

# The Tactical Primary Survey

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## Abstract

Tactical Emergency Medical Support (TEMS) is the subspecialty of emergency medicine that focuses on the medical support of law enforcement special operations. TEMS involves the full continuum of support from medical planning through post-incident advocacy of injured officers. A defining feature of TEMS field care at the point of injury is the Tactical Primary Survey (TPS). The Tactical Primary Survey (TPS) is the sequential series of assessments and interventions designed to provide optimal care for patients suffering from acute injury in the tactical environment. This review article will cover all the elements that compose the TPS.

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## INTRODUCTION

Tactical Emergency Medical Support (TEMS) is the subspecialty of emergency medicine that focuses on the medical support of law enforcement special operations. TEMS involves the full continuum of support from medical planning through post-incident advocacy of injured officers. A defining feature of TEMS field care at the point of injury is the Tactical Primary Survey (TPS). Comparable to the primary survey in traditional emergency care, the TPS is a sequential series of assessments and interventions designed to provide life-saving resuscitation for critically injured patients. However, TEMS providers and TEMS Medical Directors should understand that certain unique modifications in both philosophy and approach from the traditional primary survey are required in order to perform effective medical care in the tactical environment.

## ELEMENTS OF THE TACTICAL PRIMARY SURVEY

There are three primary influences that continue to shape the evolution of the TPS. The threat environment in which TEMS providers care for patients significantly influences the scope, nature and standard of care that can be provided to patients in the tactical environment. The military medical

experience, particularly with the increasing resemblance of the military mission to the traditional law enforcement role in urban settings, continues to inform the practice of TEMS and the development of the TPS. Finally, refinement of the Zones of Care concept during a tactical response has delineated and reconciled different approaches to care delivery in the prehospital environment, clarifying the role of the TPS.

In order to better understand the TPS, it is valuable to describe the central features of the threat environment. With regard to the law enforcement special operations response, threat environments are precipitated by critical incidents such as hostage situations, active shooter scenarios and terrorist incidents. The threat environment is characterized by a spectrum of potential threats including perpetrators, weapons, toxic hazards and austere conditions. For TEMS providers, this threat environment impacts acute care delivery in four significant ways. First, TEMS providers must maintain situational awareness of their surroundings while simultaneously providing effective patient care. Second, several restrictions to care are imposed by this environment including the limited amount of medical equipment that can be carried by a TEMS provider in the field, the need for prolonged extraction under hostile conditions and the need to operate behind cover with light and noise discipline. Third, the casualty profile is shifted toward the potential for significant penetrating trauma, explosive blast injuries, multiple victims, delayed definitive care and contaminated patients. Fourth, medical decision-

making is impacted by the need for risk-benefit assessment. The benefits of proposed medical interventions (such as performing cardiopulmonary resuscitation on a downed officer) must be weighed against the potential for further harm to team members when the intervention is conducted under hostile conditions.

The military, particularly its special operations teams, has long recognized the value of endogenous medical care as an essential part of its response capability. In recent years, the multi-service Committee on Tactical Combat Casualty Care (COTCCC) has examined the nature of care in the combat environments faced by special operations medics. Based on expert consensus and analysis of real-world experience, the COTCCC has developed recommendations and guidelines for combat casualty care.<sup>1</sup> With modification and adaptation to the civilian context, these concepts have significant applicability to the medical support of law enforcement special response teams.

Unlike the fixed nature of tactical perimeters, Zones of Care are more fluid regions within the tactical environment shaped by the dynamic relationship between the provider, the patient and the threat. The Hot Zone in tactical medicine refers to situations in which the provider and patient are under direct fire. Under these conditions, the best medicine is often fire suppression and patient extraction. If absolutely needed, medical care should be limited to rapid insertion of a nasal airway or application of a tourniquet. Conversely, the Cold Zone designates the area outside the scope of the threat where traditional emergency care may be safely performed. This care may extend from treatment by responding lifesquads at the staging area through evaluation at a trauma center. The Warm Zone refers to the “islands of cover” within a tactical environment where the provider may provide focused life-saving intervention for the patient. While not under direct fire, TEMS providers in the Warm Zone must still be ready to react rapidly if shifting conditions suddenly put their patients in jeopardy. It is in the Warm Zone where the practices and principles of the TEMS provider are most fully applied in the sequential series of interventions framed by the TPS.

The TPS may be recalled by the memory aid “XABCDE” which stands for Exsanguinating Hemorrhage (X), Airway (A), Breathing (B), Circulation (C), Deficit and Decontamination (D) and Expose (E). The particular techniques for assessment and intervention are performed no differently than in traditional emergency care. As with the traditional primary survey, each step is performed in

sequence and stabilized prior to proceeding to the next stage. For the TPS, however, there is a different emphasis necessitated by care in the threat environment.

