Important Note
The intent of the Albany Medical Center Best Practices Guidelines is to provide health care professionals with evidence-based recommendations regarding care of the trauma patient. The Best Practices Guidelines do not include all potential options for prevention, diagnosis, and treatment and are not intended as a substitute for the provider’s clinical judgment and experience. The responsible provider must make all treatment decisions based upon his or her independent judgment and the patient’s individual clinical presentation. Albany Medical Center and any entities endorsing the Guidelines shall not be liable for any damages, including without limitation any direct, indirect, special, incidental, consequential or punitive damages, related to any use of the information contained herein. Albany Medical Center may modify the Best Practices Guidelines at any time without notice.
PURPOSE:
Appropriate utilization of resuscitative thoracotomy for the injured patient in extremis

SUPPORTIVE DATA:

Definitions:
- Resuscitative thoracotomy: refers to the operative procedure in which a left anterolateral thoracotomy incision is used to access the left hemithorax, combined with a number of procedures including pericardotomy, cross clamping of the descending aorta, mitigation of cardiac, pulmonary or great vessel hemorrhage, internal cardiac massage and defibrillation.
- Trauma patients in extremis: refers to the hemodynamically unstable patient including but not limited to the moribund patient, rapid/profound cardiovascular collapse, pre-hospital CPR less than 15 minutes after penetrating trauma, pre-hospital CPR less than 10 minutes after blunt trauma.

Policy Statements:
Resuscitative thoracotomy may be considered for victims of both penetrating and blunt trauma within prescribed guidelines.
Resuscitative thoracotomy may only be performed by appropriately trained and credentialed staff with expert knowledge of the procedure.
Equipment necessary for resuscitative thoracotomy has been selected and approved by Trauma Medical Director and Trauma-Acute Surgery Attending Surgeons and is immediately available in the Emergency Department and Operating Room.
The decision to proceed with resuscitative thoracotomy is ultimately based on the clinical judgement of the Attending Trauma Surgeon, the Attending Emergency Department Physician in concert with the Attending Trauma Surgeon and/or the Trauma Team Leader in concert with the Attending Trauma Surgeon.
Use of the Pericardial Window of the focused abdominal sonography for trauma (FAST) may be a useful adjunctive procedure to facilitate decision making in this situation.

Background:
Resuscitative thoracotomy has evolved in the setting of mature trauma systems to selective utilization when there is a reasonable expectation of satisfactory outcome for trauma patients arriving at hospitals in extremis. Literature review indicates that the best outcomes occur in patients with penetrating cardiac injury with an overall survival of 15% and survival of up to 35% with low velocity cardiac injury such as stab wounds in patients arriving in shock with detectable vital signs.
Resuscitative thoracotomy for blunt trauma patients remains poor with overall survival of 2% and survival of less than 1% in patients presenting with no vital signs.

PROCEDURES/THERAPEUTIC INTERVENTIONS

Recommendations and Level of Evidence:
Recent comprehensive clinical practice guidelines have been published by both the Eastern Association for the Surgery of Trauma and the Western Trauma Association. The level of evidence forming the basis of the recommendations was generally low to moderate quality resulting in strong and conditional recommendations.

1. Resuscitative thoracotomy is supported for:
   a. Patients presenting pulseless with signs of life after penetrating thoracic injury
   b. Patients presenting without signs of life after penetrating thoracic injury (pre-hospital CPR < 15 min)
   c. Patients presenting pulseless with signs of life after penetrating extrathoracic injury
   d. Patients presenting pulseless without signs of life after penetrating extrathoracic injury
   e. Patients presenting pulseless with signs of life after blunt injury (pre-hospital CPR < 10 min)

2. Resuscitative Thoracotomy is not recommended for patients presenting pulseless without signs of life after blunt trauma.

A number of algorithms for the use of resuscitative thoracotomy have been published. THEY CAN BE FOUND ON THE TRAUMA WEBSITE. All of the algorithms utilized advanced trauma life support principles and represent pragmatic approaches to the patient presenting in extremis. All algorithms included accepted indications for the use of resuscitative thoracotomy which are critical to the appropriate use of this extreme resuscitative measure and are designed to avoid its indiscriminate use.

Given the nature and consequences of resuscitative thoracotomy for both patient and providers it is critical to reiterate that resuscitative thoracotomy should only be performed by appropriately trained and credentialed staff with expert knowledge of the

REFERENCES


Clay Cothren Burlew, MD, Ernest E. Moore, MD, Frederick A. Moore, MD; Raul Coimbra, MD, Robert C. McIntyre, Jr., MD, James W. Davis, MD, Jason Sperry, MD, and Walter L. Biffl, MD. Western Trauma Association Critical Decisions in Trauma: Resuscitative thoracotomy. J Trauma Acute Care Surg. 2012;73:1359-1364.