

# PENNSYLVANIA EMERGENCY HEALTH SERVICES COUNCIL

*Your Voice In EMS*

## RECOMMENDATION FOR CONSIDERATION

Board Meeting Date: June 13, 2012

Subject: Critical Care Paramedic Project

VTR#: 0612-01

Committee/Task Force: Air Medical Task Force

Recommended Goal

Recommended Policy Change

Other:

### Recommendation:

The Pennsylvania Department of Health should adopt the standards and expanded scope of practice detailed in the attached document entitled, "Establishing the Critical Care Paramedic in Pennsylvania."

### Rationale [Background]:

Critical care transport is the delivery of complex health care to patients experiencing acute life threatening conditions. This care is delivered using both aircraft and ground vehicles to patients in the prehospital setting and those who require interfacility transport to a higher level of care. In Pennsylvania, critical care transport is typically provided by highly experienced paramedics and prehospital registered nurses (PHRNs).

This project establishes educational standards and an expanded scope of practice that will take the paramedic working on a licensed air or critical care transport ambulance to the next level and permit these allied health professionals to function more effectively as part of the critical care transport team.

The vision to establish the critical care paramedic in Pennsylvania is embodied in the proposed rulemaking for Pennsylvania's EMS Act (Act 37 of 2009) in §1027.36 - §1027.37:

*"An EMS Agency that operates a critical care transport ambulance service [or air ambulance service] employs one or more ALS [air]ambulances staffed by a crew capable of providing medical assessment, observation, triage, monitoring, treatment and transportation of patients who require EMS at the skill level needed to attend to and transport critically ill or injured patients between receiving facilities."*

*"The minimum staffing for a critical care transport crew or air ambulance when responding to a call to provide critical care transport is an Emergency Medical Services Vehicle Operator (EMSVO) [Pilot] and two (2) EMS providers above the Advanced EMT (AEMT) level with at least one of the EMS providers being a Paramedic, Prehospital Registered Nurse (PHRN), Prehospital Physician Extender (PHPE) or Prehospital Physician (PHP) who has successfully completed a critical care transport educational program approved by the Department of Health."*

*"When providing EMS through a critical care transport ambulance service or air ambulance service, the scope of practice for an EMS provider above the AEMT level will be expanded. This expansion will include EMS skills, the use of equipment in addition to those included in the EMS provider's general scope of practice if the EMS provider has received education to perform those skills and use that equipment by having successfully a critical care transport educational program approved by the Department of Health."*

### **Medical Review [Concerns]:**

This project has had integral physician involvement during the design phase.

On June 6, 2012 the PEHSC Medical Advisory Committee held a special meeting to review the proposed critical care paramedic program. Following a comprehensive presentation of the project, the MAC voted its unanimous support for the project and suggested the following best practices for future consideration by the Department:

1. Critical care agency medical directors, when performing their annual provider review, should include those psychomotor skills that may be considered low-frequency, high-risk, i.e., e.g. operation of the IABP, RSI airway control, etc.
2. To ensure that the critical care agency medical director is well versed in issues surrounding critical care transport, the Department should explore the possibility of requiring these physicians to be board certified in emergency medicine or critical care, and in the future consider requiring board certification in emergency medical services.
3. Develop a program to educate the physician community on the available modes of interfacility transportation and how to select a level of care that ensures continuity of care during transport. This program should be developed in partnership with appropriate statewide organizations.
4. Continue to develop and refine the scope of practice for the critical care paramedic using the recommended scope of practice contained in the proposal as the basis for those discussions. It is recognized that the scope of practice of the critical care paramedic will continue to evolve over time in a similar manner to other EMS provider levels.

### **Fiscal Concerns:**

Individual costs will vary and be based on the cost of the critical care education program and fees associated with obtaining Board for Critical Care Transport Paramedic Certification. EMS agency costs will also vary and could include financial support for a critical care education program, field internship or fees associated with obtaining and/or maintaining BCCTPC certification.

Based on their completion of a Department of Health approved critical care transport educational program and authorized expanded scope of practice, the Critical Care Paramedic meets the definition established by the Centers for Medicare and Medicaid Services (CMS) for SCT as it relates to a "paramedic with additional training." This provides a mechanism for a licensed critical care transport ambulance service or air ambulance service to seek reimbursement for specialty care transport.

CMS [Medicare] Definition: Specialty Care Transport (SCT)

*"Specialty care transport (SCT) is the interfacility transportation of a critically injured or ill beneficiary by a ground ambulance vehicle, including the provision of medically necessary supplies and services, at a level of service beyond the scope of the EMT-Paramedic. SCT is necessary when a beneficiary's condition requires ongoing care that must be furnished by one or more health professionals in an appropriate specialty area, for example, emergency or critical care nursing, emergency medicine, respiratory care, cardiovascular care, or a paramedic with additional training."*

*"The EMT-Paramedic level of care is set by each State. Care above that level that is medically necessary and that is furnished at a service level above the EMT-Paramedic level of care is considered SCT. That is to say, if EMT-Paramedics – without specialty care certification or qualification – are permitted to furnish a given service in a State, then that service does not qualify for SCT. The phrase "EMT-Paramedic with additional training" recognizes that a State may permit a person who is not only certified as an EMT-Paramedic, but who also has successfully completed additional education as determined by the State in furnishing higher level medical services required by critically ill or critically injured patients, to furnish a level of service that otherwise would require a health professional in an appropriate specialty area (for example a nurse) to provide. "Additional training" means the specific additional training that a State requires a paramedic to complete in order to qualify to furnish specialty care to a critically ill or injured patient during an SCT."*

**Educational Concerns:**

The educational requirements have been established within the project document and have been reviewed by EMS education content experts.

**Plan of Implementation:**

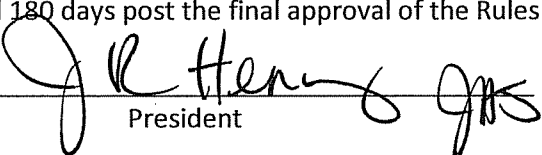
Upon acceptance of this VTR, the PA Department of Health should:

1. Prepare to implement this program following the promulgation of rules and regulations for PA's EMS Act (Act 37 of 2009).
2. Provide guidance to licensed air ambulance services to begin internal planning processes while the draft rules and regulations continue to proceed through the regulatory review process.
3. The PA Department of Health should task the PEHSC Statewide Air Medical Task Force to recommend licensing standards for the "Critical Care Transport Ambulance Service." The PA Department of Health should issues appropriate guidance related to this project to EMS agencies, regional EMS councils and accredited EMS educational institutions.
4. The PA Department of Health should serve notice in the Pennsylvania Bulletin of the approved expanded scope of practice for the critical care paramedic.

The PEHSC Committee/Task Force offers consultation to the Department in regard to the content of this Vote to Recommend (VTR) and its attached documents. The PEHSC Committee/Task Force specifically offers staff or member support to participate in Department deliberations regarding this recommendation in an effort to convey committee/task force discussions.

**Board Meeting Comments/Concerns:**

A question was raised about the next steps and it was confirmed that the task force will begin to investigate education for physicians on the utilization of CCP. Also, Director Schmitter noted that nothing can take effect with is program until 180 days post the final approval of the Rules and Regs to Act 37.

Signed:  Date 6-13-12  
President

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For PEHSC Use Only – PA Department of Health Response

Accept: \_\_\_\_ Table: \_\_\_\_ Modify: \_\_\_\_ Reject: \_\_\_\_

Comments:

Date of Department Response: \_\_\_\_\_

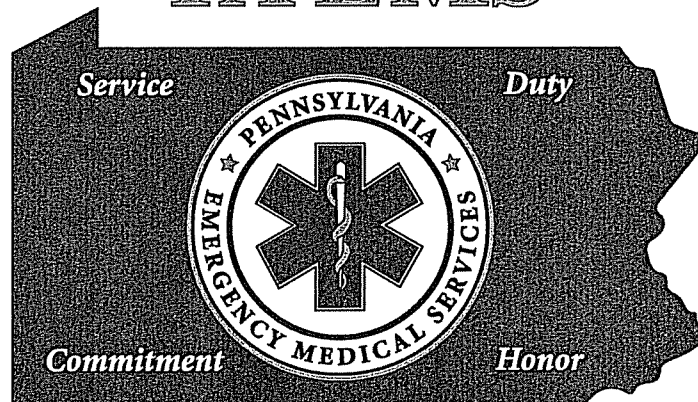


# Establishing the Critical Care Paramedic In Pennsylvania

- Educational Standards
- Competency Verification
- Continuing Education
- Scope of Practice

*Developed by:  
Pennsylvania Emergency Health Services Council:  
Statewide Air Medical Task Force*

## PA EMS



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## Introduction

Critical care transport is the delivery of complex health care to patients experiencing acute life threatening conditions. This care is delivered using both aircraft and ground vehicles to patients in the prehospital setting and those who require interfacility transport to a higher level of care. In Pennsylvania, critical care transport is typically provided by highly experienced prehospital registered nurses (PHRN) and paramedics.

## Purpose

This project establishes educational standards and an expanded scope of practice that will take the paramedic to the next level to permit these allied health professionals to function more effectively as part of the critical care transport team.

## Scope

Pennsylvania Department of Health authorized critical care paramedics practicing on a licensed air or critical care transport ambulance service, or in other patient care settings authorized by the Department of Health.

## National Education Standards

In August, 1996, the *EMS Agenda for the Future* was published. This consensus document was developed by the National Association of EMS Physicians and the National Association of State EMS Directors with funding provided by the National Highway Traffic Safety Administration (NHTSA) and the Health Resources and Services Administration (HRSA).

Following the Agenda's publication, a conference of national EMS education leaders was convened by NHTSA. The resultant work product from this conference was the *EMS Education Agenda for the Future: A Systems Approach*. Based on guidance from the EMS education agenda, the following companion documents were published:

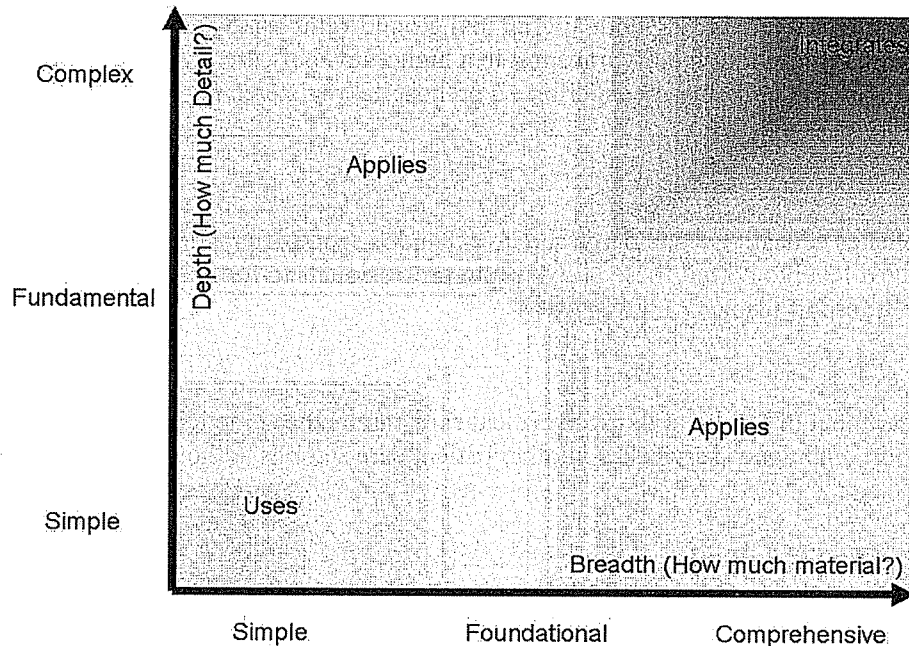
- *National EMS Core Content*
- *National EMS Scope of Practice*
- *National EMS Education Standards*

The *National Education Standards* replaced the NHTSA National Standard Curricula at all levels. The standards define the competencies, clinical behaviors, and judgments that must be met by EMS personnel at all levels of practice. In developing standards for the critical care air/ground paramedic, the task force felt the integrity of the NHTSA document should be maintained, therefore the critical care paramedic standards are an extension of the federal document for Pennsylvania.

## Education Standard Components

1. Competency (designated in yellow) – represents the minimum competency required for an entry-level provider at each level.
2. Knowledge Required to Achieve Competency (designated in blue) – represents an elaboration of the knowledge within each competency (when appropriate) that entry-level providers would need to master in order to achieve competency.
3. Clinical Behaviors/Judgments (designated in green) – describes the clinical behaviors and judgments essential for entry-level providers at each level.

The standards also assume there is a progression in practice from Emergency Medical Responder through Paramedic, and now the Critical Care Paramedic level. The descriptors used to illustrate the increasing complexity of knowledge and behaviors are expressed in terms of their “depth” and “breadth.”



The *depth* of knowledge is the amount of detail a student needs to know about a particular topic. The *breadth* of knowledge refers to the number of topics or issues a student needs to learn in a particular competency. For example: the Emergency Medical Responder (EMR) needs to have a thorough understanding (depth) about how to safely and effectively use the bag-valve-mask device; however, the EMR is taught a limited number of concepts (breadth) surrounding airway management.

To describe the intended depth of knowledge of a particular concept the terms *simple*, *fundamental*, and *complex* are used. This terminology better illustrates the progression of the depth of knowledge from one level to another. For example, the EMR's *depth* of knowledge for bleeding control is simple while the EMT's *depth* of knowledge for bleeding control is fundamental.

