

FM 4-02.25 (FM 8-10-25)

**EMPLOYMENT OF
FORWARD SURGICAL
TEAMS**

TACTICS, TECHNIQUES, AND PROCEDURES

HEADQUARTERS, DEPARTMENT OF THE ARMY

MARCH 2003

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PREFACE

The forward surgical team (FST) is a 20-man team which provides far forward surgical intervention to render nontransportable patients sufficiently stable to allow for medical evacuation to a Level III hospital (combat support hospital [CSH]). There are 57 patient condition codes (Appendix A) that identify patients with the type of injuries that would benefit most from FST intervention. Surgery performed by the FST is resuscitative surgery; additional surgery may be required at a supporting Level III hospital in the area of operations (AO). Patients remain at the FST until they recover from anesthesia, once stabilized they are evacuated as soon as possible. The postoperative intensive care capacity of the FST is extremely limited, there is no holding capability. The FST is not a self-sustaining unit and must be deployed with or attached to a medical company or hospital for support. Further, the FST is neither staffed nor equipped to provide routine sick call functions.

This field manual (FM) outlines doctrine for the employment of the FST. It is the primary reference document for the Active Component (AC) and the Reserve Component (RC) of the Army. It presents tactics, techniques, and procedures for employing FSTs. It is primarily intended for the use of the FST chief, his team, and the medical company/troop commanders and their staff. Other intended users include senior medical commanders, senior medical staff advisors, and joint and Army health service support (HSS) planners.

This publication is fully compatible with Army operations doctrine in war and stability operations and support operations as outlined in FM 3-0. It is also compatible with combat service support (CSS) and HSS doctrine outlined in FM 4-02, FM 100-10, and FM 100-15. This publication assumes that the user has a fundamental understanding of FM 4-02, FM 100-10, and FM 100-15; it does not repeat the concepts contained therein except to explain operations unique to the FST.

Users of this publication are encouraged to submit comments and recommendations to improve the publication. Comments should include the page, paragraph, and line number of the text where the change is recommended. The proponent for this publication is the United States (US) Army Medical Department Center and School (AMEDDC&S). Comments and recommendations should be forwarded directly to Commander, AMEDDC&S, ATTN: MCCS-FCD-L, 1400 East Grayson Street, Fort Sam Houston, Texas 78234-5052, or at e-mail address: *Medicaldoctrine@amedd.army.mil*.

This publication implements and/or is in consonance with the following North Atlantic Treaty Organization (NATO) Standardization Agreements (STANAGs) and American, British, Canadian, and Australian (ABCA) Quadripartite Standardization Agreements (QSTAGs):

TITLE	STANAG	QSTAG
Emergency Alarms of Hazard or Attack (NBC and Air Assault Only)	2047	183
Emergency War Surgery (Edition 4) (Amendment 3)	2068	322

TITLE	STANAG	QSTAG
Regulations and Procedures for Road Movements and Identification of Movement Control and Traffic Control Personnel and Agencies	2454	
Orders for the Camouflage of the Red Cross and Red Crescent on Land in Tactical Operations	2931	
Procedures for Disposition of Allied Patients by Medical Installations	2061	423
Medical, Surgical, and Dental Instruments, Equipment and Supplies	2127	
Basic Military Hospital (Clinical) Records	2348	
Medical Requirements for Blood, Blood Donors, and Associated Equipment	2939	815

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

Use of trade or brand names in this publication is for illustrative purposes only and does not imply endorsement by the Department of Defense (DOD).

The staffing and organizational structure presented in this publication reflects information in the most current tables of organization and equipment (TOE).

CHAPTER 1

DOCTRINAL CONCEPTS**1-1. Power Projection**

The ability of a nation to apply all or some of its elements of national power—political, economic, informational, or military—to rapidly and effectively deploy and sustain forces in and from multiple dispersed locations to respond to crises, to contribute to deterrence, and to enhance regional stability.

1-2. Force Projection

The ability to project the military element of national power from the continental United States (CONUS) or another theater, in response to requirements for military operations. Force projection operations extend from mobilization and deployment of forces to redeployment to CONUS or home station.

1-3. Combat Service Support

The essential capabilities, functions, activities, and tasks necessary to sustain all elements of operating forces in theater at all levels of war. Within the national and theater logistic systems, it includes but is not limited to that support rendered by service forces in ensuring the aspects of supply, maintenance, transportation, health services, and other services required by aviation and ground combat troops to permit those units to accomplish their missions in combat. Combat service support encompasses those activities at all levels of war that produce sustainment to all operating forces on the battlefield.

1-4. Health Service Support

All services performed, provided, or arranged by the Services to promote, improve, conserve, or restore the mental or physical well-being of personnel. These services include, but are not limited to, the management of health services resources such as manpower, monies, and facilities; preventive and curative health measures; evacuation of the wounded, injured, or sick; selection of the medically fit and disposition of the medically unfit; blood management; medical supply, equipment, and maintenance thereof; combat operational stress control; and medical, dental, veterinary, laboratory, optometry, nutritional care, and medical intelligence services.

1-5. Forward Surgery

a. The forward surgery concept supports HSS requirements for improving, conserving, and restoring the physical well-being of our personnel. Forward surgical teams accomplish this by providing immediate surgical support at Level II medical treatment facilities (MTFs). The FST is designed to perform resuscitative surgery that is essential to stabilize severely injured patients so they may be safely evacuated to the next higher level of medical care. The FST combined with the medical company is considered a Level II+ MTF.

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b. Historically, 10 to 15 percent of soldiers wounded in action will require surgical intervention to control hemorrhage. Ballistic protection and increased probability of operations in urban terrain will likely increase the need for forward surgical intervention. Forward surgical capability is essential to reduce mortality of severely injured soldiers.

c. Nonlinear battlefields require a greater degree of proximity and flexibility from HSS assets. Medical support elements must be able to keep pace with maneuver forces and provide appropriate levels of care. In order to successfully accomplish its mission, the FST works on the principles of selectivity and transportability.

(1) *Selectivity*—The FST is constrained by its limited personnel and resources. It is for this reason that only those patients who fit into the patient condition codes listed in Appendix A, be considered for treatment at the FST. As such, selectivity is crucial to the success of the FST mission and the survival of those patients who will benefit most from their efforts.

(2) *Transportability*—Transportability refers to the patient's ability to survive evacuation to the next level of care. Nontransportable patients are those patients with severe wounds and uncontrollable hemorrhage that may not survive evacuation without immediate resuscitative surgery. These patients are the prime candidates for FST intervention.

d. Triage is the key to maximizing the limited resources of the FST. The finite capacity and resources of the FST are easily exceeded if this fact is not observed. Forward resuscitative surgery is generally not complete surgery. It is surgery that is necessary to save life or limb so the patient will survive evacuation. The FSTs must resist the temptation of performing nonessential surgical procedures in order to conserve their resources.

1-6. The Threat

The Army Medical Department (AMEDD) views the threat as twofold, an operational threat and a medical threat.

a. The operational threat addresses the impact that enemy combat operations may have on the delivery of HSS. A possible result of FSTs being collocated forward with the supported medical company in the brigade support area (BSA) is the risk of their being compromised and lost.

b. The medical threat is a composite of ongoing or potential enemy actions; environmental, occupational, and geographic and meteorological conditions; endemic diseases; and employment of nuclear, biological, and chemical (NBC) weapons (to include weapons of mass destruction) that can reduce the effectiveness of forces through wounds, injuries, illness, and psychological stressors.

1-7. Patients

The major cause of preventable mortality following combat injury is uncontrolled hemorrhage. Experience dictates that the sooner a casualty is treated and stabilized, the less likely he is to die from wounds or suffer

from complications and/or permanent disability. Stabilization of the severely injured is possible with rapid hemorrhage control, moderate fluid resuscitation, initiation of antibiotic therapy, initial resuscitative surgery as far forward as the tactical situation permits, and prompt evacuation.

a. Patients whose condition can be stabilized by nonsurgical means are evacuated to Level III MTF. In those cases where nonsurgical resuscitation techniques are not sufficient to adequately stabilize the patient for evacuation, immediate resuscitative surgery is necessary.

b. As lines of communication lengthen, the need for forward surgical intervention increases. Operations in Grenada, Panama, Iraq, Somalia, and now Afghanistan, demonstrate the critical need for forward surgical support.

CHAPTER 2

CAPABILITIES AND ORGANIZATION**2-1. Mission**

The mission of this unit is to provide a rapidly deployable urgent initial surgical service forward in a division AO.

2-2. Assignment

a. The medical company, main support battalion (MSB), airborne (ABN) division (TOE 08267L000), the medical company, MSB, air assault (AASLT) division (TOE 08277L000), and the medical troop, support squadron, armored cavalry regiment (ACR) (TOE 08489L000), each have an organic FST. The medical company, support squadron, ACR (TOE 08477L000) does not have an organic FST. The FSTs organic to divisional units do not have separate TOE numbers.

NOTE

Current redesign initiatives for the medical troop, support squadron, ACR will result in the deletion of the FST capability from this unit.

b. The medical team, forward surgical (TOE 08518LA00) and the medical team, forward surgical (ABN) (TOE 08518LB00) are assigned to the medical command (MEDCOM) (TOE 08411A00) or medical brigade (TOE 08422A100) and attached to a corps hospital (CSH) when not operationally employed and further attached to a medical company. The difference between the two teams is the airborne qualifications required for the FST (ABN) (TOE 08518LB00).

2-3. Capabilities

This team is designed to provide—

- a.* Continuous operations in conjunction with a supporting medical company for up to 72 hours.
- b.* Urgent initial surgery for otherwise nontransportable patients.
- c.* Emergency treatment to receive, triage, and prepare incoming patients for surgery; provide the required surgery; and continued postoperative care for up to 30 critically wounded/injured patients over a period of 72 hours with its organic medical equipment sets (MESs).
- d.* Postoperative acute nursing care for up to eight patients simultaneously per team prior to further patient evacuation.
- e.* Technical advice and assistance to the division surgeon and the division surgeon's section (DSS)/division medical operations center (DMOC) for the surgical services portion of the division plans and policies.

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- f.* Current information concerning surgical augmentation of Level II MTFs to higher headquarters.
- g.* Team augmentation of the surgical capability of Level III hospitals.

2-4. Basis of Allocation

a. Medical team, forward surgical (TOE 08518LA00): The basis of allocation for this team is one per brigade supported (except ABN brigades); one per divisional maneuver brigade (minus the AASLT and ABN division); two per AASLT; one per separate brigade/enhanced separate brigade (ESB); and one per heavy ACR.

b. Medical team, forward surgical (ABN) (TOE 08518LB00): The basis of allocation for this team is one per ABN brigade supported (two per ABN division).

2-5. Mobility

This unit is capable of transporting 100 percent of its TOE (personnel and equipment) and supplies in a single lift using its organic vehicles.

2-6. Dependency

a. The medical teams, forward surgical (TOEs 08518LA00 and 08518LB00) are designed to be dependent upon the appropriate elements of corps or division to provide religious, legal, unit-level HSS, finance, food service, personnel and administrative services, logistical support, generator support, unit maintenance, and communications/information management. These teams are further dependent upon—

(1) Headquarters and headquarters detachment (HHD), medical evacuation battalion (TOE 08446L00) for patient evacuation.

(2) Medical battalion, logistics (forward) (TOE 08485L000) for medical equipment maintenance and repair, blood distribution, and Class VIII resupply.

(3) Appropriate elements of the corps support command (COSCOM) for—

(*a.*) Rigging when airdrop operations are required (ABN only).

(*b.*) Sling load operations.

b. Current operations have demonstrated the need for flexibility and dictate that the FST may be required to conduct limited stand-alone operations. If deployed as a part of a multinational or coalition force, joint task force, or in support of special operations forces (SOF), the conventional support base that

the FST relies on may not be present in the theater of operations (TO). In order to operate successfully under these conditions, it is critical that the HSS planner consider personnel and equipment augmentation in the following areas: command, control, and communications (C3); medical operations planning; power generation; vehicle maintenance; food service; force protection (security); patient administration; pharmacy; patient holding; instrument sterilization; Class VIII resupply; medical equipment maintenance and repair; x-ray; medical laboratory; and sick call (primary care physician).

2-7. Functions

The FST is a 20-man team whose function is to perform triage/preoperative resuscitation, initial surgery, and postoperative nursing care. Organic personnel set up and breakdown the shelter system in preparation of operations or unit movement, prepare the patient for surgery, perform essential surgeries for a maximum of 30 patients within 72 hours, and provide postoperative nursing care and stabilization for medical evacuation to the next level of medical care. The FST performs unit plans and movement, routine and specialized operations, and mission-related task organization, and coordinates directly with the Level II MTF to which it may be attached or collocated.

a. Administrative Function. Administrative support for this team is accomplished by the assigned field medical assistant and detachment sergeant. The FST chief must be apprised of ongoing tactical operations, requirements to disestablish, move, and reestablish the surgical facility, status of organization and medical supply/resupply, planning for FST current and future operations, status of individual and unit training, and status of communications connectivity. As the FST is dependent upon its supporting medical company and/or hospital for a significant share of its administrative and logistical requirements, continuous coordination is required to ensure that shortfalls in support do not adversely impact patient care.

b. Triage/Preoperative Resuscitation Function. The surgical staff assesses patients as they are received at the FST to determine the extent of injuries and wounds and to identify the required surgical procedures to be performed. Patients are provided emergency treatment if required prior to preparation for surgery. Patients are prepared for surgery by the nursing staff.

c. Initial Surgery Function. Once triaged and prepared for surgery, patients undergo surgery required to render them transportable to the next level of care where more definitive surgery can be accomplished. An orthopedic surgeon is available to perform required surgery for injuries of the musculoskeletal system and provides specialized care and consultation on the necessary limb- and lifesaving procedures in patients with injuries to the spine and limbs. Clinical nurse anesthetists administer anesthesia during surgery. The FST is capable of performing two surgeries simultaneously if required.

d. Postoperative Nursing Care Function. Postoperative nursing care, under the supervision of the surgeon, is provided patients from the completion of surgery, through postanesthesia recovery, and until they are sufficiently stable to withstand the rigors of medical evacuation to the next level of care. Acute nursing care is required by each patient postoperatively, as patients have received life-threatening injuries and may require further medical intervention. Once the patient is stabilized, he is prepared for medical evacuation (refer to paragraph C-22 for additional information).

CHAPTER 3

COMMAND AND CONTROL**3-1. General**

a. The FST is attached to a hospital and employed forward, it is further attached to a medical company. The supported medical company provides logistical support to the FST while it is attached. When corps FST support is requested, the DSS/DMOC makes the request through a division-level operations and plans staff section (Assistant Chief of Staff [Security Plans and Operations]) (G3) to the operations and plans section at corps. The corps then directs the medical command/brigade commander to deploy the FST.

b. In airborne/air assault divisions the FST is organic to the main support medical company (MSMC). There may be occasions when additional forward surgical support is required. Under such conditions, FST augmentation may be required.

c. In the ACR (Light) the FST is organic in the medical troop. It synchronizes and integrates its clinical operations with those of the regimental medical troop treatment platoon. It is normally sufficient to support ACR maneuver squadrons. In the event the regiment is committed out of sector and anticipates heavy casualties, it may be necessary to augment the medical troop FST with an additional FST.

