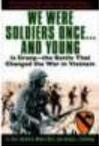


 <p>Tactical Combat Casualty Care August 2011</p>  <p>Tactical Evacuation Care</p>	<p>Tactical Combat Casualty Care August 2011</p> <p>Tactical Evacuation Care</p>	<p>The Tactical Evacuation phase of care is that phase in which casualties are moved from the hostile and austere tactical environment in which they were injured to a more secure location capable of providing advanced medical care. The term “Tactical Evacuation” includes both CASEVAC and MEDEVAC as discussed below. This phase may represent the first opportunity to receive additional medical personnel and equipment.</p>
 <p>OBJECTIVES</p> <ul style="list-style-type: none"> • DESCRIBE the differences between MEDEVAC and CASEVAC • DESCRIBE the four evacuation categories • DESCRIBE the differences between Tactical Field Care and Tactical Evacuation Care • LIST the nine items in a MEDEVAC request <p>2</p>	<p>OBJECTIVES</p> <ul style="list-style-type: none"> •DESCRIBE the differences between MEDEVAC and CASEVAC •DESCRIBE the four evacuation categories •DESCRIBE the differences between Tactical Field Care and Tactical Evacuation Care •LIST the nine items in a MEDEVAC request 	<p>Read text</p>
 <p>OBJECTIVES</p> <ul style="list-style-type: none"> • DESCRIBE the additional assets that may be available for airway management, electronic monitoring, and fluid resuscitation • LIST the indications and administrative controls applicable to giving Packed Red Blood Cells (PRBCs) in the field <p>3</p>	<p>OBJECTIVES</p> <ul style="list-style-type: none"> •DESCRIBE the additional assets that may be available for airway management, electronic monitoring, and fluid resuscitation •LIST the indications and administrative controls applicable to giving Packed Red Blood Cells (PRBCs) in the field 	<p>Read text</p>
 <p>OBJECTIVES</p> <ul style="list-style-type: none"> • STATE the rules of thumb for calling for Tactical Evacuation and the importance of careful calculation of the risk/benefit ratio prior to initiating the call <p>4</p>	<p>OBJECTIVES</p> <ul style="list-style-type: none"> •STATE the rules of thumb for calling for Tactical Evacuation and the importance of careful calculation of the risk/benefit ratio prior to initiating the call 	<p>Read text</p>

 <h3>Tactical Evacuation</h3> <ul style="list-style-type: none"> • Casualties will need to be evacuated as soon as feasible after significant injuries. • Evacuation asset may be a ground vehicle, aircraft, or boat. • Evacuation time is highly variable – significant delays may be encountered. • Tactical situation and hostile threat to evacuation platforms may differ markedly from one casualty scenario to another. • The Tactical Evacuation phase allows for additional medical personnel and equipment to be used. <p>5</p>	<h3>Tactical Evacuation</h3> <ul style="list-style-type: none"> • Casualties will need to be evacuated as soon as feasible after significant injuries. • Evacuation asset may be a ground vehicle, aircraft, or boat. • Evacuation time is highly variable – significant delays may be encountered. • Tactical situation and hostile threat to evacuation platforms may differ markedly from one casualty scenario to another. • The Tactical Evacuation phase allows for additional medical personnel and equipment to be used. 	<p>Casualty movement/evacuation may occur as a separate moving portion of the operation while the main assault force continues tactical operations or the casualties may be evacuated along with the main assault force as it exfiltrates from the main objective.</p> <p>Pre-mission planning should identify medical facilities and capabilities within the area of operations. Transport times to these facilities by various types of vehicles should also be identified.</p> <p>Planning for loading casualties onto mission vehicle assets is important. A single litter patient may occupy space within a tactical vehicle normally occupied by 4 uninjured combatants. Take this into account during planning.</p>
 <h3>Evacuation Terminology</h3> <ul style="list-style-type: none"> • MEDEVAC: evacuation using special dedicated medical assets marked with a Red Cross <ul style="list-style-type: none"> – MEDEVAC platforms are non-combatant assets • CASEVAC: evacuation using non-medical platforms <ul style="list-style-type: none"> – May carry a Quick-Reaction force and provide close air support as well • Tactical Evacuation (TACEVAC) – this term encompasses both types of evacuation above <p>6</p>	<h3>Evacuation Terminology</h3> <ul style="list-style-type: none"> • MEDEVAC: evacuation using special dedicated medical assets marked with a Red Cross <ul style="list-style-type: none"> – MEDEVAC platforms are non-combatant assets • CASEVAC: evacuation using non-medical platforms <ul style="list-style-type: none"> – May carry a Quick-Reaction force and provide close air support as well • Tactical Evacuation (TACEVAC) – this term encompasses both types of evacuation above 	<p>Any platform can be used to evacuate casualties. You must understand the capabilities and limitations of any vehicle you opt to utilize.</p> <p>MEDEVAC vehicles and aircraft are specifically configured for casualty care and designated with a Red Cross. These assets generally minimally armed. They will often NOT evacuate casualties where there is a high threat of hostile fire.</p> <p>CASEVAC assets are combatant platforms – good firepower, good armor, no Red Cross, designed to go into the fight. You will need CASEVAC assets if you have to evacuate casualties from a tactical situation where the threat level is high.</p>

