First Draft August 2017

11TH EDITION ACCREDITATION STANDARDS

of the

Commission on Accreditation of Medical Transport Systems

Standards apply to each transport mode unless specifically designated as
Rotorwing (RW), Fixed Wing (FW), Surface (S), or Special Operations (SOP)
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— PREFACE —

The standards are as appropriate to the country of residence and the specific regulator of that country as referenced by the term “Authority Having Jurisdiction” (AHJ). CAMTS Accreditation Standards, as a measure of quality, are part of a voluntary process and frequently exceed the AHJ’s regulations.

The Term “Surface” as used throughout this document refers to any service other than air and the term “surface vehicle” includes ground ambulance, boat, snowmobile, all terrain vehicle (ATV) etc. used for patient care and transport. The term “ambulance” in this document is specific to a ground ambulance.

01.00.00 – MANAGEMENT AND STAFFING

01.01.00 MISSION STATEMENT AND SCOPE OF CARE

01.01.01 There is a Mission Statement written in the present tense that describes the purpose of the service, mode(s) of transport provided and its constituents. The Mission Statement directs employees toward the values the service was founded upon.

01.01.02 There is a written scope of service that describes the types of patients accepted (Scope of Care), transport modalities and exceptions (service that is not provided). Scope of Service includes range of each mode, response time, number of patients transported simultaneously and any exceptions to types of requests that are accepted.

The Scope of Care is commensurate with the qualifications and level of initial and ongoing education required for medical personnel. The Scope of Care should address, as applicable to the program, patient populations served, age groups and their definition.

Examples of evidence to meet compliance:
The Mission Statement describes what you do in a clear and concise manner. The vision and mission are strategic statements developed by and unique to each organization. Values statements are separate but key underpinnings of these statements. The modes of transport and constituents are not, and must not be part of these statements, but rather must be included under a "scope of service and care" statement.

01.02.00 FINANCIAL COMMITMENT

01.02.01 There must be evidence of financial commitment to the program by the administrative structure and through financial resources that provide excellence in patient care and safety of the transport environment.

Examples of evidence to meet compliance:
Transport vehicle is well kept – equipment and supplies are well maintained, accessible and adequate for patient population(s)/volume. Physical surroundings are well maintained. There are adequate management and staff personnel for transport volume. Education appropriate to the scope of care and to all aspects of the organization (communications, transport crew, medical crew, etc.) is provided.

01.02.02 Insurance – The transport service must have and maintain insurance against loss or damage of the kinds customarily insured against and in such types and amounts as are customarily carried under similar circumstances by similar businesses. The insurers must be financially sound and reputable, and they must be qualified to do business in the state(s) or country in which the transport service is located.

The types of insurance must include but are not limited to the following:

1. Hull insurance for each operating aircraft. Aircraft liability provides coverage with a single limit that must comply with the following minimums that are required for accreditation applicants in the U.S. and no less than applicable regulations permitted in countries outside of the United States.

a. Fixed Wing (U.S. dollars)

$5 million for twin engine aircraft
$25 million for turbo props and light jets*
$30 million for heavy jets*

*(See Glossary for definitions of light jets and heavy jets)

b. Rotorwing – $30 million (U.S. dollars)

2. Auto insurance (for ground vehicles and ambulances owned by the service) – $1 million (U.S. dollars) and includes accidental death and disability

3. Medical Professional Liability – $1 million (U.S. dollars)

4. Worker's compensation or employer's liability – per state or equivalent government guidelines

5. Group life insurance or accidental death and disability – whether paid for by the employer or employee. A minimal coverage of one times the annual salary is encouraged.

6. For United States operations conducting flights outside the United States, a customs bond appropriate to the size and type of aircraft in the amount that covers any unexpected costs based on port of entry

01.03.00 MARKETING AND EDUCATION FOR THE PUBLIC

01.03.01 There is a professional and community education program and/or printed information with the target audience to be defined by the medical transport service.

1. Clear identification pertinent to the aviation authority of the company that is operating the aircraft is on the program's website, in marketing materials and on the aircraft. (RW/FW)

2. Website information and printed materials are accurate and consistent with program documents, practice and capabilities.

3. Evidence of state licensure (or authority having jurisdiction (AHJ)) is provided for each transport vehicle as appropriate to state or local guidelines.

4. State or local license (or AHJ) for each transport vehicle is accessible to the public.

5. Hours of operation, phone number, and access procedure are accessible to the public.

6. Capabilities of medical transport personnel--including current scope of care, a list of types of patients who are accepted based on personnel training, and configuration and equipment capabilities--are included.

7. Type of aircraft/interfacility ambulance(s) used and operational protocols specific to type are included.

8. Coverage area for the transport service is specified.

9. Preparation and stabilization of the patient prior to transport is outlined.

10. Patients considered appropriate for transport by the medical transport service are specified. An appropriate transport enhances patient outcome, safety and cost effectiveness over other modes of transport.

Examples of evidence to meet compliance:
Marketing materials are up to date, consistent with mission and scope, depict actual types of transport vehicles etc. and do not exaggerate the scope of care or transport vehicle capabilities.

01.04.00 ETHICAL BUSINESS PRACTICES

01.04.01 The transport service develops and demonstrates use of a written code of ethical conduct in all areas of business that demonstrate ethical practices in business, marketing and professional conduct.

1. The code of conduct guides the service when confronted with potential compliance or ethical issues.

2. The code of conduct outlines the service's standards for ethical behavior as well as contact information and reporting protocols if a standard has been violated.

3. The code of conduct outlines ethical billing practices.

4. There is a policy that addresses privacy rights in regard to photographing and the use of photos or other media that includes prohibiting photos placed in social media that would compromise HIPAA requirements without a patient's written permission.

Examples of evidence to meet compliance:
Policies may address such issues as proper/improper behavior toward other programs' marketing materials, honesty in reporting data, personal cell phone use, use of social media sites, how ethical issues are addressed, conflicts of interest, phone etiquette, acceptable and unacceptable behaviors on the worksite/on transport, acceptance of gifts from patients/vendors, etc.

01.04.02 The Board of Directors, administrative and management staff are encouraged to complete an annual conflict-of-interest statement or form, disclosing any actual or potential conflicts.

01.04.03 Ethical business practices must be maintained in policy and practice and include specific guidelines for transport requests that are not performed directly by the CAMTS-accredited service or service seeking accreditation as follows: (RW/FW/S)

1. Referring transport requests – Referring is defined as transferring the transport request to another program or service. There is no further involvement on the part of the original services,

and there is no monetary exchange for the referral. If an accredited program refers a transport to another service, the accredited service/service seeking accreditation will attempt to refer a transport to another CAMTS-accredited service whenever possible if unable to perform the transport.

2. Subcontracted transport requests – Subcontracted is defined as the occasion when another service is used to supply a portion of the transport, such as the vehicle or the medical team, if the service's vehicle or medical team is not available or is not appropriate.

3. Outsourcing transport requests – Outsourcing is defined as transferring a request to another service but retaining control of the coordination throughout the transport (which may include flight following, arranging for surface transport, hotels, medical direction etc.) The service may add a fee for coordinating the transport, but full disclosure of the name of both the medical provider and the vehicle provider must be made to the patient, his/her advocate and the payer source(s). Ten percent or less of the total number of transports is acceptable for transports in North America or within the same continent and whenever possible should be done by CAMTS-accredited services.

4. Brokering transport requests – Brokering is defined as arranging for transport and collecting a fee but not actually performing the transport. This is not an acceptable practice of an accredited service. If the accredited service or service seeking accreditation cannot fulfill a request for transport, the service may elect to subcontract or refer the request.

01.04.04 If an accredited service or CAMTS accreditation applicant subcontracts or outsources a request for transport, the following conditions are maintained in practice and policy: (RW/FW/S)

1. The other service shall be CAMTS-accredited whenever possible unless there is not one in the service range, or the CAMTS-accredited service is not available within an appropriate response time based on patient condition and needs.