3-2. Planning

Planning for the employment of the FST is the responsibility of the medical command/brigade commander with input from the FST chief. Operational and support estimates developed by the division medical staff, along with input from the brigade medical staff is used in the planning process to develop the HSS estimates for corps HSS to the divisions and/or forward deployed forces. All factors must be considered during the initial developmental stages of the operations plan (OPLAN). The plan is updated, as required, to meet tactical and HSS operational requirements. Planning for the employment of the airborne/air assault FST is the responsibility of the division support command (DISCOM) and is normally done by the DSS/DMOC with oversight provided by the division and brigade surgeons. Field Manuals 4-02.4, 4-02.6, 4-02.7, 4-02.10, 4-02.21, 4-02.24, 8-10-3, 8-10-5, 8-42, 8-43, and 8-55 provide more detailed discussion on medical planning.

a. Forward surgical team HSS operations involve all of the factors that are considered in the initial developmental stages of the HSS plan. The HSS plan is updated to meet mission, enemy, terrain and weather, troops and support available, time available, civil considerations (METT-TC) operational requirements.

b. Table 3-1 provides a list of FST-specific clinical planning factors that may be used in determining the full potential and limitations of the FST.

Table 3-1. Forward Surgical Team Clinical Planning Factors

FORWARD SURGERY
REQUIRES A MINIMUM OF 1.5 HOURS SET UP TO BECOME FULLY FUNCTIONAL
MUST NOT BEGIN SURGERY UNLESS THEY CAN GUARANTEE SUFFICIENT TIME ON STATION TO SAFELY BEGIN AND CONCLUDE THE REQUIRED PROCEDURES AND PERMIT POSTOPERATIVE RECOVERY
TWO OPERATING TABLES PER TEAM
AVERAGE TIME PER PATIENT = 135 MINUTES
MAXIMUM CASELOAD PER 24 HOURS = 10 CASES (MES WILL ONLY SUPPORT 30 CASES TOTAL WITHOUT RECONSTITUTION)
POSTOPERATIVE CARE UP TO 6 HOURS WITH MAXIMUM OF 8 SIMULTANEOUS PATIENTS
RELIEF/RECONSTITUTION/AUGMENTATION OF FST IS REQUIRED AFTER 72 HOURS

CHAPTER 4

FORWARD SURGICAL TEAM OPERATIONS**4-1. Deployment and Mobilization**

a. Alert/Readiness Posture. In the event of an emergency situation, contingency plans, or general war, the DOD initiates appropriate action for the deployment of forces in response to the scenario. Forward surgical teams are alerted for deployment through existing command channels. For RC hospitals with attached FSTs, mobilization notification constitutes an increase in readiness posture.

b. Control and Deployment. Deployment operations for unit readiness validation are controlled through the post/installation emergency operations center (EOC) in accordance with established plans and directives.

c. Deployment in Theater. Land, sea, or air transportation assets may be used to deploy FSTs. Each FST deploys with a minimum of 3 days of supply or as specified in the OPLAN.

4-2. Employment in the Area of Operations

a. Forward surgical teams are normally employed in the combat zone (CZ) on the basis of one per maneuver brigade. They are normally attached to a CSH for general support. When operationally employed, FSTs are attached to medical companies/troops. The FST may also be a part of a medical task force in support of SOF missions. In stability operations and support operations, the FST may also be considered for employment with a separate maneuver brigade or a joint task force.

b. On arrival in the AO, the FST establishes contact with the supporting unit to coordinate its support requirements (see paragraph 2-6). They will also obtain situational updates and arrange for x-ray, medical laboratory, medical records administration, patient movement items (PMI), and force protection requirements.

4-3. Establishing the Surgical Facility

a. Currently, FSTs deploy using general purpose (GP) tents (Figures 4-1 and 4-2), or deployable rapid assembly shelter (DRASH) tents (which are not currently authorized on the TOE) (Figure 4-3). Actions are ongoing to develop a lightweight chemically biologically protected shelter (CBPS) system (Figures 4-4 and 4-5) that will serve as the standard shelter system for this unit (see FM 4-02.7). Ideally, the FST will have a lightweight shelter system with an environmental control unit for heating/cooling which provides clean air ventilation of the surgery area. A mechanism for heating is necessary for management of expected hypothermia in patients in temperate and cold environments. Clean air ventilation in the operating area is a must for controlling contamination of surgical incisions and sterile supplies.

b. Operationally, the FST requires less than 1,000 square feet of space (equivalent to one GP large tent) to set up and operate in. For convenience and additional space, the unit may set up in two GP large tents or a combination of GP large and GP medium tents.

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(1) The FST establishes itself in an area selected by the supported medical company (site selection criteria for the FST is the same as that for the supported unit) and is collocated with the medical company. Once established, the FST, its vehicles and generator should be sandbagged. Bunkers should be established for the protection of patients and FST personnel as required.

(2) Airborne, air assault, and ACR surgical teams are organic to the medical company/troop and are configured in the required tentage depicted in the area indicated in FM 4-02.6.

c. The FST sets up based on the type of tentage or shelter systems that are available. This may consist of GP tents, DRASH tents, or, when fielded, CBPS systems. The configuration layout of the FST is normally METT-TC-driven, and may be based on the anticipated patient load, and the frequency with which they anticipate being displaced.

4-4. Displacement and Redeployment

a. The medical command/brigade commander attaches the FST to divisions/separate brigades in direct support of medical companies. Normally, the medical command/brigade commander issues orders, either verbally or in writing, to the FST chief. Frequently, the time to respond to orders is short; therefore, the FST must be constantly prepared to move. It is critical that the FST have a flexible entry and exit strategy in order to minimize confusion during entry into and withdrawal from the AO. After receiving the commander's guidance, the chief of the FST and his headquarters element will conduct a mission analysis, incorporating changes based on the METT-TC. Once the FST collocates with a medical company, it may be subject to frequent displacements.

b. The FST is normally attached for a period of up to 72 hours, after which they will normally redeploy to its home-based unit for reconstitution. However, the situation may require them to remain on station and be reconstituted or augmented by additional FSTs.

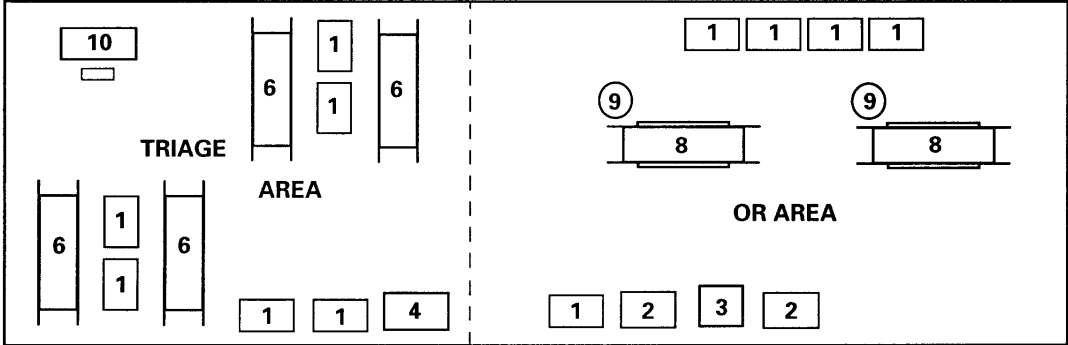
4-5. X-ray, Laboratory, and Blood

a. X-ray support is provided by the supported MTF.

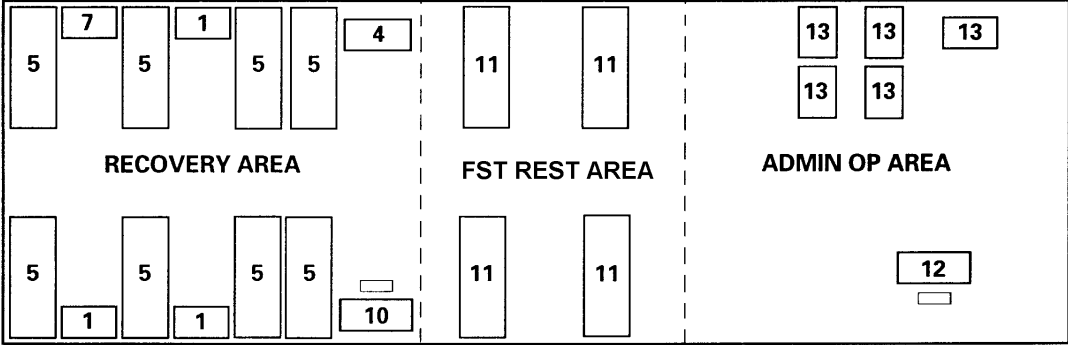
b. The need for x-rays (especially for patients requiring orthopedic surgery) is normally made during the assessment phase in the triage preoperative area. However, x-ray follow-up may be required.

c. Nursing personnel perform limited near-patient testing laboratory procedures for the FST (refer to Appendix C for more detailed information).

d. The FST has the capacity to store up to 50 units of Group O Rh positive and Rh negative packed red blood cells (PRBCs). When available, Rh negative blood will be administered to women of childbearing age. If additional blood support is required, the medical company/troop has 50 units available. Should it become necessary to provide fresh whole blood for a critically injured patient, the supporting MTF has a blood-typing and crossmatch capability.



NOT TO SCALE



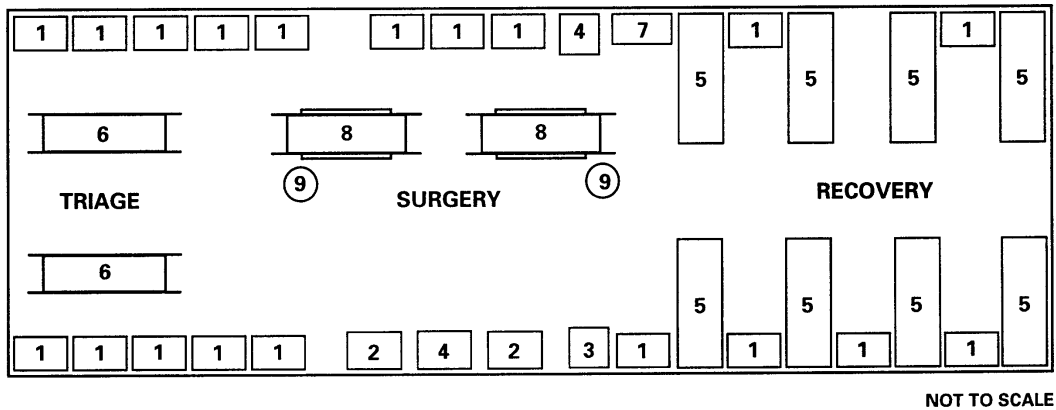
NOT TO SCALE

LEGEND:

- | | |
|------------------|---|
| 1 #3 CHEST | 8 OR TABLE W/LITTER |
| 2 IMPACT CHEST | 9 SURGICAL LAMP |
| 3 REFRIGERATOR | 10 FIELD TABLE W/TA-312 TELEPHONE AND FOLDING CHAIR |
| 4 SINK | 11 FOLDING COT |
| 5 RECOVERY COT | 12 FIELD TABLE W/TA-312 TELEPHONE, FAX MACHINE, AND FOLDING CHAIR |
| 6 LITTER W/STAND | 13 SUPPLIES AND EQUIPMENT |
| 7 MEDICAL CHEST | |

NOTE: GP LARGE TENTS MAY BE PLACED END-TO-END CONNECTING THE OR AND RECOVERY AREA. THIS CAN BE DONE BY USING A FABRICATED CONNECTIVE VESTIBULE, OR BY TYING THE END POLES OF THE TWO TENTS TOGETHER AND ROLLING UP THE END FLAPS.

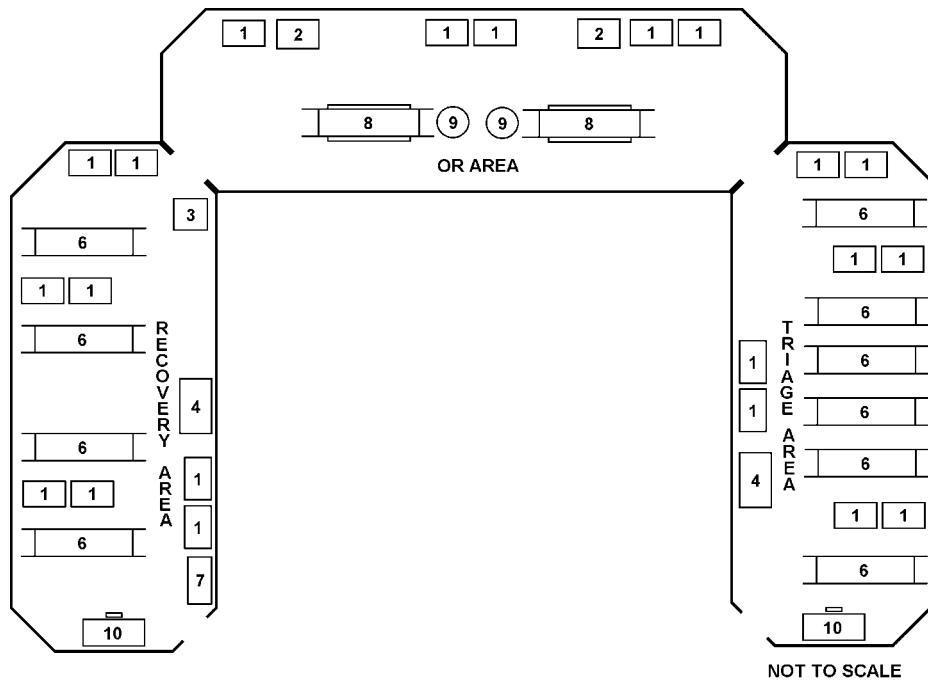
Figure 4-1. Sample layout in two general purpose large tents.



LEGEND:

- | | |
|----------------|---------------------|
| 1 #3 CHEST | 6 LITTER W/STAND |
| 2 IMPACT CHEST | 7 MEDICAL CHEST |
| 3 REFRIGERATOR | 8 OR TABLE W/LITTER |
| 4 SINK | 9 SURGICAL LAMP |
| 5 RECOVERY COT | |

Figure 4-2. Sample layout in one general purpose large tent.



LEGEND:

- | | |
|------------------|---|
| 1 #3 CHEST | 7 MEDICAL CHEST |
| 2 IMPACT CHEST | 8 OR TABLE W/LITTER |
| 3 REFRIGERATOR | 9 ANESTHESIA |
| 4 SINK | 10 FIELD TABLE W/TA-312 TELEPHONE AND FOLDING CHAIR |
| 6 LITTER W/STAND | |

Figure 4-3. Sample layout in three DRASH tents.

