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Determination of En Route Patient Staging Competencies

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14. ABSTRACT

Background: The en route care (ERC) system ensures patients are safely transported between levels of care. The ERC system must have the "ability to provide uninterrupted care from the point of injury or initial illness until patients arrive at a medical treatment facility (MTF) or between capabilities in the continuum of essential care, without compromise to the patient's condition." Optimal care must be provided not only at a specific point, but across the care continuum. Although nursing personnel may be assigned to a designated En Route Patient Staging facility, nurses from all three services are responsible for preparing and receiving patients from transport (ground, rotary and fixed wing and possibly sea-based transport). No research has been conducted to identify the care requirements and core nursing competencies for this epoch of care.

Purpose: The purpose of this project was to identify nursing care competencies for patients who are being prepared for/receiving transport/evacuation under operational conditions. A specific focus was on the following areas: 1) considerations for unique aspects of en route care (e.g., pain management) including the stresses of transport, 2) flight/transport preparation, and 3) ground-based safety, including handoff.

Methods: The methods used to identify competencies were consistent with previous work that informed the development of the USAF readiness competencies for medical-surgical and critical care nurses. *Step 1*: Identify characteristics of patients potentially requiring transport. This phase involved a review of reports on patients transported in the USAF Aeromedical Evacuation system (Aeromedical Evacuation Registry) and the Role 2 Registry. Relevant JTS Clinical Practice Guidelines were also reviewed and consideration was given to the effects of the transport environment (e.g., stresses of flight, etc.) on preflight preparation. *Step 2*: For each competency on the USAF Comprehensive Medical Readiness Program Nurse Corps, 46N3 (medical-surgical) list the following question was asked: "Is there a unique en route care related competency specific to this patient situation?" *Step 3*: A draft list of competencies specific to the operational setting was created and sent to subject matter experts (SME) who reviewed each statements for 1) relevance and criticality to types of patients cared for

and nursing care requirements, 2) scope of practice, 3) performed by specialty teams (e.g., CCATT or Burn Team), or 4) performed in garrison as a part of general readiness training. *Step 4*: Based on SME feedback the checklist was revised. Items were eliminated based on relevance to the operational setting and criticality to optimal patient outcomes or if they were outside the scope of practice of an RN, performed by a specialty team or unique to care provided only in an en route patient staging facility. A competency was not removed if it reflected a unique en route aspect of care (e.g., cast management – considerations for bivalving cast). A crosswalk was done against the US Army Austere Environment of Care (Feb 2018): Maintains Patient Stability and Safety during the Transport Process checklist.

Results: The competencies related to the preparation for en route care/receiving patients from en route care included the following areas: 1) Performs Nursing Care in the En Route Care Environment Specific to Stresses of Flight. These competencies reflect knowledge related to stresses of flight, such as altitude related hypoxia or gas expansion. 2) Performs Nursing Care in the En Route Care Environment for specified injury/illness (e.g., head trauma – en route need for supplemental oxygen, ocular trauma – risk for gas expansion, anemia, chest tube management and pain management). 3) Provide Nursing Care in the Deployed Location for Issues Related to Transport/Evacuation including packaging a patient for transport, documentation and handoff, pressure injury prevention, and safety related to various transport vehicles (helicopter, airplane, ship/small boat). The comparison of the proposed checklist with the Army Austere Environment of Care checklist identified consistency, but the proposed document adds details and education/training resources that may enhance tri-service standardization of readiness training related to pre/post-patient transport. Each competency on the final checklist was coded as knowledge or performance (skills).

Conclusions: This project is unique given its focus on the epoch of care in the pre/post transport phase. Although previous research has identified the importance of tailored care during this period, no research had been done specific to the competencies for this phase of care. The checklist may be augmented by service specific resources but provides a core set of competencies for nurses across all services. This study also addresses a joint need outlined in strategic planning documents and is timely given preparation for the provision of care under austere conditions where fixed structures and capabilities, such as an En Route Patient Staging facility, may not be available.

15. SUBJECT TERMS
En Route Care, ERC, Competencies, ERPS, En Route Patient Staging

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The en route care (ERC) system ensures patients are safely transported between levels of care. The ERC system must have the "ability to provide uninterrupted care from the point of injury or initial illness until patients arrive at a medical treatment facility (MTF) or between capabilities in the continuum of essential care, without compromise to the patient's condition." Optimal care must be provided not only at a specific point, but across the care continuum. Although nursing personnel may be assigned to a designated En Route Patient Staging facility, nurses from all three services are responsible for preparing and receiving patients from transport (ground, rotary and fixed wing and possibly sea-based transport).

The purpose of this project was to identify nursing care competencies for patients who are being prepared for transport/evacuation (e.g., en route patient staging system (ERPSS)) under operational conditions. A specific focus was on the following areas:

- Considerations for unique aspects of en route care (e.g., pain management) including the stressors of transport
- Flight/transport preparation
- Ground based safety, including handoff

1.1 Stipulations for Competencies

1. The competencies are applicable to all nurses regardless of role or service (Army, Navy, Air Force), and are not restricted to nurses assigned to an En Route Patient Staging facility (e.g., CASF, ERPS). The results of this project may inform service specific readiness training, for example the Comprehensive Medical Readiness Program (CMRP) checklist for USAF medical-surgical nurses or critical care nurses. Formatting of the final competency list may vary by service.
2. The competencies should not duplicate readiness training/role requirements specific to a unique operational role (e.g., preparing a transport ventilator – ECCN/CCATT/Burn Team; perform anti-hijacking screen – CASF/AE).
3. The competencies should not duplicate aspects of roles routinely performed in garrison (e.g., conducts circulation, mobility, and sensitivity (CMS) exam, except if there is a transport unique aspect of the care).
4. The competencies may be specific to unique transport settings (e.g., ground-based, helicopter, fixed wing aircraft, ship/boat) and will be denoted as such (e.g., safety – Describes methods for safe approach to transport vehicles: Helicopter, airplane)
5. The competencies do not address transport within a medical facility (only inter-facility/inter-location transport).

1.2 Definitions

The following definitions, which were drawn from AFI 41-106 Medical Readiness Program Management (2017),[1] which implements DoDI 1322.24 Medical Readiness Training[2] and Air Force Tactics, Techniques and Procedures 3-42.57: En Route Patient Staging System[3] were used to inform the development of the operational nursing competency checklist for en route patient staging:

- Readiness: "the ability of military forces to fight and meet the demands of assigned missions."[4]
- Readiness Skills Training: the skills specific to an Air Force Specialty Code (AFSC), which allow an Airman to perform within the full scope of their AFSC in a deployed setting.[5] These skills are outlined on Comprehensive Medical Records Program (CMRP) checklists for each specific AFSC.
- En route patient staging: "temporary staging of patients to prepare them for flight and aircraft loading while reducing the amount of time an AE aircraft is on the ground. Prior to ERPS concept, staging patients for AE had historically been accomplished via MASFs, CASFs or Disaster Aeromedical Staging Facilities (DASFs)."[6]
- Competence is one's potential ability to perform in a competent manner.[7]
- Competency is one's actual performance as required/desired in a real (clinical, work, field) situation.[7]
- Operational Clinical Readiness: the nurse's demonstration of all behaviors described in the competency checklist to at least the performance standard(s) indicated and *operational clinical nursing competencies* are the described behaviors.