2. If unable to subcontract or outsource to a CAMTS-accredited service, the service must ensure that the patient and/or requesting agent is notified of the actual medical team, service or aviation operator conducting the transport through a written contact or other means of written notification.

a. Attempts to contact a CAMTS-accredited service will be documented (which service and date and time of contact) along with reasons for not contracting with a CAMTS-accredited service, such as a viable alternative based on time and proximity.

b. Transport requests that are outsourced to or subcontracted will be tracked and trended as part of the Quality Management process.

3. If an unfamiliar transport vehicle is used (either by the originating team or the other team), a medical team member familiar with the operation of medical systems, communications and emergency procedures must accompany the transport team.

4. The accredited program will disclose through a signed agreement (that may be signed on site, faxed or electronically transmitted) with the requesting agent, patient and payer source whenever

the transport is not performed by their program, medical teams and/or aircraft. (This does not apply to specialty teams that are listed as part of an accredited service.)

Examples of evidence to meet compliance:
Signed agreements reflect when part of the service is not provided by a CAMTS-accredited entity, such as a subcontracted aircraft or medical team. All referred, subcontracted and/or outsourced requests are tracked and trended in the QM review process.

01.04.05 The transport service will know the capabilities and resources of receiving facilities and will transport patients to appropriate facilities within the service region based on direct referral, approved EMS plan, or services available when no direction is provided.

1. Whenever possible, services that respond directly to the scene will transport patients to the nearest appropriate hospital (i.e., major trauma to the nearest Level I or II Trauma Center, stroke patients to a hospital with specialized stroke care, acute myocardial infarction patients to a hospital with a staffed cardiac catheterization lab, major burns to a Level I or II burn center, high-risk OB patients to a hospital with OB services and a Level II or III NICU, etc.). See References for Centers for Disease Control trauma triage guidelines.

2. Management ensures, through policy, that all transfers of patient care occur from a lower level of care to an equal or higher level of care except for elective transfers for patient convenience or returning a patient to a referring facility/residence.

3. Accurate estimated time of arrivals (ETA's) are always provided regarding arrival of the service to the patient for emergency requests.

4. Contractual relationships with public services or health care agencies do not reflect implied referrals.

5. Subscription services do not reflect implied referrals that could negatively impact expeditious transport of patients to the most appropriate facility.

Examples of evidence to meet compliance:
Contracts do not exceed current market value for goods and/or services or severely discount current market value with the intent to influence requests or referral patterns.

01.04.06 All patient care resources, including personnel and equipment, necessary to the program's mission must be readily available in the transport vehicle or available to place in the transport vehicle, and they must be operational prior to initiating the mission. This includes resources, personnel, and equipment provided by Specialty Care Providers.

01.05.00 COMPLIANCE

There is a corporate compliance officer or designated person responsible for ensuring that the service is in compliance with external laws and regulations, payer requirements and internal policies and procedures.

01.05.01 Compliance issues may include but are not limited to:

1. Health Insurance Portability and Accountability Act (HIPAA)*

    a. If a program is using a form of telemedicine, there are policies and procedures that outline how patient privacy issues are protected.

2. Federal civil statutes (False Claim Act)*

3. Balanced Budget Act of 1997*

4. Office of Inspector General (OIG) Compliance Program Guidance*

5. OIG annual work plans *

6. Anti-kickback and Stark laws*

7. Emergency Medical Treatment and Active Labor Act (EMTALA)*

8. Red Flag Rules (Identity Theft Prevention Program) *

9. Federal sentencing guidelines

10. Or applicable national regulations

* *(See References)*

01.05.02 The compliance program includes:

1. Written policies and procedures

2. Designation of a compliance officer or assignment of responsibility to a specific individual or individuals

3. Effective training and education for staff documents both initial and continuing competency

4. Effective lines of communication

5. Enforced standards based on published disciplinary guidelines

6. Auditing and monitoring

7. Procedures for responding to detected offenses and taking corrective action

01.05.03 The program provides timely reporting on requested data to the state(s), or other agencies, in which it responds.

01.05.04 The program actively participates as an integrated part of the state(s) EMS and trauma system in which it responds. (RW, FW and Surface ALS/BLS) (*in some regions, fixed wing may be the only air transport available)*

Examples of evidence to meet compliance:
Staff is knowledgeable about current compliance issues.

01.06.00 MANAGEMENT/POLICIES

01.06.01 There is a well-defined line of authority.

1. There is a clear reporting mechanism to upper-level management. An organizational chart defines how the medical transport service fits into the governing/sponsoring institution, agency or corporation.

2. For public or private institutions and agencies that contract with an aviation or ambulance company for transport, there must be a policy that specifies the lines of authority between the medical management team and the aviation/ambulance management team.

3. All personnel understand the chain of command. Medical personnel understand that the pilot in command has ultimate authority for the aircraft and safe operations. (RW/FW)

4. Managers are oriented to aviation regulations as pertinent to the Federal Aviation Regulations,(FAR's) in the U.S. or authority having jurisdiction (AHJ) that apply to the medical transport service.

5. Managers are oriented to ambulance standards and state regulations or AHJ pertinent to ambulance services. (S)

6. Managers require by policy that any encounter with an unmanned aerial system (UAS) while in flight require reports submitted to local law enforcement and ATC on a timely basis.

   a. Policy defines who is responsible to notify and submit a written report to local authorities

7. Managers are trained to recognize real and perceived pressures that may influence unsafe acts by staff.

8. The program adheres to state/provincial, national and/or local ambulance (air and surface) rules and regulations, including licensure requirements.

9. A policy must be in place that documents the employer's disciplinary process and protects employees from capricious actions.

10. There is a policy that addresses DNR orders.

11. There is a policy that addresses transfer and security of patient's personal property.

12. Management:

a. Demonstrates strategic planning that aligns with the mission, values and vision of the service.

b. Sets written guidelines for press-related issues and marketing activities.

c. Sets an Emergency Response Plan that includes a PAIP and responses to unexpected occurrences involving personnel, vehicles and facilities to include helipads as appropriate to the base of operations.

~~d. Requires shift briefings be conducted at the beginning of each shift to assure continuity between shifts.~~ [Repeat of 04.05.00]

~~e. Requires a post-flight debrief be conducted after each flight. If there were issues involving the communications center, the debriefing should include the communications specialist. (RW/FW)~~ [Repeat of 04.06.00]

~~f. Requires a post-transport debrief be conducted after each transport or groups of transports as response readiness permits. (S)~~ [Repeat of 04.06.00]

g. Has a policy and a mechanism to track, investigate, disclose and close the loop on any medically adverse and Never Events. [very similar to 02.01.02. #1]

Examples of evidence to meet compliance:
Business plans demonstrate a needs and risk assessment when expanding the service or adding bases, and those plans include staffing, training and management restructuring for added responsibilities.

Examples of evidence to exceed compliance:
Management is educated to Just Culture and applies Just Culture principles throughout the organization.

01.06.02 Employment Policies

1. A policy addresses pre-hire background checks that include, at a minimum, criminal background, license verification, and previous employer.

2. A policy requires staff to self-report any investigation, arrests, or convictions.

3. A policy addresses pre-hire (whether or not it is required) drug screening.

4. A policy addresses criteria to require “for cause” drug screening.

5. A policy addresses a procedure for employee terminations that ensures protection of program information, physical and electronic data, property and security. This may include securing the individual’s badge/keys/other access devices, deactivating e-mail accounts/computer sign-ons/remote access/codes, remaining with employee until leaving the premises, inspecting items

employee takes with him or her, providing prompt notification of relevant departments/vendors/contractors, procuring property that belongs to the program that the employee may have off site, etc.

01.06.03 Policy Manual (electronic or hard copy) is available and familiar to all personnel

1. Policies are dated and signed by the appropriate manager(s).

2. Policies are reviewed on an annual basis as verified by dated manager's signature on a cover sheet or on respective policies.

Examples of evidence to meet compliance:
Policies can be broken out by department/division; however, there must be signatures and revision dates on each specific policy or a cover sheet that represents annual review with respective review dates and signatures.

