1. **Key messages**

The Victorian State Trauma System provides support and retrieval services for major trauma patients requiring definitive care, transfer and management. This teamwork and communication guideline provides advice on both how to run and how to be a member of an effective team. The aim of this document is to improve efficiency of interaction within the team, be it within a pre-hospital, hospital or retrieval setting, with the goal of improving patient management and avoiding critical incidents. It also provides a general approach to the structure of the trauma team and the roles of each member.

This guideline is developed for all clinical staff involved in the care of trauma patients in Victoria. It is intended for use by frontline clinical staff that provide early care for major trauma patients; those working directly at the Major Trauma Service (MTS) as well as those working outside of a MTS.

These guidelines provide the user with accessible resources to effectively and confidently provide early care for the critically injured patient. 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.1

**Clinical emphasis points:**

- The structure of a trauma team will differ according to staffing levels and availability.
- Effective communication is essential in successfully resuscitating trauma patients.
- A designated team leader should seek input from other members of the team; however, they must make the final decision.
- To ensure the team runs effectively there must be mutual trust and respect between all members.

Technical developments in remote clinician contact and assistance (such as telehealth) is providing better access to expert guidance in the management of major trauma.

2. **Key attributes of an effective team**

Any team should be greater than the sum of its parts. While it is important that individual members are highly skilled and technically competent there are a number of key attributes that every team member should display:
- clear understanding of individual roles
- awareness of shared goals
- ability to display resilience under stress
- ability to cooperate on a personal and professional level
- flexibility to handle whatever comes their way

In the context of trauma the team is a group of individuals, often from different professional backgrounds with varying levels of expertise, who come together with a common purpose: the successful resuscitation of a trauma victim. The traditional ED team consists of doctors and nurses, however these practitioners work mainly independently due to conventional demarcations. Dependant on location and available resources pre-hospital personal may be required to assist with the initial management of trauma patients until additional personnel arrive. It is vital that all members of the team, whatever their cultural and professional background, are able to operate within an atmosphere of mutual trust and respect.

3. Trauma team structure

The trauma team structure will vary according to factors such as the time of day, availability of staff, hospital resources and skill set of the responders. This section will describe the makeup and roles in the ‘ideal’ setting and in modified circumstances where only limited resources are available. The level of training or seniority is not a fixed recommendation and it is recognised that, at a practical level, ‘emergency clinician’ may equate to ‘emergency registrar’ and ‘anaesthetist’ to ‘anaesthetic registrar’, etc. The assignment of roles in a trauma team need to flexibly focus on optimising the net capabilities of those present and available, rather than being restricted by seniority or craft group.
Trauma team positions
As general guidance, the ideal trauma team should consist of the following:

**Team leader:** ED clinician or doctor with the highest level of trauma care skills
- Controls and manages the resuscitation. Hands off!
- Must be clearly identifiable in that role.
- Allocates roles to other members of the team.
- Ensures that preparation for the patient’s arrival is complete.
- Stands at the foot of the bed.
- On arrival of the patient, ensures all involved listen to the handover by EMS staff, ensuring no one begins working on the patient until complete (hands off, hand over).
- Directs the resuscitation, makes critical decisions and prioritises care.

**Airway specialist:** Anaesthetist, but if none available then it should be the person most experienced in airway management. Consider the assistance of a GP, MICA paramedic or others
- Ensures adequate preparation of airway equipment.
- Responsible for assessing and managing the airway and ventilation.
- Counts the initial respiratory rate. Administers oxygen therapy, performs suction, inserts airway adjuncts, performs endotracheal intubation (RSI).
- Maintains cervical spine immobilisation and controls the log roll.
- Takes an initial history (AMPLE: Allergies, Medications, Past medical history, Last eaten, Events leading).

**Airway assistant:** A theatre assistant may assist in this role; if not, then Nurse 1 can assume this role
- Assists in preparing equipment for advanced airway intervention.
- Assists during interventions (applying cricoid pressure, passing tools to the airway specialist).

**Doctor 2: Assessment:** Emergency clinician/surgeon
- Undertakes the primary survey.
- Reports clinical findings clearly to the team leader and scribe.
- Conducts FAST exam if suitably qualified and no ultrasonographer present.
- May be required to perform procedures dependant on whether Doctor 2 is present and on skill set and training.

