**PRE-HOSPITAL TRIAGE GUIDELINE**

1. Key messages

The objective of pre-hospital triage is to reduce preventable death and permanent disability and to improve patient outcomes by matching the needs of the injured patient to an appropriate level of care in a safe and timely manner.

The triage decision in the pre hospital setting is based on anatomic, physiologic and high mechanism risk criteria, available resources, and time and distance factors to hospital. The level of care available at the destination facility has a significant impact on outcome, therefore access to the highest level of trauma service possible within logistic and safety parameters is desirable. The Victorian State Trauma System (VSTS) aims to ensure that as many major trauma patients as possible receive their definitive care at a major trauma service (MTS) or equivalent specialist trauma service (the Austin Hospital for spinal cord trauma and the Metropolitan Neurological Services (MNS) for older patients with isolated head injuries). Non-major trauma patients, once identified, should remain in a local facility where their care can best be managed inclusive of family and local support services.

Overall, there has been an increase in the percentage of major trauma patients transported directly to the hospital of definitive care from the scene of injury, home or general practitioner (GP), from 65.9 per cent in 2005−06 to 68.9 per cent in 2011−12. This change indicates a significant improvement in pre-hospital triage and transportation processes.

An aim of pre-hospital triage is to optimise the identification of major trauma patients and to minimise the over-triage of non-major trauma patients.

Major trauma in the pre-hospital setting in Victoria can be identified when there is a minimum of one out of three criteria present. These are: the presence of abnormal vital signs; the presence of an assumed or actual anatomic injury; or the existence of a high-risk mechanism of injury in at-risk patients.

These guidelines provide the user with accessible resources to effectively and confidently provide early care for critically injured patients. The guideline is evidence based, has followed the AGREE II methodology for guideline development and is under the auspice of the Victorian State Trauma Committee (VSTC).

**Clinical emphasis points:**

- Victoria’s trauma system is integrated and inclusive, with system guidelines directing responders and hospitals as to the most appropriate destination facility for the patient.
- Expert scene assessment and initial pre-hospital management of life-threatening injuries is essential.
PRE-HOSPITAL TRIAGE GUIDELINE

- Major trauma criteria using the defined triage guidelines must be identified.
- Initial dispatch to the scene via either road or air must be well coordinated.
- Early planning as to transport to definitive destination is essential.
- Two adult and one paediatric hospital are designated as MTS hospitals, with potential trauma-receiving hospitals assigned a trauma designation.
This page is being held to contain an updated one-page summary of the guideline, intended for real-time clinical access and use. It will be sent as an out of session document for final revision.

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**Pre-hospital Major Trauma Triage**

**Does the trauma patient have abnormal vital signs meeting any of the VS criteria?**

- **Y:** Transport to the nearest Metropolitan Neurosurgical Facility

**Is the patient within 45 minutes transport time of a major trauma service?** (or MTS for elderly head injury patients: above)

- **N:** Does the patient have specific injuries meeting potential major trauma criteria?

**Is the patient within 45 minutes transport time of a major trauma service?**

- **Y:** Transport to the nearest appropriate emergency care facility

**What is the transport mode?**

- **ROAD:** Does the patient have signs of persisting hypovolaemic shock despite initial resuscitation?

**Is the patient within 45 minutes transport time of a major trauma service?**

- **N:** Does the patient have specific injuries meeting potential major trauma criteria?

**Consult ARV coordinator for discussion of emergency destination options including RTS**

- **mts:** ARV ensures reception capability of RTS including Surgeon, OR, Blood Bank, Supports, Notifies MTS

**Pre-hospital Vitals Signs Major Trauma Criteria**

<table>
<thead>
<tr>
<th>Age</th>
<th>Term - 3 mths</th>
<th>4-11 mths</th>
<th>1-4 yrs</th>
<th>5-11 yrs</th>
<th>12-15</th>
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<td>&lt;97%</td>
<td>&lt;98%</td>
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<td>&lt;15</td>
<td>&lt;13</td>
<td>&lt;11</td>
<td>&lt;10</td>
<td>&lt;10</td>
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</table>

**Specific injuries meeting potential major trauma criteria**

- **All penetrating injuries (except isolated superficial limb injuries)**

  **Blunt injuries:**
  - Serious injury to a single body region such that specialised care or intervention may be required, or such that life, limb or long term quality of life may be at risk.
  - Significant injuries involving more than one body region.

