1. Key messages

The ongoing coordination of the Victorian State Trauma System (VSTS) is co-funded by the Department of Health and the Transport Accident Commission to ensure major trauma patients are managed in the best possible way.

The objective of the VSTS is to reduce preventable death and permanent disability and improve patient outcomes by matching the needs of injured patients to an appropriate level of treatment in a safe and timely manner.

The 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 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.

There is clear evidence that the VSTS has been highly effective in improving the clinical management and outcomes of major trauma patients.

Key elements of the VSTS that underpin its success include:

- coordination of pre-hospital and acute care services
- designation of two adult and one paediatric hospital as MTS hospitals, with all other potential trauma-receiving hospitals assigned a trauma designation
- defined triage guidelines for transporting patients to MTS hospitals
- statewide system of major trauma response through Adult Retrieval Victoria (ARV) and Paediatric Infant Perinatal Emergency Retrieval (PIPER)
- a ministerial committee and subcommittee to oversee the trauma system.

**Emphasis points**

- An integrated and inclusive trauma system, the VSTS commenced in 2000.
- The VSTS delivers a systemic clinical pathway for efficiently managing major trauma patients.
- The treatment of critically ill patients with multiple injuries requires a multidisciplinary, coordinated and integrated system of trauma care.
- Integrated trauma care systems have been shown to reduce preventable deaths.
- The introduction of the VSTS has been associated with a significant reduction in mortality and morbidity from major trauma.
- The designation of all 140 potential trauma-receiving hospitals reflects the clinical capabilities of each hospital.
• Compliance with major trauma guidelines and protocols ensures the right patient to the right level of care in the shortest time.
• Evidence based on data from the Victorian State Trauma Registry indicates overall major trauma patient functional outcomes have significantly improved under the VSTS. Over 85% of major trauma patients now receive definitive care at an MTS hospital or a specialist trauma service (the Austin Hospital for spinal cord trauma and the Metropolitan Neurological Services for older patients with isolated head injuries).
• The first point of call to initiate retrieval and transfer of adult trauma patients is ARV and PIPER for paediatrics.
• The VSTS will continue to be enhanced and strengthened by the introduction of a statewide trauma education system.

*The success of the VSTS and its impact on patient outcomes is a result of the work of all staff providing care to major trauma patients at all stages of the patient journey. Good early trauma care, appropriate and timely transfer and best practice in definitive care continue to improve outcomes for Victorian victims of major trauma.*

2. Introduction

For some time, Victoria has been a significant leader in the development and implementation of innovations to improve the care and outcomes of major trauma patients. To achieve the world-class trauma system that exists in Victoria today, a ministerial taskforce was established in 1997 to provide advice to the department on a best practice model that would be responsive to the needs of major trauma patients. This taskforce undertook a review, with extensive consultation, and provided recommendations for a system of trauma management.

The Review of the Trauma and Emergency Services 1999 (RoTES) report led to the VSTS being established in 2000. The report found that improvements to reduce trauma morbidity and mortality could be achieved by enhancing trauma patient management at all stages.

The RoTES report made more than 100 recommendations, which provided a framework for an integrated system of care for major trauma patients.

Today, implementation of these recommendations is substantively complete.

Since its implementation the VSTS has continued to evolve and adapt to improve the delivery of trauma care. The system is subject to a process of continuous improvement through outcomes measurement, monitoring and analysis. Information from the Victorian State Trauma Registry is regularly used to review system performance and inform system improvements and new policy initiatives.
3. Definition of major trauma

In the absence of an internationally recognised standard definition of major trauma, Victoria applies the following operational definition of major trauma in injured patients:

- death after injury
- admission to an intensive care unit for more than 24 hours, requiring a period of mechanical ventilation
- serious injury to two or more body systems
- an Injury Severity Score (ISS) over 12, or
- urgent surgery for intracranial, intrathoracic or intra-abdominal injury, or for fixation of pelvic or spinal fractures
- Paediatric trauma refers to all children aged <16 years (up to 15 years and 364 days).