**Doctor 2 procedure:** Emergency clinician/doctor if available; if not then this role can be divided between Doctor 1 / Nurse 1 or 2 / paramedic, dependant on skills
- Performs procedures dependant on skill set and training (finger thoracostomy, chest drain insertion).
- Gains intravenous (IV) or intraosseous (IO) access and draws bloods.
- Has nasogastric tube (NGT) and in-dwelling catheter (IDC) insertion tubes ready.
- Conducts the secondary survey.
**Nurse 1: Monitoring**: ED nurse / ward nurse / paramedic

- Cuts off clothing on the right side.
- Places monitoring equipment on the patient (three-lead ECG, blood pressure, SpO₂, defibrillation pads if necessary).
- Takes temperature.
- Assists with advanced airway interventions as necessary.
- Assists with procedures (NGT / IDC / chest drain) as necessary or medical care as directed by the team leader.

**Nurse 2: Circulation**: ED nurse / ward nurse / paramedic

- Cuts off clothing on the left side.
- Attempts IV cannulation or IO access, take bloods including BSL (if no doctor available to do this).
- Commences IV fluid therapy via a warmer if necessary.
- Draws up drugs and administers medications as necessary (morphine, anaesthetic induction agents).
- Sets up external warming and ensures the patient is kept normothermic during resuscitation.

**Scribe**: ED nurse / ward nurse / paramedic

- Collates all information and records it on trauma charting.
- Keeps an accurate record of time of arrival, interventions and events.
- Records drug dosages, time of administration and amounts.
- Prepares paperwork for inter-hospital transfer if necessary.
- Gathers the patient’s belongings and documents a record of their possessions.
- Writes the patient identification wrist band and provides to nurse for application.

**Others**: Remain outside the area of principal activity and wait to be called by the team leader to assist.

**Radiographer**:

- Takes x-rays as directed by the team leader; if trained, may perform the FAST exam.

**Specialists**: General surgeon / orthopaedic surgeon

- Assists with the secondary survey and advanced procedures as directed by the team leader.
Modified trauma team positions
Where there are limited resources then individuals in the team will need to assume more than one role. It is important that all staff work collaboratively and communicate effectively.
4. The role of the team leader

The role of the team leader is an important one and one that shouldn't be undertaken lightly. Before any trauma reception begins the team leader role needs to be allocated and explicitly stated. The position does not need to be taken by the person with the most experience, but it should be someone with knowledge of the treatment of critically ill trauma patients. They also need to have the communication skills needed to fulfil the role.

Team leadership is the ability to direct and coordinate the activities for all team members, assess team performance, work with the team to develop collective knowledge, skills and abilities, motivate team members, plan and organize as well as establish a positive working atmosphere.

A good team leader will support and encourage the team, seek advice from other expert members of the team and allow their instructions to be questioned. Members of the team must respect their authority and be prepared to carry out the instructions of the leader. The team leader cannot always be correct, but following discussion the leader must make the final decision.

Strong leadership will provide the members of the team with a sense that the best possible outcome was achieved, even if the patient does not recover. In contrast, poor leadership may induce frustration and anxiety, having a negative impact on the team and its future performance.

Monitoring simultaneous activities is hard, and as team leader it is necessary to have a dynamic mental model of what is occurring with each element of the resuscitation, what rate the assessment and management of each component (A/B/C/D) is proceeding at, and how the dynamic changes in each component are affecting the other elements of the resuscitation.

What is situational awareness?

Situational awareness means being aware of what is going on around you, being able to see the bigger picture and reacting appropriately to it without getting caught up in the minutiae. In managing a complex trauma it is easy to become fixated on one problem; being focused on a single part of the situation means that other critical elements may deteriorate around you without recognition. In a practical sense, situational awareness is paying attention to what is going on around you. The resuscitation room or trauma bay can be a loud and distracting environment; the team leader has to be able to manage this while directing the team in an efficient way.

5. Effective communication

Effective communication is essential in successfully assessing and resuscitating critically ill trauma patients, especially in times of high stress. It is important to maintain a common vocabulary, creating a shared mental model of the case to avoid assumptions.

What is a shared mental model?

Creating a shared model of the patient’s situation allows personnel from differing backgrounds to understand both the clinical and logistical implications of the case. It ensures that team members are familiar with one another’s roles and responsibilities; that they are able to anticipate the needs of other team members, and have a high level of adaptive
This collaborative approach helps break down boundaries between individuals with varying levels of experience. It also helps reduce the perception of a power differential between outside specialists coming into the emergency department. Stating common treatment goals prevents individual team members veering off on counterproductive tangents. An example of this is an orthopaedic surgeon fixating on a dislocated ankle while the patient has a life-threatening pneumothorax that needs dealing with first. A way of doing this is to brief the team prior to the patient’s arrival.