2.0 Patient Characteristics

The methods used to identify potential competencies were consistent with previous work that informed the development of the USAF readiness competencies for medical-surgical and critical care nurses. To inform the competency list by first defining the characteristics of the patients potentially requiring transport, a review was conducted of reports on patients transported in the USAF Aeromedical Evacuation system (Aeromedical Evacuation Registry)[8,9] and the Role 2 Registry.[10,11]

3.0 AE Transport

Between 2001-2014, the US Air Force Aeromedical Evacuation System (AES) has received 216,621 patient movement requests (PMRs) worldwide reflecting 139,163 patients transported, with over 90% transported by AE (remaining 10% of patients transported by specialty teams, such as Critical Care Air Transport Teams (CCATT)). As demonstrated in Figure 1, the most common specialty area was orthopedics. To develop the competencies for ERPS, existing literature/evidence on en route care (ERC) of these patients was integrated into the competency checklist. For example, a unique aspect of ERC for patients with orthopedic trauma is pain management, particularly for patients with an external fixator. In a study by Gentry [12] of patients transported from a Role III hospital to the aircraft, the highest pain scores were in patients with orthopedic trauma with an external fixator compared to other patients (including patients with orthopedic trauma with splints). Derived competencies for orthopedic patients with an external fixator/orthopedic hardware would include: 1) Describe strategies for padding/protection of orthopedic hardware during transport, 2) Position affected extremity to minimize bumping during transport, 3) Assess pre-transport pain status, and 4) Administer/instruct patient on analgesic or adjuvants. A similar strategy was applied for each of these major categories. Of note, while a smaller number of patients (n = 1,264; 0.94%) suffered burns (listed as primary specialty), these patients represent a unique population who were also included on the competency list. A complete list of patients by Primary Medical Specialty over Years (2001-2014) is in Figure 1.

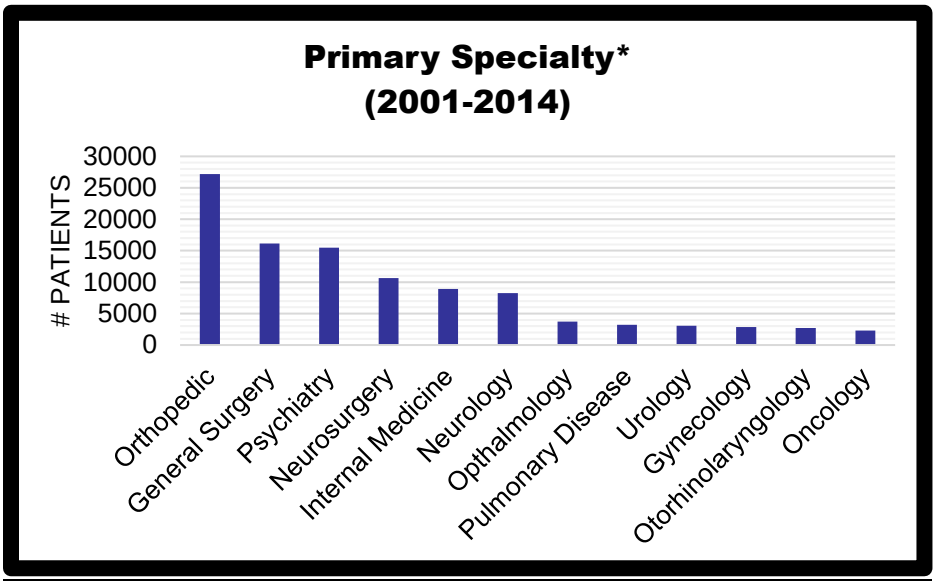

Figure 1. Top ten primary specialties for patients transported in AE (2001-2014).

3.1 Role 1-Role 2

Patient transport from Role 1 (field) to a Role 2 facility (fixed or mobile facility for emergency surgical stabilization and resuscitation)[13] is outside the scope of this project. However, two recent studies[10,11] described the casualties transported to a Role 2 facility identify the patients who will need to be prepared for further transport. Among the 15,310 patients included in the Role 2 Registry (R2R), 10,559 casualties who suffered traumatic injury (battle and non-battle injury) were analyzed. The primary Injury type was penetrating (53.5%), blunt (30.8%), combined penetrating and blunt (7.5%) and burns (1.9%). Injuries were due to explosions (48.3%), gunshot wounds (24.6%) and motor vehicle crashes (9.1%). There was no specific information on injury location (e.g., traumatic brain injury, extremity). Further analysis of the R2R is summarized in the next section.

3.2 Role 2-Role 3

The Role 2 Registry (R2R) describes patients receiving care at a Role 2 facility. The adult patients cared for at the Role 2 facility suffered primarily from battle injuries (76%) primarily due to explosions, gunshot wounds, and motor vehicle crashes. This preliminary report demonstrates the complex nature of the injuries (penetrating + blunt + burn) but does not provide details of the specific types of injuries or level of care required. A recent paper[14] further analyzed the R2R database and described the 3927 patients transported from Role 2 to Role 3 (2008-2014). A majority of the patients had battle injuries (81%) due to an explosion (51.5%) with penetrating trauma (52.5%). Pre-transport care included surgery (37.9%), blood transfusions (24.5%) and 4.7% received a massive transfusion. An assumption is that these patients are captured under the AE system. Similar to the AE data, the most common injuries were orthopedic (23.9%), soft tissue trauma (23.9%), penetrating extremity injuries (13.8%) and brain injuries (13.3%) and approximately 20% had indications of hemodynamic compromise (shock index $\geq$ 0.9). Approximately 45% of the patients were transported from Role 2 to Role 3 by a nurse (unclear if this was an ECCN) or a physician, suggesting that 55% of the patients were prepared for transport by the clinical nurses. The similarities in the patient characteristics, with the exception for acuity due

to time to initial surgery/resuscitation), suggests there is a core patient population for whom a set of transport competencies would apply. The inclusion of considerations for the preparation of a stable post-operative patient may need to be considered given the potential for future operational scenarios.

The competency list was crosschecked with the demographic characteristics of patients transported in the USAF Aeromedical Evacuation System and research reports published from the Role 2 Registry. Although data were available on the number of patients evacuated during Hurricanes Rita and Katrina, there is no known system wide database or research report outlining the characteristics (e.g., age, diagnosis) of patients requiring transport as a part of a disaster/humanitarian mission. Identification of unique disaster/humanitarian en route competencies will be solicited.

4.0 Stresses of Flight

One key component of pre-flight preparation is awareness of the stresses of flight (Table 1). Consideration must be given to the interaction between the patient's injury/disease and the transport environment. An example of a competency statements: 1) define the stresses of flight, 2) head injury – assess patients need for en route supplemental oxygen, and 3) identify patients at increased risk for intra-auricular air (or ear block) – due to barometric pressure changes.

Table 1. Stresses of Flight

Stress	At-Risk Patients	Care Considerations
Gas expansion at altitude	Entrapped air (pneumocephalus, pneumothorax not relieved by chest tube), decompression sickness	Preflight decongestant, gastric decompression, venting colostomy bags, control IV flow, cabin altitude restriction (CAR). Ensure correct positioning of chest tubes. Effectiveness of vented/non-vented chest seals at altitude has not been confirmed.
Hypobaric hypoxia	Cardiac disease, pulmonary disease, pulmonary blast injury, anemia, trauma, head injury	Calculate altitude adjusted oxygen requirements. Supplemental oxygen, SpO_2 monitoring. Consider CAR for high-risk patients.
Gravitational forces	Head trauma, cardiac, receiving enteral feed	Backrest elevation for patients at risk (e.g., aspiration risk, cardiopulmonary dysfunction, risk for ICP changes). Request long, slow takeoff and landing if possible. Anecdotal reports and case studies of the effect of gravitational forces on patients suggest that at-risk patients be loaded with feet to back of aircraft for takeoff and that they may need to be repositioned with feet to front of aircraft for landing.[15] However, there are no systematic studies to support this recommendation.
Vibration	Spinal cord injury, orthopedic trauma (especially patients with external fixators)	Appropriate padding and protection of orthopedic hardware (i.e., external fixators). Position the patient on the aircraft so the external fixators are positioned away from the aisle to avoid being bumped. Patients with unstable thoracolumbar vertebral fractures may require use of a vacuum spine board, particularly during periods of high movement
Noise	Pain management, TBI, mental health, auditory illness/injury, pediatrics/elderly	Provide hearing protection. Ability to perform routine physical assessment (auscultation) may not be possible. Position monitors to allow for line of sight as device alarms may not be audible. Patients are less likely to communicate with the crew when they are wearing their headphones—ensure strategies to enhance patient communication.
Temperature	Burns, neonates, elderly, TBI, post-resuscitation	On military aircraft, aft/bottom litter positions have the lowest temperature and highest airflow. The HPMK prevents hypothermia under conditions of AE and MEDEVAC transport in severely injured casualties (note—blankets alone will not prevent hypothermia). The warming ability of the Ready Heat blanket is dependent on O2, and it may not be as effective at altitude.
Humidity	Burns, trauma, dental/maxillofacial, pediatrics/elderly	Humidity decreases to as low as 5% onboard aircraft. Dehydration and immobility may be risk factors for venous thromboembolism (VTE). Offer frequent water/hydration as appropriate, nasal spray, eye drops, oral hygiene, IV fluid replacement.