01.07.00 STAFFING

The service must have written operational policies to address each of the areas listed below:

01.07.01 Scheduling and individual work schedules demonstrate strategies to minimize duty-time fatigue, length of shift, number of shifts per week and day-to-night rotation. (See References for circadian rhythm, Fatigue Risk Management System (FRMS) and other fatigue studies.)

1. On-site shifts scheduled for a period to exceed 24 hours are not acceptable under most circumstances. The following criteria must be met for shifts scheduled more than 12 hours.

a. Medical personnel are not required to routinely perform any duties beyond those associated with the transport service.

b. Medical personnel are provided with access to and permission for uninterrupted rest after daily medical personnel duties are met.

c. The physical base of operations includes an appropriate place for uninterrupted rest.

d. Medical personnel must have the right to call "time out" and be granted a reasonable rest period if the team member (or fellow team member) determines that he or she is unfit or unsafe to continue duty, no matter what the shift length. There must be no adverse personnel action or undue pressure to continue in this circumstance.

e. Management must monitor transport volumes and personnel's use of a "time out" policy.

2. Shifts extended over several days may be scheduled to address long commutes at programs with low volumes. The program must clearly demonstrate and document it meets the above criteria for shifts over 12 hours. In addition:

a. A program's base averages less than 1 transport per day

b. The program provides at least 10 hours of rest in each 24-hour period
c. The location of the base or program is remote, and one-way commutes are more than 2 hours

d. A fatigue-risk management tool is utilized

3. A written policy addresses the scheduling of on-call shifts, and that policy addresses fatigue by requiring managers to monitor duty times, by tracking QM, and by using fatigue risk management.

4. Policies for long-range transports address rest during transport, after patient is at the destination and acceptance of back-haul missions. Medical personnel must have 10 hours free from all company-assigned duties before accepting another mission, or crews need to be swapped out. (FW)

a. Policies addressing overnight stays must not exceed more than 16 hours on duty in a 24-hour period OR a minimum of two medical team members are provided to allow one member rest during the transport and insure another attends the patient.

b. Missions extending beyond three days (i.e. international or multi-overnight mission) must allow crew members adequate rest periods using a fatigue-risk management tool to assess crew readiness.

5. Personnel (including communications specialists) must have at least 10 hours of rest (pilots must have 10 hours of rest as consistent with Part 135 regulations or as consistent with AHJ regulations) with no work-related interruptions prior to any scheduled shift of 12 hours or more or prior to any on-call shift of greater than 12 hours that is scheduled to precede or follow a scheduled on-duty 12-hour shift. The intent is to preclude back-to-back shifts with other employment, commercial or military flying, or significant fatigue-causing activity prior to a shift.

6. The number of consecutive shifts and day-to-night rotations must be closely monitored by management for pilots, medical crews, communication specialists, surface vehicle operators and aircraft maintenance personnel.

7. Policies address crew interface so that team members are expected to stay alert on all legs of the transport, including at least one team member on empty legs, to assist the pilot in staying alert (especially in one-pilot operations) and the vehicle operator to stay alert for surface transports.

Examples of evidence to meet compliance:
Management monitors fatigue in terms of staffing patterns, patient outcomes and incidents or accidents with implementation to include Just Culture.

01.08.00 PHYSICAL WELL-BEING

01.08.01 Physical well-being is promoted through:

1. Wellness programs that promote healthy lifestyles (e.g. balanced diet, weight control, no smoking)

2. Evidence of an injury prevention program and ergonomic strategies to reduce employee injuries

3. Protective clothing and dress code pertinent to:

a. Mission profile, such as turn-out gear available at scene for medical personnel who assist with heavy extrication (RW)

b. Safe operations, which may include the following, unless specified as "required" below:

- Boots or sturdy footwear (required)

- Reflective material or striping on uniforms for night operations

- High-visibility reflective vests or appropriate Department of Transportation (DOT)-approved clothing worn by flight and ambulance crews in accordance with ANSI-SEA 107 standard or equivalent national standard (required for medical crews and vehicle operators responding to night scene requests)

- Flame-retardant clothing (strongly encouraged for rotorwing services according to a risk assessment)

- Appropriate outerwear pertinent to survival in the environment (required)

4. Infection control – dress codes address jewelry, hair and other personal items of medical personnel that may interfere with patient care. Refer to Occupational Safety and Health Administration (OSHA) standards.

5. Written policies addressing:

a. Hearing protection requirements

b. Duty status during pregnancy

c. Duty status during acute illnesses, such as sinusitis or otitis

d. Duty status while taking medications that may impair performance related to safety

e. Weight/height and/or lifting ability as specified in pre-hire requirements

Examples of evidence to meet compliance:

Personnel are observed following the program's dress codes and are knowledgeable about policies regarding physical well-being. Pregnancy policies are consistent with current national laws and may address notification to employer requirement, written documentation requirements to continue on duty, possible alternative duty assignments if team member is restricted from transport duty.

01.09.00 MEETINGS AND RECORDS

01.09.01 Meetings

1. There are formal, periodic staff meetings for which minutes are kept on file. Minutes will include who attended, base identification (if multiple bases), who is presiding and discussion (versus agenda/topics only). There are defined methods, such as a staff notebook or electronic mechanisms, for disseminating information between meetings.

a. Meeting minutes (Staff, Safety, QM meetings etc.) are kept on file and maintained for a minimum of three years.

b. Minutes are dated, and personnel present are clearly identified by title or function. (e.g., Director, RN, EMT-P, RRT)

Examples of evidence to meet compliance:
Meeting minutes indicate attendance and representation by all disciplines. Action items, timelines and area of responsibility are well documented and demonstrate a flow of information that indicates tracking, trending and loop closure.

01.09.02 Records Management ensures that patient care records, meeting minutes, policies and procedures are stored according to hospital or agency policies, and HIPAA or privacy regulations are indicative of the individual medical transport service's sensitivity to patient confidentiality in accordance with local and national standards.

1. A record of patient care is completed, and a copy remains (electronic or other format) at the receiving facility for appropriate continuity of care.

a. A policy outlines minimal requirements based on the transport service's scope of care.

- Purpose of the transport
- History of present illness/injury, physical exam, initial vital signs as well as periodic vital signs per patient needs assessment and program's guidelines
- Treatments, medications, intake and output and patient's response to treatments, procedures, and medications
- Ventilator settings and change in ventilator settings are recorded
- Documentation of pertinent radiologic and laboratory reports on interfacility transports

• Signature of each care provider and clarity about what care was performed by each provider(administering medications and performing procedures) and indicates who actually documented patient information

• Transport facilities (to and from) and to whom report was given to at the receiving facility

• Patient condition at certain predetermined altitudes

- Pain assessment

- Waveform capnography for patients on the ventilator

b. A policy outlines approved abbreviations for use in patient care records. Medication abbreviations are avoided.

c. A stored permanent electronic patient care record is preferred, but scanned hard copies are acceptable.

Examples of evidence to meet compliance:
Patient records are signed and initialed by the crew member who performed the treatment or procedure. Records are stored in a secure area that is inaccessible to the public with accessibility limited according to applicable HIPAA guidelines.

2.00.00 – QUALITY MANAGEMENT

This section includes Performance Improvement (PI or QM), Utilization Management and Safety Management.

02.01.00 The QM program has written objective evidence of actions taken in potential and identified problem areas and the evaluation of the effectiveness of that action.

02.01.01 A QM flow chart diagram or comparable tool is developed demonstrating organizational structure in the QM plan and linkage to the Safety Management System.

02.01.02 The QM program is linked with risk management so that concerns raised through the risk management program can be followed up through the quality management program:

1. There is a written policy that outlines a process to identify, document and analyze sentinel events, adverse medical events or potentially adverse events (near misses) with specific goals to improve patient safety and/or quality of patient care.

2. There is follow-up on the results of actions/goals for specific events until loop closure is achieved.

3. The process encourages personnel to report adverse events even if it is a sole-source event (only the individual involved would know about it) without fear of punitive actions for unintentional acts.