**Briefing the team**

Even before the trauma patient arrives in the department the team leader should gather the team and brief them. The aim of the briefing is to:

- Allocate individual roles (for example, airway doctor/nurse).
- Allocate tasks to be completed before the patient arrives (for example, draw up drugs, prepare for a chest drain insertion, pre-notification of radiology/blood bank/theatre).
- Create a shared mental model of the patient’s current status as well as the anticipated plan and final destination.
- Create awareness of potential issues and how they might be dealt with (anticipate the ‘what if?’ scenario).
- Allow the team to ask questions and clarify any issues **before** the patient arrives.

**Tacit vs explicit communication**

Tacit knowledge can be described as that which is acquired through practice and experience and may be difficult to communicate. The same idea can be applied when referring to communication skills in the ED. Tacit communication is communication that occurs, often without words, in which the intention is never actually stated. One example of this is an experienced anaesthetist putting their hand out and expecting to be handed the laryngoscope by their assistant without actually asking for it because that is the way they do things. It should be obvious that this method can lead to problems, especially in occasional teams in times of high stress.

By making communication explicit and specific such as ‘When I do ... I would like you to do ...’ and allowing questions to be asked, errors and critical incidences can be avoided. In times of high stress communication often shifts from an explicit to a tacit form without the team being aware of it. This leads to missed information and poor outcomes.

One technique that can help avoid this is using closed-loop communication.

**Closed-loop communication**

Once the team leader has either requested information or asked for a procedure to be performed by a named person, they should then acknowledge the request explicitly and then state when it is done. This allows for clarification of requests if needed and avoids errors of omission. Closed-loop communication allows the sender to know that their requests have been heard and understood.

Example: 

`James, I want you to insert a large-bore IV, please.’

‘You want me to insert a 16-gauge IV?’

‘Correct.’`
Closed loop communication has been shown to reduce error rates by removing ambiguity from instructions, allowing questions if the instruction was not heard clearly, and it allows others in close proximity to be aware of the proposed course of action.

It is also especially important when ordering drug doses, especially if they are unfamiliar. If one asks for ‘50 of propofol’, do you mean 50 mg or 50 mL? It would be better to state, ‘John, I’d like you to give 50 mg, which is 5 mL of propofol.’

The use of names avoids the problem of such requests being made to an empty space. When a team leader asks out loud for an IV to be inserted, unless s/he specifies who s/he wants to perform the procedure then there is a risk it will not be done at all.

It is important that the team leader also uses eye contact when making requests, allowing for non-verbal as well as verbal clarification. The leader doesn’t bark orders but should be concise and clear in their language in order to get the task done.

**Handover**

**ISBAR** is an acronym for facilitating health professional communication ensuring clarity and completeness of information in verbal communication. By using a structured approach one can avoid missing vital information. By consistently using the ISBAR format for handover the team can anticipate what is coming next and be aware when important information is being presented:

- **I** Identify: Who are you and what is your role? Patient identifiers (at least three).
- **S** Situation: What is going on with the patient?
- **B** Background: What is the clinical background/context?
- **A** Assessment: What do you think the problem is?

**Remote support and communication**

The formation of a trauma or deteriorating patient response team may be very different among health services with highly variable capacity. Developments in both technological hardware and communication infrastructure have allowed healthcare services to extend their information base beyond in-house capacity, through using videoconference (VC) technologies. Difficult major trauma patient presentations, particularly when there is no or only off-site medical cover, require additional support to optimise patient care. The connection to a ‘remote expert’ to assist in identifying differential diagnoses and to guide ongoing assessment and intervention can be facilitated by Adult Retrieval Victoria (ARV) consultants. Where structures do not exist to allow VC consultation, voice-only teleconferencing with ARV allows for ongoing dialogue regarding best management of the major trauma patient.

Current structures allow for many Victorian health services to connect with critical care coordinators at ARV to provide expert guidance in managing major trauma patients. Engaging a VC support person has been shown to improve the confidence and abilities of attendant staff in managing acutely unwell patients. Systems currently in place allow for high-quality video and voice transmission to add value to the on-site clinical assessment of major trauma patients. The capacity of VC support lends itself to wide-ranging consultation, including reviewing x-rays and electrocardiographs in addition to major trauma patient assessment and interventional support.
Interactions over VC and teleconference technologies may require a change in approach, with some additional training and exposure, and the dissolution of barriers to involving an additional and external expert. However, identified positive outcomes necessitate health services embracing the use of VC and teleconference technologies to build staff confidence and skills and therefore improved patient outcomes.

6. Dealing with issues

Graded assertiveness
Teaching people to speak up and creating the dynamic where they will express their concerns is a key safety factor. Occasionally the team members may not agree with the leader’s management plan or the team leader may go silent and appear to be cognitively stuck. Members can use this as an opportunity to practice graded assertiveness. This is a communication technique that can allow anyone to challenge any action or behaviour that they think is inappropriate.