5.0 Pre-Transport Stability

Another area of ERPS care is the assessment of patients for pre-transport physiologic stability. For example, per USAF standards, patients with a Hgb $\leq$ 9 gm/dL should have supplemental oxygen available during fixed wing transport to mitigate potential altitude induced hypoxemia (see Table 2 for preflight hemoglobin levels). The derived competency statement would be: In patients with anemia (Hgb $\leq$ 9 g/dl) assess the need for en route supplemental oxygen. (Note, these competency statements do not denote undertaking independent actions that would require an advanced practitioner/provider order such as ordering supplemental oxygen).

Table 2. Preflight Hemoglobin Levels

Year	Average Pre-Flight Hgb (g/dl)	Total Hgb Values Reported‡	# Hgb ≤ 9 g/dl (%)*
2008	13.2 ± 2.4	5232	328 (6.3%)
2009	13.3 ± 2.4	5369	313 (5.8%)
2010	13.2 ± 2.5	7379	489 (6.6%)
2011	13.2 ± 2.4	6857	431 (6.3%)
2012	13.1 ± 2.5	4717	384 (8.1%)
2013	13.2 ± 2.4	2539	188 (7.4%)
2014	13.1 ± 2.3	1681	110 (6.5%)

‡Patient may have more than one value; *percentage of reported values

A recently published Joint Trauma System Clinical Practice Guideline (CPG): Inter-facility Transport of Patients Between Theater Medical Treatment Facilities[16] outlines patient preparation for transport. However, the focus of this CPG is primarily on transport supported by a specialty team (critical care, ECCN, paramedic), thus, these criteria would not apply to less severely injured patients.

The primary source document for this project was the August 2016 USAF Comprehensive Medical Readiness Program (CMRP) checklist for medical-surgical (46N3) nurses. This document reflects competencies that are unique to the operational setting and provides the organizational structure for the proposed competency list. The list was validated as a part of a previous research study and informed the policy and final readiness checklists used by the USAF Nurse Corps. In April 2018, this document was updated (Appendix A). The results of the proposed instrument were cross-walked with this current document. The proposed checklist augments but does not replicate the CMRP checklist.

To inform the identification of en route care patient staging competencies, for each general area on the nurse 46N3 CMRP list (e.g., neurological), the following question was asked: "Is there a unique en route care related competency specific to this patient situation?" For example, a study by Johannigman[17] identified SpO_2 < 90% in 90% of non-critically injured AE patients (mean duration of hypoxemia = 44 minutes). A possible case study would be: Patient with mild TBI has a sea level room air SpO_2 of 92% before flight. Do they require supplemental O_2 for flight (cabin altitude 7,000-8000 Ft.)? A: Given that hypoxemia may exacerbate a TBI, it would be appropriate to discuss with the Flight Surgeon the need to order supplemental oxygen during transport to maintain the patient's ground level SpO_2. The derived competency statement under the section Perform Nursing Care in En route Environment for Patients with the Following Types of Injuries/Illness - Head Injury would be: *Assess patient's need for en route supplemental oxygen*. Other examples of en route care specific to transport to altitude would be to assess a patient's risk associated with entrapped air (e.g., pneumothorax not relieved by a chest tube) and pain management strategies in preparation for movement (considerations include timing of transport – movement onto a litter or transport vehicle, time to transport to aircraft/transport vehicle; pharmacokinetics of available agents relative to transport time, patient safety – consideration if patient is ambulatory/airway safety, etc.).

6.0 Methods

6.1 Step 1: Subject matter expert (SME) review

1. Identify subject matter experts (members of the TriService Nursing Research Program (TSNRP) Expeditionary Care Research Interest Group) – representing each service. Individuals with expertise in transport or preparation for transport (e.g., CASF, AE, ECCN, CCATT) were also included.
2. SMEs were provided with the following background documents:
   a. Air Force Nurse Corps CMRP list – Medical Surgical Nurses (46N3) as background. Similar documents that are service specific may also be considered
   b. Aeromedical Evacuation (AE) Patient Handoff Checklist (SBAR)
   c. Draft chapter (FCCS – Transport of Critically Ill Patients) – Not for distribution
   d. Draft chapter (AE Nursing) from text: Aeromedical Evacuation (2nd ed. – in press) – not for distribution
   e. Regulations specific to patient transport
3. Draft En Route Patient Staging competency list (Appendix B)

The SMEs were asked to consider the following questions specific to patients **during en route patient staging** (e.g., pre-transport preparation independent of mode)

1. Do these competency statements reflect the types of adult patients being cared for in a deployed environment
2. Do these competency statements reflect the nursing care requirements of adult patients being prepared for transport cared for in a deployed setting

6.2 Step 2: SME Recommendations

Based on these considerations the SMEs were asked to do the following:

1. Review the list and identify any competencies that would be specific to a unique transport role (e.g., preparation of transport ventilator – e.g. only CCATT/ECCN/Burn team would perform this competency)
2. Review the list and identify whether a competency statement is within scope of practice for your area of practice (medical surgical, emergency department, or critical care – these data will be used to determine if certain competency statements should be assigned to all nurses (relevant to medical surgical nurses would be a surrogate that the competency is relevant to all nurses) or is relevant only to a specialty area – critical care or emergency)
3. Review the list and identify any competencies that are already being performed as part of general readiness training (e.g., cares for a patient with a mild traumatic brain injury is already a CMRP competency for medical-surgical and critical care nurses). These competencies will not be retained; what will remain on the new list are the en route patient staging aspects of this care.
4. Review the list and rate the competencies based on their relevance to en route patient staging in the operational setting (0 = Not relevant; 1 = Minimally relevant; 2 = Moderately relevant; 3 = Highly relevant)
5. Review the list and rate the competencies for their criticality to optimizing patient outcomes (0 = Not critical; 1 = Minimally critical; 2 = Moderately critical; 3 = Highly critical)
6. Add any competencies that you think are missing or modify any existing competency statement for clarity

Based on this feedback the draft list was revised with competencies removed if they are already included on other readiness training checklists or are unique to specialty teams (note: the goal of this checklist is to specify the core competencies that every nurse preparing patients for transport should demonstrate. This competency list will augment other existing training documents). The relevance and criticality ratings will be collapsed: Not

relevant (not relevant/minimally relevant) vs. Relevant (moderately relevant/highly relevant); not critical (not critical/minimally critical) vs. critical (moderately critical/highly critical). A threshold of 80% will be required for a competency to be validated as relevant and critical. Competencies were removed if they did not reach this threshold. Any additional competency statements or revisions to existing competency statements were made and the final draft list was sent to the SMEs for confirmation.

