Joint Trauma System

Interfacility Transport of Patients Between Theater Medical Treatment Facilities

Clinical Practice Guideline (CPG) Training

Joint Trauma System Trauma Care Educational Program

Disclosure/Disclaimer

- No financial disclosures
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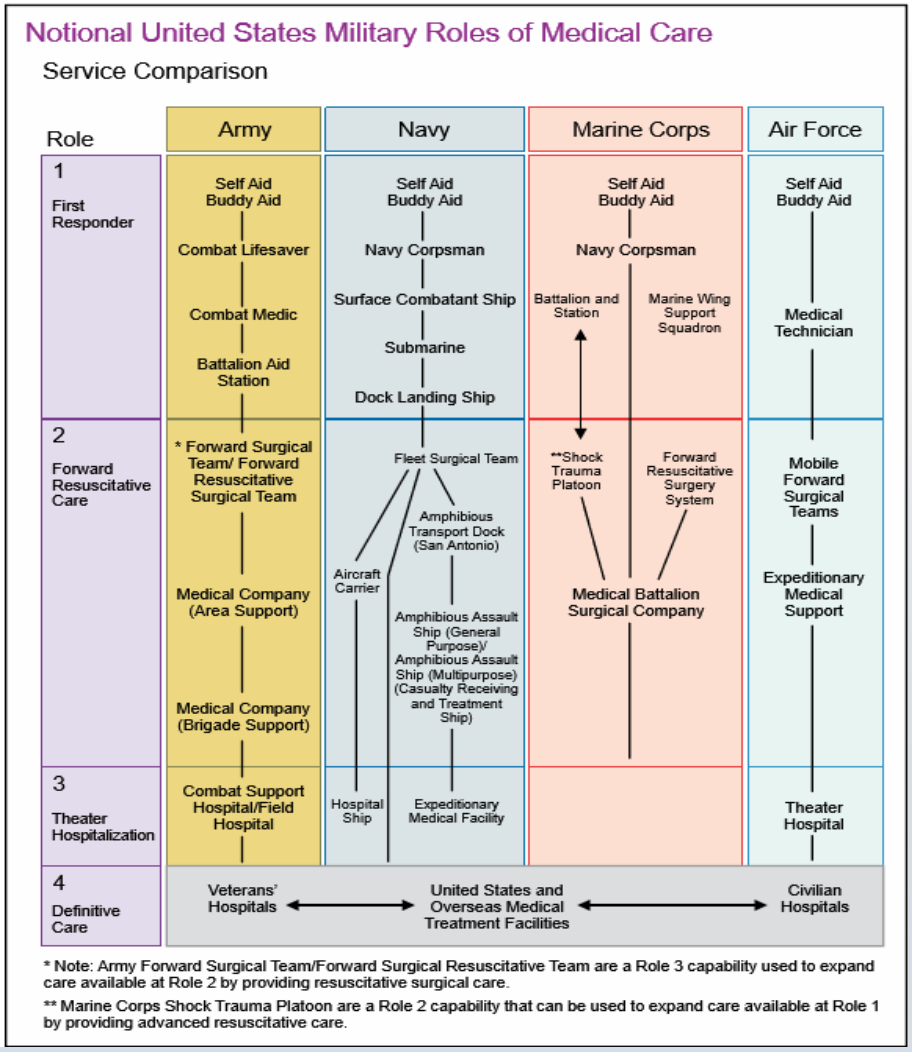
Purpose

- These slides are based on the JTS Interfacility Transport of Patients Between Theater Medical Treatment Facilities CPG which recommends the minimum requirements to move critical care casualties after their entry into the evacuation system.
- Date of CPG publication: 24 Apr 2018
- JTS CPGs are evidence-based guidelines developed by subject matter experts in the military and civilian communities. CPGs are compiled from DoD Trauma Registry data, health data abstracted from patient records and after action reports.
- Information contained in this presentation is only a guideline and not a substitute for clinical judgment.