<p> Aircraft Evacuation Planning</p> <ul style="list-style-type: none"> • Flying rules vary widely among different aircraft and units • Consider: <ul style="list-style-type: none"> – Distances and altitudes involved – Day versus night – Passenger capacity – Hostile threat – Medical equipment – Medical personnel – Icing conditions 	<p>Aircraft Evacuation Planning</p> <ul style="list-style-type: none"> • Flying rules vary widely among different aircraft and units • Consider: <ul style="list-style-type: none"> – Distances and altitudes involved – Day versus night – Passenger capacity – Hostile threat – Medical equipment – Medical personnel – Icing conditions 	<p>In tactical situations where the threat of hostile fire is high, plan to use a CASEVAC asset.</p> <p>However, in general, if the tactical situation will allow for a MEDEVAC asset to be used, it's best to use that asset and save the CASEVAC assets for other contingencies that may arise later.</p> <p>If you use a tactical CASEVAC asset, you may have to make plans to augment the medical capabilities of the asset. Plan to have extra medical personnel and equipment on the CASEVAC asset.</p>
<p> Aircraft Evacuation Planning</p> <ul style="list-style-type: none"> • Ensure that your evacuation plan includes aircraft capable to fly the missions you need • Primary, secondary, tertiary options 	<p>Aircraft Evacuation Planning</p> <ul style="list-style-type: none"> • Ensure that your evacuation plan includes aircraft capable to fly the missions you need • Primary, secondary, tertiary options 	<p>Always have a backup plan. Or two.</p> <p>KNOW the flying rules for all of your potential evacuation aircraft.</p>
<p> CASEVAC vs. MEDEVAC: The Battle of the Ia Drang Valley</p> <ul style="list-style-type: none"> • 1st Bn, 7th Cavalry in Vietnam • Surrounded by 2000 NVA - heavy casualties • Called for MEDEVAC • Request refused because landing zone was not secure • Eventual pickup by 229th Assault Helo Squadron after long delay • Soldiers died because of this mistake • Must get this part right 	<p>CASEVAC vs. MEDEVAC: The Battle of the Ia Drang Valley</p> <ul style="list-style-type: none"> • 1st Bn, 7th Cavalry in Vietnam • Surrounded by 2000 NVA - heavy casualties • Called for MEDEVAC • Request refused because landing zone was not secure • Eventual pickup by 229th Assault Helo Squadron after long delay • Soldiers died because of this mistake • Must get this part right 	<p>Here's an example of how preventable deaths can occur from evacuation delays if you don't understand the difference between a CASEVAC and a MEDEVAC.</p> <p>Soldiers died because of this planning error.</p>

<p> Ground Vehicle Evacuation</p> <ul style="list-style-type: none"> • More prevalent in urban-centric operations in close proximity to a medical facility • May also be organic to unit or designated MEDEVAC assets  <p>10</p>	<p>Ground Vehicle Evacuation</p> <ul style="list-style-type: none"> • More prevalent in urban-centric operations in close proximity to a medical facility • May also be organic to unit or designated MEDEVAC assets 	<p>Ground evac typically takes too long in Afghanistan.</p> <p>Also, military vehicles are not designed for comfort. There is usually significant noise and vibration in cargo areas, and overland movement generally provides for an extremely rough ride, which may be hard on the casualty.</p>
<p> Tactical Evacuation Care</p> <ul style="list-style-type: none"> • TCCC guidelines for care are largely the same in TACEVAC as for Tactical Field Care. • There are some changes that reflect the additional medical equipment and personnel that may be present in the TEC setting. • This section will focus on those differences.  <p>11</p>	<p>Tactical Evacuation Care</p> <ul style="list-style-type: none"> • TCCC guidelines for care are largely the same in TACEVAC as for Tactical Field Care. • There are some changes that reflect the additional medical equipment and personnel that may be present in the TEC setting. • This section will focus on those differences. 	<p>The Tactical Evacuation phase of care may represent the first opportunity within the tactical operation to bring additional medical equipment and personnel to bear.</p> <p>Additional medical personnel should arrive with the evacuation asset. This is important because:</p> <ul style="list-style-type: none"> -The unit's medic or corpsman may be among its casualties -The unit's medic or corpsman may be dehydrated, hypothermic, or otherwise debilitated -The unit's medic or corpsman may need to continue on the unit's mission and not get on the evacuation platform -There may not have been a medic or corpsman at the casualty scene
<p> Airway in TACEVAC</p> <ul style="list-style-type: none"> • Additional Options for Airway Management <ul style="list-style-type: none"> - Laryngeal Mask Airway - CombiTube - Endotracheal Intubation (ETT) • Confirm ETT placement with CO2 monitoring • These airways are advanced skills not taught in basic TCCC course 	<p>Airway in TACEVAC</p> <ul style="list-style-type: none"> • Additional Options for Airway Management <ul style="list-style-type: none"> -Laryngeal Mask Airway -CombiTube -Endotracheal Intubation (ETT) • Confirm ETT placement with CO2 monitoring • These airways are advanced skills not taught in basic TCCC course 	<p>The Nasopharyngeal Airway adjunct was described in the Tactical Field Care section. Once a casualty has been secured aboard an evacuation platform, a wider variety of more definitive airway adjuncts and personnel trained to use them may be available, although the NPA should suffice for most patients.</p> <p>Endotracheal intubation may offer a better airway option for selected patients in the Tactical Evacuation setting.</p> <p>Don't attempt advanced airways unless you have been trained on them and are proficient in their use.</p>