6.3 SME Evaluation Response

A request to evaluate the checklist was sent to 13 identified SMEs. Ultimately only three provided feedback (Table 3). While this low response limits generalizability, these individuals were in key positions to provide informed feedback on the checklist reflecting training, warzone and humanitarian missions. Their responses are consolidated in Appendix C.

Table 3. Demographics of SMEs

	SME 1	**SME 2**	**SME 3**
Role at time of response	Not specified	ERPS - Bagram	Senior Flight Nurse - USAF
Primary area of specialty	Med-Surg		Flight Nurse
Service	Air Force - Active	Air Force	Air Force - Active
Rank	03/04	03/04	03/04
Area of Practice	Med-Surg		Flight Nurse (USAF)
Deployments in support of OIF/OEF/OND	0	--	2
Deployment Location		Bagram	Tomodachi- Japan Irma/Harvey- Puerto Rico & St. Croix, VI (2018)
Most recent deployment	None	Deployed	2018
Shipboard deployments	No	No	No
Role during most recent deployment	N/A	ERPS	Chief Nurse - EAES
Deploy to CASF	N/A	Yes (ERPS)	No
Other roles (Flight Nurse, ECCN, CCATT)	No	No	Flight Nurse
Have you ever prepared a patient for transport under operational conditions	N/A	Yes	Yes

Based on the feedback from the SMEs (Appendix C) the checklist was revised. Items were eliminated based on relevance/criticality.

The US Army Austere Environment of Care (Feb 2018) document was also reviewed, particularly the section: Maintains Patient Stability and Safety during the Transport Process. A crosswalk was done with the critical element of performance identified in this document compared to the proposed checklist (Table 4). This crosswalk demonstrates that the proposed competency checklist is consistent with other training documents, but provides additional details and education/training resources that may enhance triservice standardization of readiness training related to patient transport.

Table 4. Crosswalk – Austere Environment of Care – En route Staging/Receiving Checklist	
Critical elements of Performance	Cross-Walk with Proposed checklist
Explains unique features of each transport platform (Air, sea, land) and appropriate safety procedures	• Describes method for safe approach to transport vehicles
Creates patient care plan that accounts for altitude physiology	• Defines the stresses of flight (Knowledge) • Identify patients potentially requiring Cabin Altitude Restriction (K) • Defines criteria for pre-transport stability (K) • See injury specific stresses (e.g., administration of supplemental oxygen for head injury, pulmonary)
Organizes all needed supplies and equipment for air movement	• Patient Transfer Checklist for Aeromedical Evacuation (competencies do not include specialty team equipment – e.g., ventilator, ICP monitor)
Prepares patient for transport to care facility	• Packages for patient transport (patient transfer checklist for AE) • Litter
Provides safe and effective en route monitoring and care	Outside scope of this project (pre/post transport only)
Ensures safe patient "hand-off" to/from receiving unit/facility	• Perform handoff using iSBAR (refer also to AE Outpatient/Inpatient Handoff Checklists)
Documents en route care according to policy	Outside scope of this project (pre/post transport only)
Manages patient effectively in CBRN environment	UTC specific training – outside scope of this project

A crosswalk was also undertaken to confirm if any of the competencies were already addressed on in-garrison checklists (see Appendix A). A competency statement was not removed if it reflected the unique en route aspect of care (e.g., orthopedic cast management – considerations for cast bivalving). Consideration was also given to whether a specific competency statement would be performed only by personnel assigned to an ERPS facility (or would any nurse preparing a patient for transport be likely to perform the critical skill). For each competency statement, a list of possible training resources was identified. Additional service specific resources or en route specific resources (e.g., preparation of a patient for MEDEVAC) should be added during the final review process.

6.4 Next Steps:

1. Provide final document to members of the Expeditionary Nursing Research Interest Group for their review (inclusion – individuals who have deployment experience).
2. Provide document to service appropriate review (e.g., Air Force – Air Staff/Air Mobility Command).

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Appendix A
COMPREHENSIVE MEDICAL READINESS PROGRAM
Clinical Nurse – 46NX Checklist (Approved April 2018)

Skill Set	Knowledge/ Performance	Frequency	Training Sources	Yes (Y) No (N)	Trainer Initials	Member Initials	Date
Category-1 Clinical Currency for Readiness – Fundamental training and skills of an Airman, usually obtained through medical education and in-garrison care that form a foundation on which to build readiness skills.							
A. UNIT ORIENTATION COMPETENCY: Complete unit and AFSC-specific requirements for independent practice.	Knowledge	Q24	Orientation checklist • Advanced Cardiac Life Support (ACLS) per AFI 44-102, *Medical Care Management*, 03 August 2016, Section 2.18.3. • Pediatric Advanced Life Support (PALS) per AFI 44-102, *Medical Care Management*, 03 August 2016, Section 2.18.3.2				
Category-2 AFSC Skills for Readiness – Skills specific to an AFSC which allow an Airman to perform within the full scope of their AFSC in a deployed environment.		Begins on arrival to duty station, AFI 41-106, 5.7.4					
B. Inpatient Clinical Activity Perform 72 hours inpatient clinical duty	Performance	Q12M	• MTF, TAA/MOU, Regional Currency Site, C-STARS. * • ODE may be included. *				
C. Inpatient Care Medical Simulation Minimum of **12 hours** of training oversite performed by local Functional Managers.	Knowledge	Q12M	• 6 sims from AFMAST or CSTARS Sim Curriculum (choose from 2-12) Training will be conducted using any of the CPGs identified in • **Blocks 3A-6**				
D. Pediatric Care Assesses pediatric patient using motor /neurologic scales/tools with consideration for developmental age and culture Recognize and treat life- threatening conditions and minimize/prevent secondary injury Fluid Resuscitation in pediatrics Indications of respiratory distress Weight based dosing/medication	Knowledge	Q12M	• Borden Institute Pediatric Surgery and Medicine in Harsh Environment (revised 2013) • Elsevier Performance Manager (Clinical Skills) Kx Virtual Library https://emp601.elsevierperformancemanager.com/Personalization/Home *Battlefield and Disaster Nursing Pocket Guide (v2)* • Pediatrics: • Consideration for AE and Pain Management				
E. Trauma	Knowledge	Q12M	• Trauma Nurse Core Curriculum (TNCC) ***Current within last 24 month***s **AND/OR** JTTS Clinical Practice Guidelines * Battle and Non-Battle Injury Documentation: The				

			Resuscitation Record *Battlefield and Disaster Nursing Pocket Guide (v2)* • Primary/Secondary Assessment • Life-saving interventions				
F. BLAST/BLUNT INJURY Predict potential injuries from specific mechanisms and patterns of injury Identify patients at high risk of missed injury, compartment syndrome and conduct serial abdominal exams	Knowledge	Q12M	JTTS Clinical Practice Guidelines • Blast Injury • Blunt Abdominal Trauma, Splenectomy and Post-Splenectomy Vaccination • Aural Blast Injury/Acoustic Trauma and Hearing Loss *Battlefield and Disaster Nursing Pocket Guide (v2)* • Blast Injury • Dismounted Complex Blast Injury • Cardiac Trauma/Tamponade • Ocular • Otologic Injury				
G. DAMAGE CONTROL RESUSCITATION Prevent development of coagulopathy by dilution of factors needed to provide hemostasis Identify blood components at an appropriate ratio throughout the resuscitation process Recognize and manage signs and symptoms of a transfusion reaction	Knowledge	Q12M	JTTS Clinical Practice Guidelines • Damage Control Resuscitation • Whole Blood Transfusion • Walking Blood Bank *Battlefield and Disaster Nursing Pocket Guide (v2)* • Blood/Blood Products • Damage Control Resuscitation • Circulation • Hypothermia Prevention				
H. THERMAL INJURY Document intake/output on JTS Burn Resuscitation flow sheet; Burn wound management; Recognize emerging burn complication syndromes; Pain Management	Knowledge	Q12M	JTTS Clinical Practice Guidelines • Burn Care 54% Burn Sim AFMAST *Battlefield and Disaster Nursing Pocket Guide (v2)* • Burns				
I. SOFT TISSUE TRAUMA & AMPUTATION Wound care with consideration to diagnosis and infection control practices	Knowledge	Q12M	JTTS Clinical Practice Guidelines • Infection Prevention in Combat-Related Injuries • Management of War Wounds • Invasive Fungal Infection in war wounds *Battlefield and Disaster Nursing Pocket Guide (v2)* • Compartment Syndrome • Crush Syndrome • Soft Tissue Trauma • Wound Care • Amputation Care				