To describe the intended breadth of knowledge of a concept within a provider level, the terms *simple*, *foundational*, and *comprehensive* are used. This terminology also better illustrates the progression of the breadth of knowledge from one level to another. For example, the EMT's *breadth* of knowledge for cardiovascular disorders is foundational while the Paramedic's *breadth* of knowledge for cardiovascular disorders is comprehensive.

### Course Design, Sponsorship and Approval Process

The design of the critical care transport course curriculum will be determined by the course sponsor and should be based on the student's intended practice environment, i.e. ground transport, air transport or both. If a paramedic takes a critical course designed for ground-based transport and later transitions to flight operations, they will be required to complete a bridge course for those flight specific topics. Within the educational standards section, topics required for the flight paramedic are identified with an (\*).

Sponsors of a critical care transport course should be accredited by the Pennsylvania Department of Health as advanced life support education institutions. The Department of Health should permit an air or critical care transport ambulance service that is associated with an institution of higher learning, e.g. university or college, to conduct a critical care course. The agency would be required to adhere to the same policies as accredited educational institutions with regard to course administration.



An educational institution or agency may not conduct a critical care course without first obtaining the approval of the Pennsylvania Department of Health. As part of its approval process the Department may require the course sponsor to submit course objectives, content outline, instructional guidelines or other information as may be needed in order for the Department, or its designee, to determine if the proposed course meets the educational standards outlined in this document.

### **Field/Clinical Internship**

A paramedic enrolled in a Department approved critical care course will be permitted to practice expanded scope skills during an optional field/clinical internship. The internship may begin during the course and extend beyond its conclusion for a period not to exceed 12 months.

A transitioning paramedic that has previously completed a critical care course as described in Section 2 of the transition table will be permitted to practice expanded scope skills during an optional field/clinical internship for a period not to exceed the 24 month limitation set forth in transition table.

The optional field/clinical internship may occur at an agency licensed by the Department as an air or critical care transport ambulance service and/or other clinical settings licensed by the Department, e.g. hospital ICU, PICU, OR, ED, etc. The paramedic will perform all expanded scope skills under the direct supervision of a PHRN, PHP, PHPE, FP-C, CCP-C or other licensed healthcare professional.

### **Competency Evaluation**

The process to evaluate a student's entry-level mastery of the information presented in the critical care course will consist of a two-step process that will lead to the granting of expanded scope of practice privileges by the Pennsylvania Department of Health.

Step 1. At the conclusion of a Department approved critical care course, the sponsor will issue documentation attesting to the student's successful completion of the course requirements; then

Step 2. The student takes a competency exam administered the Board for Critical Care Transport Paramedic Certification (BCCTPC) and receives certification as a Flight Paramedic (FP-C) or Critical Care [Ground] Paramedic (CCP-C). The BCCTPC is the currently the only independent, nationally recognized examination for paramedic critical care air and ground transport.

Paramedics certified in critical care ground transport (CCP-C) who later transition to flight operations will be considered to be equivalent to the FP-C after completing an education module on flight physiology, operations and other related topics. In this situation certification as an FP-C will not be required unless mandated by the air or critical care transport ambulance agency.

### **Expanded Practice Authority**

The critical care paramedic will only be permitted to utilize the approved expanded scope of practice when practicing on a licensed air or critical care transport ambulance service, or in other patient settings authorized by the Department of Health. The agency medical director of an air or critical care transport ambulance service has the authority to restrict a paramedic's ability to practice at an expanded level based on their evaluation of the provider.

The critical care paramedic's continued expanded authority will be based on:

1. The agency medical director's annual review.
2. Completion of biannual registration and continuing education requirements as determined by the Department.
3. Completion of the BCCTPC requirements to maintain certification as an FP-C or CCP-C.

## Continuing Education Requirements

The critical care paramedic will be required to satisfy the BCCTPC continuing education requirements over the four (4) year certification period consisting of 100 hours of education; 75 hours of which must be in clinical topics and successful completion of a 16 hour BCCTPC review course.

The Department will accept, through an identified process, continuing education credits earned in critical care clinical topics towards the paramedic's Pennsylvania 27.0 hour bi-annual clinical/core con-ed requirement.

## Transition of Current Flight and Critical Care Paramedics

There are many paramedics currently working in air and ground critical care transport throughout Pennsylvania. These providers have completed many hours of self-initiated and/or employer mandated education in critical care; some have obtained their FP-C or CCP-C certification from the Board for Critical Care Transport Paramedic Certification.

In establishing an expanded scope role for critical care paramedics, it is incumbent upon the system to identify a pathway to integrate providers currently working in a critical care setting. This is not to say, however, that all paramedics currently working on an air or critical care transport ambulance will automatically be granted expanded practice privileges. Only those legacy providers meeting the requirements set forth in this section will be eligible for transition to expanded scope practice.

<b>Status At Time of Implementation</b>	<b>Integration Pathway</b>
The paramedic has current certification from the Board for Critical Care Transport Paramedic Certification as an FP-C or CCP-C	No further action necessary – the Department should automatically grant expanded scope of practice privileges.
The paramedic can produce documentation of prior successful completion of a course in critical care transport, but has not yet obtained BCCTPC certification.	The provider will have 24 months to obtain BCCTPC certification as a FP-C or CCP-C where upon the Department should grant expanded scope of practice privileges.
The paramedic has completed continuing education in critical care transport, but has not attended an actual critical care transport course.	The provider will be required to complete a Department approved critical care transport course and obtain certification from the BCCTPC as a FP-C or CCP-C.

## Reciprocity

Paramedics possessing valid certification from another state or territory seeking to practice as a critical care paramedic will be required to complete the following process:

1. Complete the process established by the Department to obtain reciprocity as a Pennsylvania paramedic; and
2. Provide evidence of current BCCTPC certification as a flight or critical care [ground] paramedic.

The Department may, at its discretion, require the applicant to submit additional documentation related to previous critical care transport education. Following completion of the reciprocity procedure, the Department will issue expanded scope practice privileges or notify the applicant of any additional requirements that will need to be satisfied.

## System Integration

An EMS Agency that operates a critical care transport ambulance service [or air ambulance service] employs one or more ALS [air]ambulances staffed by a crew capable of providing medical assessment, observation, triage, monitoring, treatment and transportation of patients who require EMS at the skill level needed to attend to and transport critically ill or injured patients between receiving facilities.

The minimum staffing for a critical care transport ambulance or air ambulance when responding to a call to provide critical care transport is an Emergency Medical Services Vehicle Operator (EMSVO) [Pilot] and two (2) EMS providers above the Advanced EMT (AEMT) level with at least one of the EMS providers being a Paramedic, Prehospital Registered Nurse (PHRN), Prehospital Physician Extender (PHPE) or Prehospital Physician (PHP) who has successfully completed a critical care transport educational program approved by the Department of Health.

When providing EMS through a critical care transport ambulance service or air ambulance service, the scope of practice for an EMS provider above the AEMT level will be expanded. This expansion will include EMS skills, the use of equipment in addition to those included in the EMS provider's general scope of practice if the EMS provider has received education to perform those skills and use that equipment by having successfully completed a critical care transport educational program approved by the Department of Health.

*Source: Proposed Rulemaking 28 PA Code § 1027.36 - §1027.37*

Based on their completion of a Department of Health approved critical care transport educational program and authorized expanded scope of practice, the Critical Care Paramedic meets the definition established by the Centers for Medicare and Medicaid Services (CMS) for SCT as it relates to a “paramedic with additional training.”

CMS Definition: Specialty Care Transport (SCT)

*“Specialty care transport (SCT) is the interfacility transportation of a critically injured or ill beneficiary by a ground ambulance vehicle, including the provision of medically necessary supplies and services, at a level of service beyond the scope of the EMT-Paramedic. SCT is necessary when a beneficiary's condition requires ongoing care that must be furnished by one or more health professionals in an appropriate specialty area, for example, emergency or critical care nursing, emergency medicine, respiratory care, cardiovascular care, or a paramedic with additional training.”*

*“The EMT-Paramedic level of care is set by each State. Care above that level that is medically necessary and that is furnished at a service level above the EMT-Paramedic level of care is considered SCT. That is to say, if EMT-Paramedics – without specialty care certification or qualification – are permitted to furnish a given service in a State, then that service does not qualify for SCT. The phrase “EMT-Paramedic with additional training” recognizes that a State may permit a person who is not only certified as an EMT-Paramedic, but who also has successfully completed additional education as determined by the State in furnishing higher level medical services required by critically ill or critically injured patients, to furnish a level of service that otherwise would require a health professional in an appropriate specialty area (for example a nurse) to provide. “Additional training” means the specific additional training that a State requires a paramedic to complete in order to qualify to furnish specialty care to a critically ill or injured patient during an SCT.”*

*Source: CMS Transmittal #68 – Effective January 1, 2007*

## Critical Care Transport Educational Standards

	Paramedic	Critical Care Paramedic
<b>Preparatory</b>	Integrates comprehensive knowledge of EMS systems, the safety/well-being of the paramedic, and medical/legal and ethical issues which is intended to improve the health of EMS personnel, patients, and the community.	Expands previous upon knowledge of EMS systems by integrating a comprehensive understanding of critical care transportation, including those operations conducted by air or ground, and patient care environments that include both the prehospital and interfacility setting.
<b>EMS Systems</b>	<p><b>AEMT Material PLUS:</b></p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• History of EMS</li> </ul> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• EMS systems Roles/responsibilities/professionalism of EMS personnel</li> <li>• Quality improvement</li> <li>• Patient safety</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• History of critical care transport</li> <li>• Modes of critical care transport</li> <li>• Crew configurations</li> <li>• Prehospital v. Interfacility transports</li> <li>• Ethical considerations                             <ul style="list-style-type: none"> <li>• Patient safety during transport                                     <ul style="list-style-type: none"> <li>• Provider knowledge/experience</li> <li>• Available resources</li> </ul> </li> <li>• Medical Director support                                     <ul style="list-style-type: none"> <li>• Declination of transport for safety reasons</li> <li>• Education of facilities and physicians on safe transport practices</li> </ul> </li> </ul> </li> </ul>
<b>Research</b>	<p><b>AEMT Material PLUS:</b></p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Research principles to interpret literature and advocate evidence-based practice</li> </ul>	<b>Same As Previous Level</b>
<b>Workforce Wellness &amp; Safety</b>	<p><b>AEMT Material PLUS:</b></p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Provider safety and wellbeing</li> <li>• Standard safety precautions</li> <li>• Personal protective equipment</li> <li>• Stress management</li> <li>• Dealing with death and dying</li> <li>• Prevention of work related injuries</li> <li>• Lifting and moving patients</li> <li>• Disease transmission</li> <li>• Wellness principles</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Rotary-wing and fixed-wing aircraft *</li> <li>• Crash and mishap avoidance *</li> <li>• Safety considerations in air-medical operations *</li> <li>• The atmosphere and gas laws *                             <ul style="list-style-type: none"> <li>• Temperature</li> <li>• Pressure</li> <li>• Volume</li> <li>• Relative Mass</li> <li>• Boyle's Law</li> <li>• Dalton's Law</li> <li>• Charles' Law</li> <li>• Gay-Lussac's Law</li> <li>• Henry's Law</li> <li>• Graham's Law of Gaseous Diffusion</li> </ul> </li> <li>• Stresses of Transport *                             <ul style="list-style-type: none"> <li>• Hypoxia (review all types)</li> <li>• Barometric Pressure Changes</li> <li>• Thermal Changes</li> <li>• Decreased Humidity</li> <li>• Noise</li> <li>• Vibration</li> <li>• Fatigue</li> <li>• Gravitational Force</li> <li>• Spatial Disorientation</li> <li>• Flicker Vertigo</li> <li>• Fuel Vapors</li> </ul> </li> <li>• Evolved gas disorders *</li> </ul>