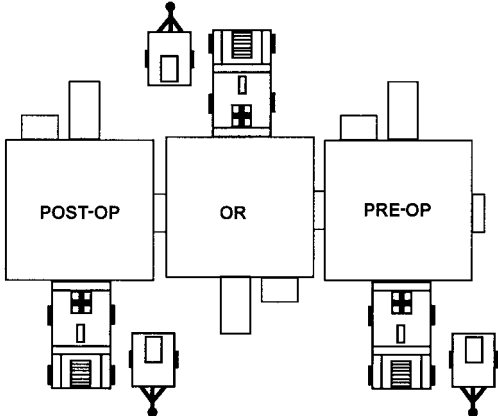


Figure 4-4. Sample layout of FST (alone) using CBPS systems.

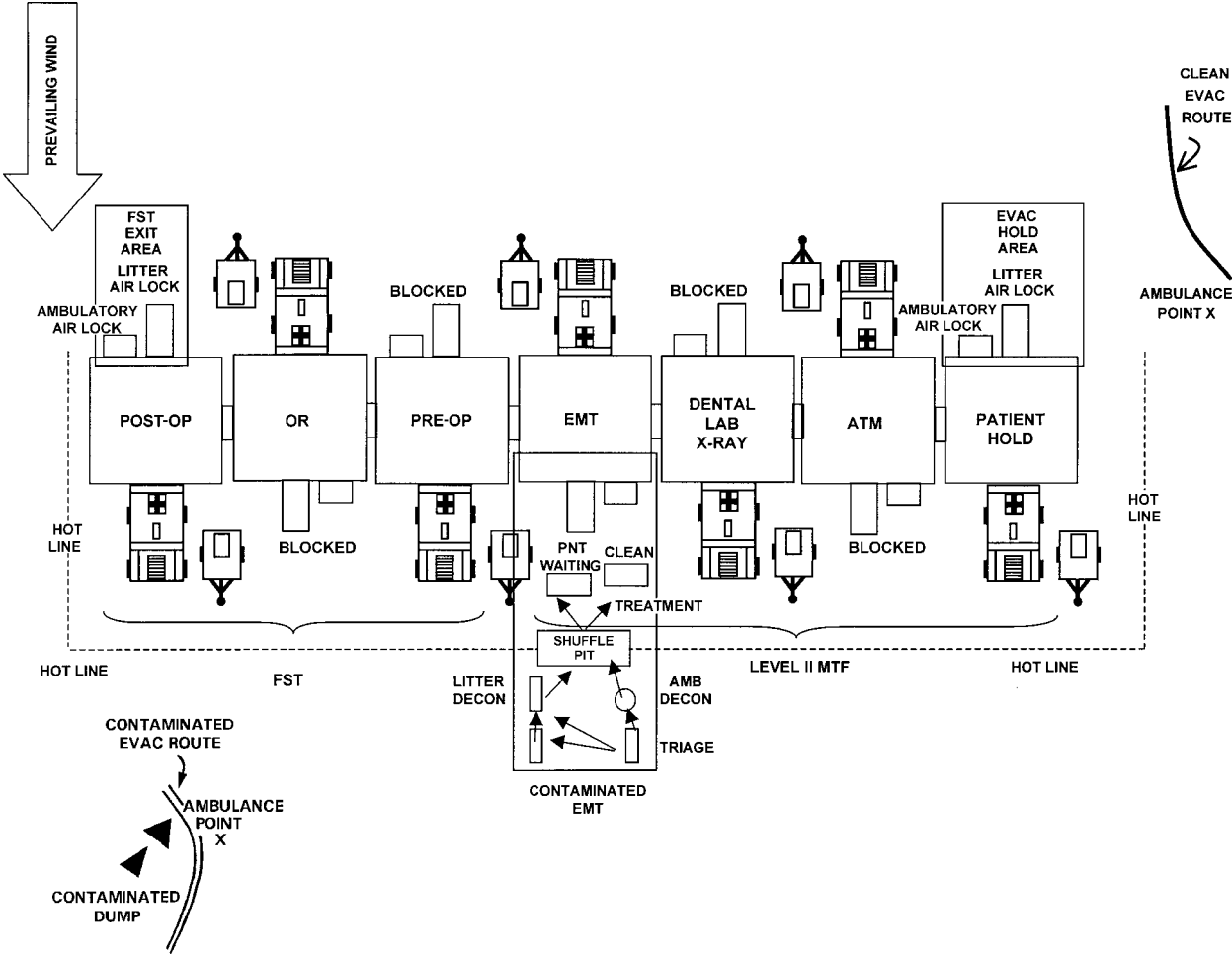


Figure 4-5. Sample layout of FST (collocated with Level II MTF) using CBPS systems.

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e. The FST is specifically configured to perform forward resuscitative surgery. It possesses neither the personnel, equipment, nor medications to perform sick call. However, if requested to do so, FST personnel can augment the sick call capabilities of the supported MTF at the discretion of the FST chief.

4-6. Disposition of Remains

In the event a patient dies while in the FST, a US Field Medical Card (Department of Defense [DD] Form 1380) is completed then signed by a physician. Coordination is made with the medical company and the deceased is immediately removed from the FST facility to the supported MTF's temporary morgue area (refer to FMs 4-02.6 and 4-02.10).

4-7. Training

a. The chief of the FST, in concert with his staff, uses the mission-essential task list (METL), mission training plans (MTPs), and other training evaluation tools to determine training requirements for their personnel. Refer to FM 7-0 and FM 7-15 for guidance in the development of the unit's METL.

b. All FST personnel are eligible for and should be afforded the opportunity to attend the courses listed in Table 4-1. The training that these courses provide support the basic principles of combat surgery and the skills required by members of the FST.

c. Training should be geared to the specific military occupational specialties (MOS) and clinical specialties of both enlisted and officer team members. These highly perishable skills must be sustained. Scheduling individuals for specific training as well as regular clinical rotations at local MTFs will help accomplish this. Training attendance and clinical rotations can be tracked and documented if they are entered into the AMEDD Systematic Approach to Realistic Training (ASMART) Program. Personnel assigned to the FST should also undergo training at the Army's Trauma Training Center. It is equally as important to track and maintain the skills of Professional Officer Filler System (PROFIS) personnel.

d. As a method of improving regulatory compliance and credentialing, developing team integrity and cohesion, as well as a better understanding of their duties and responsibilities within the FST, all PROFIS personnel should maintain monthly contact with the FST chief.

Table 4-1. Professional Development Training

COURSE	COURSE SPONSOR
COMBAT CASUALTY CARE	DMRTI, FORT SAM HOUSTON
PREHOSPITAL TRAUMA LIFE SUPPORT	DMRTI, 91W PROGRAM
ADVANCED TRAUMA LIFE SUPPORT	DMRTI, UNIFORMED UNIVERSITY OF HEALTH SCIENCES
TRAUMA NURSING CARE COURSE (TNCC)	DMRTI
ADVANCED BURN LIFE SUPPORT	DMRTI
EXTREMITY WAR SURGERY COURSE	EXPORTABLE COURSE OFFERED BY WBAMC

APPENDIX A

PATIENT CONDITION CODES

This appendix lists 57 patient condition codes extracted from the DOD Deployable Medical Systems' clinical database that have been identified as patient conditions that should be treated by the FST.

PATIENT CONDITION CODE	DESCRIPTION OF PATIENT CONDITION
0005	Cerebral Contusion, Closed, with Intracranial Hematoma, with/without Nondepressed Linear Skull Fracture, Severe—Large Hematoma (Including Epidural Hematoma) with Rapidly Deteriorating Comatose Patient.
0007	Cerebral Contusion, Closed, with Depressed Skull Fracture, Severe—with Associated Intracerebral Hematoma and/or Massive Depression.
0017	Wound, Face, Jaws, and Neck, Open, Lacerated with Associated Fractures, excluding Spinal Fractures, Severe—with Airway Obstruction.
0019	Wound, Face and Neck, Open, Lacerated, Contused without Fractures, Severe—with Airway Obstructions and/or Major Vessel Involvement.
0045	Wound, Upper Arm, Open, Penetrating, Lacerated, without Fracture, Severe—with Nerve and/or Vascular Injury.
0071	Amputation, Full Arm, Traumatic, Complete, All Cases.
0087	Wound, Thorax (Anterior or Posterior), Open, Penetrating, with Associated Rib Fractures and Pneumothorax, Acute, Severe Respiratory Distress.
0088	Wound, Thorax (Anterior or Posterior), Open, Penetrating, with Associated Rib Fractures and Pneumothorax, Moderate Respiratory Distress.
0098	Wound, Liver, Closed, Acute (Crush Fracture), Major Liver Damage.
0099	Wound, Liver, Closed, Acute (Crush Fracture), Minor Liver Damage.
0100	Wound, Spleen, Closed, Acute (Crush Fracture), All Cases.
0101	Wound, Abdominal Cavity, Open, with Lacerating, Penetrating, Perforating Wound to the Large Bowel.
0102	Wound, Abdominal Cavity, Open, with Lacerating, Penetrating, Perforating Wound to Small Bowel, without Major or Multiple Resections.

PATIENT CONDITION CODE	DESCRIPTION OF PATIENT CONDITION
0103	Wound, Abdominal Cavity, Open, with Penetrating, Perforating Wound of Liver, Major Damage.
0104	Wound, Abdominal Cavity, Open, with Penetrating, Perforating Abdominal Wound with Lacerated Liver.
0105	Wound, Abdominal Cavity, Open, with Penetrating, Perforating Wound of Spleen.
0106	Wound, Abdominal Cavity, Open, with Lacerated, Perforated Wound with Shattered Kidney.
0107	Wound, Abdominal Cavity, Open, with Lacerated, Penetrating, Perforating Wound with Lacerated Kidney, Initially Repaired, but Subsequent Nephrectomy.
0108	Wound, Abdominal Cavity, Open, with Lacerated, Penetrating, Perforated Wound with Shattered Bladder.
0109	Wound, Abdominal Cavity, Open, with Lacerated, Penetrating, Perforated Wound with Lacerated Bladder.
0114	Wound, Abdomen, Open, with Pelvic Fracture and Penetrating, Perforating Wounds to Multiple Pelvic Structures (Male or Female).
0115	Wound, Abdomen, Open, with Pelvic Fracture and Penetrating, Perforating Wounds to Pelvic Colon Only (Male or Female).
0121	Wound, Thigh, Open, without Fracture, Nerve, or Vascular Injury, Requiring Major Debridement.
0131	Wound, Lower Leg, Open, Lacerated, Penetrating, Perforating, with Fracture and Nerve and/or Vascular Injury, Limb Salvageable.
0137	Wound, Ankle, Foot, Toes, Open, Penetrating, Perforating, with Fractures and Nerve and/or Vascular Injury, Limb Salvageable.
0138	Crush Injury, Lower Extremity, Limb Not Salvageable.
0139	Crush Injury, Lower Extremity, Limb Salvageable.
0146	Amputation, Traumatic, Complete, Requiring Hip Disarticulation.

PATIENT CONDITION CODE	DESCRIPTION OF PATIENT CONDITION
0147	Amputation, Above Knee, Traumatic, Complete.
0159	Multiple Injury Wound (MIW), Brain and Chest with Sucking Chest Wound and Pneumothorax.
0160	MIW, Brain and Abdomen with Penetrating, Perforating Wound, Colon.
0161	MIW, Brain and Abdomen with Penetrating, Perforating Wound, Kidney.
0162	MIW, Brain and Abdomen with Penetrating, Perforating Wound, Bladder.
0163	MIW, Brain and Abdomen with Shock and Penetrating, Perforating Wound, Spleen.
0164	MIW, Brain and Abdomen with Shock and Penetrating, Perforating Wound, Liver.
0165	MIW, Brain and Lower Limbs Requiring Bilateral Above Knee Amputations.
0166	MIW, Chest with Pneumothorax and Abdomen with Penetrating Wound, Colon.
0167	MIW, Chest with Pneumothorax and Abdomen with Penetrating, Perforating Wound, Kidney.
0168	MIW, Chest with Pneumothorax and Abdomen with Perforating Wound, Bladder.
0169	MIW, Chest with Pneumothorax and Abdomen with Penetrating, Perforating Wound, Spleen.
0170	MIW, Chest with Pneumothorax and Abdomen with Penetrating, Perforating Wound, Liver.
0171	MIW, Chest with Pneumothorax and Limbs with Fracture and Vascular Injury.
0172	MIW, Abdomen with Penetrating, Perforating Wound of Colon and Bladder.
0173	MIW, Abdomen with Penetrating, Perforating Wound of Colon and Spleen.
0174	MIW, Abdomen with Penetrating, Perforating Wound of Colon and Liver.

PATIENT CONDITION CODE	DESCRIPTION OF PATIENT CONDITION
0175	MIW, Abdomen and Limbs with Penetrating, Perforating Wound of Colon and Open Fracture and Neurovascular Injury of Salvageable Lower Limb.
0176	MIW, Abdomen and Pelvis with Penetrating, Perforating Wound of Liver and Kidney.
0177	MIW, Abdomen and Pelvis with Penetrating, Perforating Wound of Spleen and Bladder.
0178	MIW, Abdomen, Pelvis, Limbs, with Fracture and Neurovascular Injury, Limb Salvageable, and Penetrating Wound, Kidney.
0179	MIW, Abdomen, Pelvis, Limbs, without Fracture or Neurovascular Injury, and Penetrating, Perforating Wound, Bladder.
0180	MIW, Abdomen and Lower Limbs, with Fracture and Nerve Injury, with Penetrating Wound of Spleen, with Full Thickness Burns to greater than 20 percent of total body surface area.
0181	MIW, Abdomen and Limbs, without Fracture or Nerve Injury, with Penetrating Wound of Liver.
0182	MIW, Chest with Pneumothorax, Soft Tissue Injury to Upper Limbs, and Penetrating Wound of Brain.
0183	MIW, Chest with Pneumothorax, Soft Tissue Injury to Upper Limbs and Abdomen, with Wound of Colon.
0184	MIW, Chest with Pneumothorax, Pelvis and Abdomen, with Wound of Colon and Bladder.
0185	MIW, Abdomen and Chest with Multiple Organ Damage.
0313	Wound, Abdominal Cavity, Open, with Lacerated, Penetrating, Perforating Wound, Kidney, Moderate—Kidney Salvageable.

APPENDIX B

SURGICAL GUIDELINES

The concept of phased combat casualty care, dictates that the FST perform only those procedures necessary to stabilize patients for evacuation. Surgery performed at the FST is generally not complete surgery rather it is an initial effort to save life and limb, prevent infection, and render the patient transportable. Surgical procedures not essential to resuscitation and stabilization must be avoided. This concept allows the FST to maintain its intended mobility. The sections outlined in this appendix are intended to serve as a working and planning guide for the surgical portion of the FST.