Background

- Reducing time to medical or surgical interventions improves patient outcomes.
- It starts on the battlefield and ends at definitive care facilities in the United States.
- Some descriptions can be different between branches, but unity of command is critical for ultimate success.
- For some ERC missions, the transport may require serial transfers between different vehicles and modes of transport. Familiarization with the different vehicles available in a theater of operations is imperative.

Service Comparison



* Note: Army Forward Surgical Team/Forward Surgical Resuscitative Team are a Role 3 capability used to expand care available at Role 2 by providing resuscitative surgical care.

** Marine Corps Shock Trauma Platoon are a Role 2 capability that can be used to expand care available at Role 1 by providing advanced resuscitative care.

Transport Considerations

- Movement of patients is a medical intervention with associated risks and benefits.
- When any one or more of these criteria are not met, continued care should be rendered at the current facility unless institutional capabilities are exceeded.
  - Best outcomes occur when physiology is closest to normal.
  - Resuscitation may be ongoing in route, but should not require dynamic, complex, or life-preserving adjustments en route.
  - Packing and anticipation of patients needs are important and require careful planning.
  - Documentation of interventions is important.

Patient Prior to Transfer

- Clinical parameters that suggest normal physiology:
  - Heart rate < 120 beats/minute
  - Systolic blood pressure > 100 mmHg
  - Hematocrit > 24%
  - Platelet count > 50/mm3
  - INR < 2.0
  - pH > 7.3
  - Base deficit < 5 mEq/L
  - Temperature > 35 C

Request Transport

- Dedicated dispatch center allocate resources based on:
  - Resources based on mission requirements
  - Requests of transferring provider
  - Expected en route needs
  - Capabilities of ERC units
- Dispatch centers are generally co-located with command and control.
- 9-Line provides a standardized messaging format for communication.

NATO 9 Line MEDEVAC Request

Line	Title	Explanation	Reason
1	Location/Pick up site	Eight- or ten-digit grid coordinates of pick-up site	Required to know where to pick up the patient
2	Radio frequency, call sign	Frequency of radio at the pickup site Call sign of the person to be contacted at the pickup site	Evacuation vehicle can contact requesting unit while en route
3	Number of patients by precedence	A—URGENT B—URGENT-SURG C—PRIORITY D—ROUTINE E—CONVENIENCE	Assist command and control in prioritizing evacuation unit missions
4	Special equipment required	A—None B—Hoist C—Extraction equipment D—Ventilator	Required to have needed equipment loaded prior to mission start
5	Number of patients by type	L+# of patients-Litter A+# of patients- Ambulatory (sitting)	Needed to have appropriate number of vehicles dispatched
6	Security of pick-up site (wartime)	N—No enemy troops in area P—Possibly enemy troops in area (approach with caution) E—Enemy troops in area (approach with caution) X—Enemy troops in area (armed escort required)	For situational awareness and planning
6	Number and type of wound, injury or illness (peacetime)	Specific patient information on wound type (gunshot, blunt force, or explosive device). Serious bleeding and patient blood type if known	Assists evacuation personnel in determining required treatment and special equipment needed
7	Method of marking pickup site	A—Panels B—Pyrotechnic signal C—Smoke signal D—None E—Other	Assists the evacuation crew in identifying the specific location of the pick up
8	Patient nationality and status	A—U.S. military B—U.S. civilian C—Non-U.S. military D—Non-U.S. civilian E—Enemy prisoner of war	Assists in planning for destination facilities and the need for guards.
9	Chemical, biological, radiological, and nuclear contamination (wartime)	Include this line only when applicable C—Chemical B—Biological R—Radiological N—Nuclear	Assists in planning for the mission.
9	Terrain description (peace time)	Identify terrain features in and around proposed landing or pickup site (lake, tower, ridge, mountain).	
+	M I S T	M - Mechanism of injury I - Type of Injury S - Signs (vital signs) T - Treatment given	Recently incorporated into use. May include adult or child notification.