 <p>Breathing in TACEVAC</p> <ul style="list-style-type: none"> • Watch for tension pneumothorax as casualties with a chest wound ascend to the lower pressure at altitude. • Pulse ox readings will become lower as casualty ascends unless supplemental oxygen is added. • Chest tube placement may be considered if a casualty with suspected tension pneumo fails to respond to needle decompression <p>13</p>	<p>Breathing in TACEVAC</p> <ul style="list-style-type: none"> • Watch for tension pneumothorax as casualties with a chest wound ascend to the lower pressure at altitude. • Pulse ox readings will become lower as casualty ascends unless supplemental oxygen is added. • Chest tube placement may be considered if a casualty with suspected tension pneumo fails to respond to needle decompression 	<p>Consider tension pneumothorax in casualties with penetrating chest injuries and progressive respiratory distress. Decompress with a needle thoracostomy.</p> <p>Although chest tubes may be considered by trained personnel in long or delayed evacuations, they are considerably more difficult and invasive procedures, and there is no evidence that they are more effective than needle decompressions for relieving tension pneumothorax.</p>
 <p>Supplemental Oxygen in Tactical Evacuation Care</p> <p>Most casualties do not need supplemental oxygen, but have oxygen available and use for:</p> <ul style="list-style-type: none"> - Casualties in shock - Low oxygen sat on pulse ox - Unconscious casualties - Casualties with TBI (maintain oxygen saturation > 90%) - Chest wound casualties  <p>14</p>	<p>Supplemental Oxygen in Tactical Evacuation Care</p> <p>Most casualties do not need supplemental oxygen, but have oxygen available and use for:</p> <ul style="list-style-type: none"> - Casualties in shock - Low oxygen sat on pulse ox - Unconscious casualties - Casualties with TBI (maintain oxygen saturation > 90%) - Chest wound casualties 	<p>Oxygen should be pre-positioned on evacuation assets.</p> <p>Oxygen generators or concentrators are preferred over compressed gas cylinders because of the reduced explosive hazard.</p>
 <p>Tranexamic Acid (TXA)</p> <p>5. Tranexamic Acid (TXA)</p> <p>If a casualty is anticipated to need significant blood transfusion (for example: presents with hemorrhagic shock, one or more major amputations, penetrating torso trauma, or evidence of severe bleeding)</p> <ul style="list-style-type: none"> - Administer 1 gram of tranexamic acid (TXA) in 100 cc Normal Saline or Lactated Ringer's as soon as possible but NOT later than 3 hours after injury. - Begin second infusion of 1 gm TXA after Hextend or other fluid treatment. <p><small>* Note: Per the Assistant Secretary of Defense for Health Affairs memo dated 4 November 2011, use of TXA outside of fixed medical facilities is limited to the Special Operations community.</small></p>	<p>5. Tranexamic Acid (TXA)</p> <p>If a casualty is anticipated to need significant blood transfusion (for example: presents with hemorrhagic shock, one or more major amputations, penetrating torso trauma, or evidence of severe bleeding)</p> <ul style="list-style-type: none"> - Administer 1 gram of tranexamic acid (TXA) in 100 cc Normal Saline or Lactated Ringer's as soon as possible but NOT later than 3 hours after injury. - Begin second infusion of 1 gm TXA after Hextend or other fluid treatment. <p>* Note: Per the Assistant Secretary of Defense for Health Affairs memo dated 4 November 2011, use of TXA outside of fixed medical facilities is limited to the Special Operations community.</p>	<p>If the casualty meets the criteria for treatment with TXA, and it has not already been given, then give the first dose in Tactical Evacuation Care. Note that TXA should not be initiated if more than three hours have passed since the casualty was injured.</p>

 <p style="text-align: center;">TXA Administration – 2nd Dose</p> <ul style="list-style-type: none"> • Typically given after the casualty arrives at a Role II/ Role III medical facility. • May be given in Tactical Evacuation Care if the first dose was given earlier, and fluid resuscitation has been completed before arrival at the medical facility. <ul style="list-style-type: none"> – Should NOT be given with Hextend or through an IV line with Hextend in it – Inject 1 gram of TXA into a 100-cc bag of normal saline or lactated ringer’s – Infuse slowly over 10 minutes <p style="text-align: right;">16</p>	<p>TXA Administration – 2nd Dose</p> <ul style="list-style-type: none"> •Typically given after the casualty arrives at a Role II/Role III medical facility. •May be given in Tactical Evacuation Care if the first dose was given earlier, and fluid resuscitation has been completed before arrival at the medical facility. <ul style="list-style-type: none"> –Should NOT be given with Hextend or through an IV line with Hextend in it –Inject 1 gram of TXA into a 100-cc bag of normal saline or lactated ringer’s –Infuse slowly over 10 minutes 	<p>Remember that rapid IV push of TXA may cause hypotension. If there is a new-onset drop in BP during the infusion – SLOW DOWN the TXA infusion.</p>
 <p style="text-align: center;">Fluid Resuscitation in TACEVAC</p> <p>6. Fluid Resuscitation Reassess for hemorrhagic shock (altered mental status in the absence of brain injury and/or change in pulse character). If BP monitoring is available, maintain target systolic BP 80-90 mmHg.</p> <p>a. If not in shock:</p> <ul style="list-style-type: none"> - No IV fluids necessary. - PO fluids permissible if conscious and can swallow. <p>b. If in shock and blood products are not available:</p> <ul style="list-style-type: none"> - Hextend 500-mL IV bolus - Repeat after 30 minutes if still in shock. <p>- Continue resuscitation with Hextend or crystalloid solution as needed to maintain target BP or clinical improvement.</p> <p style="text-align: right;">17</p>	<p>Fluid Resuscitation in TACEVAC</p> <p>6. Fluid Resuscitation Reassess for hemorrhagic shock (altered mental status in the absence of brain injury and/or change in pulse character). If BP monitoring is available, maintain target systolic BP 80-90 mmHg.</p> <p>a. If not in shock:</p> <ul style="list-style-type: none"> - No IV fluids necessary. - PO fluids permissible if conscious and can swallow. <p>b. If in shock and blood products are not available:</p> <ul style="list-style-type: none"> - Hextend 500-mL IV bolus - Repeat after 30 minutes if still in shock. <p>- Continue resuscitation with Hextend or crystalloid solution as needed to maintain target BP or clinical improvement.</p>	<p>Read text</p>