	<b>Paramedic</b>	<b>Critical Care Paramedic</b>
		<ul style="list-style-type: none"> <li>• Pressurized and non-pressurized aircraft *</li> <li>• Altitude related disorders *</li> <li>• Flight tolerance of the ill and injured *</li> </ul> <i>* Topics required for flight paramedic</i>
<b>Documentation</b>	<b>AEMT Material PLUS:</b> Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Principles of medical documentation and report writing</li> </ul>	<b>Paramedic Material PLUS:</b> Fundamental depth, foundational breadth: <ul style="list-style-type: none"> <li>• Documenting the critical care assessment</li> <li>• Supplemental documentation for reimbursement and operations</li> </ul>
<b>EMS System Communications</b>	<b>AEMT Material PLUS:</b> Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• EMS communication system and communication with other health care professionals</li> <li>• Team communication and dynamics</li> </ul>	<b>Paramedic Material PLUS:</b> Fundamental depth, foundational breadth: <ul style="list-style-type: none"> <li>• Flight following *</li> <li>• Communicating with ground providers *</li> </ul> <i>* Topics required for flight paramedic</i>
<b>Therapeutic Communications</b>	<b>AEMT Material PLUS:</b> Complex depth, comprehensive breadth:  Principles of communicating with patients in a manner that achieves a positive relationship: <ul style="list-style-type: none"> <li>• Factors that affect communication</li> <li>• Interviewing techniques</li> <li>• Dealing with difficult patients</li> <li>• Adjusting communication strategies for age, stage of development, patients with special needs, and differing cultures</li> </ul>	<b>Paramedic Material PLUS:</b> <ul style="list-style-type: none"> <li>• Effective communications with family members</li> </ul>
<b>Medical-Legal Issues and Ethics</b>	<b>AEMT Material PLUS:</b> Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Consent/refusal of care</li> <li>• Confidentiality</li> <li>• Advanced directives</li> <li>• Tort and criminal actions</li> <li>• Statutory responsibilities</li> <li>• Mandatory reporting</li> <li>• Health care regulation</li> <li>• Patient rights/advocacy</li> <li>• End-of-life issues</li> <li>• Ethical principles/moral obligations</li> <li>• Ethical tests and decision making</li> </ul>	<b>Paramedic Material PLUS:</b>  <b>Fundamental depth, foundational breadth</b> <ul style="list-style-type: none"> <li>• End of life issues during interfacility transport</li> </ul>
<b>Anatomy and Physiology</b>	<b>Integrates a complex depth and comprehensive breadth of knowledge of the anatomy and physiology of all human systems</b>	<b>Same as previous level w/ review and expansion on material relevant to critical care transport</b>
<b>Medical Terminology</b>	<b>Integrates comprehensive anatomical and medical terminology and abbreviations into the written and oral communication with colleagues and other healthcare professionals.</b>	<b>Same as previous level</b>
<b>Pathophysiology</b>	<b>Integrates comprehensive knowledge of pathophysiology of major human systems.</b>	<b>Same as previous level w/ review and expansion on material relevant to critical care transport</b>
<b>Life Span Development</b>	<b>Integrates comprehensive knowledge of life span development.</b>	<b>Same as previous level</b>

<b>Public Health</b>	Applies fundamental knowledge of principles of public health and epidemiology including public health emergencies, health promotion, and illness and injury prevention.	Same as previous level
<b>Pharmacology</b>	Integrates comprehensive knowledge of pharmacology to formulate a treatment plan intended to mitigate emergencies and improve overall health	Reviews and expands upon comprehensive knowledge of pharmacology at the paramedic level to include those medications commonly encountered during a critical care interfacility transport.
<b>Principles of Pharmacology</b>	<b>AEMT Material PLUS:</b>  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Medication safety</li> <li>• Medication legislation</li> <li>• Naming</li> <li>• Classifications</li> <li>• Schedules</li> <li>• Pharmacokinetics</li> <li>• Storage and security</li> <li>• Autonomic pharmacology</li> <li>• Metabolism and excretion</li> <li>• Mechanism of action</li> <li>• Phases of medication activity</li> <li>• Medication response relationships</li> <li>• Medication interactions</li> <li>• Toxicity</li> </ul>	<b>Paramedic Material PLUS:</b>  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Pharmacodynamics</li> </ul>
<b>Medication Administration</b>	<b>AEMT Material PLUS:</b>  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Routes of administration</li> <li>• Within the scope of practice of the paramedic, administer medications to a patient</li> </ul>	<b>Paramedic Material PLUS:</b>  Complex depth and comprehensive breadth: <ul style="list-style-type: none"> <li>• Use of intravenous infusion pumps</li> </ul>
<b>Emergency Medications</b>	<b>AEMT Material PLUS:</b>  Complex depth, comprehensive breadth:  Within the scope of practice of the paramedic: <ul style="list-style-type: none"> <li>• Names</li> <li>• Actions</li> <li>• Indications</li> <li>• Contraindications</li> <li>• Complications</li> <li>• Routes of administration</li> <li>• Side effects</li> <li>• Interactions</li> <li>• Dosages for the medications administered</li> </ul>	<b>Paramedic Material PLUS:</b>  Complex depth and comprehensive breadth:  Medications commonly administered during a critical care transport, which may include, but not be limited to drugs in the following functional classifications: <ul style="list-style-type: none"> <li>• Analgesics</li> <li>• Sedatives</li> <li>• Paralytics</li> <li>• Induction agents</li> <li>• Antiarrhythmics</li> <li>• Antianginals</li> <li>• Antihypertensives</li> <li>• Vasopressors</li> <li>• Thrombolytics</li> <li>• Bronchodilators</li> <li>• Antibiotics</li> <li>• Corticosteroids</li> <li>• Antiemetics</li> <li>• Diuretics</li> <li>• Insulin</li> <li>• Anticonvulsants</li> <li>• Anticoagulants</li> <li>• Anti-Platelet agents</li> <li>• Tocolytics</li> <li>• Prostaglandins</li> <li>• Parenteral nutrition</li> </ul>

Airway Management, Respiration and Artificial Ventilation	Integrates complex knowledge of anatomy, physiology, and pathophysiology into the assessment to develop and implement a treatment plan with the goal of assuring a patent airway, adequate mechanical ventilation, and respiration for patients of all ages.	Reviews and expands upon the comprehensive knowledge of airway management, respiration and artificial ventilation from the paramedic level to include advanced airway management and ventilation modalities that are associated with the critical care patient management.
Airway Management	<b>AEMT Material PLUS:</b>  Complex depth, comprehensive breadth:  Within the scope of practice of the paramedic: <ul style="list-style-type: none"> <li>• Airway anatomy</li> <li>• Airway assessment</li> <li>• Techniques of assuring a patent airway</li> </ul>	<b>Paramedic Material PLUS:</b>  Review of airway assessment and airway control techniques.  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Drug facilitated airway control (RSI)</li> <li>• Tracheostomy management</li> <li>• Airway control in special patient populations</li> <li>• Assessment and management of the difficult airway</li> </ul>
Respiration	<b>AEMT Material PLUS:</b>  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Anatomy of the respiratory system</li> <li>• Physiology, and pathophysiology of respiration <ul style="list-style-type: none"> <li>➢ Pulmonary ventilation</li> <li>➢ Oxygenation</li> <li>➢ Respiration <ul style="list-style-type: none"> <li>○ External</li> <li>○ Internal</li> <li>○ Cellular</li> </ul> </li> </ul> </li> <li>• Assessment and management of adequate and inadequate respiration</li> <li>• Supplemental oxygen therapy</li> </ul>	<b>Paramedic Material PLUS:</b>  Review anatomy, physiology, pathophysiology of respiratory system and focused assessment.  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Arterial blood gas interpretation and monitoring</li> </ul>
Artificial Ventilation	<b>AEMT Material PLUS:</b>  Complex depth, comprehensive breadth: Assessment and management of adequate and inadequate ventilation: <ul style="list-style-type: none"> <li>• Artificial ventilation</li> <li>• Minute ventilation</li> <li>• Alveolar ventilation</li> <li>• Effect of artificial ventilation on cardiac output</li> </ul>	<b>Paramedic Material PLUS:</b>  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Mechanical ventilation <ul style="list-style-type: none"> <li>➢ Principles of mechanical ventilation</li> <li>➢ Patient assessment for mechanical ventilation</li> <li>➢ Ventilator modes and parameters</li> <li>➢ Troubleshooting</li> </ul> </li> </ul>
Assessment	Integrate scene and patient assessment findings with knowledge of epidemiology and pathophysiology to form a field impression. This includes developing a list of differential diagnoses through clinical reasoning to modify the assessment and formulate a treatment plan.	Expands upon the traditional paramedic-level assessment to include those techniques and parameters associated with a critical care setting. The critical care assessment includes an expanded physical assessment, use of diagnostic instruments and fundamental depth/foundational breadth interpretation of laboratory values and medical imaging.
Scene Size-Up	<b>AEMT Material PLUS:</b>  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Scene management <ul style="list-style-type: none"> <li>➢ Impact of the environment on patient care</li> <li>➢ Addressing hazards</li> <li>➢ Violence</li> <li>➢ Multiple patient situations</li> </ul> </li> </ul>	<b>Paramedic Material PLUS:</b>  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Landing zone safety assessment * <ul style="list-style-type: none"> <li>➢ Location</li> <li>➢ Size</li> <li>➢ Elevated obstructions</li> <li>➢ Ground level hazards</li> </ul> </li> </ul> <p><i>* Topics required for flight paramedic</i></p>
Primary Assessment	<b>AEMT Material PLUS:</b>  Complex depth, comprehensive breadth: <ul style="list-style-type: none"> <li>• Primary assessment for all patient situations</li> </ul>	Same as previous level

	<ul style="list-style-type: none"> <li>➤ Initial general impression</li> <li>➤ Level of consciousness</li> <li>➤ ABCs</li> <li>➤ Identifying life threats</li> <li>➤ Assessment of vital functions</li> <li>• Integration of treatment/procedures needed to preserve life</li> </ul>	
<b>History Taking</b>	<p><b>AEMT Material PLUS:</b></p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Components of the patient history</li> <li>• Interviewing techniques</li> <li>• How to integrate therapeutic communication techniques and adapt the line of inquiry based on findings and presentation</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Differentiate between essential information in the prehospital and interfacility transport setting</li> <li>• Effectively communicating with other healthcare professionals involved in the transfer of care process</li> </ul>
<b>Secondary Assessment</b>	<p><b>AEMT Material PLUS:</b></p> <p>Complex depth, comprehensive breadth:</p> <p>Techniques of physical examination for all major</p> <ul style="list-style-type: none"> <li>• Body systems</li> <li>• Anatomical regions</li> </ul>	<p><b>Same as previous level</b></p>
<b>Monitoring Devices</b>	<p><b>AEMT Material PLUS:</b></p> <p>Fundamental depth, foundational breadth:</p> <p>Within the scope of practice of the paramedic:</p> <ul style="list-style-type: none"> <li>• Obtaining and using information from patient monitoring devices including (but not limited to): <ul style="list-style-type: none"> <li>➤ Continuous ECG monitoring</li> <li>➤ 12 lead ECG interpretation</li> <li>➤ Carbon dioxide monitoring</li> <li>➤ Basic blood chemistry</li> </ul> </li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Understanding of critical laboratory values</li> <li>• Using portable blood analysis devices</li> <li>• Understanding medical imaging <ul style="list-style-type: none"> <li>➤ Radiographs</li> <li>➤ CT scans</li> <li>➤ MRI</li> <li>➤ Ultrasound</li> </ul> </li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Prehospital invasive vs. non-invasive pressure monitoring</li> <li>• Hemodynamic monitoring <ul style="list-style-type: none"> <li>➤ Arterial pressure monitoring</li> <li>➤ Venous pressure monitoring <ul style="list-style-type: none"> <li>○ Triple lumen catheters</li> <li>○ SCVO2 catheters</li> <li>○ Pulmonary artery catheters</li> </ul> </li> </ul> </li> <li>• Invasive monitoring catheter/line management</li> <li>• Invasive pressure measurement <ul style="list-style-type: none"> <li>➤ Use of transducers</li> <li>➤ Interpreting pressure measurements</li> </ul> </li> </ul>



<p><b>Reassessment</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Complex depth, comprehensive breadth</p> <ul style="list-style-type: none"> <li>• How and when to perform a reassessment for all patient situations</li> </ul>	<p>Same as previous level</p>
<p><b>Medicine</b></p>	<p><b>Integrates assessment findings with principles of epidemiology and pathophysiology to formulate a field impression and implement a comprehensive treatment/disposition plan for a patient with a medical complaint.</b></p>	<p><b>Builds upon the principles of pathophysiology and assessment findings used to formulate a field impression to understand the often complex medical problems encountered during the critical care interfacility transport.</b></p>
<p><b>Medical Overview</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Complex depth, comprehensive breadth: Pathophysiology, assessment, and management of medical complaints to include:</p> <ul style="list-style-type: none"> <li>• Transport mode</li> <li>• Destination decisions</li> </ul>	<p>Same as previous level</p>
<p><b>Neurology</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of:</p> <p>Complex depth, comprehensive breadth</p> <ul style="list-style-type: none"> <li>• Stroke/intracranial</li> <li>• hemorrhage/transient ischemic attack</li> <li>• Seizure</li> <li>• Status epilepticus</li> <li>• Headache</li> </ul> <p>Fundamental depth, foundational breadth</p> <ul style="list-style-type: none"> <li>• Dementia</li> <li>• Neoplasms</li> <li>• Demyelinating disorders</li> <li>• Parkinson's disease</li> <li>• Cranial nerve disorders</li> <li>• Movement disorders</li> <li>• Neurologic inflammation/infection</li> <li>• Spinal cord compression</li> <li>• Hydrocephalus</li> <li>• Wernicke's encephalopathy</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review of anatomy, physiology, pathophysiology, neurological focused assessment and management.</p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• NIH stroke assessment tool</li> <li>• Use of thrombolytics</li> </ul> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Use of therapeutic hypothermia</li> <li>• Intracranial pressure monitoring</li> </ul>
<p><b>Abdominal and Gastrointestinal Disorders</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Acute and chronic gastrointestinal hemorrhage</li> <li>• Liver disorders</li> <li>• Peritonitis</li> <li>• Ulcerative diseases</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Irritable bowel syndrome</li> <li>• Inflammatory disorders</li> <li>• Pancreatitis</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review of anatomy, physiology, pathophysiology, GI focused assessment and management.</p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Management of enteral feeding devices</li> <li>• Management of drains</li> <li>• Management of vacuum closure devices</li> <li>• Altitude considerations *</li> </ul> <p>* <i>Topics required for flight paramedic</i></p>