02.01.03 The QM program must be integrated and include activities related to patient care, such as:

1. Customer and staff satisfaction

2. Communications

3. Equipment maintenance

4. All aspects of transport operations pertinent to the service's mission statement

02.01.04 There is a written QM plan that should include but not be limited to the following components:

1. Responsibility/assignment of accountability

2. Scope of care

3. Important aspects of care and quality metrics that are identified, measured and compared to metrics/outcomes of evidence-based standards

4. Operational processes such as financial outcomes

5. Thresholds for evaluation that are appropriate to the individual service

6. Methodology – the ~~QI~~ QM process or ~~QI~~ QM tools utilized

7. Assembly of groups to address each identified area of quality concerns that represent all disciplines involved, ensuring optimal communications and problem-solving

8. Emphasis on the quality of services offered on a continuing basis with constant attention to developing new strategies for improving; maintaining the status quo or achieving arbitrary goals are not considered the end-measures

9. Evaluation of the improvement process

Examples of evidence to meet compliance:
The QM plan is current and describes the process with evidence of loop closure in subsequent reports. QM does not consist only of medical record reviews.

Examples of important aspects of care may be:

- *Response time on emergent transports*
- *Controlling life-threatening dysrhythmias*
- *Managing cardiac chest pain*
- *Managing respiratory distress*
- *Patient and user satisfaction*
- *Complete and accurate documentation of care delivered*
- *Efficient turnaround time in referring hospitals on emergent transfers*

Other criteria may include:

- *Communications among parties involved in transfer*
- *Facilitating transfer of patients for referring physicians*
- *Appropriateness of use of transport service (if an issue) and absence of patient/staff injuries incurred during transfer.*

Indicators may also be in regard to:

- *Meeting response time*
- *Advanced procedure success rate*
- *Patient, employee or referring/receiving staff satisfaction*
- *Periodic maintenance on medical equipment*
- *Communicating vehicle status*
- *Improving appropriate mode use*

Documentation requirements, policy/procedure compliance, etc.

Thresholds are appropriate for the indicator and may be based on published standards/results, program historical results/goals and/or intuitive appropriateness, i.e., 100% is desired for correct referring location. However, 100% is not realistic for success on first attempt of intubation. Examples of methodologies: These include sources of data such as questionnaires, databases, medical records, administrative reports, incident reports, how numerical results are calculated, fishbone diagram, six sigma, control charts, Pareto charts, flowcharts, etc.

Examples of evidence to meet compliance:

~~*Business indicators*~~ *Quality metrics should be developed that allow the program to improve its processes and that focus on every aspect of the program (i.e. communications, clinical, aviation, safety, etc.). A flow chart should show the steps by which outliers are addressed and how loop closure for each outlier is assured. Subsequent action to trends in activity should be noted with constant evaluation of the performance improvement process (i.e., Deming Cycle; Plan Do, Study/Check, Act). The QM plan is current and describes the process with evidence of loop closure in subsequent reports.*

02.01.05 There will be regularly scheduled QM meetings providing a forum for all disciplines involved in the medical transport service.

02.01.06 The monitoring and evaluation process has the following characteristics:

1. It is driven by important aspects of care and operational practices identified by the medical transport service's QM plan.

2. It has ~~indicators~~ metrics and thresholds or other criteria – identified to objectively monitor the important aspects of care.

3. It provides evidence of QM studies and evaluation in compliance with written QM plan.

4. It provides evidence that action plans are developed when problems are identified through QM, and these plans are communicated to the appropriate personnel.

5. It includes an annual summary Quality Management report.

6. It provides evidence of ongoing re-evaluation of action plans until problem resolution occurs.

7. It provides evidence of performance data, tracking and trending and sharing with all members of the service.

8. It provides evidence of annual goals established prospectively for the QM program that provide direction for the work groups and results that are measurable.

9. It puts emphasis on loop closure and the resolution of problems within a finite time period.

Examples of evidence to meet compliance:

QM goals may be educational, such as developing a particular subject content, revising orientation, improving the process to carry out ongoing education/skills or recordkeeping; operational, such as improving a process or policy that isn't working well, tracking of skills/advanced procedures, developing a

system of how medical equipment is shared/returned among multiple bases, employee/patient/user satisfaction; clinical, such as improving medical record documentation forms/implementing or improving electronic medical records, evaluating and acquiring a new item of medical equipment, expanding medical capabilities, developing a reference or resource for team members/orientees; communications, such as improving ongoing education, studying ergonomics or C communications S specialists' work stations.

02.01.07 Performance metrics must be multidisciplinary and reviewed at least quarterly (at a senior executive level). Based on the scope of care of the service, ~~at least one~~ performance metrics from the following groups (with examples) is required to be tracked and trended on an annual basis.

1. Patient safety ~~(this category requires tracking and trending two metrics in addition to "a." below)~~

    a. Interfacility patients not transported bedside to bedside

    b. Out-of-range cabin temperatures without risk mitigation

    c. Arrest during transport (i.e. CPR)

    d. Two-patient transports

    e. Single-medical-provider transports

    f. Transports of infectious-disease patients realized during/after transport

    g. Number of Never Events (see References)

2. Rotorwing Operations

    a. Fatigue-risk management (such as use of time-outs, utilization of fatigue-risk management tools)

    b. Adding unscheduled crew

    c. VFR to IFR

    d. Contact with Operational Control Center (OCC) not performed as required by program's policy

    e. Deviation from program's policy on use or lack of use of night vision goggles.

    f. Deviation from flight plan

    g. Flight interruptions or delays due to weather or maintenance

    h. Flight data recorder device reviews

3. Fixed Wing Operations

a. Fatigue risk management (such as use of time-outs, utilization of fatigue risk management tools)

b. Adding unscheduled crew

c. VFR to IFR

d. Deviation from flight plan

e. Flight interruptions or delays due to weather or maintenance

f. Flight data recorder device reviews

4. Surface Operations (ground ambulance, marine or other transport vehicle)

a. Lights and sirens use ~~(tracking is required along with one additional metric)~~

b. Transport interruptions or delays

c. Diversion from original patient request to another request

d. Response to witnessed incident or an incident that was happened upon

e. Real-time feedback devices, event-recording cameras, speed governors and/or weather alert system reviews

5. Communications ~~(one additional metric is required along with the 2 "Required" metrics listed below)~~

a. ETA accuracy

b. Accuracy of coordinates (RW)

c. Weather at time of request and during transport if changes occur

d. Request times from acceptance to lift-off or departure times

e. Number of missed and aborted transports (Required)

f. Total number of auto launches and number of completed transports versus aborted transports as a result of the auto launch (RW)

g. Total number of stand-bys and number of subsequent responses versus cancelled responses. (RW) (Required)

6. Business and Customer Service

a. Referred, subcontracted or outsourced transports

b. Negative feedback from requesting/receiving agents

c. Negative feedback from patients (tracking is required along with 1 additional metric)

7. Maintenance

a. Foreign Objects Debris (FOD) incidents

b. Unscheduled maintenance rate

c. Missed/aborted transports for maintenance (tracking is required along with 1 additional metric)

8. Clinical – see section 03.00.00 Patient Care

02.01.08 Safety practices

1. Safety issues may be handled through the Safety Committee where a problem, incident, or accident must be identified with detailed reporting and analysis of aircraft and vehicular accidents, incidents, and resolution of issues with findings and action plans reported back to the QM committee.

2. QM personnel may collect data and refer to the Safety Committee for action and resolution.

02.01.09 For both QM and Utilization Management (UM) programs, there should be evidence of reporting of results through established organizational structure to the service's sponsoring institution(s) or agency (if applicable). For both QM and UM programs, there is direct integration of the medical transport service's activities with the sponsoring institution or agency (if applicable).

Examples of evidence to meet compliance:
Outcomes from QM should drive education and training needs. Systems improvement tools are educational. The process is not punitive.

Tracking and trending lift-off times, response times and times on scene or at the referring/receiving hospital are evaluated in terms of benchmarks set by the program in order to evaluate the effectiveness of policies/procedures, training and/or equipment needs.