 <p>Fluid Resuscitation in TACEVAC</p> <p>6. Fluid Resuscitation c. If in shock and blood products are available under an approved command or theater protocol: - Resuscitate with 2 units of plasma followed by packed red blood cells (PRBCs) in a 1:1 ratio. If blood component therapy is not available, transfuse fresh whole blood. Continue resuscitation as needed to maintain target BP or clinical improvement. d. If a casualty with an altered mental status due to suspected TBI has a weak or absent peripheral pulse, resuscitate as necessary to maintain a palpable radial pulse. If BP monitoring is available, maintain target systolic BP of at least 90 mmHg.</p> <p>18</p>	<p>Fluid Resuscitation in TACEVAC</p> <p>6. Fluid Resuscitation c. If in shock and blood products are available under an approved command or theater protocol: - Resuscitate with 2 units of plasma followed by packed red blood cells (PRBCs) in a 1:1 ratio. If blood component therapy is not available, transfuse fresh whole blood. Continue resuscitation as needed to maintain target BP or clinical improvement. d. If a casualty with an altered mental status due to suspected TBI has a weak or absent peripheral pulse, resuscitate as necessary to maintain a palpable radial pulse. If BP monitoring is available, maintain target systolic BP of at least 90 mmHg.</p>	<p>Concerns about “popping the clot” and diluting blood clotting factors remain as factors when resuscitating casualties with uncontrolled (torso) hemorrhage.</p> <p>In TBI casualties, the need to maintain adequate perfusion to the brain takes precedence over concerns about “popping the clot.”</p>
 <p>Blood Product Administration</p> <p>1) The success of blood product administration in improving the survival of trauma patients is unquestioned, and blood products are the standard for hospital-based trauma care in both military and civilian settings.</p> <p>19</p>	<p>Blood Product Administration</p> <p>1) The success of blood product administration in improving the survival of trauma patients is unquestioned, and blood products are the standard for hospital-based trauma care in both military and civilian settings.</p>	<p>Giving blood products is part of the standard of care for trauma patients in military and civilian hospitals, and has been for a long time. This practice clearly contributes to increased survival rates.</p>
 <p>Blood Product Administration</p> <p>2) The additional benefit gained from starting blood products in the prehospital phase has not yet been established in the medical literature, but the Defense Health Board has agreed that this therapy may be beneficial in the prehospital setting if blood products are available.</p> <p>20</p>	<p>Blood Product Administration</p> <p>2) The additional benefit gained from starting blood products in the prehospital phase has not yet been established in the medical literature, but the Defense Health Board has agreed that this therapy may be beneficial in the prehospital setting if blood products are available.</p>	<p>The consensus of expert opinion favors giving blood products in the prehospital setting. In other words, it is reasonable to expect that blood products will benefit the trauma patient if given when the patient’s need arises, regardless of the setting.</p>

 <p>Blood Product Administration</p> <p>3) Blood product administration should be initiated if feasible for any casualty who meets protocol criteria and is still enroute to the medical treatment facility. There is no minimum transport time below which blood product therapy should not be initiated if protocol criteria are met. Casualties who have absent radial pulse and/or decreased mental status due to hemorrhagic shock in the prehospital setting have a very high mortality rate and are in need of blood products as soon as possible.</p> <p>21</p>	<p>Blood Product Administration</p> <p>3) Blood product administration should be initiated if feasible for any casualty who meets protocol criteria and is still enroute to the medical treatment facility. There is no minimum transport time below which blood product therapy should not be initiated if protocol criteria are met. Casualties who have absent radial pulse and/or decreased mental status due to hemorrhagic shock in the prehospital setting have a very high mortality rate and are in need of blood products as soon as possible.</p>	<p>Blood products should be available during TACEVAC if logistically feasible. Blood product therapy should be initiated during transport if indicated by the casualty's clinical condition as delineated in an approved protocol.</p> <p>If a trauma victim clearly needs blood products, give them right away even if a Level II or III facility is close by.</p> <p>Remember, though, that giving blood products, like any other resuscitation fluid, does not take precedence over controlling any life-threatening bleeding that can be controlled.</p>
 <p>Blood Transfusion Protocols</p> <ul style="list-style-type: none"> • Transfusion of blood products should not be attempted in the absence of a theater- or command-approved protocol. • Blood products should be transfused only by providers that have been appropriately trained in the governing protocol. <p>22</p>	<p>Blood Transfusion Protocols</p> <ul style="list-style-type: none"> • Transfusion of blood products should not be attempted in the absence of a theater- or command-approved protocol. • Blood products should be transfused only by providers that have been appropriately trained in the governing protocol. 	<p>The maintenance, transport, and administration of blood products is a complex practice. It should be carried out only in strict compliance with formal protocol. Compliance with such a protocol requires a great deal of training and careful preparation.</p>
 <p>Damage Control Resuscitation</p> <ul style="list-style-type: none"> • Standard of care for severe shock is now "1:1" therapy <ul style="list-style-type: none"> • One unit of plasma for every unit of packed red cells • Different from previous focus primarily on packed red cells • Plasma helps to control hemorrhage by promoting clotting • Has been shown to increase survival <p>23</p>	<p>Damage Control Resuscitation</p> <ul style="list-style-type: none"> • Standard of care for severe shock is now "1:1" therapy <ul style="list-style-type: none"> • One unit of plasma for every unit of packed red cells • Different from previous focus primarily on packed red cells • Plasma helps to control hemorrhage by promoting clotting • Has been shown to increase survival 	<p>Read text</p>
 <p>Protocols for FDA-Compliant Blood Products (Component Therapy)</p> <ul style="list-style-type: none"> • Issues to address include: <ul style="list-style-type: none"> – Minimum provider level required – Training in blood product administration – Preparation and transport of blood products – Transfusion equipment – Which casualties need blood products – Verifying correct blood type <p>24</p>	<p>Protocols for FDA-Compliant Blood Products (Component Therapy)</p> <ul style="list-style-type: none"> • Issues to address include: <ul style="list-style-type: none"> – Minimum provider level required – Training in blood product administration – Preparation and transport of blood products – Transfusion equipment – Which casualties need blood products – Verifying correct blood type 	<p>Protocols for giving blood components like Packed Red Blood Cells and Plasma have to meet criteria spelled out by the FDA.</p>