J. ORTHOPEDIC TRAUMA Perform nursing care related to external fixators (pin care, transport, CMS checks) Recognize signs and symptoms of extremity compartment syndrome	Knowledge	Q12M	JTTS Clinical Practice Guidelines • Pelvic Fracture Care • Orthopedic Trauma: Extremity Fractures JTTS Clinical Practice Guidelines • Compartment Syndrome and Fasciotomy **AND** *Battlefield and Disaster Nursing Pocket Guide:* • Orthopedic-Musculoskeletal • Cast Care for Aeromedical Evac				
K. GENITOURINARY/RENAL TRAUMA OR DISORDERS Recognize signs and symptoms indicative of genitourinary/renal trauma Recognize signs and symptoms of Rhabdomyolysis Suprapubic catheter management	Knowledge	Q12M	JTTS Clinical Practice Guidelines • Urologic Trauma Management Battlefield and Disaster Nursing Pocket Guide (2nd ed): • Rhabdomyolysis • Crush Injuries • Genitourinary/Renal Trauma Elsevier: Caring for a suprapubic catheter				
L. NEUROLOGIC INJURIES Knowledge of Military Acute Concussion Evaluation (MACE) Medic/Corpsman screening of Service Members involved in a potentially concussive/ Mild Traumatic Brain Injury event; Evaluate the effectiveness of medical and nursing interventions for the neurologic trauma patient Manage the patient with potential/actual intracranial, spinal cord, and cervical-thoracic-lumbar injury	Knowledge	Q12M	JTTS Clinical Practice Guidelines • DoD Policy Guidance for MRI and mTBI in deployed setting • Concussion management Algorithm Cards • Cervical and Thoracolumbar Spine Injury Evaluation, Transport, and Surgery in the Deployed Setting *Battlefield and Disaster Nursing Pocket Guide (v2)* • Neurological • Spinal Cord Injury/Spinal Immobilization • Traumatic Brain Injury • TBI – Prolonged Field Care				
M. MECHANICAL VENTILATION Fundamental Concepts of Mechanical Ventilation	Knowledge	Q12M	JTTS Clinical Practice Guidelines • Acute Respiratory Failure • Airway Management of Traumatic Injuries *(Slide presentations for equipment can be located on the 46N3J Kx site)* **AND** Clinical Skills Plus site on AFMS KX: Mechanical Ventilation: Volume and pressure modes, troubleshooting Impact 731 Setup CSTARS CCATT (2:58) https://www.youtube.com/watch?v=PHdnb43Sibo Impact 731 O2 Low Flow CSTARS CCATT (2:34) https://www.youtube.com/watch?v=60				

			c7ppjwRfI Impact 731 Volume Control CSTARS CCATT (3:40) https://www.youtube.com/watch?v=WGNq94KwbNc Impact 731 Pressure Control CSTARS CCATT (3:43) https://www.youtube.com/watch?v=I4Xhc8JdTUM *Battlefield and Disaster Nursing Pocket Guide (v2)* • Pneumothorax • Chest Tube • Pulmonary/Thoracic • Care of the Ventilator Patient • ARDS • Emergency Airway Mgmt • AE considerations				
N. PAIN, ANXIETY AND DELIRIUM Use of DoD/VA pain rating scale Sets up/administers medications via patient-controlled analgesia (AMBIT Pain Pump) Assess for sedation level using Richmond Agitation Sedation Scale (RASS) Use of Confusion Assessment Method (CAM) Mission/use of Acute Pain Service (APS) at Role 3 Care of patient with peripheral nerve block	Knowledge	Q12M	JTTS Clinical Practice Guidelines • Pain, Anxiety and Delirium AE Guidance Policy Letter: Management Of Epidural Analgesia & PNB Catheters *Battlefield and Disaster Nursing Pocket Guide (v2)* • Pain, Anxiety, & Delirium Management • Epidural Anesthesia/PNB in AE • PCA • Sedation • Emergence Delirium				
O. TRANSPORT/EVACUATION Understand concept for patient (including equipment/supplies) for MEDEVAC or AE considering inflight care requirements and the stresses of flight			JTTS Clinical Practice Guidelines • Litter Evacuation Guide (located on AFMS Kx with CMRP checklists) **AND** AFI 48-307, V1 *En Route Care and Aeromedical Evacuation Medical Operations.* **AND/OR** AE courses (AEPSC, EMEDS, etc.) *Battlefield and Disaster Nursing Pocket Guide (v2)* • Transport • Pre-Flight Assessment • Handoff • Transport to Ships • See injury specific considerations				
P. EXPEDITIONARY EQUIPMENT Triple channel IV pump Patient Controlled Analgesic (PCA) pump (e.g., AMBIT Pain Pump) Portable lab equipment (e.g., I-Stat machine Rapid Infuser	Knowledge	Q12M	Prime Triple Channel Pump CSTARS CCATT (2:14) https://www.youtube.com/watch?v=EpO4UFxGAus Program Vasopressin in Triple Channel Pump CSTARS CCATT (3:31) https://www.youtube.com/watch?v=2vmsptvnPRI Program Secondary Line Triple				

Wound vacuum (e.g., KCI wound vac) Chest tube drainage system - Adult/pediatric (e.g., Atrium) Bair Hugger Intracranial Pressure Monitoring Device – Intraventricular Drainage Device Propaq/Defibrillator			Channel Pump CSTARS CCATT(1:04) https://www.youtube.com/watch?v=EcFRONwj7gc Change Device Mode Triple Channel Pump CSTARS CCATT (1:15) https://www.youtube.com/watch?v=Le_JbVmBWIA Codman Express CSTARS CCATT (7:14) https://www.youtube.com/watch?v=FMxX97LXhbw EVD Stopcock Positions CSTARS CCATT (4:04) https://www.youtube.com/watch?v=YRv3oX1Urws EVD Level and Open Zero CSTARS CCATT (3:12) https://www.youtube.com/watch?v=_2quwzlmyqk EVD Draining CSTARS CCATT (3:29) https://www.youtube.com/watch?v=IErGQjHad2I				
Q. ENVIRONMENT INJURY Recognizes and provides therapies for: heat at illness, heat exhaustion, heat stroke Initiates therapies to prevent/minimize hypothermia and correlate clinical implications			JTTS Clinical Practice Guidelines • Hypothermia prevention **AND** *Battlefield and Disaster Nursing Pocket Guide*: • Heat Related Injuries • Hypothermia Prevention • Frostbite/Trench foot				
Category-3 UTC Training - Training specific to a UTC to which an Airman is assigned			Per AFI 41-106, Chapter 5. • Auto populated in MRDSS upon assignment to a UTC.				

For Comprehensive Medical Readiness Program questions, please contact the Readiness, Analysis and Comprehensive Evaluation (RACE) team at 210-395-9022/9867 (DSN: 969-9022/9867) and/or send correspondence to usaf.jbsa.afmoa.mbx.sghm-race@mail.mil. For comments or suggestions regarding the content of the Comprehensive Medical Readiness Skills checklist, please contact your Surgeon General Consultant or Career Field Manager (CFM) through your MAJCOM. (The SG Consultants/CFM Roster is available through the AFMOA Clinical Quality Kx site: https://kx2.afms.mil/AFMOA/ClinicalQuality/SitePages/Home.aspx.)