	<ul style="list-style-type: none"> <li>• Bowel obstruction</li> <li>• Hernias</li> <li>• Infectious disorders</li> <li>• Gall bladder and biliary tract disorders</li> </ul> <p>Simple depth, simple breadth:</p> <ul style="list-style-type: none"> <li>• Rectal abscess</li> <li>• Rectal foreign body obstruction</li> <li>• Mesenteric ischemia</li> </ul>	
<b>Immunology</b>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of common or major immune system disorders and/or emergencies:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Hypersensitivity</li> <li>• Allergic and anaphylactic reactions</li> <li>• Anaphylactoid reactions</li> </ul> <p>Fundamental depth, foundational breadth</p> <ul style="list-style-type: none"> <li>• Collagen vascular disease</li> <li>• Transplant related problems</li> </ul>	<p><b>Same as previous level</b></p> <p>Review of anatomy, physiology, pathophysiology, focused assessment and management.</p>
<b>Infectious Diseases</b>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, reporting requirements, prognosis, and management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• HIV-related disease</li> <li>• Hepatitis</li> <li>• Pneumonia</li> <li>• Meningococcal meningitis</li> <li>• Fundamental depth, foundational breadth</li> <li>• Tuberculosis</li> <li>• Tetanus</li> <li>• Viral diseases</li> <li>• Sexually transmitted disease</li> <li>• Gastroenteritis</li> <li>• Fungal infections</li> <li>• Rabies</li> <li>• Scabies and lice</li> <li>• Lyme disease</li> <li>• Rocky Mountain Spotted Fever</li> <li>• Antibiotic resistant infections</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review of anatomy, physiology, pathophysiology, focused assessment, PPE/universal precautions and management.</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Use of antibiotics, antiviral and antifungal medications</li> <li>• Infections in special patient populations</li> <li>• The immuno-suppressed patient</li> <li>• Post exposure prophylaxis for the healthcare provider</li> </ul>

<p><b>Endocrine Disorders</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Acute diabetic emergencies</li> <li>• Diabetes</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Adrenal disease</li> <li>• Pituitary and thyroid disorders</li> </ul>	<p><b>Same as previous level</b></p> <p>Review of anatomy, physiology, pathophysiology, focused assessment and management.</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Types of insulin and administration technique</li> <li>• Correctable endocrine conditions , e.g. hypoglycemia, etc.</li> <li>• Adrenal insufficiency</li> </ul>
<p><b>Psychiatric</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Acute psychosis</li> <li>• Agitated delirium</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Cognitive disorders</li> <li>• Thought disorders</li> <li>• Mood disorders</li> <li>• Neurotic disorders</li> <li>• Substance-related disorders /addictive behavior</li> <li>• Somatoform disorders</li> <li>• Factitious disorders</li> <li>• Personality disorders</li> <li>• Patterns of violence/abuse/neglect</li> <li>• Organic psychoses</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review of anatomy, physiology, pathophysiology, psychiatric focused assessment and management.</p> <p>Complex depth, comprehensive depth:</p> <ul style="list-style-type: none"> <li>• Air* and ground transport safety considerations</li> <li>• Use of physical and/or pharmacological restraint</li> </ul> <p><i>* Topics required for flight paramedic</i></p>
<p><b>Cardiovascular</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Acute coronary syndrome <ul style="list-style-type: none"> <li>➢ Angina pectoris</li> <li>➢ Myocardial infarction</li> </ul> </li> <li>• Heart failure</li> <li>• Non-traumatic cardiac tamponade</li> <li>• Hypertensive emergencies</li> <li>• Cardiogenic shock</li> <li>• Vascular disorders <ul style="list-style-type: none"> <li>➢ Abdominal aortic aneurysm</li> <li>➢ Arterial occlusion</li> <li>➢ Venous thrombosis</li> </ul> </li> <li>• Aortic aneurysm/dissection,</li> <li>• Thromboembolism</li> <li>• Cardiac rhythm disturbances</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Infectious diseases of the heart <ul style="list-style-type: none"> <li>➢ Endocarditis</li> <li>➢ Pericarditis</li> </ul> </li> <li>• Congenital abnormalities</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review of anatomy, physiology, pathophysiology, cardiovascular focused assessment and management. Reinforce the importance of prehospital STEMI recognition through the use of 12-lead EKGs and the use of therapeutic hypothermia in post-resuscitation management.</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Electrophysiology Devices <ul style="list-style-type: none"> <li>➢ Pacemakers, including epicardial and transvenous</li> </ul> </li> <li>• Cardiac Assist Devices <ul style="list-style-type: none"> <li>➢ LVAD and BiVAD</li> <li>➢ Intra-Aortic balloon pump</li> <li>➢ Extracorporeal membrane oxygenation</li> </ul> </li> <li>• Management of mediastinal chest tubes</li> </ul>

<p><b>Toxicology</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of the following toxidromes and poisonings:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Cholinergics</li> <li>• Anticholinergics</li> <li>• Sympathomimetics</li> <li>• Sedative/hypnotics</li> <li>• Opiates</li> <li>• Alcohol intoxication and withdrawal</li> <li>• Over-the-counter and prescription medications</li> <li>• Carbon monoxide</li> <li>• Illegal drugs</li> <li>• Herbal preparations</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review of anatomy, physiology, pathophysiology, toxicology assessment and management. Reinforce the importance of safety assessment, PPE and decontamination procedures prior to transport.</p> <p>Complex depth, comprehensive breadth</p> <ul style="list-style-type: none"> <li>• Intentional vs. unintentional poisoning</li> <li>• General management <ul style="list-style-type: none"> <li>○ Initial management</li> <li>○ History taking and assessment</li> <li>○ Symptoms of poisoning or toxic exposure</li> <li>○ Physical exam</li> <li>○ Laboratory studies</li> </ul> </li> <li>• Removal, elimination or disruption of toxins</li> <li>• Supportive and emotional care</li> <li>• Safety issues during transport</li> <li>• Pharmacologic properties of drugs</li> <li>• Toxicity and treatment of poisoning by specific drugs <ul style="list-style-type: none"> <li>○ Acetylsalicylic Acid</li> <li>○ Acetaminophen</li> <li>○ Antidepressants, i.e. Tricyclics</li> <li>○ Benzodiazepines</li> <li>○ Cardiac drugs, i.e. beta blockers, calcium channel blockers, digitalis, etc.</li> <li>○ Cocaine and other illicit drugs</li> <li>○ Hallucinogens</li> <li>○ Alcohol</li> <li>○ Ethylene Glycol</li> <li>○ Carbon Monoxide</li> </ul> </li> <li>• Snakebites <ul style="list-style-type: none"> <li>○ Recognition of venomous snakes</li> <li>○ Initial management</li> <li>○ Advanced treatment during transport</li> </ul> </li> </ul>
<p><b>Respiratory</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Acute upper airway infections</li> <li>• Spontaneous pneumothorax</li> <li>• Obstructive/restrictive lung diseases</li> <li>• Pulmonary infections</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Neoplasm</li> <li>• Pertussis</li> <li>• Cystic fibrosis</li> </ul>	<p><b>Same as previous level</b></p> <p>Review of anatomy, physiology, pathophysiology, respiratory focused assessment and management, including use of CPAP and BiPAP devices.</p>
<p><b>Hematology</b></p>	<p><b>AEMT Material PLUS:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of common or major hematological diseases and/or emergencies:</p> <p>Complex depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Sickle cell disease</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Blood transfusion complications</li> <li>• Hemostatic disorders</li> <li>• Lymphomas</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review of anatomy, physiology, pathophysiology and focused assessment.</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Blood transfusions <ul style="list-style-type: none"> <li>➤ Indications</li> <li>➤ Whole blood, blood components, and substitutes</li> <li>➤ Typing and compatibility</li> <li>➤ Pre-transfusion, concurrent, and post-transfusion assessment</li> <li>➤ Administration techniques</li> <li>➤ Management of transfusion complications</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Red blood cell disorders</li> <li>• White blood cell disorders</li> <li>• Coagulopathies</li> </ul>	<ul style="list-style-type: none"> <li>➤ Documentation</li> </ul>
<b>Genitourinary/Renal</b>	<p><b>AEMT Material Plus:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Complications of <ul style="list-style-type: none"> <li>➤ Acute renal failure</li> <li>➤ Chronic renal failure</li> <li>➤ Dialysis</li> <li>➤ Renal calculi</li> </ul> </li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Acid base disturbances</li> <li>• Fluid and electrolyte</li> <li>• Infection</li> <li>• Male genital tract conditions</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review anatomy, physiology, pathophysiology, focused assessment, and management</p> <p>Fundamental depth, foundational breadth</p> <ul style="list-style-type: none"> <li>• Insertion and management of a foley catheter</li> <li>• Management of: <ul style="list-style-type: none"> <li>○ Renal replacement therapy</li> <li>○ Nephrostomy tubes</li> <li>○ Supra-pubic catheters</li> </ul> </li> </ul>
<b>Gynecology</b>	<p><b>AEMT Material Plus:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of common or major gynecological diseases and/or emergencies:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Vaginal bleeding</li> <li>• Sexual assault</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Infections</li> <li>• Pelvic inflammatory disease</li> <li>• Ovarian cysts</li> <li>• Dysfunctional uterine bleeding</li> <li>• Vaginal foreign body</li> </ul>	<p><b>Same as previous level</b></p> <p>Review anatomy, physiology, pathophysiology, focused assessment, and management</p>
<b>Non-Traumatic Musculoskeletal</b>	<p><b>AEMT Material Plus:</b></p> <p>Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of common or major non-traumatic musculoskeletal disorders:</p> <p>Fundamental depth, foundation breadth:</p> <ul style="list-style-type: none"> <li>• Disorders of the spine</li> <li>• Joint abnormalities</li> <li>• Muscle abnormalities</li> <li>• Overuse syndromes</li> </ul>	<p><b>Same as previous level</b></p> <p>Review anatomy, physiology, pathophysiology, focused assessment, and management</p>

<p><b>Diseases of the Eyes, Ears, Nose and Throat</b></p>	<p><b>AEMT Material Plus:</b></p> <p>Knowledge of anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis and management :</p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Common or major diseases of the eyes, ears, nose, and throat, including nose bleed</li> </ul>	<p><b>Same as previous level</b></p> <p>Review anatomy, physiology, pathophysiology, focused assessment, and management</p>
<p><b>Shock and Resuscitation</b></p>	<p><b>Integrates comprehensive knowledge of causes and pathophysiology into the management of cardiac arrest and peri-arrest states. Integrates a comprehensive knowledge of the causes and pathophysiology into the management of shock, respiratory failure or arrest with an emphasis on early intervention to prevent arrest.</b></p>	<p><b>Same as previous level</b></p>
<p><b>Trauma</b></p>	<p><b>Integrates assessment findings with principles of epidemiology and pathophysiology to formulate a field impression to implement a comprehensive treatment/disposition plan for an acutely injured patient.</b></p>	<p><b>Same as previous level</b></p>
<p><b>Trauma Overview</b></p>	<p><b>AEMT Material Plus:</b></p> <p>Complex depth, comprehensive breadth:</p> <p>Pathophysiology, assessment and management of the trauma patient:</p> <ul style="list-style-type: none"> <li>• Trauma scoring</li> <li>• Transport and destination issues</li> </ul>	<p><b>Same as previous level</b></p> <p>Review pathophysiology, assessment and management of the trauma patient. Review and discuss trauma patient destination decisions relative to ground vs. air transport both in the prehospital and interfacility transport setting.</p>
<p><b>Bleeding</b></p>	<p><b>AEMT Material Plus:</b></p> <p>Complex depth, comprehensive breadth:</p> <p>Pathophysiology, assessment, and management of:</p> <ul style="list-style-type: none"> <li>• Bleeding</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review the pathophysiology and management of bleeding, including hemostatic agents and commercial tourniquets.</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• DIC/coagulopathy</li> <li>• Assessment and laboratory studies associated with the anti-coagulated patient</li> <li>• Management of the anti-coagulated patient <ul style="list-style-type: none"> <li>○ Fresh frozen plasma</li> <li>○ Vitamin K</li> <li>○ Clotting factors</li> </ul> </li> </ul>
<p><b>Chest Trauma</b></p>	<p><b>AEMT Material Plus:</b></p> <p>Pathophysiology, assessment, and management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Traumatic aortic disruption</li> <li>• Pulmonary contusion</li> <li>• Blunt cardiac injury</li> <li>• Hemothorax</li> <li>• Pneumothorax <ul style="list-style-type: none"> <li>➤ Open</li> <li>➤ Simple</li> <li>➤ Tension</li> </ul> </li> <li>• Cardiac tamponade</li> <li>• Rib fractures</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review pathophysiology, assessment and management of chest trauma.</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Management of chest tubes</li> </ul>