 <p>Protocols for FDA-Compliant Blood Products (Component Therapy)</p> <ul style="list-style-type: none"> • Issues to address include (cont): <ul style="list-style-type: none"> – Which products should be given and how much – Transfusion procedures – Management of transfusion reactions – Documentation of blood product administration <p>25</p>	<p>Protocols for FDA-Compliant Blood Products (Component Therapy)</p> <ul style="list-style-type: none"> •Issues to address include (cont): <ul style="list-style-type: none"> –Which products should be given and how much –Transfusion procedures –Management of transfusion reactions –Documentation of blood product administration 	<p>Read text</p>
 <p>Non - FDA Compliant Blood Products (Fresh Whole Blood (FWB))</p> <ul style="list-style-type: none"> • Must be administered IAW Assistant Secretary of Defense for Health Affairs memo of 19 March 2010 • Used only in emergencies when: <ul style="list-style-type: none"> – No FDA-compliant blood products are available – Complying with a command-approved protocol – Providers trained in the protocol • Transfusing FWB may save lives when blood components are not available <p>26</p>	<p>Non - FDA Compliant Blood Products (Fresh Whole Blood (FWB))</p> <ul style="list-style-type: none"> •Must be administered IAW Assistant Secretary of Defense for Health Affairs memo of 19 March 2010 •Used only in emergencies when: <ul style="list-style-type: none"> –No FDA-compliant blood products are available –Complying with a command-approved protocol –Providers trained in the protocol •Transfusing FWB may save lives when blood components are not available 	<p>Transfusing FWB in the field may save a casualty’s life when PRBCs and plasma are not available.</p> <p>FWB must also be given under protocol by appropriately trained providers.</p>
 <p>Protocols for Non-FDA Compliant Blood Products</p> <ul style="list-style-type: none"> • Issues to address include: <ul style="list-style-type: none"> – Minimum provider level required – Training in FWB administration – Transfusion equipment – Which casualties need FWB – Prescreened donor pool – Screening for infectious agents – Verifying blood type – Transfusion procedures <p>27</p>	<p>Protocols for Non-FDA Compliant Blood Products</p> <ul style="list-style-type: none"> •Issues to address include: <ul style="list-style-type: none"> –Minimum provider level required –Training in FWB administration –Transfusion equipment –Which casualties need FWB –Prescreened donor pool –Screening for infectious agents –Verifying blood type –Transfusion procedures 	<p>Protocols for transfusing FWB are also complex and also require careful preparation and extensive training.</p>
 <p>Protocols for Non-FDA Compliant Blood Products</p> <ul style="list-style-type: none"> • Issues to address include (cont): <ul style="list-style-type: none"> – How much FWB should be given – Management of transfusion reactions – Documentation of blood product administration – Post-transfusion monitoring of donor and recipient <p>28</p>	<p>Protocols for Non-FDA Compliant Blood Products</p> <ul style="list-style-type: none"> •Issues to address include (cont): <ul style="list-style-type: none"> –How much FWB should be given –Management of transfusion reactions –Documentation of blood product administration –Post-transfusion monitoring of donor and recipient 	<p>Note that post-transfusion monitoring of donors for infectious diseases is an additional consideration when transfusing FWB in prehospital settings.</p>

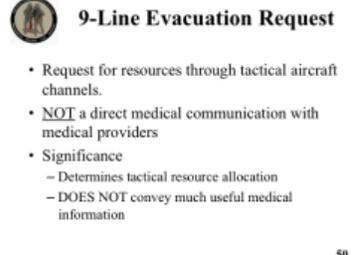
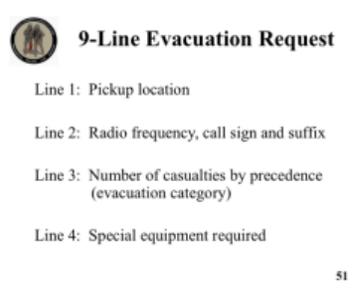
<p> Hypothermia Prevention in TACEVAC</p> <p>Remember to keep the casualty on an insulated surface or get him/her on one as soon as possible.</p> <p>Apply the Ready-Heat Blanket from the Hypothermia Prevention and Management Kit (HPMK), to the casualty's torso (<u>not</u> directly on the skin) and cover the casualty with the Heat-Reflective Shell (HRS).</p>  <p>29</p>	<p>Hypothermia Prevention in TACEVAC</p> <p>Remember to keep the casualty on an insulated surface or get him/her on one as soon as possible.</p> <p>Apply the Ready-Heat Blanket from the Hypothermia Prevention and Management Kit (HPMK), to the casualty's torso (<u>not directly on the skin</u>) and cover the casualty with the Heat-Reflective Shell (HRS).</p>	<p>Read text</p>
<p> Hypothermia Prevention in TACEVAC</p> <p>If a HRS is not available, the previously recommended combination of the Blizzard Survival Blanket and the Ready Heat blanket may also be used.</p>  <p>Use a portable fluid warmer capable of warming all IV fluids including blood products.</p> <p>30</p>	<p>Hypothermia Prevention in TACEVAC</p> <p>If a HRS is not available, the previously recommended combination of the Blizzard Survival Blanket and the Ready Heat blanket may also be used.</p> <p>Use a portable fluid warmer capable of warming all IV fluids including blood products.</p>	<p>Read text</p>
<p> Remember Prevention of Hypothermia in Helicopters!</p>  <ul style="list-style-type: none"> • Cabin wind and altitude cold result in cold stress • Protection especially important for casualties in shock and burn casualties <p>31</p>	<p>Remember Prevention of Hypothermia in Helicopters!</p> <ul style="list-style-type: none"> • Cabin wind and altitude cold result in cold stress • Protection especially important for casualties in shock and burn casualties 	<p>Imagine how cold these casualties are. It is <u>always</u> cold at altitude in helos, but much worse in winters.</p> <p>Medics and corpsmen in helicopters in winter – bring chemical hand warmers to maintain manual dexterity!</p>
<p> CPR in Tactical Evacuation Care</p> <p>17. CPR in TACEVAC Care</p> <p>a. Casualties with torso trauma or polytrauma who have no pulse or respirations during TACEVAC should have bilateral needle decompression performed to ensure they do not have a tension pneumothorax. The procedure is the same as described in section 2 above.</p> <p>32</p>	<p>CPR in Tactical Evacuation Care</p> <p>17. CPR in TACEVAC Care</p> <p>a. Casualties with torso trauma or polytrauma who have no pulse or respirations during TACEVAC should have bilateral needle decompression performed to ensure they do not have a tension pneumothorax. The procedure is the same as described in section 2 above.</p>	<p>As in Tactical Field Care, when a polytrauma or torso trauma victim loses signs of life during resuscitation, bilateral needle decompression of the chest should be performed, if feasible, to rule out tension pneumothorax.</p>