Appendix B
Subject Matter Expert Competency Checklist Evaluation

To describe the expert panel, please provide the following demographic information

What is your <u>primary</u> area of practice (pick one)

❑ Medical-Surgical Nursing	❑ Administrator (not clinical practice)
❑ Critical Care Nursing	❑ Flight Nurse
❑ Emergency Department	❑ Other _____

Service

❑ Army	❑ Active	❑ Reserve	❑ National Guard
❑ Navy	❑ Active	❑ Reserve	
❑ Air Force	❑ Active	❑ Reserve	❑ Air National Guard

Current Rank

- ❑ O1/O2 (2nd Lt/Ensign or 1st Lt/Lt JG)
- ❑ O3/O4 (Captain/Lieutenant or Major/LCDR)
- ❑ O5/O6 (Lt Col/CDR or Col)
- ❑ Retired

Area of Practice (Deployed) – select primary role(s)

❑ Medical – Surgical	❑ Critical Care Air Transport Team (USAF)
❑ Critical Care	❑ Burn Team
❑ Emergency Department	❑ Flight Nurse (USAF)
❑ Administrator (not clinical practice)	❑ Navy ship
❑ En Route Critical Care Nurse (US Army)	❑ Other _____
❑ CASF	❑ Did not deploy

DEPLOYMENT HISTORY

 # Deployments in support of OIF/OEF/OND (or current operations) _____ Most recent deployment year _____

 # Humanitarian deployments _____ Location _____ Most recent deployment year _____

Did you have a shipboard deployment?

- ❑ Yes Location _____ **Most recent deployment year** _____
- ❑ No

Role during <u>Most Recent</u> Deployment

- ❑ ECCN
- ❑ CCATT
- ❑ CASF
- ❑ Role II
- ❑ Role III
- ❑ Navy ship
- ❑ Other _____
- ❑ Did not deploy

Did you ever deploy to a CASF?

- ❑ Yes Location _____ Year _____
- ❑ No

Were you ever?

- ❑ Flight Nurse
- ❑ ECCN
- ❑ CCATT

Have you ever <u>prepared</u> a patient for transport under operational conditions?

- ❑ Yes
- ❑ No

En Route (Patient Staging) Operational Nursing Competencies (Draft)

Scoring Grid	Performed by All Nurses	Within Scope for your PRIMARY (**in-garrison**) AREA of PRACTICE	Already included as a competency for in-garrison role	Relevance	Criticality	Comments or Recommendation
	0 = No (specific to transport role – FN/CCATT/ECCN) 1 = Yes	0 = Not within scope 1 = Within scope	0 = No (unique to operational setting) 1 = Yes – required for in-garrison care	0 = Not relevant 1 = Minimally relevant 2 = Moderately relevant 3 = Highly relevant	0 = Not critical 1 = Minimally critical 2 = Moderately critical 3 = Highly critical	
Performs Nursing Care in the En Route Care Environment Specific to Stresses of Flight *Preparation for En Route Care/Receiving Patients from En Route Care*						
	Performed by all Nurses (0-1)	Within Scope (0-1)	In-Garrison (0-1)	Relevance (0-3)	Criticality (0-3)	Comments
Define the stresses of flight A. Decreased partial pressure O_2(PaO_2) B. Decreased barometric pressure C. Decreased humidity D. Vibration E. Gravitational forces F. Thermal stress G. Noise H. Fatigue	Rating: X X X X X X X X X	Rating: X X X X X X X X X	Rating: X X X X X X X X X	Rating: X X X X X X X X X	Rating: X X X X X X X X X	Note – single rating for this competency (stresses of flight)
Identify patients potentially requiring Cabin Altitude Restriction due to: A. hypobaric hypoxia (cardiac, pulmonary, brain injury, anemia) B. hypobaric gas expansion (pneumothorax not relieved by chest tube, pneumocephalus, entrapped intraocular air) C. Decompression sickness with arterial gas embolism						Ratings for each component of competency

Define clinical criteria for pre-transport stability (HR, SBP, Hct/Hgb, Platelet count, INR, pH, base deficit, temperature)						

Performs Nursing Care in the En Route Care Environment for Patients with the Following Injury/Illness Preparation for En Route Care/Receiving Patients from En Route Care						
Scoring Grid	Performed by All Nurses	Within Scope for your PRIMARY (in-garrison) AREA of PRACTICE	In-Garrison	Relevance	Criticality	Comments
	0 = No (specific to transport role only) 1 = Yes	0 = Not within scope 1 = Within scope	0 = No (unique to operational setting) 1 = Yes – required for in-garrison care	0 = Not relevant 1 = Minimally relevant 2 = Moderately relevant 3 = Highly relevant	0 = Not critical 1 = Minimally critical 2 = Moderately critical 3 = Highly critical	
Neurological **Head Trauma** A. Assess patients need for en route supplemental oxygen B. Assess patients need for altered position (head position/backrest elevation) during transport to mitigate gravitational forces C. Assess patients for risk for entrapped air (pneumocephalus) and consider need for cabin altitude restriction **Spinal Cord/Vertebral Trauma** A. Perform spinal precautions B. Assist with positioning patient in vacuum spine board						Ratings for each component
Maxillofacial						Ratings for each component

Ocular Trauma A. Identify patients at increased risk for intraocular air B. Provide eye protection with appropriate device (e.g., Fox shield) C. Assess need to supplement eye moisture **Ear Block** A. Identify patients at risk for ear-block B. Implement strategies/instruct patient on strategies to decrease risk for ear block						
	Performed by All Nurses (0/1)	Within Scope (0/1)	In-Garrison (0/1)	Relevance (0-3)	Criticality (0-3)	
Cardiac **Coronary artery disease** A. Assess patient for resolution of signs/symptoms B. Assess patients need for en route supplemental oxygen C. Assess patients need for altered position (head position) to mitigate gravitational forces) D. Implement plan to minimize effects of cold environment during transport (e.g., blankets) E. Assess patients need for en route monitoring (ECG, pulse oximeter, blood pressure) **Anemia (Hgb < 9 g/dl)** A. Assess patients need for en route supplemental oxygen						Ratings for each component

B. Assess need for pre-transport transfusion (consult)						
Pulmonary A. Identify patients need for en route supplemental oxygen B. Identify patients potential need for cabin altitude restriction C. Assess need for en route SpO2 monitoring **Pneumothorax/Hemothorax** A. Assess for signs/symptoms of pneumothorax/hemothorax not relieved by chest tube B. Chest tube management 1. Position tubing to maximize draining 2. Determine need for Heimlich valve 3. Post-chest tube management						Ratings for each component

	Performed by All Nurses (0/1)	Within Scope (0/1)	In-Garrison (0/1)	Relevance (0-3)	Criticality (0-3)	Comments
Orthopedic Trauma A. Perform color, motion, sensation (CMS) checks B. Assess for risk/indications of compartment syndrome C. Care for patient with external fixator/orthopedic hardware 1. Describe strategies for padding/protection of orthopedic hardware during transport 2. Position affected extremity to minimize bumping during transport 3. Assess pre-transport pain status						

4. Administer/instruct patient on analgesic or adjuvants D. Assess need to bivalve cast/splint *E.* Describe correct positioning of residual limb for amputations						
Soft Tissue Trauma A. Apply negative pressure wound vac (topical negative pressure) B. Reapply/reinforce dressings						
Vascular **Venous thromboembolism prophylaxis** A. Identify patients at risk for VTE B. Assess for need for/provision of thromboprophylaxis *C.* Implement/discuss with patient strategies to decrease VTE risk (hydration, mobilization, range-of-motion exercises)						
Burns *A.* Document fluid resuscitation status						