If transports are delayed, reasons for delays ~~or referrals~~ [not in the std] are tracked as are transport requests that are conducted by an alternative means of transport (within the same program) such as FW or surface vehicle is used although RW was requested.

02.02.00 UTILIZATION MANAGEMENT (UM)

Management ensures an appropriate utilization management process through trending and tracking requests. There is evidence of feedback to the requesting agents and feedback from the patients' receiving facilities. Utilization review may be prospective, concurrent, or retrospective.

02.02.01 The following are included in the Utilization Management program:

1. Medical denials or requests that should have been denied for a specific transport mode (such as RW when ground would have been appropriate) – tracked and evaluated specific to the program's scope of care and mission.

2. Specialized medical transport personnel expertise and/or equipment available during transport that would otherwise not be available

3. Cost of the transport

a. Emergency transports do not require a guaranteed payment prior to transport.

b. Calling agents for non-emergent requests are assisted with information about the cost of the transport as well as alternative, more economical (and equally appropriate) means of transport, if available.

02.02.02 A structured, periodic review of transports (to determine transport appropriateness or that the mode of transport enhances medical outcome, safety or cost effectiveness over other modes of transport) performed at least semiannually and resulting in a written report.

1. The following criteria may trigger a review of the record to determine the medical appropriateness of the transport based upon patients:

a. Who are discharged home directly from the Emergency Department

b. Who are transported without an IV line or oxygen (RW)

c. Upon whom CPR is in progress at referring location

d. Who are "scheduled transports" (RW)

e. Who are transported more than once for the same illness or injury within 24 hours (RW/FW)

f. Who are transported from the scene of injury that do not meet local/regional/state or national triage guidelines (RW)

g. Who are treated at scene or referring hospital but not transported (RW)

h. Who are transported interfacility, and the receiving facility is not a higher level of care than the referring facility (RW)

i. Who are flown initially by fixed-wing and transported from the airport to the receiving facility by helicopter (RW/FW)

j. Who are served by an inappropriate vehicle in consideration of time, distance, speed considerations, etc.

k. Who are served by an inappropriate team, i.e., ALS team used but patient requires critical care skills

l. Who are served by an inappropriate surface vehicle that met the aircraft to assume care of the patient and continue transport with the level of care, equipment and supplies appropriate to the patient's specific needs (RW/FW)

02.02.03 Continuity of Care – The medical service must ensure continuity of care and expeditious treatment of patients.

1. Where appropriate, the service should promote a timely feedback to referring agency, facility, or physician about patient outcome and treatment rendered before, during, and after transport.

2. Patients are only transferred to surface vehicles (at sending and receiving destination) when care can be continued by the same level or higher qualified personnel as that provided by transport personnel (subject to rural capabilities and elective transport needs) and when ordered by the referring/receiving physician or medical director(s) to optimize the outcome of the patient. (RW/FW)

02.02.04 Management ensures that steps are taken to reduce those transports that are considered to be non-appropriate as identified by the program's scope of service.

Examples of evidence to meet compliance:
UM reports indicate trending and loop closure of patient outcomes. Requesting agents are contacted if there are trends that indicate over-triage or under-triage. Continuous review of utilization review with applicable trending and loop closure of patient outcomes in the form of follow-up to receiving facility, documented phone calls to patient/family, etc. may provide adequate information about patient outcome. Outliers should be presented to Case Review Committee or during regularly scheduled staff meetings to discuss specifics of transport.

Examples of evidence to exceed compliance:
There is written evidence that the program routinely provides feedback and education to requesting agents regarding inappropriate requests for the transport. Program regularly meets with representatives of the EMS region and trauma center to discuss scene transports that were both undertriaged and overtriaged.

02.03.00 SAFETY MANAGEMENT (includes Safety Management Systems and Safety and Environment)

02.03.01 Safety Management System (SMS) – Management is responsible for an effective SMS, but management and staff ~~is~~ are responsible for making operations safer.

02.03.02 The Safety Management System is proactive in identifying risks and eliminating injuries to personnel and patients and damage to equipment. A Safety Management System includes:

1. A statement of policy commitment from the accountable executive

2. A risk identification process and risk management plan that include a non-punitive system for employees to report hazards, risks and safety concerns

3. A system to track, trend and mitigate errors or hazards

4. A system to track and document incident root cause analysis

5. A safety manual (electronic or hard copy)

6. A system to audit and review organizational policy and procedures, ongoing safety training for all personnel (including managers), a system of pro-active and reactive procedures to insure compliance, etc.

02.03.03 There is evidence of management's decisive response to non-compliance in adverse safety or risk situations.

1. Senior management must establish a process to identify risk escalation to ensure that safety and risk issues are addressed by the appropriate level of management up to and including the senior level.

2. Operational Risk Assessment tools must include but not be limited to issues such as transport acceptance that includes tools for assessing vehicle operator and crew alertness and fatigue; aviation decision making; clinical, operational, and logistical considerations; country risk assessment for international operations; and surface transport weather/risk considerations. Risk assessment tool(s) are used for all patient transports, search and rescue, public relations, training, maintenance and repositioning events/transports.

02.03.04 The program has a process to measure its safety culture by addressing:

1. Accountability – employees are held accountable for their acts of commission and omission.

2. Authority – those who are responsible have the authority to assess and make changes and adjustments as necessary.

a. Standards, policies and administrative control are evident.
b. Written procedures are clear and followed by all.

c. Training is organized, thorough and consistent according to written guidelines.

d. Managers represent a positive role model promoting an atmosphere of trust and respect.

3. Professionalism – as evidenced by personal pride and contributions to the program's positive safety culture

4. Organizational Dynamics

a. Teamwork is evident between management and staff and among the different disciplines regardless of employer status as evidenced by open bi-directional and inter-disciplinary communications that are not representative of a "silo" mentality.

b. Organization represents a practice of encouraging criticism and safety observations, and there is evidence of acting upon identified issues in a positive way.

c. Organization values are clear to all employees and embedded in everyday practice.

Examples of evidence to meet compliance:
The Safety Management System includes the criteria defined in the International Helicopter Safety Team (IHST) tool kit or equivalent. (RW/FW)

02.03.05 A Safety Management System includes all disciplines and processes of the organization. A Safety Committee is organized to solicit input from each discipline and must meet at least quarterly with written reports sent to management and kept on file as dictated by policy.

1. Written variances relating to safety issues will be addressed in Safety Committee meetings.

2. The committee will promote interaction ~~between~~ among medical transport personnel, communications personnel, pilots, mechanics and vehicle operators addressing safety practice, concerns, issues and questions.

3. There is evidence of action plans, evaluation, and loop closure.

4. There must be a designated safety person for an air transport service. Surface transport services that are not affiliated with an air transports service must also have a designated safety person.

5. The Safety Committee is linked to QM and risk management.

6. Aviation and surface related events are identified and tracked to minimize risks. (See Glossary for definition of event.)

a. Medical transport services are required to report aviation and surface accidents to CAMTS and the appropriate government agencies and encouraged to report incidents to

the CONCERN network. There is a written policy that addresses reporting incidents or accidents and assigns certain individual(s) with the responsibility to report. (See Glossary for definitions of accident and incident.)

02.03.06 Flight Data Monitoring Program – A flight data monitoring program is required if a flight data recorder is on the aircraft. The flight data monitoring program is a systematic method of assessing, analyzing and acting upon information obtained from flight data to identify and address operational risks before they lead to incidents or accidents. (RW/FW)

Examples of evidence to meet compliance:
The IHST tool kit or similar criteria provides guidance for a flight data monitoring program for both rotorwing and fixed wing. (RW/FW)

02.03.07 Safety and Environment

1. There is evidence that the specific operational environment (i.e., weather, terrain, aircraft performance) safety issues are addressed.

Examples of evidence to meet compliance:
Helicopters operating at density altitudes of 5000 feet and above must have mission-appropriate lift capabilitie in comparison to those operating at lower density altitudes.

a. The physical base of operations demonstrates an appropriate and safe work environment for all personnel with adequate lighting, ventilation, and equipment storage for patient care and care of the transport surface vehicle.