  **Specific Injuries:**
  - Limb amputation
  - Suspected Spinal Cord Injury
  - Burns > 20% BSA or suspected respiratory tract burns
  - Serious crush injury
  - Major compound fracture or open dislocation
  - Fracture to two or more of femur, tibia, humerus
  - Fractured Pelvis
  - Spinal Fracture

**High Risk Criteria for Major Trauma**

- Ejected from vehicle
- Motor / cyclist impact > 30 kph
- Fall from height > 3 m
- Struck on head by object falling > 3 m
- Explosion
- High speed MCA > 60 kph
- Pedestrian impact
- Prolonged extrication time

**ARV 1300 36 86 61**

Pediatric Infant Perinatal Emergency Retrieval

**PIPER 1300 13 76 50**

Contact us: Trauma.Victoria@ambulance.vic.gov.au
3. Identification of potential major trauma

**Vital signs**
The first step to identifying the presence of potential major trauma (pMT) is to assess the vital signs. In the pre-hospital setting, potential major trauma is identified according to the following criteria.4 5

<table>
<thead>
<tr>
<th>AGE</th>
<th>Term – 3 Months</th>
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<tr>
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<td>&lt;90%</td>
<td>&lt;90%</td>
<td>&lt;90%</td>
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<td>&lt; 15</td>
<td>&lt; 15</td>
<td>&lt; 13</td>
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</table>

If the patient has any one of the above signs present, then pMT is identified. The patient must be assessed for any life-threatening injuries that can be immediately managed in the field and consideration of transport to an MTS must be commenced.

**Injuries found or suspected**
The presence of any one of the following assumed or actual anatomic injuries constitutes pMT for the purpose of primary triage6.

**All penetrating injuries**
- Excludes isolated superficial limb injuries

**Blunt injuries**
- Significant injury to a single region such that specialised care or intervention may be required, or that life, limb or long-term quality of life may be at risk
- Significant injuries involving more than one body region

**Specific injuries**
- Limb amputations or limb-threatening injuries
- Suspected spinal fracture and/or spinal cord injury
- Burns to 20% or more of the body for an adult, 10% or more for a child, or suspected respiratory tract burns
- High-voltage burn injuries
- Serious crush injury
- Major open fracture or open dislocation
- Fracture to two or more of the femur, tibia or humerus
- Suspected fractured pelvis
**Isolated head injury in older people**
Where a person has an isolated head injury with an altered conscious state (GCS < 13) and is over 65 years of age and has sustained their injury as a result of a low fall (< 1 m) and is located in the metropolitan region then the patient should be transported to the nearest metropolitan neurosurgical service (MNS) or MTS. Data from the Victorian trauma system demonstrates that outcomes for this subset are comparable when care is delivered in an MNS as when provided in an MTS. 7

**High-risk criteria**
The triage of trauma patients who are physiologically stable and where only a single mechanistic criterion is present has a high potential for over-triage. The Victorian pre-hospital high-risk criteria requires both a specific trauma mechanism and either an age or comorbidity element present in order to identify as pMT. 8

**Specific trauma mechanism:**
- Ejection from vehicle.
- Motor/cyclist impact > 30 kph.
- Struck on the head by object falling > 3 m.
- Explosion.
- High-speed car accident > 60 kph.
- Pedestrian impact.
- Prolonged extrication.
- Fall from height > 3 m.

AND

**Additional patient criteria:**
- Age > 55 or a child < 16
  or
- Pregnant
  or
- Significant comorbidity to include one or more of:
  - diabetes, epilepsy, cardiac failure, angina, acute myocardial infarction (AMI), obesity, chronic respiratory disease, chronic renal failure, symptomatic chronic obstructive airway disease (COAD), renal or liver failure, chronic liver disease or congenital coagulopathy.

**4. On Scene**

**Scene Time**
As a general rule, the aim should be for a scene time of 20 minutes or less for non-trapped major trauma patients. 9
It is acknowledged that longer scene times may be necessary when interventions such as Rapid Sequence Intubation are required. In these circumstances a risk / benefit should be undertaken to determine if the interventions are essential (including consideration for proximity to hospital) or whether transport should be the priority. Additional considerations that may influence scene time include the number of patients versus resources available and the time to a primary hospital versus time to aeromedical transport to enable direct transport to a Major Trauma Service.

**Adult Retrieval Victoria notification**

If it is necessary for a pMT patient to be taken by ambulance to a hospital designated other than an MTS, Ambulance Victoria will notify ARV of the case and ARV will contact the primary receiving hospital within 60 minutes to determine the need for advice or support, or the need for retrieval or transfer to an MTS. If onward movement to a MTS is required then it is important that it occurs as soon as is practicable.

### 5. Transport time

Where an MTS is within 45 minutes’ transport time from the incident scene, the patient with pMT should be taken to that service, bypassing other hospitals in order to minimise the time from injury to definitive care. This will also avoid the need for subsequent inter-hospital transfer later on. (This also applies to an older patient with an isolated head-injury for whom a 45-minute transfer to an MNS/MTS is appropriate.)

**Road transfer**

Transport time by road will vary according to many factors including the time of day, traffic conditions and distance. Time will be calculated from loading the patient to the time of arrival at the receiving centre. Some flexibility in the 45-minute timeframe should be shown where a small increment added to transport time means that the patient is delivered to a facility for definitive care.