Section I. GENERAL SURGERY**B-1. Airway Management**

a. The standards established by the advanced trauma management (ATM) protocol are accepted for the establishment of the airway, and the technique is essential for resuscitation of traumatized patients. The team 66F00 (Nurse Anesthetists) should be routinely utilized in all airway management situations that occur in the FST. This includes airway management in the triage/preoperative resuscitation area, the operating room, and in the postoperative recovery area.

b. Endotracheal intubation is used and/or cricothyrotomies are performed by medical personnel forward of the corps hospital.

c. Endotracheal tubes/cricothyrotomies will be used as adjuncts in assisted ventilation. Prophylactic intubation or cricothyrotomy should be considered prior to medical evacuation for patients with inhalation burns, severe head injuries, and cervical spine injuries.

d. Every patient being evacuated and requiring assisted ventilation will have his airway secured with an endotracheal tube or cricothyrotomy.

e. Cricothyrotomies should be sutured in place at the skin. The cannula should accompany the patient in order to facilitate replacement of the tube in case of displacement.

B-2. Medical Antishock Trousers

For patients admitted at the FST encapsulated in medical antishock trousers (MAST), the standard procedure is that such equipment will only be removed at the surgeon's direction.

B-3. Guidelines for Anesthesia

a. The anesthesia delivery system used in FST is the Ohmeda® PAC, draw-over vaporizer. This device is well suited for anesthesia due to its size, weight, durability, and safety features. Spontaneous/assisted ventilation should be maintained if consistent with the patient's condition, including depth

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of anesthesia. When possible, a low flow oxygen source, such as an oxygen concentrator, is used to supplement the patient's fractional inspired oxygen (FIO₂). Remember that with the draw-over device and given a set supplemental oxygen flow, FIO₂ will actually decrease as minute ventilation increases.

b. A nonflammable, nonexplosive, halogenated agent (that is, halothane, isoflurane) is the inhalation agent of choice. Nitrous oxide is contraindicated with the draw-over vaporizer. Total inhalation anesthesia, balanced anesthesia, total intravenous anesthesia, and regional anesthesia are all appropriate anesthetic techniques in the FST.

c. The Propaq® monitor is the standard anesthesia monitor in the FST. The Propaq® monitor includes electrocardiogram, noninvasive blood pressure, pulse oximeter, capnograph, and temperature monitoring capability as well as a carbon dioxide (CO₂) end tidal indicator function that provides instant and important information, regarding the placement of the endotracheal tube. Other standard monitors in the FST include precordial and esophageal stethoscopes.

NOTE

The most important monitor is a vigilant nurse anesthetist.

d. Assume all casualties have a full stomach. Use aspiration prophylaxis, to include appropriate airway management (that is, rapid sequence induction and intubation with cricoid pressure, awake intubation, as indicated).

e. The anesthetist should only attend to one anesthetized patient at a time unless the patient flow dictates otherwise. The attending anesthetist is responsible for giving a postoperative patient report to the postoperative recovery personnel prior to departing the OR area. The anesthetist should follow the patient's postoperative progress until he is fully recovered from anesthetic effects.

B-4. Wound Debridement

a. Wound debridement is performed by the FST only in connection with surgical procedures.

- (1) All readily accessible foreign bodies and blood clots are removed.
- (2) Each tissue plane is treated as it is encountered.
- (3) Soft tissue wounds are vigorously scrubbed to remove debris and foreign bodies.

(4) Irrigation of wounds is performed at every tissue plane level. The requirement for adequate amounts of irrigating fluids is recognized; but emphasis should be placed on using only what is necessary due to limited quantities.

B-2

- (5) Hemostasis must be complete.
- (6) Ragged, traumatized skin edges should be excised, taking a few millimeters (mm) of normal-appearing skin.
- (7) Longitudinal incisions of extremities are utilized for entrance and exit wounds. An S-shaped incision should be used around joint creases.
- (8) Fascia should be opened widely, and all shredded tissue should be carefully excised.
- (9) Tendons that are frayed should be carefully trimmed.
- (10) With the exception of facial and digital nerves which may be freshened and primarily repaired if time permits, repair of nerves is normally not undertaken.
- (11) Devitalized tissue should be resected.
- (12) Bone fragments are dealt with in the following manner:
 - (a) Small, unattached fragments are removed.
 - (b) Large bone fragments are cleaned and returned to their normal anatomical position.
- (13) Immobilization of extremities in an anatomical position is essential to the healing process.
 - b.* Following debridement, wounds are generally left open for delayed primary closure at the next level of care.

B-5. Neurosurgery Policies

- a.* Patients with deteriorating closed head injuries may be treated by the FST. Generally, the only neurosurgical procedures performed by the FST are burr holes and bone flaps to permit evacuation of extradural and subdural hematomas.
- b.* Surgeons performing initial surgery on peripheral nerve injuries should exercise care to preserve and protect all peripheral nerves. As a rule, there will be no repairs of peripheral nerves in the CZ, but they should be tagged with prolene suture to facilitate future repair.
- c.* Operative procedures on the brain should minimize free air in the intracranial space to avoid complications during aeromedical evacuation of the patient.

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B-6. Policies for Thoracic Surgery

a. Approximately 80 percent of thoracic wounds do not require formal thoracotomy. They can be adequately treated by tube thoracostomy with a water seal, suction drainage, or Heimlich® valve for evacuation.

b. Generally, there are five indications for thoracotomy. These include—

- Continued hemorrhaging with greater than 1,000 cubic centimeters (cc) initial drainage or greater than 300 cc per hour.
- Massive air leak with inability to adequately ventilate.
- Mediastinal injury.
- Major chest wall injury.
- Extension of laparotomy for liver resection and the closure of the right hemidiaphragm.

c. One-lung anesthesia can be accomplished if required using a conventional endotracheal tube. The endotracheal tube can be intentionally placed into the right mainstem bronchus to allow for optimal surgical access to the left chest (required for penetrating cardiac injuries and injuries to the great vessels). Oxygen delivery should be optimized during the periods of one-lung ventilation.

B-7. Policies for Maxillofacial Trauma and Otolaryngology

a. No maxillofacial repairs will be performed by the FST. Maxillofacial surgery should be limited to that necessary to establish a patent airway, to control hemorrhage, and to stabilize the patient.

b. In general, closed facial fractures will NOT be reduced by the FST.

c. All wiring used to immobilize mandibular and maxillary fractures will be of the quick-release type to allow urgent control of the airway during aeromedical evacuation.

d. Penetrating wounds of the neck require a thorough exploration to rule out esophageal, carotid artery, and tracheal injuries.

B-8. Ophthalmology Policies

a. Ophthalmological procedures in the CZ are performed to expedite return to duty (RTD) or to save the globe. Treatment by the FST will consist of “patch-and-evacuate.”

b. Major soft tissue and ocular adnexal trauma is not closed by the FST.

B-4

- c. The FST should remove embedded corneal foreign bodies, preferably by irrigation.
- d. More extensive ophthalmological procedures are performed at Levels III and IV hospitals with a collocated hospital augmentation team, head and neck.

B-9. Policies for Abdominal Surgery

a. *General.* The goals of abdominal surgery by the FST are to stop hemorrhage and gastrointestinal soilage. The following principles apply:

(1) All patients should be explored through generous midline incision because the abdomen is often the source for occult hemorrhage. Abdominal exploration may be lifesaving in patients with unexplained hypotension as the FST lacks less invasive means for diagnosis of hemoperitoneum.

NOTE

Portable ultrasound equipment is not currently part of the TOE, however, if available, it should be used to detect blood in the abdomen and chest. This device could aid the surgeon with rapidly detecting blood in the abdomen and chest in blunt trauma patients.

(2) Do only what is necessary to save life and limb. Resources and time are limited at the FST and attempting to perform definitive surgery too far forward will result in increased loss of life and suffering.

b. *Abbreviated Laparotomy.*

(1) The goal of the abbreviated laparotomy is to take a critically injured patient and stop his bleeding and any fecal or intestinal soilage. It has to be performed rapidly to be effective. Surgeons should only perform those procedures that allow the patient to survive until he reaches the next level of care.

(2) Bleeding is controlled by ligation of bleeding vessels. It is not always necessary to restore the blood flow as this can be done in another procedure. Bleeding from the liver, retroperitoneum, or pelvis can be controlled with packing.

(3) Holes in the gastrointestinal tract are closed. If resection is necessary, the closed ends are not reanastomosed, but are left in the abdomen. These may be tagged to facilitate later anastomosis. There should be no attempt to restore intestinal continuity or to perform a colostomy during the abbreviated laparotomy.

(4) Holes in the diaphragm should be closed early in order to prevent spread of contamination from the abdomen to the chest cavity.

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(5) The closure is abbreviated. This can be a single-layer, running closure of either fascia or skin, or the skin can be closed with towel clamps. An abbreviated closure may also be accomplished with a Bogota bag (a single three-liter intravenous [IV] bag cut open and sewn to the skin). Consideration should be given to not closing the fascia of these patients, as abdominal compartment syndrome frequently develops in critical patients that were previously hypotensive.

(6) Patients requiring abbreviated laparotomy, once stabilized, should be evacuated as soon as possible to the next level of care.

c. Solid Organ Injuries.

(1) Most liver injuries will stop bleeding on their own. Major hepatic procedures should not be attempted by the FST. If a patient requires more than cautery, topical hemostatic agents, or a few simple sutures for hemostasis, the liver should be packed and the patient evacuated. It is crucial to pack these wounds early to avoid a cold coagulopathic patient with no hope of survival.

(2) Splenic injuries that are bleeding at the time of laparotomy require splenectomy. The FST does not have the blood products nor the observation capabilities to perform splenic salvage.

d. Diaphragm Injury. The diaphragm is closed primarily with nonabsorbable suture. This will prevent the late complications of chronic herniation.

e. Pancreas and Duodenum.

(1) Isolated duodenum injuries can be repaired primarily after debridement of the wound edges. This is adequate in most cases of duodenal injury. In more severe cases, a duodenostomy tube, jejunal patch, or even duodenal diverticularization may be necessary.

(2) Small injuries to the pancreas can be treated with drainage only. Severe injuries can be treated with resection. Patients with severe pancreatic injuries should be packed to control hemorrhage and evacuated to higher levels of care for more definitive surgery. The FST is no place to perform a Whipple operation. This applies also to combined pancreaticoduodenal injuries.

f. Small Intestine, Colon and Rectal Injuries.

(1) Small intestinal injuries can be treated with simple closure after debridement or with resection for more extensive injuries. If the patient has other critical injuries, the holes can be simply closed and the patient evacuated for planned restoration of intestinal continuity and re-exploration.

(2) Colon injuries have traditionally been treated with colostomy. In some patients, primary repair of colon injuries is safe. This decision must be based on the patient's other injuries and overall surgical condition.

(3) Rectal injuries should be closed whenever possible. They should have a protecting colostomy, presacral drainage, and distal washout of the rectal stump. Any devitalized tissue must

be debrided. There may be some cases where a colostomy is not necessary (for example, small wounds without fecal soilage).

Section II. ORTHOPEDIC SURGERY

B-10. General Orthopedic Policies and Procedures

a. Tissue protection and immobilization by means of a cast have proven their efficacy under such stressful circumstances as in World War II and the Korean and Vietnam wars. Casts should remain the mainstay of initial combat injury management. Full circular casts are almost always tolerated better than splints during movement through the medical evacuation system. Full casts, adequately padded and bivalved, should be used for both fractures and soft-tissue support. The cast must be strong enough at the joints to withstand bivalving that must extend through all the padding along the length of the cast. Casts should be marked with the date of injury, date of any surgery, and a sketch of the location and type of injuries and repairs, to include vascular injuries and repairs. All casts must be able to fit within the length and width of a standard litter. They must be of such shape as to allow placement within the confines of a multilevel litter support system configured for ground or air evacuation.

b. The vast majority of vascular repairs can be immobilized using casts without jeopardizing the vascular repair. Casts used in this manner should be bivalved with a 1/2-inch gap on each side. They should have a window over the repair area to allow access should bleeding occur. They should also have a window to allow distal pulse checks. A rubber tourniquet should be loosely placed around the limb, proximal to the repair site, to allow rapid tightening in case of blowout hemorrhage.

c. Free-hanging weights are not acceptable for patients being evacuated. Traction for these patients may be maintained by a self-contained cast with outrigger devices equipped with rubber tubing, or with spring-loaded devices.

d. Open fractures do not have open reduction and external fixation except where stabilization for vascular repairs is absolutely necessary.

e. External fixation is used in suitable cases in order to stabilize fractures for evacuation. In all open fractures of the extremities and unstable pelvic fractures, either external fixators or casting material will be used, depending upon the surgeon's preference.

f. There will be no repair of tendons at the time of initial wound surgery. Reconstruction of major tendon injuries is not performed by the FST.

g. Stumps of amputated extremities are to be left open. Those stumps requiring traction should be managed with stockinettes adhered to the skin and the extremity casted. Wire ladder splints can be used as outriggers with traction provided by rubber tubing. Hip spica casts are best for thigh amputations. Stumps not requiring traction generally travel best in bivalved casts.

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h. Parenteral antibiotics (as available, based on unit formulary) are used in all major open extremity wound cases. The use of impregnated antibiotic beads is encouraged.

i. All extremity injuries should be immediately and continuously elevated to decrease edema. Exceptions are those injuries with marginal vascular perfusion and those fresh arterial repairs where perfusion pressures may be overcome by compression dressings and elevation.

j. If the possibility exists that a joint has been violated by a foreign body, the joint should be aggressively irrigated and immobilized and the patient evacuated as soon as possible.

k. Cervical spine fractures and/or dislocations may be stabilized by Minerva jackets, or pre-packaged, self-contained, low-profile halos and body jackets and transported on litters.

l. No extremity musculoskeletal system debridement of a major nature is conducted using local anesthetics. Only a few minor debridements lend themselves to the use of such agents. Frequently, it is very difficult to predict the extent of tissue damage beneath what may appear to be a minor injury.

B-11. Fasciotomy Policy

- a.* There are six indications for performing a fasciotomy. These include—
- Greater than a 6-hour delay between injury and treatment.
 - Prolonged hypotension and shock.
 - Massive swelling, either preoperatively, intraoperatively, postoperatively, or during evacuation.
 - Combined major artery and venous injury.
 - Massive associated soft tissue injury.
 - Treatment of arterial injury by ligation.

b. Fasciotomies should be considered in any patient where there is risk of significant swelling and the patient cannot be closely followed for the development of compartment syndrome.

B-12. Orthopedic Policy (Distal Extremities)

a. In all open fractures of extremities, a combination of external fixation devices and/or casting material may be used.

b. The object of wound debridement in hand and foot injuries is to prevent infection by cleaning the wound, removing indrawn debris, and preventing tissue tension which will kill the intrinsic musculature.

c. Hand injuries have a low priority as they seldom threaten life.

(1) The severely crushed injury of the hand should be left open.

(2) Tourniquets should be placed and inflated for not more than 120 minutes for anatomic orientation and control of severe hemorrhage.