Transport of the Patient

- Requires proficient personnel and people familiar with theater standards.
- Two levels of capability recognized:
  - Critical Care Transport
    - Required when critical illness or injury impairs one or more vital organ system with threat to life during transport.
  - Intermediate Care
    - Required if dedicated medical attendant with skills equivalent to a paramedic needed.
    - Not expected to deteriorate.
- Transport platforms are required.
  - Vehicle selection can directly impact care.
  - Weight and space restrictions dependent on vehicle used at time.
  - Expendable supplies (e.g., blood, gauze, oxygen) of transferring location should be used until last possible moment given limitations on vehicles.

Transport of the Patient

- Inter-facility patient transports must be documented on an approved patient record (PCR)
- JTS PCRs include not limited to:
  - DD Form 1380 Tactical Combat Casualty Care: Point of Injury or interfacility transport
  - DA 4700 Tactical Evacuation Patient Care Record: History of injury, treatment and transportation
  - AF IMT 3899 Patient Movement Record: Used in Aeromedical Evacuation
  - Medical Rescue Report SAR Form 3-50.1A: Search and rescue involving Navy
- At handovers, ERC teams will provide a MIST (Mechanism, Injuries, Vital Signs, and Treatments).
- Documentation ensures accuracy of care through multiple hand-offs in the continuity of care.

Pre-flight Checklist

(for Critical Care and Post-Surgical Transfers)

Initials	Evaluation Steps
	1. Sending location/physician: _____Accepting location/physician:_____Flight nurse called: name / time: _____
	2. Anesthesia called: intubation if indicated. ETT secured/marked
	3. Patient meets criteria for en route critical care transport: risk documented by sending physician (POST-OPERATIVE and CC INTRAFACILITY TRANSFER, Pre-Transfer Patient Status Requirements)
	Preparation Steps
	Position and Proper Monitoring
	1. Patient moved to litter (collapsible handles), positioned, padded, strapped, equipment (with necessary attachments) added and secured.
	2. For head-injured patients, a pre-sedation neurologic examination will be performed. GCS and neurological exam documented on the en route care form, suggest placing patient sitting at 30°-45°. (For eye injured patients, fox shield in place. For burn patients, JTTS burn sheet initiated.)
	3. Ventilator switched to PMI vent at least 20-30 min prior to flight and set with transfer settings ordered by physician.
	4. IV / IO access verified, patent, and secured
	5. Arterial line inserted and secured, if indicated. Transducer accessible.
	6. Ventilator tubing checked to be free from obstruction, with $ETCO_2$ and secondary lines attached.
	7. Orogastric or nasogastric tube is inserted (unless contraindicated), placement verified with chest x-ray, and attached to low-intermittent suction.
	8. Chest tubes to water seal/suction (place Heimlich valve for non-atrium chest drainage systems).
	9. Wound vacuum disconnected and stowed.
	10. Foley catheter secured, urine output measured and documented.
	Equipment, Medication, Chart, and Personnel Preparation:
	11. Medications needed for flight prepared and organized.
	12. Flight equipment bag obtained and checked. Backup pulse oximeter readily available.
	13. Complete chart photocopied (including x-ray cd), patient belongings bagged and tagged. Transfer Document, or other theater / unit approved transfer document, has been initiated.
	14. Earplugs and eye protection for patient and flight nurse.
	15. If facility sends medical attendant, attendant must have relevant personal protective equipment. In a combat environment this includes Uniform, Kevlar, IBA, Weapon, ID Card, and equipment for transport.
	Ventilator Management:
	16. Blood gas (preferably ABG) obtained, 15 min after initial settings and ventilator changes. All efforts will be made to have a documented blood gas within 30 min prior to flight time.
	17. Adjust ventilator settings and check O_2 tank for length of flight. Resuscitator bag under patient's head with tubing connected to O_2 source, vent tubing free from obstruction.
	Final Verification:
	18. Transferring Physician, Flight Paramedic, ECCN (or Flight Provider) verbally agrees to flight care plan.
	19. Critical Care Transfer Orders reviewed and signed by transferring physician. (STANDARD ORDER SET for CRITICAL CARE TRANSFERS)
	20. En route CC Transfer Document with completed preflight and en route care data handed over to and confirmed by receiving provider / facility. (CENTCOM Transfer Document)