Where a patient is more than 45 minutes from an MTS, then the patient will be transported by road to the highest level of trauma care available within the 45-minute transport timeframe.

Where a major trauma patient appears to be in an immediately life-threatening situation during transport, the patient is to be diverted to the nearest designated trauma service for stabilisation, with subsequent transport to a MTS at the earliest appropriate time.

**Helicopter transfer**

If the flight time is more than 45 minutes and the adult patient has signs of persisting hypovolaemic shock despite resuscitation, a blood transfusion can be commenced pre-hospital. Consultation with the ARV coordinator for destination planning will occur (this may include diversion to a regional trauma service (RTS)). If the patient does not have signs of persisting hypovolaemic shock, they will be transported directly to an MTS.
**Persisting hypovolaemic shock**

**Road transfer:** Where a major trauma patient appears to be in an immediately life-threatening situation during transport, the patient is to be diverted to the nearest designated trauma service for stabilisation, with subsequent transport to a MTS at the earliest appropriate time.

**Helicopter transfer:** MICA flight paramedics (MFPs) will assess the patient and initiate resuscitative procedures, administer drugs and perform interventions in accordance with Ambulance Victoria’s *Clinical practice guidelines*.

If signs of shock are present, then non-hypovolaemic causes need to be excluded, including neurogenic shock in spinal injuries as well as obstructive shock from possible tension pneumothorax and/or cardiac tamponade.

If the trauma patient has signs of hypotensive end-organ impact such as altered conscious state (or intubated), marked pallor, clammy skin or has no response to initial crystalloid resuscitation (20–30 mL/kg), urgent management of that hypovolaemic shock is required.

In such patients, diversion to an RTS may be necessary where capability exists and where flight and landing logistics allow in order to access immediate haemostatic interventions. For this to be considered, an RTS must have available surgical, operating theatre and blood bank capability and capacity. This will be determined and confirmed by the ARV coordinator after consultation with the MFP crew and RTS staff.

The patient will be transferred by road or helicopter (if a helipad is available at the RTS), whichever is quickest.

ARV will also contact a nominated MTS to initiate early referral and case support between RTS clinicians and the MTS clinicians. The patient may be subsequently transferred for definitive care.
# AGREE II Score Sheet: Pre-hospital Triage guideline

<table>
<thead>
<tr>
<th>Domain</th>
<th>Item</th>
<th>AGREE II Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope and purpose</td>
<td>1. The overall objective(s) of the guideline is (are) specifically described</td>
<td>X</td>
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<tr>
<td></td>
<td>2. The health question(s) covered by the guideline is (are) specifically described</td>
<td>X</td>
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<td></td>
<td>3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described</td>
<td>X</td>
</tr>
<tr>
<td>Stakeholder involvement</td>
<td>4. The guideline development group includes individuals from all the relevant professional groups</td>
<td>X</td>
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<td>5. The views and preferences of the target population (patients, public, etc.) have been sought</td>
<td>X</td>
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<td>6. The target users of the guideline are clearly defined.</td>
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<tr>
<td>Rigor of development</td>
<td>7. Systematic methods were used to search for evidence.</td>
<td>X</td>
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<td>8. The criteria for selecting the evidence are clearly described.</td>
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<td>9. The strengths and limitations of the body of evidence are clearly described.</td>
<td>X</td>
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<td>10. The methods for formulating the recommendations are clearly described</td>
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<td></td>
<td>11. The health benefits, side effects and risks have been considered in formulating the recommendations</td>
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<td>12. There is an explicit link between the recommendations and the supporting evidence.</td>
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<td>13. The guideline has been externally reviewed by experts prior to its publication.</td>
<td>X</td>
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<td>14. A procedure for updating the guideline is provided.</td>
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<tr>
<td>Clarity of presentation</td>
<td>15. The recommendations are specific and unambiguous.</td>
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<td>16. The different options for management of the condition or health issue are clearly presented</td>
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<td></td>
<td>17. Key recommendations are easily identifiable.</td>
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<td>Domain</td>
<td>Item</td>
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<td>18. The guideline describes facilitators and barriers to its application.</td>
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<td>19. The guideline provides advice and/or tools on how the recommendations can be put into practice.</td>
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<td>20. The potential resource implications of applying the recommendations have been considered.</td>
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<td></td>
<td>21. The guideline presents monitoring and/or auditing criteria.</td>
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<tr>
<td>Editorial Independence</td>
<td>22. The views of the funding body have not influenced the content of the guideline.</td>
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<td></td>
<td>23. Competing interests of guideline development group members have been recorded and addressed.</td>
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<td><strong>Overall Guideline Assessment</strong></td>
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<tr>
<td></td>
<td>1. Rate the overall quality of this guideline.</td>
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<td>2. I would recommend this guideline for use.</td>
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<td><strong>Overall Guideline Assessment</strong></td>
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7. References