- Oxygen storage must be 10 feet from any open flame and 20 feet from combustibles in a well-ventilated area with no-smoking signs posted or in accordance with national regulations. (See FDA Section 211.42 guidelines in References).

- Hangar or building facility under authority of the program complies with OSHA, government or national standard (see specifics in references).

b. Transport vehicle and personnel security – A policy addresses the security of the aircraft and/or vehicle and physical environment (i.e. hangar, fuel farm).

- Security of the aircraft or surface vehicle if left unattended on a helipad, hospital ramp or unsecured airport or parking lot

- Training for vehicle operators and medical personnel to recognize signs of transport vehicle tampering

- Plan to address aircraft or vehicle tampering

Examples of evidence to meet compliance:

Vehicle operators and medical personnel are able to identify signs of aircraft/surface vehicle tampering as outlined in an education program.

c. Personnel security – Medical team is required to carry photo IDs (driver's license is acceptable) with first and last name while on duty.

d. Patient security – Family members or other passengers who accompany patients must be properly identified and listed by name (in compliance with HIPAA regulations) in the communications center by the transport coordinator.

Examples of evidence to meet compliance:
Policy requires wearing or carrying ID's while on duty

2. Equipment and Operations Around the Transport Vehicle (For medical configuration see Section 03.06.01)

a. The transport vehicle configuration and patient placement allows for safe medical personnel egress.

- Doors must be fully operable from the interior.

- Doors must be capable of being opened fully and held by a mechanical device.

b. Transport vehicle operational controls and communications equipment are physically protected from any intended or accidental interference by the patient, medical transport personnel, or equipment and supplies.

c. Lighting, electric power sources and communications equipment

- In an aircraft, a means to protect the pilot's night adaptation vision must be provided for night operations, either through the medical configuration or by a dividing curtain. (RW/FW)

- In a surface vehicle, the interior lighting includes an overhead or dome light that is configured so as not to cause reflection and impair the vehicle operator's vision while driving.

- Electric power outlet and/or invertors required for specialized medical equipment must not compromise the operation of any electrical transport vehicle equipment.

- Medical or communications equipment will be functional without interfering with the avionics and the avionics must not interfere with function of medical equipment on the aircraft. Medical or communications equipment will be functional on the surface vehicle without interfering with the mechanical components of the vehicle or vice-versa.

d. Head-strike envelope:

- The interior modification of the aircraft is clear of objects/projections OR the interior of the aircraft is padded to protect the head-strike envelope of the medical personnel and patients as appropriate to the aircraft. (FW)

- The head-strike envelope in the surface vehicle must be clear of hard objects that could cause injury in the event of poor road conditions or sudden stops.

- Helmets are required for rotorwing operations. Helmets for crewmembers must be appropriately fitted and maintained according to the program's manufacturer's criteria or program's policy. (RW)

    - Helmets are inspected on a regularly scheduled basis – at least annually at a minimum.

e. Securing equipment and supplies – All aircraft equipment (including specialized equipment) and supplies must be secured according to national aviation regulations. (Use of bungee cords is not considered appropriate when securing equipment and supplies). Surface vehicle equipment must be secured by an appropriate clamp, strap, or other mechanism to the vehicle or stretcher/isolette to prevent movement during a crash or abrupt stop.

- If an engineered mount is provided for specific equipment, that equipment must be secured in the mount at all times during the transport.

- Softpacs and equipment bags are not to be stored with belts that loop through the handles (as these handles can easily tear and dislodge).

f. For long range transports – Diversion & Contingency Plans

- If patient's condition deteriorates

- For mechanical issues

g. For international transports

- An international checklist is available that includes information about specific locations, use of medical assistance companies, networking and, local handlers.

- Repatriation insurance, ICAO (International Civil Aviation Organization) regulations

- DEA Issues – International law states it is illegal to bring controlled substances onto foreign soil - they cannot be removed from the airplane.

- There must be a policy that details how controlled substances are secured when the medical crews depart the aircraft.

- Crew Safety – Policies address crew safety, including:

    - Cultural intelligence

    - Assess travel risk to other countries and immunization recommendations using a reliable source (for example, the U.S. Department of State and CDC respectively and WHO).

Examples of evidence to exceed compliance:
Policies addressing practices such as crews should never eat the same food; never leave the hotel alone – have a buddy system; have a specific time to be back at the hotel; behave and dress so as to blend in with locals; no high-risk activities, for example, bungee jumping.

h. Transport vehicle equipment

- Night vision goggles are required in North America for programs conducting rotorwing night operations and strongly encouraged for other countries. If night vision goggles (NVG's) are used by the service, a policy addresses use of night vision goggles by personnel on board, and training is documented for personnel involved. (RW)

    - The certificate holder must have Operations Specifications approved by national aviation regulations indicating authorization for operations utilizing night vision devices.

    - The training program must be approved by the AHJ and will specify initial qualifications and currency requirements.

    - If NVG's are used to the ground, the pilot must be trained and authorized to use the NVGs. In addition, it is strongly encouraged that one team member be trained and authorized to use the NVG's.

- The helicopter must be equipped with a 180 degree controllable searchlight capable of at least 400,000 candle power. (RW)

- The aircraft must either have a 406 MHz emergency locator transmitter (ELT) OR must be monitored at 3-minute intervals or less by a satellite tracking system. (RW)

    - If using the satellite tracking system and the aircraft has not been upgraded to a 406 MHz ELT, a 121.5 MHz ELT must not be disarmed because it may be monitored by other aircraft.

- The aircraft must be equipped with a radar altimeter. (RW)

- o If the radar altimeter is inoperable, the Certificate Holder has policies and procedure that address operations with an inoperative radar altimeter.

- It is strongly encouraged to install the following on helicopters (reference NTSB recommendations): (RW)

  - o Helicopter Terrain Awareness and Warning System (HTAWS)

  - o Flight data recording devices

  - o Flight control stabilization system for single pilots operations

  - o Traffic Collision Avoidance System (TCAS)

  - ○ Crash Resistant Fuel System

- Supplemental oxygen is available for RW pilots who have the potential to fly more than 30 minutes above 9,000 feet MSL, or as applicable to local topography.

i. Vehicle conspicuity (reflectivity/chevrons etc.) is strongly encouraged for ground ambulances

The ambulance is clearly identifiable during the night with reflective striping on all sides of the vehicle. Adherence to the National Fire Protection 1901 Guidelines for Reflective Striping of Emergency Vehicles is encouraged but as a minimum must include: (as referenced in: NFPA 1901: 15.9.3.1) (S)

- Sides of the ambulance:

  - o A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side.

  - ○ The stripe or combination of stripes shall be a minimum of 4 inches (100mm) in total width.

  - o The 4-inch (100mm)-wide stripe or combination of stripes shall be permitted to be interrupted by objects (i.e., receptacles, door handles) provided the full stripe is seen as conspicuous when approaching the vehicle.

  - o A graphic design shall be permitted to replace all or part of the required striping materials if the design or combination thereof covers at least the same perimeter length.

- Back of the ambulance:

- o If the NFPA 1901 Guidelines for Reflective Striping of Emergency Vehicles are not followed for the reflective striping of the rear of the surface vehicle, then at a minimum, the reflective striping must follow the same standards as for the vehicle sides.

- Doors:

  - o Any door of the ambulance designed to allow persons to enter or exit the vehicle shall have at least 96 square inches (62,000 square millimeters) of retroreflective materials affixed to the inside of the door.

j. It is strongly encouraged that ambulance be equipped with safety technology such as real-time feedback mechanisms, event-recording cameras, speed governors and/or weather alert systems. (S)

Examples of evidence to exceed compliance:
All in-service helicopters are equipped with NVG's, TAWS, flight data recorders and autopilots. (If collecting FOQA, Flight Operations Quality Assurance, data is reported to the air medical program.) All in service surface vehicles are equipped with real-time feedback mechanisms or video recorders.

k. The transport vehicle must be equipped with survival gear appropriate to the coverage area and the number of occupants.

