textit{S.pneumoniae}, \textit{H.influenzas} or \textit{S. aureus}.

**Classification**

- **Pneumonia** - Only increased RR, no chest retractions, none of the signs of severe illness.
- **Severe Pneumonii** - Chest retractions with or without increased RR, no signs of severe illness.
- **Very severe Pneumonia** - Increased RR, chest retractions and any one or more of the following: refusal of feeds, inability to drink, excessive drowsiness, expiratory grunting, wheeze/stridor in the calm state, cyanosis, convulsions or severe malnutrition.

**Antibiotics recommended**

<table>
<thead>
<tr>
<th>Pneumonia</th>
<th>- Oral Cotrimoxazole, Amoxicillin, Amoxyclav, 1\textsuperscript{st} or 2\textsuperscript{nd} – generation Cephalosporins.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe Pneumonii</td>
<td>- Parenteral Ampicillin + Amikacin, Chloeamphenicol.</td>
</tr>
<tr>
<td>Very severe Pneumonia</td>
<td>- Parenteral Cefotaxime, Cetriaxone, Cloxacillin + Amikacin, and Cefotaxime-Vancomycin or Cefotaxime- Rifampicin for resistant strains.</td>
</tr>
</tbody>
</table>

**CONCLUSION**

Clinicians must appreciate the need to streamline treatment practices and to rationalize antibiotic therapy when dealing with children with acute respiratory infections. This will go a long way in avoiding the unnecessary use of drugs in pediatric practice and preventing the development of drug resistance in the years to come.

**REFERENCES**


