



European White Book on Polytrauma Management – Setting Standards for Trauma Care Across Europe

Authors

Roman Pfeifer¹, Frank Hildebrand², Christina Gaarder³, Ingo Marzi⁴

Roman Pfeifer: 0000-0003-1543-3995

Received: 22 March 2026

Accepted: 12 May 2026

Published: 24 July 2026

¹ Department of Traumatology, University Hospital of Zurich, Zurich, Switzerland. Email: roman.pfeifer@usz.ch

² Department of Trauma Surgery, Universitätsklinikum Aachen, Aachen, Germany. Email: fhildebrand@ukaachen.de

³ Department of Traumatology, Oslo University Hospital, Oslo, Norway. Email: tinagaar@online.no

⁴ Department of Trauma Surgery and Orthopedics, University Hospital Frankfurt, Frankfurt am Main, Germany.

Corresponding author: Roman Pfeifer, Department of Traumatology, University Hospital of Zurich, Zurich, Switzerland.

DOI: [10.67452/EMSR.2026.012](https://doi.org/10.67452/EMSR.2026.012)

Abstract

The following contribution provides an overview of the European White Book on Polytrauma Management, an initiative developed by the European Society for Trauma and Emergency Surgery (ESTES) aimed at standardizing and optimizing the care of severely injured patients across Europe. This White Book addresses significant disparities in trauma care quality and organization across European countries, advocating for integrated trauma networks and evidence-based standards encompassing the full continuum of care from prehospital emergency response through rehabilitation. It defines minimum requirements for infrastructure, personnel, and quality management, and serves as a reference framework for healthcare professionals, policy makers, and researchers. Its implementation aims to strengthen cross-border collaboration and improve healthcare system resilience across Europe.

Keywords: polytrauma; trauma systems; European standards; trauma networks; quality assurance; rehabilitation; ESTES.

The following contribution provides an overview of the European White Book on Polytrauma Management, an initiative developed by the European Society for Trauma and Emergency Surgery (ESTES) aimed at standardizing and optimizing the care of severely injured patients across Europe.¹

The Need for a European White Book

Trauma remains a major public health challenge in Europe and continues to be one of the leading causes of death and disability, particularly among young individuals during their most productive years of life. Current estimates indicate that approximately 5.3 million people are hospitalized annually due to injuries, while trauma accounts for nearly 8% of all deaths within the European Union.

In addition to the considerable human burden, trauma also imposes a substantial socioeconomic impact. Direct medical costs are estimated at approximately €80 billion annually, whereas indirect costs related to long-term disability, rehabilitation, and loss of productivity may reach up to €180 billion per year. Against this background, the European White Book was developed to address the gap between current clinical practice and established standards of care. It provides a structured framework to support the management of polytrauma patients within the heterogeneous healthcare systems existing across Europe.

Trauma Systems and Disparities in Europe

One of the principal motivations for the development of the White Book is the considerable disparity in trauma care quality, organization, and capacity among European countries. These differences are influenced by historical, geographical, political, and socioeconomic factors.

Current variations in European trauma care include:

- **Organizational differences:** While some countries have highly developed trauma networks and specialized centres of excellence, others are still in the process of establishing fundamental trauma infrastructure.
- **Differences in professional leadership:** Trauma care may be led by emergency physicians, anaesthetists, general surgeons, or orthopaedic trauma surgeons, depending on the national healthcare model.
- **Variability in system components:** Significant differences exist in prehospital emergency services, hospital network structures, trauma registries, and quality assurance systems.

Despite these variations, the White Book is based on the universal principle that every trauma patient should have access to optimal and evidence-based care, regardless of geographic location.

Networking and the Continuum of Care

The White Book strongly advocates for the establishment and strengthening of integrated trauma networks to ensure continuity of care throughout all phases of trauma management. The framework encompasses the entire patient pathway, including prehospital emergency care, acute hospital treatment, intensive care management, rehabilitation, and long-term follow-up.

An important strength of the White Book is its flexibility and adaptability. Although it defines high standards for trauma systems, it also acknowledges the diversity of European healthcare systems and allows implementation according to national and regional circumstances. This approach enables countries to prioritize local needs while progressively improving trauma care structures.

Infrastructure and Minimum Requirements

The White Book defines minimum requirements regarding infrastructure, personnel, and quality management. Its main objectives include:

1. **Personnel qualifications:** Defining staffing requirements and competencies necessary for trauma care training and education.
2. **Equipment standards:** Identifying essential equipment and resources required for the treatment of life-threatening injuries.
3. **Quality assurance:** Promoting outcome assessment, trauma registries, and continuous quality improvement measures.