	<ul style="list-style-type: none"> <li>• Flail chest</li> <li>• Commotio cordis</li> <li>• Tracheobronchial disruption</li> <li>• Diaphragmatic rupture</li> <li>• Traumatic asphyxia</li> </ul>	
<b>Abdominal and Genitourinary Trauma</b>	<p><b>AEMT Material Plus:</b></p> <p>Complex depth, comprehensive breadth:</p> <p>Pathophysiology, assessment, and management of:</p> <ul style="list-style-type: none"> <li>• Vascular injury</li> <li>• Solid and hollow organ injuries</li> <li>• Blunt versus penetrating mechanisms</li> <li>• Evisceration</li> <li>• Retroperitoneal injuries</li> <li>• Injuries to the external genitalia</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review pathophysiology, assessment and management of abdominal and genitourinary trauma.</p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Understanding ultrasound images as part of the F.A.S.T exam</li> </ul>
<b>Orthopedic Trauma</b>	<p><b>AEMT Material Plus:</b></p> <p>Pathophysiology, assessment, and management of:</p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Pediatric fractures</li> <li>• Tendon laceration/transsection/ rupture (Achilles and patellar)</li> <li>• Compartment syndrome</li> </ul> <p>Complex depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Upper and lower extremity orthopedic trauma</li> <li>• Open fractures</li> <li>• Closed fractures</li> <li>• Dislocations</li> </ul>	<p><b>Same as previous level</b></p> <p>Review pathophysiology, assessment and management of orthopedic trauma, including use of commercial pelvic stabilization devices.</p>
<b>Soft Tissue Trauma</b>	<p><b>AEMT Material Plus:</b></p> <p>Complex depth, comprehensive breadth:</p> <p>Pathophysiology, assessment, and management of:</p> <ul style="list-style-type: none"> <li>• Wounds <ul style="list-style-type: none"> <li>➢ Avulsions</li> <li>➢ Bite wounds</li> <li>➢ Lacerations</li> <li>➢ Puncture wounds</li> </ul> </li> <li>• Burns <ul style="list-style-type: none"> <li>➢ Electrical</li> <li>➢ Chemical</li> <li>➢ Thermal</li> </ul> </li> <li>• High-pressure injection</li> <li>• Crush syndrome</li> </ul>	<p><b>Same as previous level</b></p> <p>Review pathophysiology, assessment and management of soft tissue trauma.</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Management of crush syndrome</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Administration of tetanus immunization</li> </ul>
<b>Head, Facial, Neck and Spine Trauma</b>	<p><b>AEMT Material Plus:</b></p> <p>Pathophysiology, assessment, and management of:</p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Unstable facial fractures</li> <li>• Orbital fractures</li> <li>• Perforated tympanic membrane</li> </ul> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Skull fractures</li> <li>• Penetrating neck trauma</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review pathophysiology, assessment and management of head, facial, neck and spine trauma.</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Advanced management of spinal cord injuries</li> </ul>

	<ul style="list-style-type: none"> <li>• Laryngeotracheal injuries</li> <li>• Spine trauma <ul style="list-style-type: none"> <li>➤ Dislocations/subluxations</li> <li>➤ Fractures</li> <li>➤ Sprains/strains</li> </ul> </li> </ul>	
<b>Nervous System Trauma</b>	<p><b>AEMT Material Plus:</b></p> <p>Pathophysiology, assessment, and management of:</p> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Cauda equina syndrome</li> <li>• Nerve root injury</li> <li>• Peripheral nerve injury</li> </ul> <p>Complex depth, comprehensive breadth</p> <ul style="list-style-type: none"> <li>• Traumatic brain injury</li> <li>• Spinal cord injury</li> <li>• Spinal shock</li> </ul>	<p><b>Same as previous level</b></p> <p>Review pathophysiology, assessment and management of nervous system trauma.</p>
<b>Special Considerations In Trauma</b>	<p><b>AEMT Material Plus:</b></p> <p>Pathophysiology, assessment, and management of trauma in the:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Pregnant patient</li> <li>• Pediatric patient</li> <li>• Geriatric patient</li> <li>• Cognitively impaired patient</li> </ul>	<p><b>Same as previous level</b></p> <p>Review pathophysiology, assessment and management of special patient population trauma.</p>
<b>Environmental Emergencies</b>	<p><b>AEMT Material Plus:</b></p> <p>Pathophysiology, assessment, and management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Near-drowning</li> <li>• Temperature-related illness</li> <li>• Bites and envenomations</li> <li>• Dysbarism <ul style="list-style-type: none"> <li>➤ High-altitude</li> <li>➤ Diving injuries</li> </ul> </li> <li>• Electrical injury</li> <li>• High altitude illness</li> </ul>	<p><b>Same as previous level</b></p> <p>Review pathophysiology, assessment and management of environmental emergencies.</p> <p>Fundamental depth, foundational breath:</p> <ul style="list-style-type: none"> <li>• Suspension trauma</li> </ul>
<b>Multi-System Trauma</b>	<p><b>AEMT Material Plus:</b></p> <p>Pathophysiology, assessment, and management of:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Multi-system trauma</li> <li>• Blast injuries</li> </ul>	<p><b>Same as previous level</b></p> <p>Review pathophysiology, assessment and management of multi-system trauma.</p>
<b>Special Patient Populations</b>	<p><b>Integrates assessment findings with principles of pathophysiology and knowledge of psychosocial needs to formulate a field impression and implement a comprehensive treatment/disposition plan for patients with special needs</b></p>	<p><b>Builds on paramedic level assessment findings, pathophysiology, and psychosocial needs to effectively manage special patient populations in the prehospital setting and during interfacility transport.</b></p>



<p style="text-align: center;"><b>Obstetrics</b></p>	<p><b>AEMT Material Plus:</b></p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Anatomy and physiology of pregnancy</li> <li>• Pathophysiology of complications of pregnancy</li> <li>• Assessment of the pregnant patient</li> </ul> <p>Psychosocial impact, presentations, prognosis, and management of:</p> <ul style="list-style-type: none"> <li>• Normal delivery</li> <li>• Abnormal delivery <ul style="list-style-type: none"> <li>➤ Nuchal cord</li> <li>➤ Prolapsed cord</li> <li>➤ Breech</li> </ul> </li> <li>• Spontaneous abortion/miscarriage</li> <li>• Ectopic pregnancy</li> <li>• Eclampsia</li> <li>• Antepartum hemorrhage</li> <li>• Pregnancy induced hypertension</li> <li>• Third trimester bleeding <ul style="list-style-type: none"> <li>➤ Placenta previa</li> <li>➤ Abruptio placenta</li> </ul> </li> <li>• High risk pregnancy</li> <li>• Complications of labor <ul style="list-style-type: none"> <li>➤ Fetal distress</li> <li>➤ Pre-term</li> <li>➤ Premature ruptured membranes</li> <li>➤ Rupture of uterus</li> </ul> </li> <li>• Complication of delivery</li> <li>• Post partum complications</li> </ul> <p>Foundational depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Hyperemesis gravidarum</li> <li>• Post partum depression</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review pathophysiology, assessment and management of obstetrical patients.</p> <p>Fundamental depth, foundational breadth</p> <ul style="list-style-type: none"> <li>• Fetal assessment</li> <li>• Fetal monitoring data</li> <li>• Ultrasound images related to ectopic pregnancy</li> <li>• Fetal heart rate abnormalities: <ul style="list-style-type: none"> <li>○ Variability</li> <li>○ Periodic Changes</li> <li>○ Acceleration (Variable, Early, Late, Sinusodal)</li> <li>○ Bradycardia/Tachycardia</li> </ul> </li> <li>• Contributing factors to fetal distress</li> </ul> <p>Complex depth, comprehensive breadth</p> <ul style="list-style-type: none"> <li>• Pre-eclampsia/eclampsia</li> <li>• Administration of tocolytics</li> <li>• Complications of pregnancy <ul style="list-style-type: none"> <li>○ Amniotic fluid embolism</li> <li>○ Breech presentation</li> <li>○ Post-partum hemorrhage</li> <li>○ Uterine inversion</li> <li>○ Precipitous delivery</li> <li>○ Retained placenta</li> <li>○ Shoulder dystocia</li> <li>○ Umbilical prolapse</li> <li>○ Gestational diabetes</li> <li>○ Placenta abruption</li> <li>○ Placenta privia</li> <li>○ Disseminated intravascular coagulation (DIC)</li> <li>○ Multiple gestation</li> <li>○ HELLP syndrome</li> <li>○ Pre-term labor</li> </ul> </li> </ul>
<p style="text-align: center;"><b>Neonatal Care</b></p>	<p><b>AEMT Material Plus:</b></p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Anatomy and physiology of neonatal circulation</li> <li>• Assessment of the newborn</li> </ul> <p>Presentation and management:</p> <ul style="list-style-type: none"> <li>• Newborn</li> <li>• Neonatal resuscitation</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Review of anatomy, physiology, fetal circulation, assessment and resuscitation of the neonate.</p> <p>Complex depth, comprehensive breadth</p> <ul style="list-style-type: none"> <li>• Respiratory disorders, e.g. surfactant deficiency</li> <li>• Cardiac structural and flow abnormalities <ul style="list-style-type: none"> <li>○ Patent ductus arteriosm (PDA)</li> <li>○ Patent foramen ovale (PFO)</li> <li>○ Ventricular septal defect (VSD)</li> <li>○ Tetology of fallots</li> <li>○ Transposition of the great vessels</li> </ul> </li> <li>• Sepsis</li> <li>• Thermoregulation using an isolette</li> <li>• Critical neonate laboratory values</li> </ul>
<p style="text-align: center;"><b>Pediatrics</b></p>	<p><b>AEMT Material Plus:</b></p> <p>Age-related assessment findings, age-related anatomic and physiologic variations, age related and developmental stage related assessment and treatment modifications of the pediatric-specific major or common diseases and/or emergencies:</p> <p>Complex depth, comprehensive breadth:</p>	<p><b>Same as previous level</b></p> <p>Review age-related assessment findings, anatomic and physiologic variations, developmental stage related assessment and treatment modifications of the pediatric-specific major or common diseases and/or emergencies.</p>

	<ul style="list-style-type: none"> <li>• Foreign body (upper and lower) airway obstruction</li> <li>• Bacterial tracheitis</li> <li>• Asthma</li> <li>• Bronchiolitis</li> <li>➤ Respiratory Syncytial Virus (RSV)</li> <li>• Pneumonia</li> <li>• Croup</li> <li>• Epiglottitis</li> <li>• Respiratory distress/failure/arrest</li> <li>• Shock</li> <li>• Seizures</li> <li>• Sudden Infant Death Syndrome (SIDS)</li> <li>• Hyperglycemia</li> <li>• Hypoglycemia</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Pertussis</li> <li>• Cystic fibrosis</li> <li>• Bronchopulmonary dysplasia</li> <li>• Congenital heart diseases</li> <li>• Hydrocephalus and ventricular shunts</li> </ul>	
<b>Geriatrics</b>	<p><b>AEMT Material Plus:</b></p> <p>Normal and abnormal changes associated with aging, pharmacokinetic changes, psychosocial and economic aspects of aging, polypharmacy, and age-related assessment and treatment modifications for the major or common geriatric diseases and/or emergencies:</p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Cardiovascular diseases</li> <li>• Respiratory diseases</li> <li>• Neurological diseases</li> <li>• Endocrine diseases</li> <li>• Alzheimer's</li> <li>• Dementia</li> <li>• Delirium</li> <li>➤ Acute confusional state</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Herpes zoster</li> <li>• Inflammatory arthritis</li> </ul>	<p><b>Same as previous level</b></p> <p>Review normal and abnormal changes associated with aging, pharmacokinetic changes, psychosocial and economic aspects of aging, polypharmacy, and age-related assessment and treatment modifications for the major or common geriatric diseases and/or emergencies.</p>
<b>Patients with Special Challenges</b>	<p><b>AEMT Material Plus:</b></p> <p>Complex depth, comprehensive breadth: Healthcare implications of:</p> <ul style="list-style-type: none"> <li>• Abuse</li> <li>• Neglect</li> <li>• Poverty</li> <li>• Bariatric</li> <li>• Technology dependent</li> <li>• Hospice/ terminally ill</li> <li>• Tracheostomy care/dysfunction</li> </ul>	<p><b>Paramedic Material PLUS:</b></p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Air or ground medical transport of the bariatric patient *</li> <li>• Patients requiring specialty equipment and staffing support during interfacility transport.</li> </ul> <p>Fundamental depth, foundational breadth:</p> <ul style="list-style-type: none"> <li>• Pre-transport briefing of non-EMS caregivers</li> <li>• Weight and balance issues related to bariatric patients *</li> </ul> <p><i>* Topics required for flight paramedic</i></p>
<b>EMS Operations</b>	<p><b>Same as Previous Level (EMR)</b></p> <p><b>Knowledge of operational roles and responsibilities to ensure safe patient, public, and personnel safety</b></p>	<p><b>Paramedic Material PLUS:</b></p> <p><b>Expands knowledge of EMS operations gained at previous levels by integrating the roles and responsibilities necessary to ensure the safe transport of critically ill or injured patients to specialty care receiving facilities. Includes the logistics involved in extended air or ground interfacility transports.</b></p>
	<b>Same as Previous Level (EMR/EMT)</b>	<b>Same as previous level</b>

<b>Principles of Safely Operating a Ground Ambulance</b>	<p>Simple depth, simple breadth</p> <ul style="list-style-type: none"> <li>• Risks and responsibilities of emergency response</li> </ul> <p>Simple depth, foundational breadth</p> <ul style="list-style-type: none"> <li>• Risks and responsibilities of transport</li> </ul>	
<b>Incident Management</b>	<p><b>AEMT Material Plus:</b></p> <p>Complex depth, comprehensive breadth</p> <ul style="list-style-type: none"> <li>• Establish and work within the incident management system</li> </ul>	Same as previous level
<b>Multiple Casualty Incidents</b>	<p><b>Same as Previous Level (EMR/EMT)</b></p> <p>Simple depth, simple breadth:</p> <ul style="list-style-type: none"> <li>• Triage principles</li> <li>• Resource management</li> <li>• Triage</li> <li>• Performing</li> <li>• Re-Triage</li> <li>• Destination decisions</li> <li>• Post traumatic and cumulative stress</li> </ul>	Same as previous level
<b>Air Medical</b>	<p><b>AEMT Material Plus:</b></p> <p>Complex depth, comprehensive breadth:</p> <ul style="list-style-type: none"> <li>• Medical risks/needs/advantages</li> </ul>	Scope of this section is covered in other sections of the educational standards for the flight/ground critical care paramedic.
<b>Vehicle Extrication</b>	<p><b>Same as Previous Level (EMR/EMT)</b></p> <p>Simple depth, simple breadth:</p> <ul style="list-style-type: none"> <li>• Safe vehicle extrication</li> <li>• Use of simple hand tools</li> </ul>	Same as previous level
<b>Hazardous Materials Awareness</b>	<p><b>Same as Previous Level (EMR/EMT)</b></p> <p>Simple depth, simple breadth:</p> <ul style="list-style-type: none"> <li>• Risks and responsibilities of operating in a cold zone at a hazardous material or other special incident</li> </ul>	Review risks and responsibilities of operating in a cold zone at a hazardous material or other special incident.
<b>Mass Casualty Incident Due To Terrorism and Disaster</b>	<p><b>Same as Previous Level (EMR/EMT)</b></p> <p>Simple depth, simple breadth:</p> <ul style="list-style-type: none"> <li>• Risks and responsibilities of operating on the scene of a natural or man-made disaster</li> </ul>	Review risks and responsibilities of operating on the scene of a natural or man-made disaster.

