Croup – Emergency management in children – Flowchart

**Assessment** (details over page) (avoid distressing child as may increase symptoms)

- **Mild**
  - Reassure parent and provide education
  - Consider single dose of corticosteroids (Oral)

- **Moderate**
  - Corticosteroids (Oral)
  - Consider NEB if not tolerating oral

- **Severe**
  - Oxygen
  - Adrenaline (NEB)
  - Corticosteroids (Oral)
  - Consider - Dexamethasone (IM/IV)
  - Budesonide (NEB)

- **Life-threatening**
  - Call for senior help onsite to manage airway
    - Resuscitate using ABCD
    - Oxygen 15 L/min via NRBM
    - Adrenaline (NEB) (repeat once if needed)
    - Support ventilation
    - IV or IO access
    - Corticosteroids (IV)

**Reassessment**

- Consider Adrenaline (NEB) if stridor or increased WOB

- **Responding to treatment?**
  - Yes
    - Adrenaline may be repeated once after 10 mins if persistent stridor and distress
  - No
    - No symptoms at 1 hour
      - Risk of severe illness? (Box A)
        - Yes
          - Refer to inpatient service. Consider Paediatric Critical Care
          - Refer to Paediatric Critical Care
        - No
          - Continue observation in ED or SSU
          - Symptoms persist or return after 3 hours?
            - Yes
              - Consider alternative diagnosis
            - No
              - Consider discharge with advice

**Box A: Risk factors for severe croup**
- age less than 6 months
- underlying structural upper airway condition
- history of previous severe croup
- unplanned representation within 24 hours
- trisomy 21

**Abbreviations**
- WOB = Work of Breathing
- NRBM = Non-rebreather mask

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Croup – Emergency management in children – Medications

Assessment of severity of croup

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Life-threatening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occasional barking cough, no audible stridor at rest</td>
<td>Frequent barking cough, audible stridor at rest</td>
<td>Persistent stridor at rest (may be expiratory)</td>
<td>Audible stridor may be quieter</td>
</tr>
<tr>
<td>No or mild respiratory distress* at rest</td>
<td>Moderate respiratory distress</td>
<td>Severe respiratory distress</td>
<td>Exhausted, poor respiratory effort</td>
</tr>
<tr>
<td>Normal SpO2*, no cyanosis</td>
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<td>SpO2 ≤ 93% or cyanosis</td>
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</tr>
<tr>
<td>Alert</td>
<td>Little or no agitation</td>
<td>Fatigue or altered mental state</td>
<td>Lethargy or decreased level of consciousness</td>
</tr>
</tbody>
</table>

*Signs of respiratory distress include accessory muscle use, abdominal breathing, intercostal recession, subcostal recession and tracheal tug. * Oxygen saturations using pulse oximetry, commonly referred to as “sats”

Differential diagnosis of acute onset stridor and respiratory distress

<table>
<thead>
<tr>
<th>Toxic appearance</th>
<th>Non-toxic appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bacterial tracheitis</td>
<td>• Spasmodic croup</td>
</tr>
<tr>
<td>• Epiglottitis</td>
<td>• Angioneurotic oedema</td>
</tr>
<tr>
<td>• Retropharyngeal abscess</td>
<td>• Laryngeal foreign body</td>
</tr>
<tr>
<td>• Peritonsillar abscess (quinsy)</td>
<td>• Subglottic haemangioma</td>
</tr>
</tbody>
</table>

Corticosteroid dosing for the treatment of croup

<table>
<thead>
<tr>
<th>Dexamethasone (Oral/IM)</th>
<th>0.15-0.3 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.15 mg/kg has shown to be an effective dose but in practice clinicians may opt for a higher dose to ensure the desired dose is ingested in a child who is vomiting/having difficulty taking oral medicine. Preferred corticosteroid as associated with lower representation rate however not available at all hospitals and community pharmacies.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dexamethasone (IV)</th>
<th>0.3 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prednisolone (Oral)</td>
<td>Day 1: 1 mg/kg/day</td>
</tr>
<tr>
<td></td>
<td>Day 2: 1 mg/kg/day in evening</td>
</tr>
</tbody>
</table>

Budesonide (NEB) dosing for the treatment of croup

| Dose | 2 mg nebulised with oxygen. |
| Side effects | Facial irritation – cover child’s eyes while administering, wash face afterwards |

Adrenaline (NEB) dosing for the treatment of croup

| Dose | 5 mL of undiluted 1:1000 Adrenaline nebulised with oxygen as a single dose. Dose may be repeated if there is inadequate response. |
| Monitoring | Clinical observations every 15 minutes for the first hour. |

For more information refer to CHQ-GDL-60004 - Croup – Emergency management in children