Focus on OR, ICU, and Rehabilitation

The White Book identifies acute hospital care, particularly the Operating Room (OR) and Intensive Care Unit (ICU), as essential components of the trauma care continuum.

- OR and ICU: The document outlines the organizational structures, staffing models, and resources necessary to ensure optimal management of severely injured patients.
- Rehabilitation: By incorporating rehabilitation and long-term follow-up into its framework, the White Book emphasizes the importance of functional recovery, quality of life, and reduction of long-term disability.

Stakeholder Impact and Future Vision

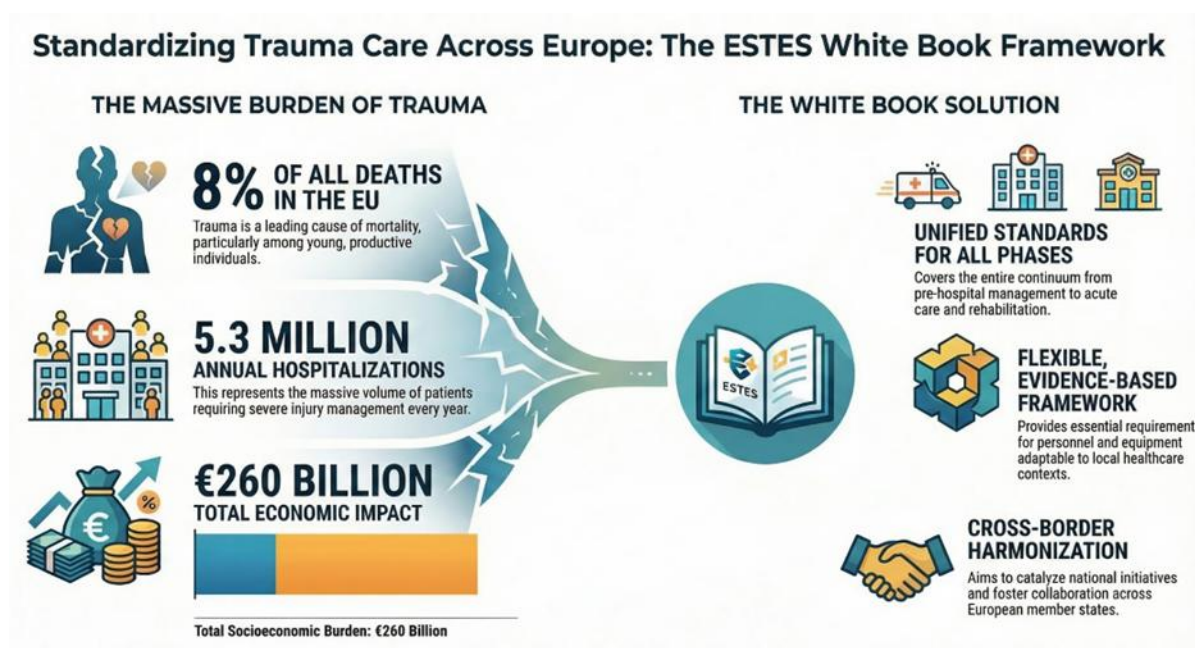
The White Book is intended to serve as a reference framework for multiple stakeholders:

- Healthcare professionals: Providing evidence-based guidance for trauma care delivery.
- Policy makers and European institutions: Supporting healthcare planning and harmonization of trauma systems across Europe.
- Researchers: Identifying priorities for future research and promoting standardized data collection.

Ultimately, the White Book represents more than a set of recommendations; it reflects a common European vision for the future of trauma care. Its implementation may stimulate national initiatives, strengthen cross-border collaboration, and improve the resilience of healthcare systems facing demographic changes, increasing healthcare costs, and future global challenges.

The standards defined in the ESTES European White Book on Polytrauma Management should be progressively implemented within the diverse healthcare systems of European countries, encompassing the entire continuum from prehospital emergency response to hospital treatment and rehabilitation. These aspects have already been discussed within the member societies of ESTES. ²

Table1





References

1. Pfeifer R, Hildebrand F, Gaarder C, Marzi I. European White Book on Polytrauma Management – Setting Standards for Trauma Care Across Europe. Cham: Springer Nature; 2025.
2. Rey Valcarcel C, Bieler D, Bass GA, Gaarder C, Hildebrand F, ESTES Polytrauma Consensus Group. ESTES recommendations for the treatment of polytrauma: a European consensus based on the German S3 guidelines for the treatment of patients with severe/multiple injuries. Eur J Trauma Emerg Surg. 2025;51(1):171. doi:10.1007/s00068-025-02852-4.