	Performed by All Nurses (0/1)	Within Scope (0/1)	In-Garrison (0/1)	Relevance (0-3)	Criticality (0-3)	Performed by All Nurses (0/1)
Temperature Imbalance A. Identify patients at risk for intolerance to temperature variations (burns, neonates, elderly, TBI, post-resuscitation) B. Discuss considerations for placement on transport to mitigate ambient temperature effects						

Transmission-Based Isolation A. Perform contact isolation for all combat wounds						
? Mental health A. Identifies patients who can be safely cared for in staging facility						
Pain/Anxiety **Pre-transport analgesia** A. Assess patients pain status B. SAM patients – instruct on pre-flight/inflight analgesia C. Administer pre-flight analgesia **Epidural Analgesia/Peripheral Nerve Block** A. Sets up/administers medications via patient-controlled analgesia (AMBIT Pain Pump) B. Care for patient receiving epidural analgesia or peripheral nerve block 1. Confirm at least 24-hours post any complication r/t PNB/epidural 2. Confirm epidural/PNB in place and running at least four hours without complications before transport C. Assess patient's need for supplemental analgesia D. Assess neurological status distal to PNB/epidural E. Describe fall precautions for patient with epidural/PNB to lower extremities						Ratings for each component

	Performed by All Nurses (0/1)	Within Scope (0/1)	In-Garrison (0/1)	Relevance (0-3)	Criticality (0-3)	Performed by All Nurses (0/1)
Gastrointestinal **Post-abdominal surgery** A. Assess need for gastric decompression B. Empty ostomy bags C. Vent ostomy bags **Enteral Nutrition Tubes** A. Confirm correct position of tubes (post-pyloric) B. Maintain backrest/head of bed elevation **Nausea** A. Assess need for/administer antiemetic						Ratings for each component

Provides Nursing Care in the Deployed Location for the Following Issues						
	Performed by All Nurses (0/1)	Within Scope (0/1)	In-Garrison (0/1)	Relevance (0-3)	Criticality (0-3)	Comments
Transport/Evacuation Prepares patient (including equipment/supplies) for MEDEVAC or AE considering inflight care requirements and the stresses of flight **A. Litter** 1. Setups litter for transport 2. Moves patient onto/off litter (use oversized litter for weight > 350 lbs.) 3. Demonstrates correct lifting and movement techniques 4. Assists with loading, securing litter, and unloading transport vehicles (ambulance, MRAP-ambulance, AMBUS, helicopter, aircraft) B. Perform handoff using iSBAR C. Pressure injury prevention 1. Perform pre/post transport skin assessment 2. Implement pressure reduction strategies (litter pad, approved occipital donut, heel protectors) 3. Reposition patient minimally q2 hours when on litter D. Noise						

1. Instruct patient on anticipated noise and communication methods during transport 2. Provide hearing protection						
Safety Describes methods for safe approach to transport vehicles A. Helicopter *B.* Aircraft						

Competencies related to preparation/receiving patients from en route care for <u>all nurses</u> (please do not include competencies that are a part of a unique role – example: preparation of a transport ventilator or care that is specific to the in-transport phase)

_____

_____

_____

_____

_____

Competencies related to preparation/receiving patients from en route for all nurses for a given platform (i.e., unique competencies for preparing a patient for helicopter transport, or ship transport). Please state the competency and the transport modality

_____

_____

_____

_____

En Route Staging/Receiving Nursing Competencies *Preparation for En Route Care/Receiving Patients from En Route Care*							
Performs Nursing Care in the En Route Care Environment Specific to Stresses of Flight *Preparation for En Route Care/Receiving Patients from En Route Care*							
Skill Set	**Knowledge Performance**	**Frequency**	**Training Sources**	**Yes(Y) No(N)**	**Trainer Initials**	**Member Initials**	**Date**
Define the stresses of flight A. Decreased partial pressure O_2 (PaO_2) B. Decreased barometric pressure C. Decreased humidity D. Vibration E. Gravitational forces F. Thermal stress G. Noise H. Fatigue	Knowledge		*Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Preflight/Inflight Considerations of Stresses of Flight				
Identify patients potentially requiring Cabin Altitude Restriction (CAR) due to: A. Hypoxic hypoxia (cardiac, pulmonary, brain injury, anemia) B. Hypobaric gas expansion (pneumothorax not relieved by chest tube, pneumocephalus, entrapped intraocular air) C. Decompression sickness with arterial gas embolism	Knowledge		• U.S. Department of Air Force. Air Force Instruction 48-307, Volume 1. Health Services: En Route Care and Aeromedical Evacuation Medical Operations, January 9, 2017. *Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • See discussion of consideration for CAR (cardiac, TBI, ocular injury, pneumothorax, pneumocephalus, hypoxemia)				
Define clinical criteria for pre-transport stability (HR, SBP, Hct/Hgb, Platelet count, temperature)	Knowledge		JTS Clinical Practice Guidelines • Inter-facility Transport of Patients between Theater Medical Treatment Facilities				

Performs Nursing Care in the En Route Care Environment for Patients with the Following Injury/Illness Preparation for En Route Care/Receiving Patients from En Route Care							
Head Trauma A. Assess patients need for en route supplemental oxygen B. Assess patients need for altered position (head position/backrest elevation) during transport to mitigate gravitational forces	Knowledge		*Battlefield and Disaster Nursing Pocket Guide*: • Neurological				
Spinal Cord/Vertebral Trauma A. Perform spinal precautions B. Assist with positioning patient in vacuum spine board	Performance		*Battlefield and Disaster Nursing Pocket Guide*: • Neurological o Spinal Immobilization/. Cervical Collar Application JTS Clinical Practice Guidelines • Cervical and Thoracolumbar Spine Injury Evaluation, Transport, and Surgery in the Deployed Setting				
Ocular Trauma Identify patients at increased risk for intraocular air	Knowledge		*Battlefield and Disaster Nursing Pocket Guide:* • Ocular – Considerations for Aeromedical Evacuation				
Ear Block A. Identify patients at risk for ear-block B. Implement strategies/instruct patient on strategies to decrease risk for ear block	Knowledge Performance		• U.S. Department of Air Force. Air Force Instruction 48-307, Volume 1. Health Services: En Route Care and Aeromedical Evacuation Medical Operations, January 9, 2017.				

Coronary Artery Disease A. Assess patients need for en route supplemental oxygen B. Assess patients need for altered position (head position) to mitigate gravitational forces) C. Assess patients need for en route monitoring (ECG, pulse oximeter, blood pressure)	Knowledge		*Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Cardiac – Considerations for En Route Care				
Anemia (Hgb < 9 g/dl) Assess patients need for en route supplemental oxygen	Knowledge		• U.S. Department of Air Force. Air Force Instruction 48-307, Volume 1. Health Services: En Route Care and Aeromedical Evacuation Medical Operations, January 9, 2017.				
Pulmonary A. Identify patients need for en route supplemental oxygen B. Assess need for en route SpO2 monitoring	Knowledge		*Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Aeromedical Evacuation Considerations – Pulmonary/Thoracic: In-Flight Oxygen Requirements • Altitude-Barometric Pressure Chart				
Pneumothorax/Hemothorax A. Assess for signs/symptoms of pneumothorax/hemothorax not relieved by chest tube B. Chest tube management C. Position tubing to maximize draining D. Determine need for Heimlich valve E. Post-chest tube management	Knowledge Performance Knowledge		*Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Aeromedical Evacuation Considerations – Chest Tubes/Preflight Considerations/Post-Chest Tube Removal – AE Requirements				