4. Key features of the Victorian State Trauma System

- Two adult and one paediatric hospital have been designated as MTS hospitals: The Alfred, the Royal Melbourne and the Royal Children’s Hospital. MTS hospitals have dedicated trauma teams comprising clinicians with a range of specialist expertise, to receive major trauma patients and manage the initial response.
- Statewide system organisation and management of major trauma response is coordinated through ARV and PIPER (paediatrics).
- Triage and transfer protocols prescribe specific physiological and anatomical criteria, and how major trauma patients should be transferred across the trauma system.
- The Ministerial Advisory Committee, the State Trauma Committee and its subcommittees oversee the VSTS and provide advice on policy development, funding, system performance and quality management, comprehensive governance model.
- The Victorian State Trauma Registry was established in 2001 to monitor the effectiveness of the VSTS. The registry is funded by the department and the Transport Accident Commission (TAC). Trauma data is collected for the 140 hospitals and healthcare facilities that manage patients in Victoria. The registry collects data to assess trends in patient characteristics, management and outcomes. Reports based on VSTR data are published annually.
- The Trauma Advice and Referral telephone line is coordinated by ARV and provides clinical support and advice to clinicians managing major trauma patients. It also coordinates the referral and transfer of patients to the MTS hospitals.
- The Case Review Group (CRG) provides advice on transfer policy, analysis and best practice management of major trauma patients. The focus of the CRG is to improve the quality of major trauma care by reviewing major trauma cases that fall outside of the Victorian major trauma guidelines and where the patient journey is not considered optimal.
5. Victorian State Trauma System outcomes

The VSTS is one of the most highly regarded integrated trauma systems in the world, providing excellence in major trauma patient care. While patients managed by the system continue to grow, significant gains have been made in trauma management and the outcomes of major trauma patients following the introduction of the VSTS.

Today, approximately 85% of all major trauma patients receive their definitive care at an appropriately designated trauma service and more than 90% of road trauma cases are managed at an MTS hospital.

In 2012–13 the odds of in-hospital death following a major trauma was at its lowest level since the introduction of the system. Patients are spending less time in hospital and more patients are able to be discharged home rather than to inpatient rehabilitation.

Evidence from the Victorian State Trauma Registry also confirms that functional and health status outcomes of major trauma are continuing to improve, indicating that the increase in lives saved under the VSTS has not resulted in an overall increase in trauma survivors living with permanent disability.

VSTS stakeholders including the Department of Health, the TAC, Ambulance Victoria and ARV are committed to ensuring the VSTS remains one of the world’s most effective trauma systems. Integral to the success of the VSTS is the quality data captured by the Victorian State Trauma Registry. The registry enables constant trauma system monitoring, which drives continued improvements and ensures the VSTS’s status as a national and international leader in trauma care.

The below graph is a timeline representation of Vic Roads safety programmes which have been introduced by the Victorian government and its effect on motor vehicle collisions and mortality rates.
VICTORIAN ROAD TRAUMA COUNTERMEASURES 1970-2014

Used with permission from Vic Roads.
6. Resources

**Trauma Victoria**

The VSTS facilitates the management and treatment of major trauma patients in Victoria. The VSTS aims to reduce preventable death and permanent disability and improve patient outcomes by matching the needs of injured patients to an appropriate level of treatment in a safe and timely manner.

The system works to have the right patient delivered to the right hospital in the shortest time.

One of the best ways to facilitate this is to provide an education resource to all clinicians. Trauma Victoria is a statewide education initiative directed towards clinical staff (doctors, nurses, allied health, paramedic) who provide early patient care for major trauma outside of a MTS.

Guidelines are in place to support awareness of key aspects of the trauma system and early trauma care and include specialist trauma transfer guidelines.

A web-based learning management system provides modules to support each of the principle guideline areas. Skills tutorials on key trauma procedural interventions will also be accessible.

Moderated remote tutorials will be offered in the future. Clinicians will join a multisite, multiparty videoconferenced meeting room for tutorials and discussions on relevant trauma subjects. It will allow local practitioners to tap into specialised clinical knowledge and to develop their learning to the fullest extent.

Regional simulation and team training will also be supported via a remote expert facilitator and will involve regional and subregional simulation trainers. It will build capacity among simulation trainers to enhance local trauma team training programs.

Facilitated visits will also be arranged whereby medical, nursing and allied health staff may be placed for brief rotations with a MTS in order to increase their experience and familiarity in major trauma management. The aim is also to promote the development of clinical relationships between organisations.

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