- Survival gear will be maintained appropriately per written policy and must be available to personnel on board.

- A written policy must be in place regarding checking survival kit contents and expiration dates on timed supplies.

l. A fire extinguisher must be accessible (meaning one of the medical personnel is able to reach a fire extinguisher) to medical transport personnel and vehicle operator while in motion.

m. "No smoking" signs are prominently displayed inside the cabin or vehicle.

n. There is a policy and an operations risk profile that addresses back-up transport vehicle to include:

- Checklists for medical configuration pertinent to the program's scope of care and patient population

- Clarification on which personnel are responsible for checking and ensuring the transport vehicle is ready for patient transports before the transport vehicle is put into service

- Realistic time frames for performing a maintenance check before the transport vehicle is put into service

o. Staff is oriented to the back-up transport vehicle (including communications equipment), and appropriate competencies are assured and documented.

p. Use of occupant restraint devices:

- Air medical personnel must be in seat belts (and shoulder harnesses if installed) that are properly worn and secured for all takeoffs and landings according to national aviation regulations. A policy defines when seat belts/shoulder harnesses can be unfastened. (RW/FW)

- Surface vehicle personnel must be seat-belted when the vehicle is in motion unless emergent patient condition precludes it.

    - Front seat occupants must always be belted.

    - Overhead grab rails must be present in the patient care area.

    - In a surface vehicle it is strongly encouraged to have forward and aft facing individual seats. Side facing bench seats are not recommended. If the ambulance has side facing bench seats, seat belt mountings must be situated at the pelvic level in order to restrain personnel/passengers. Use of shoulder harnesses on side-facing bench seats is discouraged.

q. A written policy describing patient loading and unloading procedures for medical transports as follows: (RW/FW)

- Specific policies concerning circumstances for rapid patient loading or unloading if practiced

- An established policy to ensure that the pilot is notified of any add-on equipment for weight and balance considerations

r. Refueling policies for normal and emergency situations (for fuel systems see 05.10.00 and 06.10.00): For transport vehicle, refueling with the engine running (prohibited for ambulances), rotors turning, and/or passengers on-board is not recommended. However, emergency situations of this type can arise. Specific and rigid procedures must be developed by the certificate holder to handle these occurrences. Such “rapid refueling” procedures will be covered by the certificate holder’s training program. Refueling policies must address (RW/FW):

- Refueling with engine(s) running or shut down

- Refueling with medical transport personnel or patient(s) on board, which includes a requirement that at least one medical transport person remain with the patient at all times during refueling or stopover

- Rapid refueling only if the location of the refueling port does not block patient and crew egress in the event of a fire or other emergency while refueling. (Strongly encouraged)

- Fire hazard policies pertinent to refueling procedures as addressed in the certificate holder's Operation Specifications Manual (electronic or hard copy)

- Pilot's responsibility to test, verify, or validate fuel quality before refueling and stay with the aircraft at all times during refueling.

- Wearing proper PPE when refueling. Gloves used for refueling are prohibited for use during transport. PPE potentially contaminated with fuel may not be worn in the transport vehicle

s. The Program/Certificate Holder has policies that govern operational limitations with specific equipment inoperative (for example, if the searchlight is not functioning). If night vision goggles are used, the policy must be appropriate to that specific mode of operation. (RW)

t. Specific policy to address the combative patient

- Additional physical and/or chemical restraints must be available and used for combative patients who potentially endanger themselves, the personnel, or the transport vehicle.

- A policy must address refusal to transport patients, family members, or others who may be considered a threat to the safety of the transport and/or medical transport personnel.

u. Written policy to address response to hazardous materials requests or unanticipated contact with hazardous materials

- There is an outlined plan of action according to pre-established policies with appropriate training of the medical transport team.

- There is a plan for patient decontamination procedures prior to transport, including removal of patient clothing and other decontamination procedures for saturation of gasoline or other hazardous chemicals.

- The medical transport team must be fully informed about the nature of the hazardous materials.

- There is a readily available list of hazardous materials, which could pose a threat to the medical transport team or render transport inappropriate.

- The LZ or aircraft operational area must be a safe distance to avoid any downwind danger when approaching or departing. (RW)

- A policy addresses carry-on baggage of patient or passenger that must be physically inspected for hazardous materials that could endanger the medical transport team or compromise safety (such as weapons, sharp objects, chemicals, and obvious hazardous materials) before loading on the transport vehicle.

- A policy addresses the presence of firearms on the transport vehicle.

v. For rotor wing programs that convert a flight to ground transport, ground safety standards will be adhered to.

03.00.00 – PATIENT CARE

03.01.00 MEDICAL MISSION TYPES AND PROFESSIONAL LICENSURE

Mission Types – Staffing must be commensurate with the mission statement and scope of care of the medical transport service. The aircraft or ambulance, by virtue of medical staffing and retrofitting of medical equipment, becomes a patient care unit specific to the needs of the patient. A well-developed position description for each discipline is written. All Equipment, Medications and Interventions listed below are pertinent to the program's mission and scope of service (which includes scope of care). Equipment, Medications, Interventions and Quality listings in each type of care build on each other starting with BLS to ALS to Emergency Critical Care, Intensive Care and Specialty Care.

03.01.01 Basic Life Support **(BLS)**

Preface – appropriate Authority Having Jurisdiction (AHJ) applies

1. Scope of Care – Capability to deliver pre-hospital basic life support care.

2. System – State-recognized agency or AHJ with a medical director who meets requirements listed below.

3. Clinical Crew

    a. At a minimum, one crew member has EMT status (paramedic preferred) or equivalent national training.

    b. Vehicle operator is EVOC-trained (or equivalent) and keeps training properly updated.

4. Medical Director

    a. The medical director should be board-certified in emergency medicine, but if he or she is not, it is strongly recommended that the medical director be board-certified in family medicine, internal medicine, surgery, or pediatrics with demonstrated EMS education (e.g., NAEMSP medical director course) or 5 years of experience in emergency medicine.

5. Equipment

    a. Oral/pharyngeal airway

    b. Pulse oximeter

    c. Automatic external defibrillator

    d. Bag-valve mask

e. Glucometer

f. Adequate oxygen source

g. Hemorrhage Control Equipment (such as Combat Application Tourniquet)

h. Depends on state/local or national requirements, or medical director requirements (e.g., auto-injector)

6. Medications

a. EMT may assist patient taking own medication

b. Depends on state/local or national requirements, or medical director requirements

7. Interventions

a. Bag-valve mask ventilation and oxygenation

b. Selective spinal immobilization

c. Non-invasive vital sign measurement (e.g., blood pressure, pulse-oximetry)

d. Control of bleeding (reference www.stopthebleedingfoundation.org)

e. Exposure (Infection) control

f. Depends on state/local or national requirements, medical director requirements

8. Quality – Ground and Air Quality Transport (GAMUT) metrics that must be measured (the actual GAMUT metrics are much more descriptive – see References) include:

a. Blood glucose for altered mental status

b. Serious reportable event

c. Medical equipment failure

d. Near miss or precursor

e. Reliable pain assessment

In addition:

a. Number of intercepts with ALS (Denominator = total number of BLS calls)

9. Volume

a. Total number of BLS transports

03.01.02 Advanced Life Support **(ALS)**

Preface – appropriate Authority Having Jurisdiction (AHJ) applies – also includes all aspects of BLS

1. Scope of Care – Capability to deliver pre-hospital advanced life support care

2. Clinical Crew

a. A minimum of two medical personnel who are licensed/certified according to state and/or national requirements. The vehicle operator may be the second crew member for surface ALS if he/she is at minimum an EMT and is EVOC-trained (or equivalent) and his/her training is kept current.

b. One is a paramedic with National Registered Paramedic (NRP) or national equivalent preferred

3. Medical Director

The medical director should be board-certified in emergency medicine, but if he or she is not, it is strongly recommended that the medical director be board-certified in family medicine, internal medicine, surgery, or pediatrics with demonstrated EMS education or 5 years of experience in emergency medicine.