 <p>CPR in Tactical Evacuation Care</p> <p>17. CPR in TACEVAC Care b. CPR may be attempted during this phase of care if the casualty does not have obviously fatal wounds and will be arriving at a facility with a surgical capability within a short period of time. CPR should not be done at the expense of compromising the mission or denying lifesaving care to other casualties.</p> <p>33</p>	<p>CPR in Tactical Evacuation Care</p> <p>17. CPR in TACEVAC Care b. CPR may be attempted during this phase of care if the casualty does not have obviously fatal wounds and will be arriving at a facility with a surgical capability within a short period of time. CPR should not be done at the expense of compromising the mission or denying lifesaving care to other casualties.</p>	<p>CPR may be considered during TACEVAC if it is tactically and practically feasible, and surgical care is not far away.</p>
 <p>TACEVAC CARE - Hoisting</p>  <ul style="list-style-type: none"> • Rigid Litters Only When Hoisting! • Check and double-check rigging <p>34</p>	<p>TACEVAC CARE - Hoisting</p> <ul style="list-style-type: none"> • <u>Rigid Litters Only</u> When Hoisting! • Check and double-check rigging 	<p>Stokes or basket-type litters should be used for hoisting casualties into helos.</p> <p>Secure the casualty – check and double-check rigging.</p>
 <p>Questions?</p>	<p>Questions?</p>	
 <p>Standard Evacuation Categories</p> <ul style="list-style-type: none"> • <u>Urgent/Urgent Surgical</u>: 2 hour window to save life, limb, or eyesight • <u>Priority</u>: Can be safely managed for 4 hours • <u>Routine</u>: Can be safely managed for 24 hours • <u>Convenience</u>: Can be safely managed at location and do not hinder ongoing tactical mission <p>36</p>	<p>Standard Evacuation Categories</p> <ul style="list-style-type: none"> • <u>Urgent/Urgent Surgical</u>: 2 hour window to save life, limb, or eyesight • <u>Priority</u>: Can be safely managed for 4 hours • <u>Routine</u>: Can be safely managed for 24 hours • <u>Convenience</u>: Can be safely managed at location and do not hinder ongoing tactical mission 	<p>These are evacuation categories established by joint military operations pubs – not TCCC.</p> <p>Must know them when calling on the radio for MEDEVAC/CASEVAC.</p>

	<p>Tactical Evacuation: Nine Rules of Thumb</p>	<p>Here's something that IS particular to TCCC. If you have a casualty – HOW DO YOU KNOW how delays to evac will impact on him/her? These slides will help in that respect. Not taught anywhere else.</p>
	<p>TACEVAC 9 Rules of Thumb: Assumptions</p> <ul style="list-style-type: none"> • These Rules of Thumb are designed to help the corpsman or medic determine the true urgency for evacuation. • They assume that the decision is being made at 15-30 minutes after wounding. • Also that care is being rendered per the TCCC guidelines. • Most important when there are tactical constraints on evacuation: <ul style="list-style-type: none"> – Interferes with mission – High risk for team – High risk for TACEVAC platform 	<p>Why not just evac all casualties immediately? May be OK for some situations, but others scenarios may have tactical constraints that must be factored in. Here is where you would want to use the Rules of Thumb to help you.</p>
	<p>TACEVAC Rule of Thumb #1</p> <p>Soft tissue injuries are common and may look bad, but usually don't kill unless associated with shock.</p>	<p>Casualties do not die acutely from soft tissue wounds alone unless associated with severe bleeding or airway problems.</p>

<p> TACEVAC Rule of Thumb #2</p> <p>Bleeding from most extremity wounds should be controllable with a tourniquet or hemostatic dressing. Evacuation delays should not increase mortality if bleeding is fully controlled.</p>  <p>40</p>	<p>TACEVAC Rule of Thumb #2</p> <p>Bleeding from most extremity wounds should be controllable with a tourniquet or hemostatic dressing. Evacuation delays should not increase mortality if bleeding is fully controlled.</p>	<p>BUT – long delays to evacuation may cause a limb to be lost if a tourniquet is in place.</p> <p>Two hours does not seem to be a problem for limbs with tourniquets. As you move past four to six hours, the risk to limb survival increases.</p>
<p> TACEVAC Rule of Thumb #3</p> <p>Casualties who are in shock should be evacuated as soon as possible.</p>  <p>Gunshot wound to the abdomen</p> <p>41</p>	<p>TACEVAC Rule of Thumb #3</p> <p>Casualties who are in shock should be evacuated as soon as possible.</p>	<p>This GSW to the torso is an example of a wound that causes internal, non-compressible bleeding.</p> <p>There is nothing that the combat medic/corpsman/PJ can do to stop internal bleeding. TXA may help, but even so, shock is nothing to sit on in the field.</p>
<p> TACEVAC Rule of Thumb #4</p> <p>Casualties with penetrating wounds of the chest who have respiratory distress unrelieved by needle decompression of the chest should be evacuated as soon as possible.</p> 	<p>TACEVAC Rule of Thumb #4</p> <p>Casualties with penetrating wounds of the chest who have respiratory distress unrelieved by needle decompression of the chest should be evacuated as soon as possible.</p>	<p>Usually when you do needle decompression, casualties with a tension pneumo WILL get better.</p> <p>If they don't, their main problem may be a large HEMOthorax (blood in the chest).</p> <p>Needle decompression will not help that. Chest tubes may not, either.</p>
<p> TACEVAC Rule of Thumb #5</p> <p>Casualties with blunt or penetrating trauma of the face associated with airway difficulty should have an immediate airway established and be evacuated as soon as possible.</p> <p>REMEMBER to let the casualty sit up and lean forward if that helps him or her to breathe better!</p> 	<p>TACEVAC Rule of Thumb #5</p> <p>Casualties with blunt or penetrating trauma of the face associated with airway difficulty should have an immediate airway established and be evacuated as soon as possible.</p> <p>REMEMBER to let the casualty sit up and lean forward if that helps him or her to breathe better!</p>	<p>You can make these casualties much worse if you force them to lie on their backs!</p>

