Clinical Practice Guidelines:
Environmental/Hypothermia

<table>
<thead>
<tr>
<th>Policy code</th>
<th>CPG_EN_HO_0120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>January, 2020</td>
</tr>
<tr>
<td>Purpose</td>
<td>To ensure consistent management of patients with hypothermia.</td>
</tr>
<tr>
<td>Scope</td>
<td>Applies to Queensland Ambulance Service (QAS) clinical staff.</td>
</tr>
<tr>
<td>Health care setting</td>
<td>Pre-hospital assessment and treatment.</td>
</tr>
<tr>
<td>Population</td>
<td>Applies to all ages unless stated otherwise.</td>
</tr>
<tr>
<td>Source of funding</td>
<td>Internal – 100%</td>
</tr>
<tr>
<td>Author</td>
<td>Clinical Quality &amp; Patient Safety Unit, QAS</td>
</tr>
<tr>
<td>Review date</td>
<td>January, 2023</td>
</tr>
</tbody>
</table>

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
Hypothermia is a medical emergency that occurs when body heat is lost faster than it can be produced, resulting in an abnormally low body temperature. Normal body temperature is around 37°C and hypothermia is defined as a core body temperature of less than 35°C.[1] Early compensatory mechanisms of hypothermia include shivering, increasing muscle tone, peripheral vasoconstriction, increased respiratory rate and increased cardiac output. When these mechanisms no longer compensate for heat loss, body temperature falls.[1,2,3] Despite Queensland’s warm climate, hypothermia can occur in any season or setting.[4] Causes of hypothermia can be classified under three (3) broad headings:

**Increased heat loss**
- vasodilation
- environmental
- trauma
- loss of skin integrity e.g. burns
- neuropathy

**Decreased heat production**
- age
- endocrine disorders
- nutritional deficits
- immobility

**CNS dysfunction**
- trauma
- stoke
- hypoxaemia
- malignancy
- encephalopathy.

**Clinical features**
Signs and symptoms depend on the underlying aetiology and core temperature.[5]

- **Mild (35–32°C)** – vasoconstriction, apathy/lethargy, ataxia, tachycardia, tachypnoea and normotension.
- **Moderate (32–28°C)** – confusion, delirium, ALOC, hypotension, bradycardia and muscle rigidity.
- **Severe (less than 28°C)** – stupor, coma, diminished or absent signs of life, dilated pupils, reduced/absent reflexes and apnoea. Dysrhythmias including SB, slow AF (may present with J-wave), VF and finally asystole.

The patient can also develop:
- blunted catecholamine release
- Hypo/hyperglycaemia
- Hypo/hyperkalaemia
- coagulopathy/disseminated intravascular coagulation/thromboembolic disorders
- rhabdomyolysis.

**Risk Assessment**
- Not applicable
**Additional information**

- Manage treatable underlying conditions concurrently, for example, overdose, hypoglycaemia, seizure, trauma.
- In the pre-hospital setting it is difficult to accurately measure core temperature (tympatic thermometers lack accuracy at temperature extremes).
- Move hypothermic patients carefully and gently as they are at an increased risk of developing VF due to impaired cardiac conduction. [5]

**Signs of life?**

- Minimise patient movement
- Prevent further heat loss
  - gently remove wet clothes (should be cut off rather than stripped off)
  - ensure the patient is dry
- Commence rewarming
  - cover with blankets and consider self warming blanket
  - warm/heat the ambulance

**Consider:**

- Oxygen
- LMA/ETT
- 12-Lead ECG
- IV fluid
- BGL
- Serial temperature monitoring
- Treat concurrent conditions

**Transport to hospital**

Pre-notify as appropriate

**Manage as per:**

- CPG: Resuscitation (age specific)
- CPG: Resuscitation – Special circumstances

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