(3) Initial debridement should follow the principles of soft tissue injury, particularly in the control of hemorrhage. The surgeon should—

- Obtain x-rays from two planes. (Provided by supported MTF.)
- Adequately irrigate wounds.
- Not amputate a digit; only debride.
- Not remove bone attached to soft tissue.
- Not use Kirschner wires at the time of initial surgery unless stabilization of dislocations and unstable fractures is required and spacing of metacarpal defects is necessary.
- Not undermine soft tissue.

d. In addition to the previously described procedures for hand injuries, similar techniques are also applicable for foot injuries, but differ somewhat (obviously because of the anatomical position). Surgeons are encouraged to use the following as a guide:

(1) An x-ray should be obtained from two planes.

(2) Soft tissue should not be undermined unless there is a requirement to expose the wound for debridement.

(3) In severely mangled or crushed foot injuries, adequate fascial decompression and debridement of the small muscles must be accomplished from the plantar and dorsal surfaces simultaneously.

(4) Incisions over prominent metatarsal heads should be avoided.

(5) Incisions in the long axis are desirable except under the metatarsal heads where a transverse incision, distal to the ball of the foot, will provide the required exposure.

(6) Heel-splitting incisions are valuable to debride a severely comminuted and contaminated posterior foot and calcaneus injury.

(7) Kirschner wires will not be used at the time of the initial surgery, unless stabilization of dislocations or unstable fractures is required for spacing of the tarsal and metatarsal bones.

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(8) Injuries where large bony defects are present should be left open.

(9) Wounds should be immobilized using a circular bivalved cast. The orthopedic surgeon must remember **NOT** to—

- Repair nerves in the foot.
- Primarily repair tendons.
- Repair arteries distal to the ankle.
- Use pedicle skin flaps.

Section III. BURN POLICIES

B-13. Burn Management

a. The first priority in the management of the burn patient is to maintain the airway, control hemorrhage, and provide prompt resuscitative therapy. The presence of associated traumatic wounds in patients with burn injuries may complicate the management of their burns and vice versa. The essence of the successful treatment of burn patients, with or without other traumatic injuries, is effective triage, timely diagnosis, accurate assessment of surgical priority, and appropriate resuscitation. It should be remembered that the FST is not equipped to provide definitive care for patients with life threatening burn injuries.

b. All patients with burns around the face or nose will have an airway established, preferably with an oral endotracheal tube. Patients with *mild* symptoms of inhalation injury may be closely observed in an ICU setting. However, patients with suspected inhalation injury, and those with extensive skin burns (for example, greater than 40 percent total body surface area) should be intubated prior to transport. The presence of facial burns, per se, does not mandate intubation in all cases.

B-14. Burn Resuscitation Guidelines

a. Fluid replacement and monitoring of the burn casualty will be in accordance with the established ATM guidelines.

(1) The burn patient usually requires 2 to 4 milliliters (ml) of lactated ringers solution per kilogram of body weight/percent body surface burned. The solution should be administered at a sustained rate in the first 24 hours to maintain an adequate circulating blood volume and to provide renal output. The estimated first 24 hour fluid volume intake is administered proportionately; for example, one-half of the total estimated fluid is provided in the first 8 hours postburn, and the remaining one-half is administered in the next 16 hours. The physician has to adjust the amount of fluid given according to the individual patient's response; that is, adjustments are made in accordance with the patient's urinary output, vital signs, and general condition. In the absence of lactated ringers solution, normal saline can be used initially.

B-10

(2) An indwelling urethral catheter is used in resuscitating burn patients to ensure that urine output is maintained between 30 and 50 ml per hour.

b. Burns will be treated closed. Silver sulfadiazine should be applied as the topical antimicrobial agent of choice. Gauze dressings should be applied over this. Also, burn patients are at high risk for hypothermia.

c. Escharotomies should be performed, through all full-thickness circumferential burns of the extremities if progressive diminution of peripheral pulses is noted to prevent circulatory compromise of an extremity. A thoracic escharotomy should be performed if burns to the thorax limit chest excursion.

d. Burn patients should be evacuated promptly from the forward area.

Section IV. POLICIES FOR UROLOGICAL SURGERY

B-15. Genitourinary

Genitourinary tract injuries in a CZ constitute approximately 5 percent of the total injuries generated. With the exception of the external genitalia, these wounds invariably are associated with serious visceral injury and, as a result, are better managed in areas where there are major surgical and x-ray capabilities. The treatment of urological injuries does not vary from established surgical principles: hemostasis, debridement, and drainage. The only genitourinary injuries handled by the FST will be those with life-threatening hemorrhaging.

B-16. General Considerations

a. Genitourinary injuries are frequently associated with other injuries. It is important to ensure that the patient is fluid resuscitated to maintain adequate urine output.

b. All splints and catheters should be securely taped and/or sutured in place near the point of exit. The urethral catheter should be taped in place on the lower abdominal wall. In male patients, this prevents pressure at the penoscrotal angle and reduces the incidence of urethral stricture, pressure, necrosis, and fissure.

c. All catheters should be connected to closed sterile drainage systems.

d. Use absorbable sutures on all urinary tract repairs, placing sutures external to urothelium, if possible.

e. Suprapubic cystostomy tubes should be placed in the dome of the bladder and angled in a cephalad direction, emerging from the skin 5 to 10 cc above the symphysis pubis. Suprapubic tubes should be at least a number 28 French (Foley® catheter) to facilitate irrigation of clots. They should be replaced immediately if accidentally removed.

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f. All urinary tract wounds should be generously drained. Drains should be secured by sutures at the skin edge and by a safety pin to prevent accidental extraction from the wound.

g. Urethral catheters should be large enough to drain urine and small enough to permit drainage of normal urethral secretions that are external to the catheter. A Foley® catheter, no larger than a Number 16 French, is routinely advised. A larger size, up to Number 24 French, may be needed during episodes of bleeding to enhance irrigation and clot removal.

NOTE

The foreskin must be kept in the reduced position to prevent paraphimosis.

B-17. Renal Injuries

a. Renal injuries, except for renal pedicle injuries, are usually not life threatening. Most can be managed nonoperatively. The FST will evacuate most renal injuries back to higher levels of care. Those that are hemodynamically unstable will be diagnosed at laparotomy. Surgical intervention is required for those that have—

- Expanding flank or abdominal mass.
- Continuing hemorrhage requiring two or more units of blood.
- Significant extravasation of urine.
- Gross hematuria and hypotension.

b. Improper exploration of renal injuries markedly increases the nephrectomy rate. This rate can be lessened by applying the following principles:

(1) Assure that a contralateral kidney is present if nephrectomy is required on the side of injury; however, bilateral injuries are rare.

(2) Assess the damaged kidney and determine relation of foreign bodies to the urinary tract.

(3) Use a midline laparotomy incision.

(4) Control the renal vessels before opening the Gerota's fascia.

(5) Debride necrotic tissue, ligate bleeders with absorbable suture, and drain the injury.

B-12

B-18. Ureteral Injuries

a. Ureteral injuries are rare and usually will not be treated by the FST as they are not life threatening. Small defects can be closed with fine absorbable suture. If this is not possible, place a nephrostomy tube and evacuate the patient. No attempts should be made to use intestinal conduits or transuretero-ureterostomies in the initial treatment of abdominal trauma.

b. Bladder wounds are common and should always be considered in patients with lower abdominal wounds, gross hematuria, or an inability to void following abdominal or pelvic trauma. The following treatment guidelines are provided:

- (1) The ureteral catheter may be left in place until repair is accomplished.
- (2) Close a laceration with one or two layers of absorbable suture and perform a midline suprapubic cystostomy.
- (3) Liberally drain the space of Retzius.
- (4) Irrigate, as necessary, for postoperative bleeding.
- (5) Sump drainage and coccygectomy are usually necessary in massive bladder trauma to allow adequate drainage.

c. Ureteral injuries should be treated with suprapubic cystostomy. No attempt should be made to repair them at the FST.

d. Injuries to the external genitalia are rarely life threatening. Bleeding should be controlled and the patient evacuated.

Section V. INFECTION CONTROL POLICIES

B-19. Aseptic Techniques

Aseptic techniques (with each hand gloved) are maintained when the patient requires any procedure that is invasive in nature or provides an avenue of infection; this includes operative procedures, dressing changes, endotracheal tube/tracheostomy care, and so forth.

B-20. Handwashing

Handwashing is essential before and after each patient contact. This should be accomplished with water, an antimicrobial soap, and mechanical cleansing.

B-21. General Procedures

a. Intravascular access therapy will follow the guidelines listed below:

- (1) Change all IV fluid containers every 24 hours.
- (2) Handle all IV administration equipment using aseptic techniques.
- (3) At the earliest opportunity, change all IVs initiated at Level I.

(4) All central lines placed in the field or emergently during resuscitation should be changed within 24 hours to minimize chances of catheter-related infection.

b. All open containers of sterile fluid are changed/discarded after 24 hours (IV, irrigation, respiratory therapy, and so forth).

c. All laboratory specimens, blood, tissues, and body fluids are potentially infectious and should be handled as infectious medical waste. The FST should carry large red medical waste/needle containers to dispose of such materials, coordinate with supported MTF for collection and disposition. Refer to FM 4-02.10 for a discussion of regulated and nonregulated medical waste.

d. Reusable equipment must be cleaned and disinfected after each patient use.

APPENDIX C

NURSING GUIDELINES FOR PATIENT CARE**Section I. NURSING POLICIES AND PROCEDURES****C-1. General Policies**

- a.* The goal of nursing is to provide safe nursing care in a limited resource environment.
- b.* Patients requiring x-rays will usually have them taken by the supported MTF. Nursing personnel may have to transport patients to and from the x-ray area.
- c.* Near-patient laboratory procedures are performed by the FST nursing personnel. Additional laboratory procedures are provided by the supported MTF.
- d.* The nature of the FST's operations requires maximum emphasis on training for team members. This training should focus on the duties and responsibilities of each functional area of the FST. The senior critical care nurse provides overall supervision of the nursing care provided by the team and ensures training of team members on mission essential tasks of the unit.
- e.* Responsibility for patient accountability remains with the medical company. However, the FST's field medical assistant ensures that all patients received and treated at the surgical facility are properly logged in and out on the FST patient's registry (Daily Disposition Log). Minimum documentation should include patient identification, diagnosis and treatment, and disposition (date and time).
- f.* A record of medical treatment will be established/maintained for each patient treated by the FST. These records will be transported with the patient when they are evacuated from the FST to the gaining MTF. Depending upon the operational scenario, the FST may be required to act as a primary care facility in the absence of a supporting medical company. Although the FST is neither staffed nor equipped to maintain individual health records, if it functions as a primary care facility, it is responsible for maintaining records on all patient encounters (such as routine sick call or outpatient visits). These records will be maintained until the soldier is transferred from the AO or to another primary care facility. At that time, the records will be transferred to the gaining primary care facility. The FST should coordinate with the supporting personnel element to obtain listings of soldiers being transferred. Should the FST determine that a soldier is no longer present in the AO, the individual health record should be forwarded to the soldier's home station or mobilization center. For RC soldiers whose records are maintained at the Army Reserve Personnel Center (ARPERCEN), the records should be forwarded to ARPERCEN for integration into their permanent record. For a detailed discussion on individual health record maintenance and disposition, refer to AR 40-66, AR 40-400, FM 4-02.4, and FM 4-02.6.

C-2. Nursing Supervision

- a.* Nursing practice incorporates the activities of data collecting and assessing, implementing a plan of care, and evaluating patient care outcomes. Military nursing personnel must continually adjust

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priorities to meet the dynamic requirements of patient care, ancillary support, administrative tasks, and staff management.

b. The clinical, cognitive, and managerial skills of the nurse are of paramount importance to effectively function under the vigorous demands of a wartime scenario. This environment includes limited staffing, constrained facilities, equipment of limited capability, and a large percentage of patients suffering from acute traumatic injuries. In addition, the influx of casualties and the mission of the FST necessitate a shortened length of stay within its recovery area. Under normal circumstances, patients will be recovered from anesthesia and prepared for aeromedical evacuation within 6 hours, during the window of opportunity and prior to the occurrence of postoperative complications. If evacuation is delayed, it may be necessary to place patient overflow into the medical company's patient holding squad area with continued supervision by the FST's nursing staff and assistance by patient holding squad personnel.

c. In primary nursing assessments, admission procedures include a patient-specific systems review based on the diagnosis. Emphasis is placed on the traumatized system(s) with minimal review of noninvolved areas such as—

- Assessment of dressings, tubes, IVs, and other support equipment.
- Administrative paperwork.

d. Although assessment, evaluation, and documentation are continuous processes, patients of the FST's postoperative area require additional assessment and evaluation every hour, as a minimum, or as indicated by the patient's condition and/or anticipated disposition. Tables C-1 and C-2 depict the forms that comprise both the standard patient chart and the patient postoperative management packet.

Table C-1. Standard Patient Chart

FORM NUMBER	FORM TITLE
SF 558	MEDICAL RECORD—EMERGENCY CARE AND TREATMENT
SF 509	MEDICAL RECORD—PROGRESS NOTES
SF 531	MEDICAL RECORD—ANATOMICAL FIGURE
DA FORM 4256	DOCTORS ORDERS
DD FORM 1380	US FIELD MEDICAL CARD
DD FORM 792	TWENTY-FOUR HOUR PATIENT INTAKE AND OUTPUT WORKSHEET

Table C-2. Patient Postoperative Management Pack

FORM NUMBER	FORM TITLE
SF 518	MEDICAL RECORD—BLOOD OR BLOOD COMPONENT TRANSFUSION
SF 519-B	RADIOLOGIC CONSULTATION REQUEST/REPORT
SF 550	URINALYSIS
DA FORM 3894	HOSPITAL REPORT OF DEATH
DD FORM 602	PATIENT EVACUATION TAG
DD FORM 1924	SURGICAL CHECKLIST
DA FORM 5179	MEDICAL RECORD—PREOPERATIVE/ POSTOPERATIVE NURSING DOCUMENT

NOTE: REFER TO AR 40-66 FOR PREPARATION OF FORMS. DD FORM 602 IS DISCUSSED IN FM 8-10-6.

C-3. Nursing Care of the Patient in Surgery

a. Circulator duties are performed under the supervision of the OR nurse as outlined below. They include responsibilities for readiness of all equipment and supplies, safe patient care during surgery, and continued patient care until postoperative recovery personnel assume responsibility for the patient.

(1) Both OR tables should be fully prepared for surgical procedures. The two OR tables may be employed simultaneously to provide surgical capability and to avoid surgical backlogs.

(2) Basic sterile/aseptic techniques, as outlined in FM 8-73 and FM 8-74, should be followed at all times. Unit clinical standing operating procedures (CSOPs) should clearly delineate all responsibilities of the circulator and scrub nurse.

(3) Dependent upon patient flow and work-rest cycles, one circulator may circulate for both OR tables.

(4) The collection and disposal of all body fluids is accomplished in accordance with infection control protocols and local preventive medicine (PVNTMED) guidelines. If a body part is to accompany a patient, it is placed in an appropriate container and labeled with the patient's name, grade, social security number (SSN), and unit.

