While the QAS has attempted to contact all copyright owners, this has not always been possible. The QAS would welcome notification from any copyright holder who has been omitted or incorrectly acknowledged.

All feedback and suggestions are welcome. Please forward to: Clinical.Guidelines@ambulance.qld.gov.au

Disclaimer

The Digital Clinical Practice Manual is expressly intended for use by QAS paramedics when performing duties and delivering ambulance services for, and on behalf of, the QAS.

The QAS disclaims, to the maximum extent permitted by law, all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs incurred for any reason associated with the use of this manual, including the materials within or referred to throughout this document being in any way inaccurate, out of context, incomplete or unavailable.


This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives V4.0 International License

You are free to copy and communicate the work in its current form for non-commercial purposes, as long as you attribute the State of Queensland, Queensland Ambulance Service and comply with the licence terms. If you alter the work, you may not share or distribute the modified work. To view a copy of this license, visit http://creativecommons.org/licenses/by-nc-nd/4.0/deed.en

For copyright permissions beyond the scope of this license please contact: Clinical.Guidelines@ambulance.qld.gov.au
Asthma is a potentially life-threatening condition which resulted in 455 deaths in Australia 2016.[1] It is a chronic inflammatory, obstructive disorder of the lower airways, characterised by episodes of reversible partial lower airway obstruction. Episodes of asthma commonly cause wheezing, coughing, chest tightness and breathlessness.[2]

Obstruction of the lower airways results from a combination of:
- bronchospasm
- inflammation and oedema of airways
- mucous plugging
- airway smooth muscle hyperplasia and hypertrophy.

These events cause increased airway resistance, increased work of breathing, alterations in pulmonary blood flow and mismatches between ventilation and perfusion, eventually causing hypoxia.[3]

Treatment of acute asthma has two key concepts:
- relieving the bronchospasm (bronchodilators)
- reducing the inflammation with steroid administration. Steroids take several hours to work, therefore earlier administration means earlier onset of action.

Clinical features

Asthma can be classified as mild, moderate, severe or near-fatal (life-threatening).
Asthma is considered near-fatal if associated with respiratory arrest or significant hypercarbia.[3]

There are two broad categories:

- **Gradual onset:**
  Gradual onset over days or weeks in patients with poorly controlled asthma. This is the most common form, responsible for 80–85% of all fatal events.[3] This pattern responds slowly to treatment.

- **Rapid onset:**
  Rapid onset in many cases has a precipatory cause or trigger and often responds quickly to treatment.
### Clinical features (cont.)

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Life-threatening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert</td>
<td>Alert</td>
<td>Agitated</td>
<td>Confused/drowsy</td>
</tr>
<tr>
<td>Nil accessory muscle use</td>
<td>Mild accessory muscle use</td>
<td>Moderate accessory muscle use</td>
<td>Severe accessory muscle use or minimal due to tiring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some physical exhaustion</td>
<td>Physical exhaustion</td>
</tr>
<tr>
<td>No tachypnoea</td>
<td>Mild tachypnoea</td>
<td>Marked tachypnoea</td>
<td>Marked tachypnoea</td>
</tr>
<tr>
<td>No tachycardia</td>
<td>Mild tachycardia</td>
<td>Marked tachycardia</td>
<td>Hypotension/bradycardia</td>
</tr>
<tr>
<td>Variable wheeze</td>
<td>Variable wheeze</td>
<td>Variable wheeze</td>
<td>Often silent chest</td>
</tr>
<tr>
<td>Talks in sentences</td>
<td>Talks in phrases</td>
<td>Talks in words</td>
<td>Unable to talk</td>
</tr>
<tr>
<td>Saturations &gt; 94% room air</td>
<td>Saturations 90–94% room air</td>
<td>Saturations &lt; 90% room air</td>
<td>Saturations &lt; 90% room air</td>
</tr>
<tr>
<td>No cyanosis</td>
<td>No cyanosis</td>
<td>Cyanosis/sweating</td>
<td>Cyanosis/sweating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patient seated upright, unable to lie supine, pursed lip breathing</td>
<td>Patient seated upright, unable to lie supine, pursed lip breathing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prolonged expiratory phase</td>
<td>Prolonged expiratory phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hyperinflated thorax</td>
<td>Hyperinflated thorax</td>
</tr>
</tbody>
</table>
### Complications of asthma

#### Respiratory compromise
- Gas trapping with increased work of breathing, reduced ventilation
- Hypoxia (late) due to ventilation-perfusion mismatch
- Hypercarbia – associated with exhaustion, altered level of consciousness (late)
- Barotrauma – particularly in ventilated patients
- Pneumothorax/tension pneumothorax
- Pneumomediastinum/pneumopericardium.
- Pneumonia
- Respiratory arrest

#### Haemodynamic instability
- Bradycardia/cardiac arrest – usually secondary to hypoxia or tension pneumothorax
- Cardiac arrhythmias
- Hypotension

#### Electrolyte abnormalities
- Lactic acidosis, hypokalaemia, hypomagnesaemia

### Risk assessment

- Wheezing is an unreliable sign of severity, as severe asthma may be associated with an inability to move air due to physical exhaustion, resulting in a silent chest.[5]
- Not all patients with wheeze have asthma – consider differential diagnoses (e.g. smoke inhalation, COPD, foreign body, APO).[6]

### Risk factors for life-threatening disease that increase the probability of escalation of acute asthma presentation.
- Prior ICU admissions and prior intubation
- Three or more hospital admissions over the last 12 months
- Currently taking steroids for asthma or chronic steroid use
- Poor compliance with medications

**IMPORTANT:** Asthma attacks are not generally characterised by hypoxia until late in the episode. Beware of the patient with normal SpO₂. SpO₂ is not a reliable isolated indicator of severity of illness.
Additional information

**Important patient history**
- Previous asthma history
  - age of onset, frequency and severity of symptoms, number of hospital presentations in last 12 months, ICU admissions, previous intubation
- Co-existing medical conditions
- Allergies
- Asthma triggers if known
- Cause of current episode if known
- Duration of symptoms
  - prolonged episodes increase possibility of physical exhaustion
- Medications (e.g. reliever, preventer, steroids, compliance).
  - How they have been managing the current episode.

**Note:** Officers are only to perform procedures for which they have received specific training and authorisation by the QAS.