<b>CLINICAL BEHAVIOR/ JUDGMENT</b>	<b>PARAMEDIC</b>	<b>Critical Care Paramedic</b>
<b>Assessment</b>	Perform a comprehensive history and physical examination to identify factors affecting the health and health needs of a patient.	Gathers complex healthcare information from other healthcare providers to identify factors that may affect the patient's stability during transport.
	Formulate a field impression based on an analysis of comprehensive assessment findings, anatomy, physiology, pathophysiology, and epidemiology.	Performs an advanced level critical care assessment through a comprehensive patient assessment and interpretation of monitoring parameters, laboratory values and medical imaging.
	Relate assessment findings to underlying pathological and physiological changes in the patient's condition.	Same as previous level
	Integrate and synthesize the multiple determinants of health and clinical care.	Same as previous level
	Perform health screening and referrals.	Same as previous level
<b>Therapeutic Communication and Cultural Competency</b>	Effectively communicate in a manner that is culturally sensitive and intended to improve the patient outcome.	Same as previous level
<b>Psychomotor Skills</b>	<p>Safely and effectively perform all psychomotor skills within the National EMS Scope of Practice Model AND state Scope of Practice at this level.</p> <p><b>Airway and Breathing:</b></p> <ul style="list-style-type: none"> <li>• Oral and nasal endotracheal intubation</li> <li>• FBAO – direct laryngoscopy</li> <li>• Percutaneous cricothyrotomy</li> <li>• Pleural decompression</li> <li>• BiPAP, CPAP, PEEP</li> <li>• Chest tube monitoring</li> <li>• ETCO<sub>2</sub> monitoring</li> <li>• NG/OG tube</li> </ul> <p><b>Assessment:</b></p> <p><b>ECG interpretation:</b></p> <ul style="list-style-type: none"> <li>• 12-lead interpretation</li> <li>• Blood chemistry analysis</li> </ul> <p><b>Pharmacologic interventions:</b></p> <ul style="list-style-type: none"> <li>• Intraosseous insertion</li> <li>• Enteral and parenteral administration of approved prescription medications</li> <li>• Access indwelling catheters and implanted central IV ports</li> <li>• Medications by IV infusion</li> <li>• Maintain infusion of blood or blood products</li> <li>• Blood sampling</li> <li>• Thrombolytic initiation</li> <li>• Administer physician approved medications</li> </ul> <p><b>Medical/Cardiac Care:</b></p> <ul style="list-style-type: none"> <li>• Cardioversion</li> <li>• Manual defibrillation</li> <li>• Transcutaneous pacing</li> </ul>	<p>In addition to those skills outlined in the National Scope of Practice Model and authorized by the Pennsylvania Department of Health for the paramedic, the flight or ground critical care paramedic can safely and effectively perform the following psychomotor skills:</p> <p><b>Airway and Breathing:</b></p> <ul style="list-style-type: none"> <li>• Drug facilitated airway control, i.e. RSI</li> <li>• Operation of mechanical transport ventilators</li> <li>• Use of all supra-glottic/alternative airways</li> <li>• Tracheostomy management</li> </ul> <p><b>Assessment &amp; Monitoring:</b></p> <ul style="list-style-type: none"> <li>• Maintenance and access to invasive pressure monitoring devices and interpretation of monitoring parameter information</li> <li>• Interpretation of critical laboratory values</li> <li>• Arterial blood gas interpretation</li> <li>• Interpretation of medical imaging information</li> <li>• Interpretation of fetal monitoring data</li> <li>• Operation of portable blood analysis equipment</li> </ul> <p><b>Pharmacology:</b></p> <ul style="list-style-type: none"> <li>• Expanded administration of enteral and parenteral prescription medications as ordered by a physician or through an approved protocol</li> <li>• Infusion of blood, blood products or blood substitutes</li> <li>• Initiation and/or maintenance of thrombolytics</li> </ul> <p><b>Medical &amp; Cardiac Care:</b></p> <ul style="list-style-type: none"> <li>• IABP monitoring</li> <li>• ECMO monitoring</li> <li>• VAD monitoring</li> <li>• Pacemakers</li> <li>• Feeding tube management</li> <li>• Foley catheter insertion/management</li> </ul>

	<ul style="list-style-type: none"> <li>• Carotid massage</li> </ul> <p>Trauma care:</p> <ul style="list-style-type: none"> <li>• Morgan lens</li> </ul> <p>Anticipate and prospectively intervene to improve patient outcome.</p>	<p>Trauma Care:</p> <ul style="list-style-type: none"> <li>• Chest tube management</li> <li>• Drain management</li> <li>• ICP monitoring</li> </ul>
<b>Professionalism</b>	Is a role model of exemplary professional behavior including: but not limited to, integrity, empathy, self-motivation, appearance/personal hygiene, self-confidence, communications, time management, teamwork/ diplomacy, respect, patient advocacy, and careful delivery of service.	<b>Same as previous level</b>
<b>Decision Making</b>	Performs basic and advanced interventions as part of a treatment plan intended to mitigate the emergency, provide symptom relief, and improve the overall health of the patient. Evaluates the effectiveness of interventions and modifies treatment plan accordingly.	<b>Same as previous level</b>
<b>Record Keeping</b>	Report and document assessment findings and interventions. Collect and report data to be used for epidemiological and research purposes.	<b>Same as previous level</b>
<b>Patient Complaints</b>	Perform a patient assessment, develop a treatment and disposition plan for patients with the following complains: abdominal pain, abuse/neglect, altered mental status/decreased level of consciousness, anxiety, apnea, ascites, ataxia, back pain, behavioral emergency, bleeding, blood and body fluid exposure, cardiac arrest, cardiac rhythm disturbances, chest pain, congestion, constipation, cough/hiccough, cyanosis, dehydration, dental pain, diarrhea, dizziness/vertigo, dysmenorrhea, dysphasia, dyspnea, dysuria, ear pain, edema, eye pain, fatigue, feeding problems, fever, GI bleeding, headache, hearing disturbance, hematuria, hemoptysis, hypertension, hypotension, incontinence, jaundice, joint pain/swelling, malaise, multiple trauma, nausea/vomiting, pain, paralysis, pediatric crying/fussiness, poisoning, pruritus, rash, rectal pain, red/pink eye, shock, sore throat, stridor/drooling, syncope, tinnitus, tremor, urinary retention, visual disturbances, weakness, and wheezing.	<p><b>Paramedic Material PLUS</b></p> <p>Understands complex/multiple patient diagnosis's and is able to continue the patient's previously established plan of care during interfacility transport. Is able to assess new patient complaints during transport and formulate an appropriate treatment plan to abate life threats or significant pain and discomfort.</p>
<b>Scene Leadership</b>	Function as the team leader of a routine, single patient advanced life support emergency call.	<p><b>Paramedic Material PLUS</b></p> <p>Functions as a team member/leader of an interfacility critical care transport.</p>
<b>Scene Safety</b>	Ensure the safety of the rescuer and others during an emergency.	<p><b>Paramedic Material PLUS</b></p> <p>Ensures safety of ground providers, specialty team members and others involved with or exposed to aircraft operations.</p>

## Scope of Practice

The following table outlines the proposed scope of practice for the flight or ground critical care paramedic:

Area	Skill	Current PA Paramedic	Proposed Critical Care Paramedic
<b>Airway/Ventilation</b>	Nonsurgical Alternative/Rescue Airway	Yes	Yes
	Oral and Nasal Airway	Yes	Yes
	<b>Pharyngeal Tracheal Lumen Airway</b>	No	<b>Yes</b>
	BVM-ETT Ventilation	Yes	Yes
	BVM-In Line Small Volume Nebulizer	Yes	Yes
	BVM Ventilation	Yes	Yes
	Chest Needle Decompression	Yes	Yes
	CPAP/BiPAP	Yes	Yes
	Cricoid Pressure	Yes	Yes
	Cricothyrotomy – Needle	Yes	Yes
	Cricothyrotomy – Open/Surgical	Yes	Yes
	Cricothyrotomy – Overwire (Seldinger)	Yes	Yes
	ETCO <sub>2</sub> Monitoring	Yes	Yes
	Extubation	Yes	Yes
	Demand Valve Device	Yes	Yes
	Gastric Decompression via NG/OG Tube	Yes	Yes
	Gastric Tube Insertion – NG/OG	Yes	Yes
	Head-tilt/Chin Lift	Yes	Yes
	Inspiratory Impedance Threshold Device	Yes	Yes
	Intubation – Digital & Lighted Stylette	Yes	Yes
	Intubation – ET Tube	Yes	Yes
	<b>Intubation – Med. Assisted Paralysis (RSI)</b>	No	<b>Yes<sup>1</sup></b>
	Intubation – Nasotracheal/ Orotracheal	Yes	Yes
	Intubation – Retrograde Technique	No	No
	Intubation – Transillumination/Lighted Stylette	Yes	Yes
	<b>Intubation – Laryngeal Mask Airway</b>	No	<b>Yes</b>
	Mouth to Mouth, Nose, Stoma w/ Barrier	Yes	Yes
	Obstruction - Direct Laryngoscopy w/ Forceps	Yes	Yes
	Obstruction – Manual (Abd/Chest Thrust)	Yes	Yes
	Transtracheal Jet Ventilation	Yes	Yes
	Transport Ventilator, Automated	Yes	Yes
	Transport Ventilator	Yes	Yes
	<b>Tracheostomy, Management of</b>	No	<b>Yes</b>
<b>Oxygen Therapy</b>	Blow by Device	Yes	Yes
	Humidifiers	Yes	Yes
	Nasal Cannula	Yes	Yes
	Non-Rebreather Mask	Yes	Yes
	Partial Rebreather Mask	Yes	Yes
	Regulators	Yes	Yes
	Simple Face Mask	Yes	Yes
	Venturi Mask	Yes	Yes
	Expiratory Peak Flow, Assessment of	Yes	Yes
	Pulse Oximetry	Yes	Yes
<b>Suctioning</b>	Meconium Aspiration	Yes	Yes
	Stoma/Tracheostomy	Yes	Yes