(5) The patient identification process is completed and the medical record annotated—minimum information should include name, grade, SSN, and unit.

(6) All clothing and personal gear should be removed from the patient, labeled, and secured.

(7) All sponges, needles, and instruments used with each surgical operation MUST be accounted for (refer to FM 8-74).

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(8) Additional circulator duties include—

- Assisting in the preparation of IV medications and blood.
- Assisting with and directing the placement of splints and casts.
- Assisting the anesthetist with monitoring the patient's vital signs and status.
- Assisting with cardiopulmonary resuscitation as required.

b. Scrub duties are performed under the supervision of an OR nurse and the OR NCO and include—

- Following sterile technique and draping procedures.
- Taking steps to correct breaks in sterile techniques whenever possible.
- Completing surgical hand and arm scrub prior to gowning and gloving.
- Assisting surgeons with their personal gowning, gloving, and draping procedure.
- Preparing, in advance, sutures, blades, instruments, and drapes needed for anticipated procedures.
- Assisting surgeons throughout a surgical procedure, anticipating all instrument and supply needs.
- Assisting surgeons with sterile dressings; remaining sterile until instructed to “break scrub” by the anesthetist.
- Ensuring that all medical records accompany the patient into the postoperative recovery area.

C-4. Indirect Patient Care

Indirect patient care time is increased for an FST compared to hospital facilities because of the limited resource environment; that is, facility design, location of oxygen, water, sanitation, removal of waste, and location of support services. Indirect care tasks include, but are not limited to—

- Obtaining and preparing medications.
- Collecting equipment for procedures.
- Emptying bedpans, urinals, and drainage bottles.

- Disposing of contaminated waste.
- Resupplying the FST patient care areas.
- Transporting patients.
- Obtaining and disposing of water.

C-5. Intravenous Standards

- a.* Intravenous-push medications are to be given by an Army nurse or a Medical Corps (MC) officer.
- b.* Intermittent medications administered through saline locks are to be given by Army nurses and licensed practical nurses (91WM6) because of the requirement to flush the tubing before and after giving the medication.
- c.* Enlisted nursing personnel may administer blood products and IV piggyback medications if these items have been verified by an Army nurse.
- d.* All IV additives are to be accomplished by an Army nurse.

C-6. Heparin/Saline Locks

Either Heparin or saline locks should be used for patients who require IV access only for the administration of parenteral medications; they are also used to avoid multiple venous punctures.

C-7. Medications

Under the supervision of an Army nurse, enlisted nursing personnel may administer intramuscular, subcutaneous, IV drip, oral, sublingual, topical, inhaled, and rectal medications.

C-8. Vital Signs

Patients treated by the FST have undergone initial resuscitative surgery to render them transportable to the next level of care. As such, it is essential that their vital signs be closely monitored to ensure that their medical condition is stabilizing and other immediate medical intervention is not required.

- a.* In the triage/preoperative resuscitation area, patient vital signs are taken as part of the initial assessment. If patients are to remain in the preoperative area for any length of time, the triage officer will determine at what frequency the vital signs should be taken.

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b. During the surgical procedure, the vitals signs are monitored continuously under the supervision of the surgeon and nurse anesthetist.

c. In the postoperative area, vital signs are taken upon receipt of the patient. As patients are closely monitored in this area, vital signs are taken every 5 to 10 minutes until stable, then once every 30 minutes unless otherwise directed.

C-9. Intake and Output

a. Fluid intake and output is measured and recorded every hour at a minimum.

b. Intake and output measurements are done routinely on all FST patients.

C-10. Foley® Catheters

a. Since Foley® catheters are to be changed every 7 days (to include catheter, tubing, and bag), this procedure is generally not done in the FST.

b. Patients who had Foley® catheters placed at Levels I or II MTFs, should have them checked in the triage/preoperative resuscitation area.

c. Patients exiting the surgical area who have Foley® catheters, should be checked upon receipt in the postoperative area and prior to medical evacuation.

C-11. Hyperthermia/Hypothermia

a. Management of hyperthermia is accomplished using tepid water sponges and/or antipyretics.

b. In patients receiving large volumes of IV fluids, prompt and effective management of hypothermia is critical for maintenance of hemostasis. Postoperative hypothermia is managed by using blood and fluid warmers, area space heaters, or total body rewarming.

C-12. Patient Hygiene

a. Patients entering the FST's facilities are to receive sufficient cleaning to permit a basic assessment.

b. Postoperative patients are evacuated as rapidly as possible. Few patients are expected to remain beyond 6 hours. Only that hygiene required to prevent skin breakdown, to ensure infection control, and to satisfy patient comfort is performed.

C-6

C-13. Dressings

- a.* Because of short stays in the FST area, it is not anticipated that dressings will be changed on burns, or on IV or chest tube emplacements.
- b.* Tracheostomy dressings will be changed as needed.
- c.* On all surgical patients, a “no peek” dressing policy will apply. This means that dressings will not normally be changed until the patients return to the OR for reevaluation or delayed primary closure at a Level III MTF. Dressings are reinforced by the nursing staff as needed.

C-14. Nasogastric Tubes

- a.* Unless otherwise indicated by patient condition, nasogastric (NG) tubes are irrigated as necessary and prior to evacuation. Unless otherwise ordered, NG tubes are placed to low suction or to dependent drainage during the postoperative phase.
- b.* Nasogastric tubes are essential in the management of many patients during aeromedical evacuation. The NG tubes are to be left open to air. They must not be clamped during aeromedical evacuation.
- c.* All patients diagnosed as having an ileus are required to have a functioning NG tube in place before and during aeromedical evacuation.
- d.* Patients with stomach, intestinal, or colonic wounds should have a functioning NG tube in place before and during aeromedical evacuation.

C-15. Oxygen Administration

- a.* Oxygen is administered to all patients who exhibit signs and symptoms of moderate-to-severe respiratory distress, hypoxia, and moderate-to-severe cardiovascular compromise (such as shock, Classes III and IV hemorrhages, or penetrating chest wounds).
- b.* The primary oxygen delivery device in the FST is the bedside oxygen concentrator. The rate of oxygen administration is 2 to 5 liters per minute, depending on the delivery method. A limited number of “D” cylinders are provided as emergency backup in the event of power failure or to provide higher oxygen flow rates and concentration as required.

C-16. Disposable Linen

- a.* Due to the limited weight and cube of the FST and the shortened length of stay, all patient care linens are disposable.
- b.* Refer to Table C-3 for linen stockage and requirements.

Table C-3. Linen Stockage Level

I. ASSUMPTIONS:

- A. INITIAL STOCKAGE LEVEL WILL BE ENOUGH TO SUPPORT THE FST FOR 72 HOURS.
- B. DISPOSABLE SHEETS AND TOWELS WILL BE USED.
- C. DISPOSABLE SURGICAL MASKS, DRAPES, CAPS, AND GOWNS WILL BE USED.
- D. REUSABLE WOOL BLANKETS AND ALUMINIZED BLANKETS WILL BE USED.

II. PATIENT REQUIREMENTS:

- A. 6 DISPOSABLE WASHCLOTHS.
- B. 2 DISPOSABLE SHEETS.
- C. 7 PROTECTIVE BED LINEN PADS.
- D. *EVACUATION SET (2 WOOL BLANKETS, ALUMINIZED BLANKET, AND 3 LITTER STRAPS).

* EQUIPMENT LISTED IN THE SET ARE DIRECT EXCHANGE ITEMS AND MUST BE RECOVERED FROM THE GAINING FACILITY IN ACCORDANCE WITH COMMAND STANDING OPERATING PROCEDURE (SOP). (FOR INFORMATION REGARDING PATIENT MOVEMENT ITEMS, REFER TO FM 4-02.1.)

C-17. Bedpan and Urinal Wash Point Procedures

a. Patients are to have their human waste receptacles (urinal or bedpan) disinfected after each use. Since the supporting medical company will also have the potential requirement for urinal/bedpan disinfection, one designated area for sanitizing receptacles can be used by both the patient holding squad of the medical company and the FST. This area should be clearly marked “for use in cleaning bedpans and urinals only” and should be established according to guidelines in FM 4-02.10 and FM 4-02.6.

b. Alternative procedures using impermeable disposable bags may be used to collect and dispose of urine and feces in accordance with PVNTMED guidance or as established by the supporting medical company.

C-18. Sterile Instrument and Supply Procedures

a. Forward surgical team personnel steam sterilize and plastic wrap surgical instruments and sets prior to deployment, or when they are stored for any length of time at the completion of a mission. Steam sterilization support is received from fixed MTFs or corps-level hospitals. All equipment and supplies should be stored presterilized (autoclaved) with appropriate SOPs for stock rotation.

b. Lack of quartermaster laundry support in the FST area dictates the exclusive use of disposable cloth products. These include bed linens and surgical drapes, gowns, and sponges.

c. Under FST operational conditions, cold chemical sterilization allows for maximum high-level disinfection and sterilization for the greatest number of instruments. A detailed unit SOP should be developed to allow cross training of nonoperating room personnel on cold chemical sterilization techniques.

d. The following procedures may be used in the preparation for cold chemical sterilization:

- Establish a specific area for soiled instruments. Discard disposable blades, needles, and syringes in a red sharps disposal container. The container should be marked, “SHARP ITEMS FOR DISPOSAL.”
- Wash instruments, glassware, rubber, and thermoplastic goods in appropriate solution by hand. Rinse well in potable water.
- Place instruments in chemical sterilizing solution in accordance with manufacturer’s instructions.
- Rinse instruments in sterile water and dry.
- Repackage instruments as outlined in FM 8-73.

C-19. Clinical Laboratory Procedures

a. Clinical laboratory capabilities at the level at which the FST operates are limited only to those procedures determined to be essential for far forward surgery. These include—

- Blood holding capability: Up to 50 units of Group O positive and negative PRBC.
- Electrolyte level (sodium [Na]; potassium [K]; chloride [Cl⁻]; carbon dioxide [CO₂]) using a handheld assay.
- Hematocrit determination using microhematocrit capillary tubes and battery-powered centrifuge.
- Urinalysis using dipsticks.
- Blood gas analysis using sensor-based module.

b. Nursing personnel perform near-patient testing (NPT) and perform operator maintenance on medical laboratory equipment in accordance with appropriate technical manuals (TMs) and/or manufacturer’s instructions. Quality control is done by personnel operating the equipment assisted by medical laboratory personnel of the supporting medical company/troop.

c. Emergency transfusion of Type O blood is used at this level of care. Typing and crossmatching of blood products must be available because soldiers’ identification tags do not always accurately reflect the soldiers’ blood type.

d. On rapid deployment missions, the basic load of PRBC (liquid) should be ensured for both the FST and the supporting medical company/troop. The subsequent resupply mechanism is coordinated in advance with the division medical supply office/medical materiel management branch (MMMB) or supporting medical logistics (MEDLOG) battalion.

Section II. POSTOPERATIVE RECOVERY CARE

C-20. Postoperative Recovery Techniques and Procedures

a. The scope of postoperative recovery activities encompasses those nursing practices, techniques, and procedures implemented to provide for the care of a patient after surgery.

b. Postoperative care of the critically ill patient is inclusive of the execution of the surgeon's orders. It involves the recovery of patients from anesthesia and continues through the time that they are medically evacuated. This care is supervised by the medical-surgical nurse and entails the following procedures:

(1) Recovery area personnel monitor the OR area to determine the estimated time of case completion. They set up the recovery area to include all equipment required for immediate intensive care procedures.

(2) An initial evaluation of the postoperative patient is completed prior to movement from the OR table to the anesthesia recovery area which includes, at minimum:

- Assisted ventilation intact with endotracheal and tracheostomy tubes secured.
- Circulatory status assessed.
- Drainage devices and IV catheters in place and secured.
- Splints intact.
- Safety straps in place.

(3) Upon taking charge of the patient from the OR, secure his personal effects bag from the circulator and inventory (if not already completed) the contents as soon as possible.

(4) Once in the recovery area, the nursing evaluation can proceed in a deliberate manner to ensure review and management of the primary system of involvement, as well as detection and appropriate treatment of less severe injuries. Review the medical record and the anesthetist verbal report to determine the—

- Diagnosis, location, and nature of injuries.

- Surgical procedure and application of any drainage devices.
- Anesthesia, analgesia, and/or reversal agent used and time of last dose.
- Special requirements.

(5) Take initial vital signs immediately upon arrival of patient in the recovery area and as indicated by condition or change in condition. The preferred method for obtaining the patient's temperature is by use of electronic thermometer.

(6) Set up and operate pulse oximeter. Place all patients with an irregular pulse or a pulse greater than 100 beats per minutes on a cardiac monitor. Recognize common electrocardiogram abnormalities and report any of the following to the recovery team leader:

- Premature ventricular contractions (PVCs).
- Ventricular fibrillation.
- Tachycardia.
- Asystole.
- Atrial fibrillation.

(7) Additional assessment parameters include—

- Inspecting the injury/operative site and noting any bleeding or abnormal drainage.
- Evaluating distal circulation of injured extremities, as applicable.
- Performing neurological assessment, to include level of consciousness, gross motor strength, gross sensation, and emotional status.
- Checking all skin surfaces for abnormal conditions.
- Monitoring patient's intake and output according to CSOP.

(8) Guided by the principles of combat surgery, recovery area nursing personnel perform nursing care and treatment procedures under the supervision of an Army nurse and according to established CSOPs. These procedures include, but are not limited to, the following:

- Performing airway management and extubation per CSOP.
- Performing continued fluid therapy and blood replacement via autotransfuser.
- Instituting postoperative rewarming as indicated.

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- Administering medication per surgeon’s order or CSOP; for example, analgesia, reversal agent, or antibiotics.
- Ensuring proper identification of patient before administering medications.
- Performing nursing measures to control pain and anxiety.
- Providing proper positioning and maintenance of cervical spine immobilization.
- Securing and positioning splints and casts.
- Performing special skin care and minor wound care as required.
- Providing a safe environment for patients by ensuring that all equipment is grounded and that no drugs, sharp objects, or weapons are left within their reach.
- Communicating the fire evacuation plan and emergency procedures in the event of hostilities.
- Providing patient instructions, as required.

(9) Manage controlled substances in accordance with AR 40-2. Store narcotics and other controlled substances in a locked box that is under the surveillance of the recovery team. Maintain accountability for controlled substances and record use, destruction, or additions on DA Form 3949-1.

C-21. Clinical Standing Operating Procedures and Orders

Tables C-4 and C-5 provide a sample outline of CSOPs and standing orders. These samples, though not all-inclusive, are a guide for developing the postoperative recovery area CSOPs and physicians’ standing orders.

Table C-4. Example CSOP for Postoperative Recovery

POSTOPERATIVE RECOVERY CSOP
A. PURPOSE: TO DELINEATE CARE OF THE POSTOPERATIVE PATIENT AND THE PREPARATION OF THE PATIENT FOR MEDICAL EVACUATION.
B. PROCEDURE: <ol style="list-style-type: none">1. EQUIPMENT:<ol style="list-style-type: none">A. PULSE OXIMETER, ELECTROCARDIOGRAM, AND NONINVASIVE BLOOD PRESSURE MONITORING.B. OXYGEN CONCENTRATOR, 2 TO 5 LITERS PER MINUTE.