Orthopedic Trauma A. Assess for risk/indications of compartment syndrome B. Describe strategies for padding/protection and positioning of injured extremity/orthopedic hardware during transport C. Assess need to bivalve cast/splint D. Describe correct positioning of residual limb for amputations	Knowledge		JTS Clinical Practice Guidelines • Crush Syndrome Under Prolonged Field Care *Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Orthopedic – Cast Care for Aeromedical Evacuation/External Fixator Management • Wound Care				

Venous thromboembolism prophylaxis during transport A. Identify patients at risk for VTE B. Assess for need for/provision of thromboprophylaxis C. Implement/discuss with patient strategies to decrease VTE risk (hydration, mobilization, range-of-motion exercises)	Knowledge		JTS Clinical Practice Guidelines • The Prevention of Deep Vein Thrombosis (background information) *Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Venous Thromboembolism Prophylaxis				
Burns **A.** Document fluid resuscitation status B. Assess for provision of care for burns (added**)**	Performance		JTS Clinical Practice Guidelines • Burn care • Burn Wound Management Under Prolonged Field Care *Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Burn Care – Transfer/Transport of Burn Injuries				
Transmission-Based Isolation (added) A. Familiarization with transport isolation system (TIS) and/or patient isolation unit B. Care/cleaning/disposal of contaminated line/waste/disposable medical equipment C. Proper fitting/wear of N95 on Patient/Ground Support personnel	Knowledge Knowledge Performance		JTS Clinical Practice Guidelines • Infection Prevention in Combat Related Injuries *Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Infection Prevention – Austere Settings/AE Considerations Add appropriate Instructions (AFI/DoDI)				
Behavioral Health Identifies patients who can be safely cared for in staging facility	Knowledge		*Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Combat and Operational Stress				

Pre-transport analgesia A. Assess patients pain status B. SAM patients – instruct on pre-flight/inflight analgesia C. Administer/instruct patient on analgesic or adjuvants	Knowledge		JTS Clinical Practice Guidelines • Management of Pain, Anxiety and Delirium • Analgesia and Sedation Management during Prolonged Field Care *Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Pain, Anxiety and Delirium (PAD) Management • Pain Management – En Route Care Considerations – Preflight Preparation				
Epidural Analgesia/Peripheral Nerve Block F. Sets up/administers medications via patient-controlled analgesia (AMBIT Pain Pump) G. Care for patient receiving epidural analgesia or peripheral nerve block 1. Confirm at least 24-hours post any complication r/t PNB/epidural 2. Confirm epidural/PNB in place and running at least four hours without complications before transport 3. Assess neurological status distal to PNB/epidural 4. Assess patient's need for supplemental analgesia **5.** Describe fall precautions for patient with epidural/PNB to lower extremities r/t transfer to transport vehicle	Performance Knowledge Knowledge		JTS Clinical Practice Guidelines • Management of Pain, Anxiety and Delirium *Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Pain, Anxiety and Delirium (PAD) Management • Aeromedical Evacuation Considerations for Patients with Epidural Infusion or Peripheral Nerve Block • Pain Management – En Route Care Considerations – Preflight Preparation Care of the Combat Amputee (2009) Review Ch. 11. Pain management among soldiers with amputations. http://www.bordeninstitute.army.mil/published_volumes/amputee/CCAchapter11.pdf AE Guidance Policy Letter: Management Of Epidural Analgesia & PNB Catheters				

Post-abdominal surgery A. Assess need for gastric decompression B. Empty/vent ostomy bags	Knowledge		*Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Ostomy care: En route/in-flight considerations				
Enteral Nutrition Tubes A. Confirm correct position of tubes (post-pyloric) B. Maintain backrest/head of bed elevation	Knowledge		*Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* A. Enteral Feeding during Aeromedical Evacuation				

Provides Nursing Care in the Deployed Location for the Following Issues							
Transport/Evacuation Prepares patient (including equipment/supplies) for MEDEVAC or AE considering inflight care requirements and the stresses of flight or other transport related stresses (ground, sea) **Litter** A. Setups litter for transport B. Demonstrate correct lifting/moving onto/off litter (use oversized litter for weight > 350 lbs.) – C. Assists with loading, securing litter, and unloading transport vehicles (ambulance, MRAP-ambulance, AMBUS, helicopter, aircraft, etc.) **Packages patient for transport** A. Temperature control (hypothermia/hyperthermia) B. **Preflight Documentation** A. Labeling IVs (start time, catheter gauge, last dressing change), IV bag B. Transport documents (e.g., AF Form 3899, A-N	Performance Performance Knowledge		JTS Clinical Practice Guidelines • Inter-facility Transport of Patients Between Theater Medical Treatment Facilities *Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Transport • Preflight Assessment • Preflight/Inflight Considerations of Stresses of Flight • Medical Precedence/Patient Movement Classification • Hypothermia • Litters • Patient Transfer Checklist for Aeromedical Evacuation • Moving Patients/Equipment Safely • Zulu Time Chart Need MEDEVAC packaging (non-critical care) Need NAVY packaging (non-critical care) • Additional sources: AECOT; AE Concepts; or UTC specific courses • U.S. Department of Air Force. Air Force Instruction 48-307, Volume 1. Health Services: En Route Care and Aeromedical Evacuation Medical Operations, January 9, 2017.				

Perform handoff using iSBAR	Performance		Secretary of the Air Force. Air Force Tactics, Techniques and Procedures 2-42.57 (10 August 2016. En Route Patient Staging System • AE Outpatient Handoff Checklist • AE Inpatient Handoff Checklist (iSBAR) *Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Handoff				
Pressure injury prevention A. Perform pre/post transport skin assessment B. Implement pressure reduction strategies (litter pad, approved occipital donut, heel protectors) C. Reposition patient minimally q2 hours when on litter *D.* Assess for contact pressure injuries (litter, SMEED, litter straps)	Knowledge		*Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Pressure injury prevention JTS Clinical Practice Guidelines • Nursing Intervention in Prolonged Field Care				
Noise *A.* Instruct patient on anticipated noise and communication methods during transport *B.* Provide hearing protection	Knowledge		U.S. Department of Air Force. Air Force Instruction 48-307, Volume 1. Health Services: En Route Care and Aeromedical Evacuation Medical Operations, January 9, 2017				
Safety Describes methods for safe approach to transport vehicles A. Helicopter *B.* Aircraft C. Ship/small boat	Knowledge		*Battlefield and Disaster Nursing Pocket Guide (2nd ed.)* • Transporting Patients to Ships • Helicopter Operations/Loading				
Category- 3 UTC Specific Training - Training specific to a UTC for which an Airman is assigned.			Air Force: Per AFI 41-106, Chapter 5. Auto-populated in MRDSS upon assignment to a UTC.				

Other Resources

- U.S. Department of Air Force. Air Force Instruction 48-307, Volume 1. Health Services: En Route Care and Aeromedical Evacuation Medical Operations, January 9, 2017.
- Secretary of the Air Force. Air Force Tactics, Techniques and Procedures 2-42.57 (10 August 2016. En Route Patient Staging System.
- Bridges E, Buzbee-Stiles M. Military aeromedical evacuation nursing. In Aeromedical Evacuation: Management of Acute and Stabilized Patients (2nd ed). Hurd WW, Beninati W (eds). Springer (in press)
- Fundamental Critical Care Support: Austere and Operational Environments. Society of Critical Care Medicine (in press)

Other areas to consider:

Pediatrics (See Bridges E., & McNeill, M. (Eds.) (2020). *Battlefield and Disaster Nursing Pocket Guide* (2nd Ed.). Burlington, MA: Jones & Bartlett Learning.
Pregnancy (See Bridges E., & McNeill, M. (Eds.) (2020). *Battlefield and Disaster Nursing Pocket Guide* (2nd Ed.). Burlington, MA: Jones & Bartlett Learning.)