	Tracheobronchial	Yes	Yes
	Upper Airway	Yes	Yes
<b>Assessment</b>	Glascow Coma Scale	Yes	Yes
	Level of Consciousness	Yes	Yes
	Patient Assessment Skills per NSC	Yes	Yes
	Temp, Pulse, Pupils, Resp & Skin	Yes	Yes
	<b>Critical Laboratory Values</b>	No	<b>Yes</b>
	<b>Arterial Blood Gas Values</b>	No	<b>Yes</b>
	<b>Medical Imaging Information, Interpretation of</b>	No	<b>Yes</b>
	<b>Fetal Monitoring Information, Interpretation of</b>	No	<b>Yes</b>
<b>Cardiovascular</b>	Blood Pressure, Non-Invasive	Yes	Yes
	<b>Blood Pressure, Invasive</b>	No	<b>Yes</b>
	Cardiac Monitoring, Single & Multi-lead	Yes	Yes
	CPR, Adult/Child/Infant	Yes	Yes
	Carotid Massage	Yes	Yes
	Defibrillation	Yes	Yes
	<b>Hemodynamic Monitoring</b>	No	<b>Yes</b>
	<b>Intra-aortic Balloon Pump, Monitoring/Assist</b>	No	<b>Yes<sup>2</sup></b>
	Mechanical CPR Device	Yes	Yes
	<b>Thrombolytic Therapy, Initiation of</b>	No	<b>Yes<sup>2</sup></b>
	<b>Thrombolytic Therapy, Monitoring of</b>	No	<b>Yes<sup>2</sup></b>
	Transcutaneous Pacing	Yes	Yes
	<b>Transvenous or Epicardial Pacing, Management of</b>	No	<b>Yes<sup>2</sup></b>
	Pacemaker/AICD Magnet, Use of	Yes	Yes
	<b>Extracorporeal Membrane Oxygenation (ECMO), Management of</b>	No	<b>Yes<sup>2</sup></b>
	<b>Ventricular Assist Device, Management of</b>	No	<b>Yes</b>
<b>Communications</b>	Verbal Report to Receiving Personnel	Yes	Yes
	Communications w/ PSAP, Hosp & Med Com	Yes	Yes
<b>Documentation</b>	OOH Do Not Resuscitate Order	Yes	Yes
	Patient Care Report Completion	Yes	Yes
	Refusal of Transportation and/or Care	Yes	Yes
<b>Haz-Mat</b>	Contaminated Equipment, Disposal of	Yes	Yes
	Decontamination/Disinfection	Yes	Yes
	Personal Protective Equipment, Use of	Yes	Yes
<b>Immobilization</b>	Helmet Removal or Stabilization	Yes	Yes
	Long Spine Board	Yes	Yes
	Cervical Spine, Manual Stabilization of	Yes	Yes
	Rapid Extrication	Yes	Yes
	KED, Short Spine Board, Etc	Yes	Yes
	Manual, Ridged, Soft, Vacuum Splints	Yes	Yes
	Traction Splint	Yes	Yes
<b>IV Initiation</b>	Central Venous Cannulation – Femoral	Yes	Yes
	Central Venous Catheter, Access of Indwelling	Yes	Yes
	Clean Technique	Yes	Yes
	External Jugular Vein, Catheterization of	Yes	Yes
	Heparin/Saline Lock Insertion	Yes	Yes
	IV Catheters (28 Pa Code), Insertion of	Yes	Yes
	IO Needle Insertion (Tibia, Femur, Humerous)	Yes	Yes
	Peripheral IV Cannulation	Yes	Yes
	Sub-Cutaneous Indwelling Catheters, Accessing	Yes	Yes

	Accessing Existing Vascular Devices in Home Healthcare	Yes	Yes
	Venous Blood Sampling	Yes	Yes
	<b>Blood Sampling from Central Venous Line</b>	No	<b>Yes</b>
	Arterial Line – Capped for Transport	Yes	Yes
	<b>Arterial Line – Monitoring</b>	No	<b>Yes</b>
	<b>Blood and Blood Products</b>	No	<b>Yes</b>
	<b>Portable Blood Analysis Devices, Use of</b>	No	<b>Yes</b>
<i>Lifting/Moving</i>	Patient Lifting, Moving & Transfer	Yes	Yes
	Patient Restraints on Transport Devices	Yes	Yes
<i>Medications</i>	Endotracheal Route	Yes	Yes
	Inhalation Route	Yes	Yes
	Intramuscular Route	Yes	Yes
	Intranasal Route	Yes	Yes
	Intraosseous Route	Yes	Yes
	Intravenous Route (incl. by IV infusion pump)	Yes	Yes
	Intravenous Bolus Route	Yes	Yes
	Nasogastric Route	Yes	Yes
	Oral Route	Yes	Yes
	Rectal Route	Yes	Yes
	Subcutaneous Route	Yes	Yes
	Sublingual Route	Yes	Yes
	Topical Route	Yes	Yes
	Auto-Injectors, Use of	Yes	Yes
	Immunizations, Administration of	Yes	Yes
	Medications: Published in PA Bulletin	Yes	Yes
	<b>Medications: Authorized by Agency Medical Director</b>	No	<b>Yes</b>
	Activated Charcoal	Yes	Yes
	Oral Glucose	Yes	Yes
	<b>Over-The-Counter-Medications</b>	No	<b>Yes</b>
	Oxygen	Yes	Yes
	Epinephrine Auto-Injector	Yes	Yes
	Metered Dose Inhaler Bronchodilator	Yes	Yes
	Nitroglycerin	Yes	Yes
<i>Management</i>	Restrain of Violent Patient	Yes	Yes
	Blood Glucose Measurement	Yes	Yes
	Burns	Yes	Yes
	Childbirth – Umbilical Cord Cutting	Yes	Yes
	Childbirth – Abnormal/Complications	Yes	Yes
	Childbirth – Normal Cephalic Delivery	Yes	Yes
	Carbon Monoxide Monitoring	Yes	Yes
	<b>Dislocations, Reduction of</b>	No	<b>Yes</b>
	Eye Irrigation/Care	Yes	Yes
	Hemorrhage Control	Yes	Yes
	<b>Intracranial Pressure Monitoring</b>	No	<b>Yes</b>
	Per Approved DOH Protocols	Yes	Yes
	<b>Per Approved Critical Care Agency Protocols</b>	No	<b>Yes<sup>3</sup></b>
	MCI Management/Incident Command System	Yes	Yes
	Triage	Yes	Yes
	Urinary Catheterization, Insertion/Monitoring of	Yes	Yes



	<b>Tube Thoracotomy, Management of</b>	No	Yes
	<b>Wound Drainage Devices, Management of</b>	No	Yes
	<b>Enteral Feeding Devices, Management of</b>	No	Yes
<b>Rescue</b>	Vehicle Access and Extrication	Yes	Yes

Notes:

- <sup>1</sup> Skill may only be performed by a FP-C/CCP-C when a 2nd ALS level provider is present, except in a multi-casualty situation.
- <sup>2</sup> Skill may only be performed by a FP-C/CCP-C when providing care with a PHRN or PHP.
- <sup>3</sup> The critical care paramedic, on the authority granted by air or critical care transport ambulance agency medical director through approved critical care transport protocols, may take orders from a non-medical command physician involved in the patient's care. The critical care paramedic is expected to accept only those orders that are within the define scope of practice as set forth by the Department of Health. Furthermore, it is the critical care paramedic's professional responsibility to question or decline to carry out any order that they believe may pose an undue risk to the patient and should consult their medical director or medical command as needed.

### **Acknowledgements**

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#### **Critical Care Transport Paramedic Workgroup**

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## Appendix A: Board for Critical Care Transport Paramedic Certification



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### Mission and Background:

The mission of the BCCTPC® is to improve the critical care transport community. This is accomplished by providing a certification exam that is an objective, fair, and honest validation of critical care paramedic knowledge. By offering the best certification process possible, we remain objective and responsive to the needs of the paramedic community.

The continued updating to our exam shows our commitment to a higher level of education. It is our goal to ensure the examination's content is representative of the industry, and improves critical care transport.

This certification process is focused on the knowledge level of accomplished, experienced paramedics currently associated with a Flight and/or Critical Care Transport Teams. The questions on the exam are based in sound paramedicine. The candidate is expected to maintain a significant knowledge of current ACLS, PALS, NALS, & ITLS/PHTLS standards. This exam is not meant to test entry-level knowledge, but rather to test the experienced paramedic's skills and knowledge of critical care transport. As you prepare for the exam, please consider there are a variety of mission profiles throughout the spectrum of transport medicine. Please remember this exam tests the candidates overall knowledge of the transport environment, not the specifics of one individual program. Your program may not for example complete IABP transports, but there may be questions related to these types of transports on the exam. A full listing of the exam content is available on the BCCTPC website.

The BCCTPC® contracted with Applied Measurement Professionals (AMP), a leader in the industry in test validation and psychometric analysis. The methods used by AMP are consistent with professional and technical guidelines such as those detailed in the Standards for Educational and Psychological testing (1999) by the American Educational Research Association, the American Psychological Association, the National Council on Measurements in Education, which provide the research framework that is used as a basis for validity of certification.

The methodology used met the current professional and government standards to assure the defensibility of the exam, as well as meet or exceed the standards of the National Commission for Certifying Agencies (NCCA) and the National Organization for Competency Assurance (NOCA).

### Test Options:

- Computer Based
  - Applied Measurement Professionals testing centers located in Harrisburg, Philadelphia, Pittsburgh and Wyoming PA
- Paper Based

### Associated Costs:

	<u>IAFCCP Members</u>	<u>Non-Members</u>
Computer Exam	\$231.00	\$331.00
Paper Exam	\$175.00	\$275.00
Recertification	\$175.00	\$275.00

**Test Question Categories (# of questions):**

<b>FP-C Exam</b>	<b>CCP-C Exam</b>
Trauma Management (9)	Trauma Management (12)
Aircraft Fundamentals, Safety & Survival (12)	Transport Fundamentals, Safety & Survival (9)
Flight Physiology (10)	Advanced Airway Management (12)
Advanced Airway Management (5)	Neurological Emergencies (11)
Neurological Emergencies (10)	Cardiac Patient (12)
Critical Care Patient (20)	Respiratory Patient (12)
Respiratory Patient (10)	Toxic Exposures/Environmental (12)
Toxic Emergencies (6)	Obstetrical Emergencies (9)
Obstetrical Emergencies (4)	Neonatal/Pediatric Patient (15)
Neonatal (4)	Burns (9)
Pediatric (10)	General Medical Patient (12)
Burns (5)	
General Medical Patient (16)	
Environmental (4)	

**FP-C Detailed Exam Content Outline:****1. Trauma Management (9)**

- A. Perform patient triage
- B. Differentiate injury patterns associated with specific mechanisms of injury
- C. Identify patients who meet trauma center criteria
- D. Perform a comprehensive assessment of the trauma patient
- E. Initiate the critical interventions for the management of the trauma patient
- F. Provide care for the patient with life-threatening thoracic injuries (e.g., pneumothorax, flail chest, tamponade, myocardial rupture)
- G. Provide care for the patient with abdominal injuries (e.g., diaphragm, liver and spleen)
- H. Provide care for the patient with orthopedic injuries (e.g., pelvic, femur, spinal)
- I. Administer appropriate pharmacology for trauma management

**2. Aircraft Fundamentals, Safety and Survival (12)**

- A. Assess the safety of the scene
- B. Conduct preflight checks to ensure aircraft integrity
- C. Conduct preflight checks to ensure equipment is present, functional, and stowed
- D. Observe for hazards during aircraft operation
- E. Utilize proper safety equipment while in flight
- F. Maintain a sterile cockpit during critical phases of flight
- G. Approach and depart the aircraft in a safe manner
- H. Ensure safety around the aircraft
- I. Secure the patient for flight
- J. Participate in crew resource management (CRM)
- K. Participate in flight mission safety decisions (e.g., Go-No Go, abort)
- L. Respond to in-flight emergencies
  1. fire
  2. emergency egress
  3. emergent landing
  4. adverse weather conditions
- M. Perform immediate post-accident duties at a crash site
- N. Build survival shelters
- O. Initiate emergency survival procedures

- P. Ensure the safety of all passengers (e.g., specialty teams, family, law enforcement, observer)
- Q. Estimate weather conditions that are below weather minimums

### **3. Flight Physiology (10)**

- A. Identify causes of hypoxia
- B. Take corrective measures to prevent altitude related hypoxia
- C. Identify signs of barometric trauma
- D. Identify stressors related to transport (e.g., thermal, humidity, noise, vibration, or fatigue related conditions)
- E. Take corrective action for patient stressors related to transport
- F. Relate the relevant gas laws to patient condition and treatment
- G. Relate the stages of hypoxia to patient condition and treatment
- H. Identify immediate causes of altitude related conditions in patients
- I. Identify immediate causes of altitude related conditions as they affect the air medical crew
- J. Provide appropriate interventions to prevent the adverse effects of altitude changes during patient transport

### **4. Advanced Airway Management Techniques (5)**

- A. Identify the indications for basic and advanced airway management
- B. Identify the indications and contraindications for specific airway interventions
- C. Perform advanced airway management techniques
- D. Administer appropriate pharmacology for airway management
- E. Implement a failed airway algorithm
- F. Identify esophageal intubation
- G. React to intubation complications
- H. Perform alternative airway management techniques (e.g., needle cricothyrotomy, surgical cricothyotomy, Seldinger technique, retrograde intubation, LMA)
- I. Monitor airway management and ventilation during transport
- J. Use mechanical ventilation

### **5. Neurological Emergencies (10)**

- A. Conduct differential diagnosis of coma patients
- B. Manage patients with seizures
- C. Manage patients with cerebral ischemia
- D. Initiate the critical interventions for the management of a patient with a neurologic emergency
- E. Provide care for a patient with a specific neurologic emergency
- F. Perform a baseline neurologic assessment of a trauma patient
- G. Perform an ongoing serial evaluation of a neurologic patient
- H. Assess changes in intracranial pressure using patient level of consciousness
- I. Perform a focused neurological assessment
- J. Assess a patient using the Glasgow coma scale
- K. Manage patients with head injuries
- L. Manage patients with spinal cord injuries
- M. Evaluate muscle strength and motor function
- N. Administer appropriate pharmacology for neurological management

### **6. Critical Cardiac Patient (20)**

- A. Perform a detailed cardiovascular assessment
- B. Identify patients experiencing an acute cardiac event (e.g., acute myocardial infarction, heart failure, cardiogenic shock, primary arrhythmias, hemodynamic instability)
- C. Use invasive monitoring during transport, as indicated, for the purpose of clinical management
- D. Provide treatment for patients with acute cardiac events and hemodynamic abnormalities

- F. Control cardiopulmonary support devices to patient condition as part of patient management (e g, ventricular assist devices, transvenous pacer, intra-aortic balloon pump)
- G. Assist in the control of cardiopulmonary support devices to patient condition as part of patient management ( ventricular assist devices, transvenous pacer, intra-aortic balloon pump)
- H. Conduct defibrillation during transport
- I. Administer appropriate pharmacology for cardiac management