Table C-4. Example CSOP for Postoperative Recovery (Continued)

POSTOPERATIVE RECOVERY CSOP
<p>C. OXYGEN DELIVERY SYSTEM (OXYGEN MASK, HUMIDIFIERS, AND VENTILATOR WITH DISPOSABLE PATIENT CIRCUIT AND IN-LINE HUMIDIFICATION EXCHANGE DEVICE).</p> <p>D. CONTINUOUS AND INTERMITTENT SUCTION DEVICES.</p> <p>E. AMBU BAG WITH MASK AND TRACHEAL ADAPTER.</p> <p>F. DRESSINGS.</p> <p>G. INTRAVENOUS FLUIDS.</p> <p>H. PLEURAL DRAINAGE WITH AUTOTRANSFUSION DEVICE AND REPLACEMENT BAGS.</p> <p>2. PATIENT CARE STANDARDS:</p> <p>A. PRIOR TO TRANSFER FROM OR TABLE, THE RECOVERY AREA LEADER IDENTIFIES PATIENT INJURIES, VITAL SIGNS, SURGICAL PROCEDURE, ANESTHESIA, REVERSAL AGENTS, AND NARCOTICS DOSAGE AND TIME OF ADMINISTRATION.</p> <p>B. RECOVERY AREA PERSONNEL PERFORM AND ACCOMPANY THE TRANSFER OF PATIENT FROM THE OR TABLE TO THE RECOVERY AREA.</p> <p>C. UPON ARRIVAL OF PATIENT, COMPLETE A NURSING ASSESSMENT TO INCLUDE PATIENT AIRWAY PATENCY. PLACE THE PATIENT ON OXYGEN VIA MASK AT A RATE PRESCRIBED BY THE SURGEON.</p> <p>(1) IF PATIENT IS INTUBATED, ENSURE THE ENDOTRACHEAL TUBE IS SECURED.</p> <p>(2) PLACE THE PATIENT ON THE VENTILATOR PER STANDING SURGEON'S ORDERS OR ANESTHETIST DIRECTION. INITIAL OXYGEN SUPPLEMENTATION SHOULD BE 5 LITERS PER MINUTE FROM THE OXYGEN CONCENTRATOR IN-LINE TO THE VENTILATOR. SUBSEQUENT ADJUSTMENTS ARE MADE BASED ON PULSE OXIMETER AND PATIENT CONDITION.</p> <p>D. ASSESS FOR ADEQUATE FLUID RESUSCITATION AND SHOCK. SIGNS AND SYMPTOMS OF SHOCK INCLUDE TACHYPNEA, HYPOTENSION, LOW URINE OUTPUT, PALENESS, DIAPHORESIS, AND DELAYED CAPILLARY REFILL (>3 SECONDS).</p> <p>(1) INTERVENE PER STANDING ORDERS.</p> <p>(2) CONTROL BLEEDING. NOTE AMOUNT. USE PRESSURE DRESSINGS AS NEEDED. NOTIFY SURGEON IF BLEEDING PERSISTS OR CHEST TUBE OUTPUT IS GREATER THAN 150 cc PER 30 MINUTES.</p> <p>(3) ENSURE ADEQUATE FLUID RESUSCITATION.</p> <p>(A) BLOOD REPLACEMENT FOR THE PATIENT IN PROFOUND HYPOVOLEMIC SHOCK CAN BE DONE WITH UNMATCHED TYPE O NEGATIVE BLOOD.</p> <p>(B) CRYSTALLOID REPLACEMENT WITH LACTATED RINGER SOLUTION IS USUALLY DONE WITH 3 cc OF CRYSTALLOID FOR EACH 1 cc OF ESTIMATED BLOOD LOSS.</p> <p>(C) PERSISTENT HYPOTENSION OR URINE OUTPUT LESS THAN 30 cc PER HOUR IS REPORTED TO THE ANESTHETIST FOR POTENTIAL USE OF COLLOID.</p> <p>(D) MONITOR PATIENT'S RESPONSE TO FLUID RESUSCITATION TO INCLUDE PULSE, BLOOD PRESSURE, URINE OUTPUT, LEVEL OF CONSCIOUSNESS, CAPILLARY REFILL, AND PULSE OXIMETRY.</p> <p>(4) EVALUATE DISTAL CIRCULATION AND INJURED EXTREMITIES, AND ENSURE FRACTURES ARE STABILIZED WITH APPROPRIATE SPLINTS OR CASTS.</p> <p>(A) ELEVATE INJURED EXTREMITIES UNLESS CONTRAINDICATED.</p> <p>(B) ASSESS PULSES AND CAPILLARY REFILL. ENSURE CIRCULATION IS NOT IMPAIRED BY DRESSINGS, SPLINTS, CASTS, OR IMPROPER POSITIONING.</p> <p>(5) PERFORM GROSS MOTOR AND NEUROLOGICAL ASSESSMENT FOR LEVEL OF CONSCIOUSNESS, GROSS MOTOR STRENGTH, MOVEMENT, AND SENSATION. DOCUMENT DEFICIENCIES, MONITOR IMPROVEMENT OR DETERIORATION OF STATUS, AND NOTIFY SURGEON AS REQUIRED.</p> <p>(6) MONITOR FOR CARDIAC ABNORMALITIES AS A RESULT OF CHEST INJURIES, ELECTROLYTE DISTURBANCES, AND SHOCK.</p> <p>(A) RECOGNIZE PVCs, ASYSTOLE, TACHYCARDIA, VENTRICULAR FIBRILLATION, AND ATRIAL FIBRILLATION.</p> <p>(B) NOTIFY SURGEON AND ANESTHETIST AND INITIATE ADVANCED CARDIAC LIFE SUPPORT PROTOCOLS AS INDICATED.</p>

Table C-4. Example CSOP for Postoperative Recovery (Continued)

POSTOPERATIVE RECOVERY CSOP

- (7) PROVIDE CONTINUED AIRWAY MANAGEMENT, SUPPORTIVE CARE, AND MONITOR VITAL SIGNS EVERY 5 TO 10 MINUTES UNTIL THE PATIENT IS STABLE.
- (8) PREPARE PATIENT FOR AND RELEASE TO MEDICAL EVACUATION CHANNELS.
 - (A) ASCERTAIN MEDICAL EVACUATION TRAVEL TIME OF PATIENT TO THE NEXT LEVEL MTF.
 - (B) ENSURE THAT THE PATIENT WILL RECEIVE REQUIRED CARE DURING TRANSIT TO DESTINATION MTF.
 - (C) ENSURE ADEQUATE AIRWAY. SECURE ENDOTRACHEAL OR TRACHEOSTOMY TUBE IF INTUBATED. REQUEST AMBU BAG, OXYGEN SUPPORT, AND OTHER EQUIPMENT AS REQUIRED.
 - (D) SECURE IV LINES. ENSURE LARGE BORE IV SITES AND TUBINGS ARE IN PLACE AND SECURE. PROVIDE IV FLUIDS IF THE NEED FOR BAG REPLACEMENT DURING FLIGHT IS ANTICIPATED.
 - (E) SECURE FOLEY® CATHETER AND OTHER DRAINAGE TUBES. DO NOT CLAMP FOLEY® CATHETERS OR NG TUBES. THE FOLEY® CATHETER IS CONNECTED TO THE DRAINAGE BAG. THE NG TUBE IS LEFT OPEN TO ALLOW DRAINAGE.
 - (F) DISCONTINUE CHEST SUCTION AND ENSURE HEIMLICH® VALVE IS FUNCTIONING ON ALL CHEST TUBES.
 - (G) WRAP PATIENT SECURELY IN APPROPRIATE BLANKETS AND SECURE LITTER WITH A MINIMUM OF 3 LITTER STRAPS. ENSURE THAT NO BLANKETS OR SUPPLIES ARE LEFT LOOSE ON THE LITTER BEFORE TRANSPORT OF PATIENT.
 - (H) COMPLETE THE PATIENT RECORD AND SEND ALL MEDICAL RECORDS WITH THE PATIENT. TOTAL AND RECORD FLUID INTAKE AND OUTPUT PRIOR TO RELEASE FOR MEDICAL EVACUATION. CONCISELY RECORD THE PATIENT'S CONDITION IMMEDIATELY PRIOR TO DEPARTURE. PROVIDE FLIGHT MEDIC/NURSE WITH BRIEF REPORT ON PATIENT'S STATUS AND IN-FLIGHT NEEDS. ENSURE THAT ALL SUPPLIES REQUIRED DURING TRANSPORT AND PERSONAL EFFECTS ARE WITH THE PATIENT.

NOTE

PERSONAL EFFECTS OF PATIENTS ARE TRANSPORTED, WEAPONS AND UNIT EQUIPMENT ARE NOT TRANSPORTED WITH PATIENTS. THE SUPPORTED MEDICAL COMPANY ENSURES THAT WEAPONS AND UNIT EQUIPMENT ARE RETURNED TO THE SOLDIER'S UNIT.

- (I) RELEASE PATIENT TO MEDICAL EVACUATION ELEMENT.
-

Table C-5. Example Standing Order

COPY NO. 1 OF 3 COPIES
218TH FST, 2 MED BDE
250900Z SEP 1994

STANDING ORDER NO. 3: FOR THE EXECUTION OF CLINICAL PROCEDURES

EXECUTING PERSONNEL: POSTOPERATIVE RECOVERY

IMPLEMENT THE FOLLOWING STANDING ORDERS FOR RECOVERING POSTOPERATIVE PATIENTS:

1. VITAL SIGNS: TAKE EVERY (q.) 5 TO 10 MINUTES UNTIL STABLE, THEN TAKE q. 30 MINUTES DEPENDING ON PATIENT'S STATUS.
-

Table C-5. Example Standing Order (Continued)

-
2. OXYGEN: ADMINISTER 2 TO 5 LITERS PER MINUTE.
 3. INTRAVENOUS INFUSION: ADMINISTER LACTATED RINGER SOLUTION 150 cc PER HOUR—BOLUS 500 TO 1,000 cc—THEN INCREASE FLUID RATE TO 200 cc TO ACHIEVE A BLOOD PRESSURE OF EQUAL TO OR GREATER THAN (\geq) 100 mm OF MERCURY (mm Hg) AND/OR URINE OUTPUT OF >30 cc PER HOUR.

CAUTION

NOTIFY SURGEON FOR PERSISTENT URINE OUTPUT OF <30 cc PER HOUR AND/OR WHEN THERE IS EVIDENCE OF REBLEEDING.

4. CHEST TUBE:
 - CONNECT CHEST TUBE TO PLEURAL DRAINAGE AT 20 CENTIMETERS (cm) SUCTION.
 - AUTOTRANSFUSE CHEST DRAINAGE q. 15 TO 20 MINUTES AND AS CIRCUMSTANCES REQUIRE (p.r.n.) FOR VOLUME OVER 200 cc.

CAUTION

NOTIFY SURGEON FOR CHEST DRAINAGE OF >150 cc PER 30 MINUTES.

5. VENTILATOR: INITIATE THE FOLLOWING SETTINGS FOR VENTILATOR ASSISTANCE:
 - SYNCHRONIZED INTERMITTENT MANDATORY VENTILATION (SIMV) 12/MINUTE TIDAL VOLUME (TV) 12 cc/KILOGRAM.
 - OXYGEN FLOW TO MAINTAIN OXYGEN SATURATION >90 PERCENT POSITIVE END-EXPIRATORY PRESSURE (PEEP) 5 cm.
 - PEAK FLOW AS DIRECTED AND ADJUST AS NEEDED.
6. EXTUBATION CRITERIA:
 - PATIENT'S SPONTANEOUS RESPIRATION IS 14 TO 20 INHALATIONS PER MINUTE.
 - PATIENT IS ABLE TO COUGH AND BREATHE.
 - PULSE OXIMETER SETTING MUST BE NO LESS THAN 92 PERCENT.
 - PATIENT AROUSES SPONTANEOUSLY AND CAN LIFT HEAD OFF BED.

CAUTION

DO NOT EXTUBATE A PATIENT WITH AN INHALATION INJURY, A SURGICAL SPINE INJURY, OR A REQUIREMENT FOR CONTINUED ASSISTED VENTILATION.

7. NASOGASTRIC SUCTION: REGULATE NG TUBE TO LOW SUCTION OR DRAINAGE.
8. ANALGESIA: ADMINISTER MORPHINE SULFATE 2 TO 10 mg IV q. 2 HOURS (H) p.r.n.
9. ANTIBIOTICS (CHECK ONE):
 - ___ CEFAZOLIN SODIUM, 1 GRAM IV q. 8 H.
 - ___ CEFOXITIN SODIUM, 1 TO 2 GRAMS IV q. 6 TO q. 8 H.
 - ___ GENTAMICIN SULFATE, ___ mg q. ___ H.
10. PATIENT RELEASE.
 - A. RELEASE FOR MEDICAL EVACUATION WHEN PATIENT AROUSES SPONTANEOUSLY, CAN LIFT HEAD OFF BED, WHEN BLOOD PRESSURE IS EQUAL TO OR GREATER THAN 100 mm Hg (SYSTOLIC) AND STABLE, AND WHEN THERE IS NO EVIDENCE OF REBLEEDING.
 - B. DISCONTINUE CHEST SUCTION AND PLACE HEIMLICH® VALVES ON ALL CHEST TUBES.
 - C. DISCONTINUE NG TUBE SUCTION AND ENSURE THAT TUBE IS OPEN TO AIR OR TO DRAIN.

(SIGNATURE) _____
 TEAM CHIEF
 LTC, MC

C-22. Procedures for Medical Evacuation of Patients

a. The FST recovery area has the responsibility of preparing patients for release to the medical evacuation chain. The evacuation of a patient is initiated by the surgeon in accordance with established unit SOP. The recovery area coordinates with the supporting medical company for the movement of the patient and ensures that the—

- Medical evacuation request includes requirement for surgical equipment and/or providers.
- Patient is sufficiently stabilized for the anticipated mode and duration of travel.
- Patient's airway and breathing is adequate for movement.
- Patient's IV lines, drainage devices, and tubes are fully secured and patent.
- Patient at high risk for barotrauma considered for prophylactic chest tube placement before prolonged aeromedical evacuation (consult surgeon).
- Heimlich® valves on chest tubes are functioning.
- Foley® catheters and NG tubes are placed and allowed to drain.
- Patient is securely covered with both a woolen and aluminized blanket for air transport, cold environment, and/or postoperative hypothermia.
- Three litter straps are used to secure the patient to the litter.
- Personal effects and all medical records accompany the patient. Personal effects (money, documents, pictures, jewelry, and the like) will be documented by the supported MTF and accompany patients when they are evacuated from the FST.

b. Patients stabilized at the FST will be routinely evacuated by Army medical evacuation platforms to the supporting Level III (corps or joint task force) hospital. The Level III MTF then assumes responsibility for the patient as the originating MTF for Theater Aeromedical Evacuation System (TAES) requirements, and completes the necessary documents. However, in joint or split-based operations where a brigade is deployed separate of a contiguous corps, and the US Air Force (USAF) is required to evacuate from the BSA, then the supporting medical company will assume the TAES administrative requirement.