Supervision of En Route Care

- Medical direction ensures delivery of an expected capability of care.
- At the ERC Unit level, commanders must assign a unit medical director.
  - Must be familiar with en route care.
  - Trained in treatment protocols, CPGs, etc.
  - Can be offline (chart review, protocol development) and online (on-site supervision, clinical guidance).
- Regional level ensures quality of care during intra-theater transport.
  - Advised commanders on medical common operating picture and allocation of resources for transport.
  - Provides technical supervision.

PI Monitoring

- Population of Interest

  All transported patients (intratheater, interfacility within theater).

- Intent (Expected Outcomes)
  - Patient care is documented on an approved record form.
  - Casualties requiring mechanical ventilation are transported by an enroute critical care provider (critical care flight paramedic, enroute critical care nurse, critical care physician assistant, or critical care physician).
  - Casualties are assessed for adequacy of resuscitation prior to interfacility transfer. For patients with any of the following parameters: HR < 50 or >120, systolic BP < 7.3, documentation indicates the need for transfer prior to restoration of physiology to more normal parameters.
  - Ventilated patients are placed on the transport ventilator, all monitors in place and stabilized for 30 minutes prior to departure from the current role of care to the aircraft and a final check for stability is performed/documented prior to wheels up and departure from that role of care.
  - Ventilated patients will receive lung protective ventilator settings (e.g., tidal volume 6-8 ml/kg) and have ventilator settings documented.
  - A hard copy of the medical record accompanies the patient.

PI Monitoring

- Performance/Adherence Metrics - Number and percentage of patients:
  - with patient care documented on an approved record form.
  - on mechanical ventilation who are transported by an enroute critical care provider (critical care flight paramedic, en route critical care nurse, critical care physician assistant, or critical care physician).
  - in the population of interest who are transported prior to physiologic stabilization (HR < 50 or >120, systolic BP <90, core temperature <35 ℃, SpO2 <90% on supplemental O2, Hct <21, base deficit below -5, or pH < 7.3).
  - on mechanical ventilation who are placed on the transport ventilator, all monitors in place and stabilized for 30 minutes prior to departure from the current role of care to the aircraft.
  - who had a final check for stability performed/documented prior to wheels up and departure from that role of care.
  - on mechanical ventilation who had ventilator settings documented and with tidal volume 6-8 mL/kg.
  - who had a hard copy of the medical record that accompanied the patient during interfacility transfer.
- Data Source: Patient Record, DoD Trauma Registry

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Appendices in CPG

- **Appendix A:** Patient Transport Preparation Checklist
- **Appendix B:** Additional Information Regarding Off-label Uses in CPGs

Contributors

- CDR Benjamin D. Walrath, MC, USNR
- MAJ Stephen A. Harper, MC, USA
- Maj Joseph L. Reno, USAF, MC
- CDR Joshua M. Tobin, MC, USNR
- LTC Neil Davids, MC, USA
- Col Chetan Kharod, USAF, MC
- MAJ Don Keen, MC, USA
- Col Stacey Shackelford, USAF, MC
- LTC Theodore Redman, MC, USA
- HMC Wayne N. Papalski, USN
- MAJ Benilani Peneda, NC, USA
- CDR Brendon Drew, MC, USN
- Lt Col Antoinette Shinn, NC, USAF
- COL Theresa Duquette-Frame, NC, USA
- Surg Lt Cdr Ed Barnard, MD, Royal Navy
- LCDR Dominique Selby, NC USN
- COL(ret) Samual W. Sauer, MC, USA
- LTC Cord W. Cunningham, MC, USA
- CAPT Zsolt T. Stockinger, MC, USN

Slides: Lt Col Andrew Hall, USAF, MC