**7. Respiratory Patient (10)**

- A. Perform a detailed respiratory assessment
- B. Identify patients experiencing respiratory compromise (e g, acute respiratory distress syndrome, spontaneous pneumothorax, pneumonia)
- C. Monitor patient's respiratory status using laboratory values and diagnostic equipment (e g, pulse oximetry, capnography, blood gas values, chest radiography)
- D. Provide treatment for patients with acute respiratory events
- E. Administer appropriate pharmacology for respiratory management

**8. Toxic Exposures (6)**

- A. Conduct a physical examination of a toxicological patient
- B. Decontaminate toxicological patients when indicated
- C. Administer poison antidotes when indicated
- D. Provide emergency care for victims of envenomation (e g, snake bite, scorpion sting, spider bite)
- E. Administer appropriate pharmacology for toxic exposures
- F. Provide treatment for toxicological patients (e g, medication overdose, chemical/biological/radiological exposure)

**9. Obstetrical Emergencies (4)**

- A. Perform an assessment of the obstetrical patient
- B. Perform fetal assessment
- C. React to special transport considerations of the obstetrical patient
- D. Provide treatment for high-risk obstetrical patients
- E. Assess uterine contractions
- F. Conduct interventions for obstetrical emergencies (e g, pregnancy induced hypertension, hypertonic or titanic contractions, cord prolapse, placental abruption)
- G. Assess whether transport can safely be attempted or whether delivery should be accomplished at the referring facility
- H. Administer appropriate pharmacology for obstetrical patients
- I. Manage emergent delivery

**10. Neonates (4)**

- A. Perform an assessment of the neonatal patient
- B. Reevaluate the clinical assessment and management of the neonate when initial emergency measures fail
- C. Administer appropriate pharmacology for neonatal patients
- D. Implement neonatal resuscitation according to established practice
- E. Manage the isolette transport
- F. Provide treatment of neonatal emergencies

**11. Pediatric (10)**

- A. Perform an assessment of the pediatric patient
- B. Identify the pediatric patient experiencing an acute respiratory event (e g, epiglottitis, bronchiolitis, asthma)
- C. Identify the pediatric patient experiencing an acute medical event (e g, meningitis, overdose, seizures)

- D. Identify the pediatric patient experiencing an acute cardiovascular event (e g, shock, cardiac anomaly, dysrhythmias)
- E. Identify the pediatric patient experiencing an acute traumatic event (e g, auto v. pedestrian, falls, child abuse)
- F. Administer appropriate pharmacology for pediatric patients
- G. Provide treatment of pediatric emergencies

#### **12. Burn Patients (5)**

- A. Perform an assessment of the burn patient
- B. Calculate the percentage of total body surface area burned
- C. Calculate appropriate fluid replacement amounts based on the patient's burn injury and physiologic condition
- D. Diagnose inhalation injuries in burn injury patients
- E. Administer appropriate pharmacology for burn patients
- F. Provide treatment of burn emergencies

#### **13. General Medical Patient (16)**

- A. Perform a focused medical assessment
- B. Identify patients experiencing a medical emergency (e g, AAA, GI bleed, bowel obstruction, HHNC)
- C. Use invasive monitoring during transport, as indicated, for the purpose of clinical management
- D. Provide treatment for patients with medical emergencies
- E. Manage patient condition utilizing available laboratory values (e g, blood glucose, CBC, H/H)
- F. Administer appropriate pharmacology for the medical patient
- G. Prevent transmissions of infectious disease
- H. Provide appropriate pain management
- I. Evaluate and record patient pain levels

#### **14. Environmental (4)**

- A. Perform an assessment of the patient suffering from an environmental emergency
- B. Identify the patient experiencing a cold related emergency (e g, frostbite, hypothermia, cold water submersion)
- C. Identify the patient experiencing a heat related emergency (e g, heat stroke, heat exhaustion, heat cramps)
- D. Identify the patient experiencing a diving related emergency (e g, decompression sickness, arterial gas emboli, near drowning)
- F. Identify the patient experiencing an altitude related emergency (e g, HAPE, cerebral edema)
- G. Administer appropriate pharmacology for environmental emergency patients
- H. Provide treatment of environmental emergencies

### **CCP-C Detailed Exam Content Outline:**

#### **1. Trauma Patient Management (12)**

- A. Differentiate injury patterns associated with specific mechanisms of injury
- B. Rate a trauma victim using the Trauma Score
- C. Identify patients who meet trauma center criteria
- D. Perform a comprehensive assessment of the trauma patient
- E. Initiate the critical interventions for the management of the trauma patient
  - 1. Manage the patient with life-threatening thoracic injuries (e g pneumothorax, flail chest, tamponade, myocardial rupture)
  - 2. Manage the patient with abdominal injuries (e g diaphragm, liver and spleen)
  - 3. Manage the patient with orthopedic injuries (e g pelvic, femur, spinal)
  - 4. Manage the patient with neurologic injuries (e g subdural, epidural, increased ICP)

- F. Manage patient's status using
  1. laboratory values (e g, blood gas values, ISTAT)
  2. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
- G. Administer pharmacologic agents
- H. Manage trauma patient complications
- I. Administer blood products

**2. Transport Fundamentals, Safety and Survival (9)**

- A. Manage the safety of the work environment
- B. Conduct checks to ensure transport vehicle integrity
- C. Conduct checks to ensure equipment is present, functional, and stowed
- D. Observe for hazards during transport vehicle operation
- E. Use safety equipment while in transport
- F. Secure the patient for transport
- G. Practice crew resource management
- H. Participate in mission safety decisions
- I. Evaluate transport mode
- H. Perform immediate post-accident duties at a crash site
- I. Ensure the safety of all passengers (e g, specialty teams, family, law enforcement, observer)
- J. Identify stressors related to transport (e g, thermal, humidity, noise, vibration, or fatigue related conditions)
- K. Take corrective action for patient stressors related to transport

**3. Advanced Airway Management Techniques (12)**

- A. Identify the indications for basic and advanced airway management
- B. Identify the indications and contraindications for specific airway interventions
- C. Perform advanced airway management techniques
- D. Administer pharmacology for airway management
- D. Implement a failed airway algorithm
- E. React to intubation complications
- F. Perform alternative airway management techniques (e g, needle cricothyrotomy, surgical cricothyotomy, retrograde intubation, LMA)
- G. Monitor airway management and ventilation during transport
- H. Manage mechanical ventilation

**4. Neurologic Patient (11)**

- A. Perform an assessment of the patient
- B. Conduct differential diagnosis of patients with coma
- C. Manage patients with seizures
- D. Manage patients with cerebral ischemia
- E. Initiate the critical interventions for the management of a patient with a neurologic emergency
- F. Provide care for a patient with a neurologic emergency
- G. Assess a patient using the Glasgow coma scale
- H. Manage patients with head injuries
- I. Manage patients with spinal cord injuries
- J. Manage patient's status using
  1. laboratory values (e g, blood gas values, ISTAT)
  2. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
- K. Administer pharmacologic agents
- L. Manage neurologic patient complications

## 5. Cardiac Patient (12)

- A. Manage patients experiencing a cardiac event (e g, acute coronary syndrome, heart failure, cardiogenic shock, primary arrhythmias, hemodynamic instability)
- B. Use invasive hemodynamic monitoring
- C. Assist in the use of cardiopulmonary support devices as part of patient management (e g, ventricular assist devices, transvenous pacer, intra-aortic balloon pump)
- D. Use cardiopulmonary support devices as part of patient management (e g, ventricular assist devices, transvenous pacer, intra-aortic balloon pump)
- E. Manage patient's status using
  - 1. laboratory values (e g, blood gas values, ISTAT)
  - 2. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
- F. Administer pharmacologic agents
- G. Manage cardiac patients complications

## 6. Respiratory Patient (12)

- A. Perform an assessment of the patient
- B. Identify causes and stages of respiratory failure
- C. Manage patients with respiratory compromise (e g, acute respiratory distress syndrome, spontaneous pneumothorax, pneumonia)
- D. Manage patient's status using
  - 1. laboratory values (e g, blood gas values, ISTAT)
  - 2. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
- E. Administer pharmacologic agents
- F. Manage respiratory patients complications

## 7. Toxic Exposure and Environmental Patient (12)

- A. Toxic Exposure Patient
  - 1. Perform an assessment of the patient
  - 2. Decontaminate toxicological patients (e g, chemical/biological/radiological exposure)
  - 3. Administer poison antidotes
  - 4. Provide care for victims of envenomation (e g snake bite, scorpion sting, spider bite)
  - 5. Manage patient's status using
    - a. laboratory values (e g, blood gas values, ISTAT)
    - b. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
  - 6. Administer pharmacologic agents
  - 7. Manage toxicological patients (e g, medication overdose, chemical/biological/radiological exposure)
  - 8. Manage toxicological patient complications
- B. Environmental Patient
  - 1. Perform an assessment of the patient
  - 2. Manage the patient experiencing a cold-related illness (e g, frostbite, hypothermia, cold water submersion)
  - 3. Manage the patient experiencing a heat-related illness (e g, heat stroke, heat exhaustion, heat cramps)
  - 4. Manage the patient experiencing a diving related illness (e g, decompression sickness, arterial gas emboli, near drowning)
  - 5. Manage the patient experiencing altitude-related illness
  - 6. Manage patient's status using
    - a. laboratory values (e g, blood gas values, ISTAT)
    - b. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
  - 7. Administer pharmacologic agents
  - 8. Treat patient with environmental complications



## 8. Obstetrical Patients (9)

- A. Perform an assessment of the patient
- B. Manage fetal distress
- C. Manage obstetrical patients
- D. Assess uterine contraction pattern
- E. Conduct interventions for obstetrical complications (e g, pregnancy induced hypertension, hypertonic or titanic contractions, cord prolapse, placental abruption)
- F. Determine if transport can safely be attempted or if delivery should be accomplished at the referring facility
- G. Manage patient's status using
  - 1. laboratory values (e g, blood gas values, ISTAT)
  - 2. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
- H. Administer pharmacologic agents
- I. Manage emergent delivery and post-partum complications

## 9. Neonatal and Pediatric Patient (15)

- A. Neonatal Patient
  - 1. Perform an assessment of the patient
  - 2. Manage the resuscitation of the neonate
  - 3. Manage patient's status using
    - a. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
  - 4. Administer pharmacologic agents
  - 5. Manage neonatal patient complications
- B. Pediatric Patient
  - 1. Perform an assessment of the patient
  - 2. Manage the pediatric patient experiencing a medical event
    - Respiratory      • Toxicity
    - Cardiac          • Environmental
    - GI                 • Endocrine
    - Neuro             • Infectious processes
  - 3. Manage the pediatric patient experiencing a traumatic event
    - Single vs. multiple system
    - Burns
    - Non-accidental trauma
  - 4. Manage patient's status using
    - a. laboratory values (e g, blood gas values, ISTAT)
    - b. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
    - c. Administer pharmacologic agents
    - d. Treat patient with pediatric complications

## 10. Burn Patients (9)

- A. Perform an assessment of the patient
- B. Calculate the percentage of total body surface area burned
- C. Manage fluid replacement therapy
- D. Manage inhalation injuries in burn injury patients
- E. Manage patient's status using
  - 1. laboratory values (e g, blood gas values, ISTAT)
  - 2. diagnostic equipment (e g, pulse oximetry, chest radiography, capnography)
- F. Administer pharmacologic agents
- G. Provide treatment of burn complications

## 11. General Medical Patient (12)

- A. Perform an assessment of the patient
- B. Manage patients experiencing a medical condition (e.g., AAA, GI bleed, bowel obstruction, HHNC)
- C. Use invasive monitoring for the purpose of clinical management
- D. Manage patient's status using
  1. laboratory values (e.g., blood gas values, ISTAT)
  2. diagnostic equipment (e.g., pulse oximetry, chest radiography, capnography)
- E. Administer pharmacologic agents
- F. Treat patient with general medical complications

## Recertification (Every 4 Years):

### General Guidelines

- CE should have a clear and direct application to the practice of critical care medicine.
- A minimum of 100 contact hours must be submitted; 75 of the contact hours must be in the CLINICAL category, 16 CLINICAL hours must be from an approved prep class. 25 CE's may be in the OTHER category to complete the 100 hours. However, it is acceptable to have more than 75 of the contact hours in the CLINICAL category.
- For continuing education to be eligible to use for renewal, it must have occurred during the four-year period of certification. For example, if the certification expires March 31, 2006, the four-year period of certification is from April 1, 2003 until March 31, 2006.
- It is recommended that CE logs and supporting documents be sent to the BCCTPC office at least three months and no more than six months prior to certification expiration.
- Renewal requests that are submitted to BCCTPC beyond the certification expiration date will not be accepted.
- Renewal requests are processed according to when they are received by the BCCTPC and the certification expiration date.
- Candidates who successfully meet all program requirements will have their credential renewed for the following four years. Candidates who do not meet the renewal program requirements must register and pass the exam to maintain their credential.
- It is the responsibility of the candidate to identify the number of CLINICAL and OTHER hours of CE activities using the following renewal guidelines. BCCTPC will make the final determination as to category and acceptability of submissions.
- The BCCTPC will perform 100% audit of CE's so each candidate must submit a copy of all CE with the Verification Log.
- All renewal fees are nonrefundable.