

PRACTICE GUIDELINE

Effective Date: 9-17-04

Manual Reference: Deaconess Trauma Services

TITLE: MANAGEMENT & CLASSIFICATION OF SHOCK

PURPOSE: To provide a guideline to adequately manage perfusion of the brain and major organs.

DEFINITIONS:

1. Inadequate organ perfusion and tissue oxygenation results in cellular dysfunction and cell death.
2. A patient can be in shock with or without abnormal vital signs.
3. The most common cause of shock in the Trauma patient is hemorrhage.
4. Isolated brain injuries do not cause shock.
5. Diagnostic Peritoneal Lavage is abbreviated DPL

GUIDELINES:

1. The initial step in management of shock is to recognize its presence, so start treatment, and then determine its cause.
2. A Trauma patient in shock should be considered hypovolemic until proven otherwise.
3. External hemorrhage should be identified and controlled by direct manual pressure on the wound.
4. Fluid resuscitation:
 - a. Trauma Patients must have at least two large bore intravenous lines inserted on presentation.
 - b. Trauma patients will receive warmed Lactated Ringers solution as the initial resuscitation fluid.
 - c. If the patient's clinical status is stable, the warmed LR will be infused at a rate determined by the attending physician.
 - d. If the patient has a Systolic Blood Pressure of 90mmHg or less, he/she will receive a rapid bolus of 1000cc warmed Lactated Ringers. If no response, administer a second bolus of 1000cc warmed Lactated Ringers.
 - e. The patient will be reassessed after every fluid bolus.
 - f. If after three serial boluses of warmed Lactated Ringer's the patient remains hemodynamically unstable:
 - i. Begin transfusing blood
 - ii. Aggressively identify the source of blood loss
 - iii. Consider immediate transfer to the operating room
 - g. If after 2000cc of warmed Lactated Ringers solution the patient has become normotensive, the intravenous infusion rate will be decreased accordingly by the attending physician.
 - h. If the Trauma patient lapses into shock after the Lactated Ringer's solution has been slowed, transfusion of RBCs will begin.
 - i. Central Venous Lines
 - i. Alternatively, a central venous catheter may be placed
 1. Subclavian vein
 2. Internal jugular vein
 3. Femoral vein
 - ii. A central line should not be placed through a vein that is potentially injured

iii. A chest xray must be obtained after placement of a central venous line.

5. Management of shock

- a. Rapid response (Blood loss 10-20%): Vital Signs normalize. Type and cross-match blood for the patient. Continue with evaluation.
- b. Transient response (Blood loss 20-40%): Vital signs and perfusion improve following the initial fluid bolus, but then deteriorate as fluid infusion is slowed to maintenance. There is ongoing blood loss or inadequate resuscitation. Repeat fluid bolus and transfuse uncross-matched blood as described above. Type and cross for 6 units of PRBCs. Evaluate for sources of blood loss. Repeat Hgb early.
- c. No response: Vital signs remain abnormal. Consider the possibility of tension pneumothorax or cardiac tamponade. Transfuse uncross-matched blood and repeat fluid boluses. Consider empiric chest tube placement. Evaluate for possible sources of blood loss by portable CXR, pelvic xray and DPL. If no source found, consider non-hemorrhagic causes of shock such as tension pneumothorax, cardiogenic shock, or neurogenic shock.

Classification of Hemorrhagic Shock

	Class I	Class II	Class III	Class IV
Blood Loss	Up to 750cc	750-1500cc	1500-2000cc	>2000cc
% Volume	Up to 15%	15-30%	30-40%	>40%
Pulse Rate	<100	>100	>120	>140
Blood Pressure	Normal	Normal	Decreased	Decreased
Pulse Pressure	Normal or increased	Decreased	Decreased	Decreased
Respiratory Rate	14-20	20-30	30-40	>35
Urine Output (cc/hr)	>30	20-30	5-15	Negligible
Mental Status	Slightly anxious	Mildly anxious	Anxious, confused	Confused, lethargic
Fluid Replacement	Crystalloid	Crystalloid	Crystalloid & blood	Crystalloid & blood

REFERENCES:

- ❖ Deaconess Trauma Guideline Manual, ENDOTRACHEAL INTUBATION AND AIRWAY MANAGEMENT.
- ❖ Deaconess Trauma Guideline Manual, EMERGENT THORACOTOMY.
- ❖ Deaconess Hospital Critical Care Policy and Procedure Manual, A – 13: AUTO TRANSFUSION.
- ❖ Deaconess Hospital Policy and Procedure Manual, MASSIVE BLOOD TRANSFUSION.
- ❖ Deaconess Hospital Laboratory Policy and Procedure Manual, BLOOD USAGE REVIEW PROGRAM.
- ❖ Deaconess Trauma Guideline Manual, DIAGNOSTIC PERITONEAL LAVAGE.

REVIEWED DATE	REVISED DATE
JAN 05	JAN 08
JAN 06	
JAN 07	

SHOCK MANAGEMENT FLOW CHART