NOTE

1. Due to other patients awaiting medical evacuation at the medical company, the brigade surgeon or designee determines the evacuation precedence for all patients. This is done in consultation with the FST's chief surgeon and/or senior nurse.

2. When a patient is to be evacuated by USAF assets, notification of the supporting Patient Movement Requirement Center (PMRC) should be made at the earliest time possible. This enables the PMRC sufficient time to coordinate airlift and PMI requirements.

APPENDIX D

HEALTH SERVICE LOGISTICS SUPPORT**D-1. General**

Theater health service logistics (HSL) encompasses the following: planning and execution of medical supply operations; medical equipment maintenance and repair; optical fabrication and repair; contracting services; medical hazardous waste management and disposal; production and distribution of medical gases; single integrated medical logistical management for joint operation; and blood banking services for Army, Joint, combined, and interagency operations. Health service logistics is anticipatory with select units capable of operating in a split-based or dual-based mode. See FM 4-02.1 for a detailed discussion on Army theater HSL and Joint Publication 4-02.1 for HSL considerations in joint operations.

D-2. Division Health Service Logistics Support

a. Forward deployed FSTs request HSL support, to include PMI from the supported medical company/troop.

b. During deployment, early build-up phases, and lodgment, FSTs normally operate from planned, prescribed loads and from existing pre-positioned Class VIII stocks identified in applicable logistics plans. During initial deployment, their prescribed loads may be dictated by the OPLAN for a specific contingency that may exceed the 72-hour basic load list. Initial resupply efforts may consist of preconfigured medical supply packages.

c. Anticipatory logistics provide for preconfigured push-packages that are shipped directly from CONUS/outside CONUS (OCONUS) supporting logistics elements to medical companies/troops until replenishment line item requisitioning is established with the supported medical company/troop. While resupply by preconfigured packages is intended to provide support during the initial phase, continuation on an as-required basis may be dictated by operational needs in accordance with patient estimates.

d. The supported medical company/troop requisitions blood for both the medical company/troop and the FST. Blood support at the FST consists of Type O positive and negative PRBCs in limited quantities as dictated by the specific contingency and expected casualty rate. The FST has up to a 50-unit blood storage capability and requires blood resupply on a frequent basis.

e. The FST receives medical equipment maintenance support from supporting medical company/troop. If the repair is within the scope of unit-level maintenance and the parts are on hand, the medical equipment repairers (MERs) will repair the equipment. If the repair exceeds unit-level capabilities, the equipment is evacuated to a direct support/general support element for inspection/repair. If the equipment is a critical item, the supported medical company/troop will arrange for a replacement item.

f. When turning patients over to the medical company/troop for evacuation, litters, litter straps, blankets, and like items accompany the patient. To ensure that these items are not depleted, an exchange system needs to be established. When possible, this should be a direct item-for-item exchange. The system should provide for stockpiling such items.

APPENDIX E

**TRAINING, REHEARSALS, AND STANDING
OPERATING PROCEDURES****E-1. Training**

Training is the key to success in any type of operation, especially when lives are at risk. In order for the FST to be effective, it is critical that all personnel assigned be trained to the highest degree possible.

a. The chief, in concert with his staff, establishes the METL for the FST. Refer to FMs 7-0 and 7-15 for guidance in the development of the unit's METL.

b. All FST personnel should be afforded the opportunity to attend such training courses as are required to achieve the necessary degree of competence. Some examples of courses currently available are shown in Table 4-1. These courses support the basic principles of combat surgery and the skills required by FST members.

c. Military occupational specialties and specific clinical skills of enlisted and officer team members must be sustained. This may be accomplished by regularly scheduling individuals to practice their skills at fixed MTFs on a rotational basis. This is done in accordance with the AS MART Program. It is required to enhance and sustain clinical skills. The focus of clinical rotations must be proficiency on those skills directly related to the FST. Forward surgical team personnel should undergo training at the Army's Trauma Training Center. Objectives will include MOS-specific rotations to clinical areas for cross training and sustainment training. For example, the practical nurse (91WM6) should have focused, supervised rotations through the postoperative nursing care unit, the intensive care unit, the emergency room, and the OR. Clinical objectives must be individualized and based on each soldier's MOS, current knowledge level, and experience. The importance of this cannot be overemphasized. Equally as important are the maintenance of the FST nurses' and physicians' clinical skills for PROFIS and assigned personnel. Resuscitative surgical skills can quickly atrophy, whether deployed or not. Training options include regular rotations through emergency rooms, trauma centers, and virtual reality environments. Both medical department activities/medical centers and unit commanders must cooperate in a partnership to make this happen.

E-2. Rehearsals

Once training is complete it is essential that the skills learned not be lost or degraded from lack of use. This is where the value of conducting rehearsals is realized. Not only are perishable skills honed and refined but teams become more efficient in the process.

E-3. Standing Operating Procedures

Standing operating procedures outline the duties and responsibilities of individual positions. They also articulate how a unit conducts business. The chief of the FST is responsible for the development and maintenance of unit and clinical SOPs. Forward surgical team SOPs are based on the medical command/brigade's SOPs and refined by the operational experience of the individuals drafting them. Operating procedures should be clear and concise. They must reflect procedural guidance that supports the current mission and doctrinal requirements.

APPENDIX F

NUCLEAR, BIOLOGICAL, AND CHEMICAL DEFENSE

Many countries may consider the use of NBC agents as an alternate form of conventional warfare. As such, they may well be prepared to accept casualties created in their own ranks and reduced combat efficiency of their units in exchange for tactical gain. Chemical and biological agents as well as toxic industrial materials, although not considered as conventional weapons, may be used by an ever-increasing number of adversaries. All FST personnel must understand how to negate the effects of these agents, in order to continue to perform their mission.

F-1. Fundamentals of Nuclear, Biological, and Chemical Defense

a. The presence of NBC agents adds a troublesome and complex dimension to the battlefield. Their use could produce large numbers of casualties, which would easily exceed the capacity of the HSS system. Soldiers working in hot, bulky and heavy protective clothing and equipment may create heat stress and psychological casualties, which will diminish the effectiveness of a unit. Chemical contamination causes—

- Command, control, and communications to deteriorate.
- Simple tasks such as eating, sleeping, moving, and eliminating body waste, to become difficult and subject to contamination.

b. Training and rehearsals are essential to reducing casualties and enhancing the FST's ability to continue its mission.

c. Nuclear, biological, and chemical defense is a condition, not a task in the mission. Degradation of capabilities caused by individual and collective protection must be weighed against potential casualties from NBC attack. Going too far in either direction can reduce individual effectiveness and the overall efficiency of the FST. See FM 3-4 for details on protective measures. See FM 4-02.7 for detailed information on the FST employment of collective protection.

F-2. Nuclear, Biological, and Chemical Contamination Avoidance and Protection

a. Nuclear, Biological, and Chemical Avoidance. The FST is dependent on the supported unit for locating and identifying the type and density of contamination. This enables the unit to bypass or cross NBC hazard areas. See FM 3-3 for more detailed information on NBC contamination avoidance.

b. Nuclear, Biological, and Chemical Protection. Unit protective measures can be improved by locating, identifying, and reporting NBC hazards. Nuclear hazards dictate that additional protection measures be considered. For maximum protection against the effects of nuclear weapons, the FST must—

- Evacuate from soft shelter systems to bunkers, or use sandbags or earth berms (refer to FM 4-02.7) for radiation shields.
- Take down antennas and disconnect all cables, including handsets, from all radios except mission-essential sets for monitoring nets as required.

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- Assume positions over the brow of a hill, midway down the slope for best protection, if time does not allow for digging in.

F-3. Nuclear, Biological, and Chemical Decontamination

Following an NBC attack, decontamination must take place before the protection level can be downgraded from mission-oriented protective posture (MOPP) Level 4. For detailed decontamination procedures see FM 3-5.

F-4. Forward Surgical Team Nuclear, Biological, and Chemical Defense

- a.* The FST must organize and train an NBC defense team from its own personnel.
- b.* The supported unit's NBC operations NCO assists selected FST personnel in setting up and operating assigned NBC detection and warning equipment, as well as performing unit decontamination procedures.

F-5. Forward Surgical Team Support in a Nuclear, Biological, and Chemical Environment

- a.* The mission of the FST is to provide forward surgical intervention for nontransportable patients. However, the FST is not equipped with chemical agent treatment or decontamination sets and must rely on the CSH or supported medical company to provide patient decontamination and NBC treatment before these patients are treated by the FST.
- b.* Detailed information on characteristics and dimensions of NBC operations, extended operations in contaminated areas, NBC decontamination, NBC avoidance, and NBC protection are contained in FMs 3-3, 3-4, 3-5, 3-100, 4-02.7, 4-02.33, 4-02.283, 8-9, 8-284, and 8-285.

F-6. Forward Surgical Team Operations in a Nuclear, Biological, and Chemical Environment

If unable to relocate after receiving an NBC warning, the FST will configure for NBC operations. Forward surgical teams not equipped with CBPS systems must suspend surgical operations until the all clear signal is given or appropriate decontamination procedures are completed. Chemically biologically protected shelter-equipped FSTs are capable of operating in these environments. The CBPS systems provide a contamination-free environment where medical personnel can effectively treat patients without the restrictions created by protective clothing and equipment. Information regarding CBPS systems is provided in FM 4-02.7.

APPENDIX G

FORWARD SURGICAL TEAM SITUATION REPORT**G-1. Introduction**

An FST's ability to sustain its support of an operation is dependent on a number of variables. For these reasons, it is critically important that the FST routinely provide situation reports (SITREPs) to the supported brigade surgeon and his HSS planners. The information contained in the SITREP enables the brigade surgeon's cell to develop a clearer picture of the situation, conduct continuous HSS planning, identify decision points, and maintain flexibility as the operation evolves. The information provides a snapshot in time that enables HSS planners to—

- Identify the current capabilities and any shortfalls of the supporting FST.
- Plan for and identify additional FST support requirements.
- Request replacement of FST assets that are not mission-capable due to workload, depleted stocks of Class VIII, and fatigue factors.
- Relocate the FST with a supporting Level II MTF as required to ensure adequate coverage of the AO.
- Identify and project critical Class VIII shortfalls.
- Develop a medical evacuation (MEDEVAC) plan that expedites the evacuation of casualties requiring resuscitative surgery to the FST.

G-2. Reporting the Data

The FST should transmit a SITREP as required by the brigade tactical standing operating procedure or as the situation dictates. The individual(s) tasked with preparation and transmission of the SITREP would likely be the team's field medical assistant or the noncommissioned officer in charge. This would ensure that care providers remain free to treat patients. High patient flow periods will require that the report be sent more frequently. The flow of the information should run through the supporting medical company, to the supporting command surgeon, and to the corps medical brigade.

G-3. Report Format

a. The FST SITREP format should be structured using a line item format similar to that of the nine line MEDEVAC request. Formatting in this manner makes the report easier to complete and transmit. It also enables the receiving station to record and verify the information being sent.

b. The minimum essential information that the FST should report needs to include, but not be limited to—

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(1) Number of current preoperative and postoperative patients to include the number of surgical backlog hours if any.

(2) Number of patients awaiting evacuation to the supporting Level III MTF to include scheduled estimated time of arrival and estimated time of departure of supporting corps ambulances

(3) The FST's remaining capability and ability to continue to support the fight. (Should include but is not limited to personnel status [able to function or incapable of performing due to fatigue and exhaustion], equipment, and Class VIII status.)

(4) Is additional support required?

GLOSSARY

ABBREVIATIONS AND ACRONYMS

aaslt air assault

ABCA American, British, Canadian, and Australian

abn airborne

AC active component

ACR armored cavalry regiment

admin administrative

AMEDD Army Medical Department

AMEDDC&S Army Medical Department Center and School

AO area of operations

AR Army regulation

ARPERCEN Army Reserve Personnel Center

ASMART AMEDD Systematic Approach to Realistic Training

ATM advanced trauma management

attn attention

BSA brigade support area

C3 command, control, and communications

CBPS chemically biologically protected shelter

cc cubic centimeter(s)

Cl⁻ chloride

cm centimeter(s)

CO₂ carbon dioxide

CONUS continental United States

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COSCOM corps support command

CSH combat support hospital

CSOP clinical standing operating procedure

CSS combat service support

CZ combat zone

DA Department of the Army

DD Department of Defense

decon decontamination

DISCOM division support command

DMOC division medical operations center

DMRTI Defense Medical Readiness Training Institute

DOD Department of Defense

DRASH deployable rapid assembly shelter

DSS division surgeon's section

EMT emergency medical treatment

EOC emergency operations center

ESB enhanced separate brigade

evac evacuation

FIO₂ fractional inspired oxygen

FM field manual

FST forward surgical team

Glossary-2

G3 Assistant Chief of Staff (Operations and Plans)

GP general purpose

h/hr hour

Hg mercury

HHD headquarters and headquarters detachment

HSL health service logistics

HSS health service support

IV intravenous

K potassium

lab laboratory

MAST medical antishock trousers

MC Medical Corps

MEDCOM medical command

MEDLOG medical logistics

MER medical equipment repairer

MES medical equipment set

METL mission-essential task list

METT-TC mission, enemy, terrain and weather, troops and support available, time available, and civil considerations

mg milligram(s)

MIW multiple injury wound

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ml milliliter(s)

mm millimeter(s)

MMMB medical materiel management branch

MOPP mission-oriented protective posture

MOS military occupational specialty(ies)

MS Medical Service Corps

MSB main support battalion

MSMC main support medical company

MTF medical treatment facility

MTP mission training plan

Na sodium

NATO North Atlantic Treaty Organization

NBC nuclear, biological, and chemical

NG nasogastric

NPT near-patient testing

OCONUS outside continental United States

OP operation/operative/operational

OPLAN operations plan

OR operating room

pam pamphlet

PEEP positive end-expiratory pressure

PMI patient movement item

Glossary-4

PMRC Patient Movement Requirement Center

pnt patient

PRBC packed red blood cells

PRE-OP preoperative

p.r.n. as needed

PROFIS professional officer filler system

PVC premature ventricular contraction

PVNTMED preventive medicine

q. every

QSTAG Quadripartite Standardization Agreement

RC reserve component

RTD return to duty

SF standard form

SIMV synchronized intermittent mandatory ventilation

SITREP situation report

SOF special operations forces

SOP standing operating procedure

SSN social security number

STANAG Standardization Agreement

TAES Theater Aeromedical Evacuation System

TM technical manual

FM 4-02.25

TNCC trauma nursing care course

TO theater of operations

TOE table(s) of organization and equipment

TV tidal volume

US United States

USAF United States Air Force

WBAMC William Beaumont Army Medical Center

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