<p> TACEVAC Rule of Thumb #6</p> <p>Casualties with blunt or penetrating wounds of the head where there is obvious massive brain damage and unconsciousness are unlikely to survive with or without emergent evacuation.</p> <p>44</p>	<p>TACEVAC Rule of Thumb #6</p> <p>Casualties with blunt or penetrating wounds of the head where there is obvious massive brain damage and unconsciousness are unlikely to survive with or without emergent evacuation.</p>	<p>There are some casualties you can't help.</p>
<p> TACEVAC Rule of Thumb #7</p> <p>Casualties with blunt or penetrating wounds to the head - where the skull has been penetrated but the casualty is conscious - should be evacuated emergently.</p>  <p>45</p>	<p>TACEVAC Rule of Thumb #7</p> <p>Casualties with blunt or penetrating wounds to the head - where the skull has been penetrated but the casualty is conscious - should be evacuated emergently.</p>	<p>Some penetrating trauma to the head IS survivable, especially shrapnel injuries.</p>
<p> TACEVAC Rule of Thumb #8</p> <p>Casualties with penetrating wounds of the chest or abdomen who are not in shock at their 15-minute evaluation have a moderate risk of developing late shock from slowly bleeding internal injuries. They should be carefully monitored and evacuated as feasible.</p> 	<p>TACEVAC Rule of Thumb #8</p> <p>Casualties with penetrating wounds of the chest or abdomen who are not in shock at their 15-minute evaluation have a moderate risk of developing late shock from slowly bleeding internal injuries. They should be carefully monitored and evacuated as feasible.</p>	<p>This photo shows a 7.62mm entrance wound. This single GSW to the torso proved fatal. The casualties who will die from internal bleeding do not always succumb in the first 15-30 minutes.</p>
<p> TACEVAC Rule of Thumb #9</p> <p>Casualties with TBI who display "red flag" signs - witnessed loss of consciousness, altered mental status, unequal pupils, seizures, repeated vomiting, visual disturbance, worsening headache, unilateral weakness, disorientation, or abnormal speech - require urgent evacuation to a medical treatment facility.</p> 	<p>TACEVAC Rule of Thumb #9</p> <p>Casualties with TBI who display "red flag" signs - witnessed loss of consciousness, altered mental status, unequal pupils, seizures, repeated vomiting, visual disturbance, worsening headache, unilateral weakness, disorientation, or abnormal speech - require urgent evacuation to a medical treatment facility.</p>	

 <p>Questions?</p>	<p>Questions?</p>	
 <p>9-Line Evacuation Request</p> <p>Required if you want an evacuation from another unit</p>	<p>9-Line Evacuation Request</p> <p>Required if you want an evacuation from another unit</p>	<p>The requirements for these may not seem to be optimally designed.</p> <p>Get over it – this is the format that you have to use.</p>
 <p>9-Line Evacuation Request</p> <ul style="list-style-type: none"> • Request for resources through tactical aircraft channels. • <u>NOT</u> a direct medical communication with medical providers • Significance <ul style="list-style-type: none"> – Determines tactical resource allocation – DOES NOT convey much useful medical information 	<p>9-Line Evacuation Request</p> <ul style="list-style-type: none"> • Request for resources through tactical aircraft channels. • <u>NOT</u> a direct medical communication with medical providers • Significance <ul style="list-style-type: none"> – Determines tactical resource allocation – DOES NOT convey much useful medical information 	<p>This will help to explain why you are sending what you send on the 9-line.</p>
 <p>9-Line Evacuation Request</p> <p>Line 1: Pickup location</p> <p>Line 2: Radio frequency, call sign and suffix</p> <p>Line 3: Number of casualties by precedence (evacuation category)</p> <p>Line 4: Special equipment required</p>	<p>9-Line Evacuation Request</p> <p>Line 1: Pickup location</p> <p>Line 2: Radio frequency, call sign and suffix</p> <p>Line 3: Number of casualties by precedence (evacuation category)</p> <p>Line 4: Special equipment required</p>	<p>Read text</p>

 <p>9-Line Evacuation Request</p> <p>Line 5: Number of casualties by type (litter, ambulatory)</p> <p>Line 6: Security at pickup site</p> <p>Line 7: Method of marking pickup site</p> <p>52</p>	<p>9-Line Evacuation Request</p> <p>Line 5: Number of casualties by type (litter, ambulatory)</p> <p>Line 6: Security at pickup site</p> <p>Line 7: Method of marking pickup site</p>	<p>Read text</p>
 <p>9-Line Evacuation Request</p> <p>Line 8: Casualty's nationality and status</p> <p>Line 9: Terrain Description; NBC contamination if applicable</p>  <p>53</p>	<p>9-Line Evacuation Request</p> <p>Line 8: Casualty's nationality and status</p> <p>Line 9: Terrain Description; NBC contamination if applicable</p>	<p>Read text</p>
 <p>TACEVAC Care for Wounded Hostile Combatants</p> <ul style="list-style-type: none"> Principles of care are the same for all wounded combatants Rules of Engagement may dictate evacuation process Restrain and provide security Remember that each hostile casualty represents a potential threat to the provider and the unit and take appropriate measures They still want to kill you. 	<p>TACEVAC Care for Wounded Hostile Combatants</p> <ul style="list-style-type: none"> Principles of care are the same for all wounded combatants Rules of Engagement may dictate evacuation process Restrain and provide security Remember that each hostile casualty represents a potential threat to the provider and the unit and take appropriate measures They still want to kill you. 	<p>Talked about this in TFC. Maintain proper prisoner handling procedures.</p>
 <p>Tactical Evacuation Care Summary of Key Points</p> <ul style="list-style-type: none"> Evacuation time is highly variable Thorough planning is key Similar to Tactical Field Care guidelines but some modifications  <p>55</p>	<p>Tactical Evacuation Care Summary of Key Points</p> <ul style="list-style-type: none"> Evacuation time is highly variable Thorough planning is key Similar to Tactical Field Care guidelines but some modifications 	<p>Read text</p>