Exsanguinating Hemorrhage (X) is addressed even before airway management. In tactical medicine, there is a critical focus on stopping life-threatening bleeding first. Since it is difficult to maintain direct pressure effectively under combat conditions, the technique of choice for rapid bleeding control is the tourniquet, which should be applied early. Subsequent bleeding control involves efforts at de-escalating from the tourniquet to less aggressive approaches such as pressure bandages. The tourniquet may be left in place for up to four hours but should be transitioned before then if tactically feasible.

Airway (A) management is also affected by conditions of the tactical environment. Because they can be effectively and efficiently applied, basic airway skills are emphasized for immediate airway support. The nasal trumpet is particularly valued because of its versatile application in all patients regardless of a gag reflex. Rescue devices, such as the combitube, play an increased role under tactical conditions because they can be inserted blindly and quickly. When a definitive airway is required under volatile conditions, digital intubation is preferred over orotracheal intubation because its placement does not involve a light signature or loss of situational awareness. Conversely, cervical spine immobilization is not routinely recommended for victims of penetrating trauma under tactical conditions.<sup>2</sup> Given the low incidence of occult unstable fractures in this situation, the practice of applying a cervical collar and backboard to these patients under hostile conditions likely places the patient and the extracting team unnecessarily under increased risk of harm.

Management of Breathing (B) in the tactical setting focuses on care for penetrating chest wounds. In general, application of occlusive bandages to such chest wounds should be reserved for instances of true “sucking chest wounds”. Under conditions where continually monitoring a patient's condition may be difficult, routine application of an occlusive dressing raises the likelihood for the evolution of an undetected (and very lethal) tension pneumothorax. For similar reasons, current tactical medicine training emphasizes the early (even proactive) needle thoracostomy in patients with penetrating chest trauma to avert this preventable progression to tension pneumothorax.

The approach to the Circulation (C) step in the TPS reflects

a complex integration of traditional and military medical doctrine. Given that there is virtually no survival for victims who arrest in the field from penetrating trauma, cardiopulmonary resuscitation (CPR) is generally not performed in the tactical setting, particularly if it places others at risk in a hostile situation.<sup>3</sup> Based on contemporary military experience, there is an increased recognition in TEMS for the role played by intraosseous fluid delivery and hemostatic agents in the field.

Fluid resuscitation in TEMS balances (1) the tenets of Advanced Trauma Life Support (ATLS)<sup>4</sup>; (2) the potential need in TEMS missions for fluid therapy to resuscitate non-traumatic casualties such as victims of dehydration; (3) military considerations regarding the benefits of colloid fluids in prolonged transport and in reducing weight of the individual medic's kit; and (4) the theory of permissive hypotension.<sup>5</sup> One current approach in TEMS utilizes crystalloid fluid therapy when indicated for all medical patients and for trauma patients in cases where definitive care is less than four hours away. Colloid fluid is reserved for trauma patients when definitive care is more than four hours away. In accordance with the concept of permissive hypotension, fluid administration for trauma victims follows a tiered approach: (1) placement of heplock but no fluid administration for patients with no signs of shock and controlled bleeding; (2) fluid resuscitation to normalization of vital signs for victims with signs of shock but controlled bleeding; (3) fluid resuscitation to restoration of mental status or radial pulse in victims of shock from uncontrolled internal bleeding.<sup>6</sup>

The Deficit/Decontamination (D) stage of the TPS is fairly straightforward. Mental status is assessed as in traditional care with the AVPU scale (Alert, Responds to Verbal, Responds to Pain, Unresponsive) or the Glasgow Coma Scale (GCS). In the tactical field setting, there is an emphasis on mental status as a resuscitation endpoint since other criteria may be more difficult to assess. Hasty decontamination is a capability that should be in the armamentarium of all TEMS field providers. Once the critical life threats are managed, officers suffering an unexpected exposure to some toxic agent (as from a clandestine laboratory) will require rapid gross decontamination prior to the subsequent arrival of hazardous material response teams.

The decision to Expose (E) patients to assess the severity of injury must balance the need to uncover occult injury against

the potential harm posed by both environmental factors and threat conditions. It is important to adequately search for the presence of previously unknown penetrating injury. However, in the tactical setting, it is also essential to protect the patient against hypothermia and the potential for further penetrating trauma from additional gunfire.

**Figure 1**

Figure 1: Tactical Medical Operator performing a primary survey with limited body exposure.



**Figure 2**

Figure 2: Tactical Operators providing cover while a medical officer performs a primary assessment.



## CONCLUSION

The Tactical Primary Survey (TPS) is the sequential series of assessments and interventions designed to provide optimal care for patients suffering from acute injury in the tactical environment. It is a tool that integrates the tenets of traditional emergency care with the realities of the tactical setting. TEMS providers and TEMS Medical Directors should understand the decision-making involved in the TPS, and practice patient management under realistic conditions

to develop their proficiency.

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