One way to remember it is to use the PACE mnemonic:

- **P**robe: ‘Do you know that…?’
- **A**lert: ‘Can we go back to the start and repeat the primary survey?’
- **C**hallenge: ‘Please stop what you are doing while we check …’
- **E**mergency: ‘Stop what you are doing and put down the scalpel.’

No one team member should be afraid to point out a risk, a concern or an actual or potential error.

Five-step advocacy
An alternative approach is the advocacy approach:

1. **Get attention** – ‘Excuse me, doctor!’
2. **Raise your concern** – ‘There is no end-tidal CO₂ trace.’
3. **State the problem as you see it** – ‘I’m concerned that the intubation was unsuccessful.’
4. **Suggest a solution** – ‘Why don’t we remove the ETT and go back to bagging the patient?’
5. **Obtain an agreement** – ‘Does that sound like a safe thing to do?’

7. Trauma Team Training
Under pressure, team integration may be impaired by an inability to communicate information clearly and accurately to others. As the work environment for health care professionals becomes increasingly team based, the importance of training health care professionals to work together in teams has the aim of improving team cohesion, promoting patient safety and reducing medical error. Simulated trauma resuscitation scenarios provide instruction on crisis resource management and have been shown to improve team performance in subsequent simulated and real-time scenarios. The importance of non-technical skills such as effective communication, leadership and teamwork are recognised as
essential components of the team which correlates with clinical outcomes in trauma resuscitation.

Simulation based training for healthcare providers is a well-established training tool, especially in the development of non-technical team building skills. Often this simulation takes place in a remote location, unfamiliar to staff, at a high cost to the participants with releasing of staff to attend these workshops difficult. In situ simulation takes place in the actual working environment and allows for improved team performance in the workplace. There are many advantages to this method of simulation training as individuals are familiar with equipment and are more comfortable in their environment. In situ training also allows for improved teamwork and inter-professional communication using teams that actually work together, and simulations can be tailored around events / scenarios that are relevant to the team. It conveys a greater sense of realism and team interaction and can identify system failures and problems that had not been previously identified. While courses remain a valuable learning tool for teaching technical skills, in situ simulation can play an important complementary role in reinforcing these skills and providing a bridge to the clinical environment and the use of these skills in patient care. Each healthcare facility should make time to practice in-situ simulations so that staff can feel empowered and work together as an effective team.
8. Appendix 1: AGRE II Score sheet – Teamwork and Communication

<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 general goal(s) of the guideline is (are) explicitly described.</td>
<td>6</td>
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<tr>
<td></td>
<td>2. The health question(s) covered by the guideline is (are) explicitly described.</td>
<td>6</td>
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<td>3. The target population, public, etc., to whom the guideline is meant to apply is specifically described.</td>
<td>6</td>
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<td>4. The population group includes individual from all the relevant groups.</td>
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<td>5. The population group has been sought.</td>
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<td></td>
<td>6. The target size of the guideline are clearly defined.</td>
<td>X</td>
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<tr>
<td>Stakeholder involvement</td>
<td>7. Systematic methods were used to search for evidence.</td>
<td>X</td>
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<td>8. There is a clear role of the evidence in the guideline.</td>
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<td>9. The methods for formulating the recommendations are clearly described.</td>
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<td></td>
<td>10. The health benefits, side effects and risks have been considered in formulating the recommendations.</td>
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<td></td>
<td>11. There is an explicit link between the recommendation and the supporting evidence.</td>
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<tr>
<td>Quality of guideline development</td>
<td>12. The framework used to develop the guidelines is outlined.</td>
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<td></td>
<td>13. The guidelines have been reviewed by experts prior to publication.</td>
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<td></td>
<td>14. Appendices for guiding the guideline is provided.</td>
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<td>15. The effects of bias in the guideline has been considered.</td>
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<td></td>
<td>16. The draft guidelines for management of the condition of health issue are clearly defined.</td>
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<td>17. Key recommendations are clearly defined.</td>
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<td>Domain</td>
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<td>Applicability</td>
<td>18. The guideline describes facilitators and barriers to its application.</td>
<td>X</td>
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<td></td>
<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>21. The guideline presents monitoring and/or auditing criteria.</td>
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<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>23. Competing interests of guideline development group members have been recorded and addressed.</td>
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<td>Overall Guideline</td>
<td>1. Rate the overall quality of this guideline.</td>
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<td>Assessment</td>
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<td>Overall Guideline</td>
<td>2. I would recommend this guideline for use.</td>
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<td>Assessment</td>
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9. References