 <p>Tactical Evacuation Care Summary of Key Points</p> <ul style="list-style-type: none"> • Tactical Evacuation Rules of Thumb • Evacuation Categories • 9-Line Evacuation Request  <p>56</p>	<p>Tactical Evacuation Care Summary of Key Points</p> <ul style="list-style-type: none"> •Tactical Evacuation Rules of Thumb •Evacuation Categories •9-Line Evacuation Request 	<p>Read text</p>
 <p>Convoy IED Scenario</p> <p>Recap from TFC Your last medical decisions during TFC enroute to HLZ:</p> <ul style="list-style-type: none"> - Placed tourniquet on both bleeding stumps - Disarmed - Placed NPA - Established IV - Administered 1 gm TXA and 500 ml Hextend® - IV antibiotics - Provided hypothermia prevention <ul style="list-style-type: none"> • Your convoy has now arrived at the HLZ <p>57</p>	<p>Convoy IED Scenario</p> <p>Recap from TFC Your last medical decisions during TFC enroute to HLZ:</p> <ul style="list-style-type: none"> -Placed tourniquet on both bleeding stumps -Disarmed -Placed NPA -Established IV -Administered 1 gm TXA and 500 ml Hextend® -IV antibiotics -Provided hypothermia prevention <ul style="list-style-type: none"> •Your convoy has now arrived at the HLZ 	<p>Read text</p> <p>Remember that TXA is currently limited to Spec Ops units.</p>
 <p>Convoy IED Scenario</p> <p>What is your 9-line?</p> <p>Line 1: Grid NS 12345678 Line 2: 38.90, Convoy 6 Line 3: 1 Urgent Line 4: PRBCs, oxygen, advanced airway Line 5: 1 litter Line 6: Secure Line 7: VS-17 (Orange Panel) Line 8: U.S. Military Line 9: Flat field</p> <p>* Some individuals recommend adding a tenth line: the casualty's vital signs</p> <p>58</p>	<p>Convoy IED Scenario</p> <p>What is your 9-line?</p> <p>Line 1: Grid NS 12345678 Line 2: 38.90, Convoy 6 Line 3: 1 Urgent Line 4: PRBCs, oxygen, advanced airway Line 5: 1 litter Line 6: Secure Line 7: VS-17 (Orange Panel) Line 8: U.S. Military Line 9: Flat field</p> <p>* Some individuals recommend adding a tenth line: the casualty's vital signs</p>	<p>Line 1: Pickup location Line 2: Radio frequency, call sign and suffix Line 3: Number of casualties by precedence (evacuation) category Line 4: Special equipment required Line 5: Number of casualties by type (ambulatory vs. litter) Line 6: Security of pickup site (wartime) or number/type Line 7: Method of marking pickup site Line 8: Casualty's nationality and status Line 9: Terrain description at Landing Site; NBC contamination if applicable</p>

 <p>Convoy IED Scenario</p> <p>Next steps?</p> <ul style="list-style-type: none"> • Continue to reassess casualty and prep for helo transfer <ul style="list-style-type: none"> – Search casualty for any remaining weapons before boarding helo – Secure casualty’s personal effects – Document casualty status and treatment • Helicopter arrives. Casualty is transferred to helo • Medic stays with convoy <p style="text-align: right;">59</p>	<p>Convoy IED Scenario</p> <p>Next steps?</p> <ul style="list-style-type: none"> •Continue to reassess casualty and prep for helo transfer <ul style="list-style-type: none"> –Search casualty for any remaining weapons before boarding helo –Secure casualty’s personal effects –Document casualty status and treatment •Helicopter arrives. Casualty is transferred to helo •Medic stays with convoy 	<p>At this point, the Flight Medic assumes care of the casualty. Following questions pertain to the Flight Medic.</p>
 <p>Convoy IED Scenario</p> <p>What’s Next?</p> <ul style="list-style-type: none"> • Casualty is now conscious but is confused • Reassess casualty for ABCs <ul style="list-style-type: none"> – NPA still in place – Tourniquets in place, no significant bleeding • Attach electronic monitoring to casualty <ul style="list-style-type: none"> – Heart rate 140; systolic BP 70 – O2 sat = 90% <p style="text-align: right;">60</p>	<p>Convoy IED Scenario</p> <p>What’s Next?</p> <ul style="list-style-type: none"> •Casualty is now conscious but is confused •Reassess casualty for ABCs <ul style="list-style-type: none"> –NPA still in place –Tourniquets in place, no significant bleeding •Attach electronic monitoring to casualty <ul style="list-style-type: none"> –Heart rate 140; systolic BP 70 –O2 sat = 90% 	<p>Read text</p>
 <p>Convoy IED Scenario</p> <p>What’s next?</p> <ul style="list-style-type: none"> • Supplemental Oxygen <ul style="list-style-type: none"> – Why? <ul style="list-style-type: none"> • Casualty is still in shock <p>What’s next?</p> <ul style="list-style-type: none"> • Administer Plasma:PRBCs in 1:1 ratio if available • If blood products not available, 2nd bolus of Hextend® 500ml <ul style="list-style-type: none"> – Why? <ul style="list-style-type: none"> • Casualty is still in shock <p style="text-align: right;">61</p>	<p>Convoy IED Scenario</p> <p>What’s next?</p> <ul style="list-style-type: none"> •Supplemental Oxygen <ul style="list-style-type: none"> –Why? <ul style="list-style-type: none"> •Casualty is still in shock <p>What’s next?</p> <ul style="list-style-type: none"> •Administer Plasma:PRBCs in 1:1 ratio if available •If blood products not available, 2nd bolus of Hextend® 500ml <ul style="list-style-type: none"> –Why? <ul style="list-style-type: none"> •Casualty is still in shock 	<p>Read text</p>

 <p>Convoy IED Scenario</p> <p>What's next?</p> <ul style="list-style-type: none"> • Inspect and dress known wounds and search for additional wounds <p>What's next?</p> <ul style="list-style-type: none"> • Try to Remove tourniquets and use hemostatics? <ul style="list-style-type: none"> - No - Why? THREE reasons: <ul style="list-style-type: none"> • Short transport time - less than 2 hours from application of tourniquets • No distal extremities to lose • Casualty is in shock <p style="text-align: right;">62</p>	<p>Convoy IED Scenario</p> <p>What's next?</p> <ul style="list-style-type: none"> • Inspect and dress known wounds and search for additional wounds <p>What's next?</p> <ul style="list-style-type: none"> • Try to Remove tourniquets and use hemostatics? <ul style="list-style-type: none"> - No - Why? THREE reasons: <ul style="list-style-type: none"> • Short transport time - less than 2 hours from application of tourniquets • No distal extremities to lose • Casualty is in shock 	<p>Read text</p>
 <p>Questions/Comments?</p>	<p>Questions/Comments?</p>	