4. Equipment – includes all equipment in BLS plus:

a. Ventilation: Non-invasive ventilators (CPAP / Bilevel Positive Airway Pressure)

b. Cardiac monitoring (e.g., pacemaker/defibrillator)

c. Non-invasive monitoring (e.g., waveform capnography, pulse-oximetry)

5. Medications – include all medications in BLS plus:

a. Resuscitative medications by national EMS education and practice standards.

6. Interventions – includes all equipment in BLS plus:

a. Advanced airway management (Endotracheal intubation, Supraglottic airway)

b. Needle thoracostomy

c. Intraosseous placement

d. Non-invasive CO2 monitoring

e. Peripheral IV

f. Waveform capnography for ventilated patients

7. Quality – GAMUT metrics are required to be measured and include those in BLS (with the exception of intercepts with ALS) and in addition:

a. Ventilator use in patients with advanced airways

b. Scene transports

c. First attempt tracheal tube success

d. Definitive airway “sans” hypoxia/hypotension on first attempt (encouraged)

e. Verification of tracheal tube placement

f. Over-triage in mode of transportation (RW per GAMUT description – encouraged)

g. Medication errors on transport

h. Rapid sequence intubations protocol compliance

i. Unplanned dislodgements of therapeutic devices

j. Incidence of hypoxia during transport

k. ECG interpretation for STEMI patients

l. Adverse drug event during transport

8. Volume

a. Number of total surface transports (does not include those in support of air medical transports)

b. Number of surface ALS transports (does not include those in support of air medical transports)

c. Number of air ALS transports

d. Number of surface BLS transports

e. Number of air BLS transports

03.01.03 Emergency Critical Care

Preface – appropriate Authority Having Jurisdiction (AHJ) applies – also includes all aspects of BLS and ALS

1. Scope of Care – Capability to deliver out-of-hospital care during the acute resuscitation phase before definitive care is provided (e.g. comparable to emergency department stabilizing care or an ICU transfer to more definitive care)

2. Clinical Crew

a. A minimum of two medical personnel (who are licensed according to state and/or national requirements) who provide direct patient care plus a vehicle operator

• One member of the clinical crew is a licensed nurse with CEN, CCRN, CFRN or CTRN (or equivalent national certification) within 2 years of hire (required). Primary care provider may also be a resident or staff physician, Respiratory Therapist, appropriately educated and trained Physician Assistant or a Paramedic. Nurses, Respiratory Therapists, Physician Assistants and paramedics who are the primary care providers must have 3 years of critical care experience. (Critical care experience is defined as no less than 4000 hours' experience in an ICU or an emergency department.) In addition, nurses and paramedics in the primary-care-provider role must have pre-hire experience in the medications and interventions listed below as well as IABP management (if part of scope of care), central line monitoring, left arterial wedge pressure monitoring and ventilator management.

b. Additionally, medical directors and clinical leadership must have direct responsibility to qualify the experience and competencies of applicants for a primary care provider role and set the minimums as they pertain to the autonomous care required for their specific scope of service.

c. If crewmember is a paramedic, ~~then FP-C or CCP-C required within 2 years of hire along with~~ 3 years (minimum of 4000 hours) of ALS experience. If crewmember is a respiratory therapist, then ~~RRT required with~~ 3 years (minimum of 4000 hours) ED or ICU experience required***(see section 03.05.01 for advanced certifications)***

3. Medical Director – Board-certified based on the program scope of care. Additional specialty and/or sub-specialty physician liaison(s) as required.

Examples of compliance:

• *A pediatric transport program has a pediatrics board-certified physician with education in transport medicine.*

• *A rotory-wing program that responds to scene and interfacility requests has an emergency medicine board-certified physician (EMS subspecialty or AMPA Medical Director Core Curriculum Course or equivalent encouraged). If not emergency medicine board-certified, then family medicine, internal*

medicine, surgery, or pediatrics board-certified with demonstrated EMS education and/or experience (5 years).

4. Equipment – Includes all equipment in BLS and ALS plus:

    a. Ventilation: Multimodality ventilators capable of invasive ventilation (pressure, volume, ventilator appropriate to all age groups transported)

    b. Invasive hemodynamic monitoring (e.g. transvenous pacemakers, central venous pressure, arterial pressure)

5. Medications – Includes all medications in BLS and ALS plus:

    a. Maintenance of continuous infusions (e.g., vasopressors, anti-hypertensives, anti-dysrhythmics, bronchodilators, neuromuscular blockade and sedation.

6. Interventions – Includes all interventions in BLS and ALS plus:

    a. Rapid sequence induction (medication facilitated)

    b. Surgical airway

    c. Ability to manage tube thoracostomy

    d. Ability to manage central line

    e. Blood product infusion

    f. Continuous temperature management (i.e., therapeutic hypothermia)

    g. Waveform capnography on ventilated patients

7. Quality – GAMUT metrics that must be measured include those in BLS and ALS.

    a. Scene and/or interfacility bedside times for STEMI activation

    b. Appropriate management of blood pressure for aortic emergencies

    c. Management of hypertension in hemorrhagic stroke

    d. Appropriate management of hemorrhagic shock

8. Volume

    Volume requirements: Number of transports in this category versus total number of transports will be tracked by the program. CAMTS will track, trend and analyze averages from all programs to determine a volume requirement in the future.

03.01.04 Intensive Care

Until we have sufficient data, we will not accredit at this level, but on the checklists you receive when applying for accreditation, you will be instructed to check off the crew requirements along with the number of times the equipment, medications and interventions listed in this Type of Care are used or performed.

1. Scope of Care – Capability to deliver out-of-hospital care comparable to tertiary ICU care during interfacility transport to a higher level tertiary ICU.

2. Clinical Crew – is composed of a minimum of two medical personnel (who are licensed according to state and/or national requirements) attending to the patient at all times plus a vehicle operator.

a. One crew member is a licensed nurse with CFRN, CCRN or CTRN within 2 years of hire or equivalent national certification (required). The primary care provider may also be a resident or staff physician with minimum critical care experience (signed off by the medical director) and ICU rotation and FCCS preferred. Nurses who are the primary care providers in this level must have 3 years of critical care experience (critical care experience is defined as no less than 4000 hours' experience in an ICU or an emergency department that is part of an academic or tertiary care center*).

b. If second is a paramedic, then FP-C or CCP-C required within 2 years of hire with 3 years (or a minimum of 4000 hours) of critical care experience as a flight/surface transport paramedic or in-hospital experience.

c. If second is a respiratory therapist, then RRT required with 3 years ED or ICU (or a minimum of 4000 hours) experience. ACCS or NPS is strongly encouraged.

3. Medical Director

a. Board-certified in emergency medicine** with demonstrated competency in intensive care medicine with active experience in a tertiary center; OR Critical Care boarded with demonstrated experience and competency in Transport Medicine and experience with training in EMS if this is part of the program's scope of practice.

b. If the program's scope of practice encompasses a specialty outside the experience of the medical director(s), additional sub-specialty physician liaison is required with obvious commitment, knowledge and involvement with the operations of the transport program (SMS, QM, initial and ongoing education/training, etc.)

*Absent Tertiary Care experience, the program must maintain documented pre-hire testing standards to insure knowledge and skills are consistent with Intensive Care scope.

**Medical directors board-certified in noncritical care are required to have FCCS/PFCCS certification at the time of accreditation.

4. Equipment – Includes all equipment in BLS, ALS and Emergency Critical Care plus:

a. Ventilation: Multimodality ventilators appropriate to all patient age categories being transported (APRV, reverse I:E)

b. Invasive monitoring including hemodynamic (e.g., pulmonary artery catheters), cardiac (e.g., IABP), and neurological (e.g., intracranial pressure monitors)

5. Medications – Includes all medications in ALS and Emergency Critical Care plus:

Critical Care formulary and medication infusion with capability to deliver at least 4 continuous infusions

6. Interventions – Includes all interventions in BLS, ALS and Emergency Critical Care plus:

a. Ability to perform tube thoracotomy (if in scope of care)

b. Point-of-care testing appropriate for long distance transports (if in scope of care)

7. Quality

a. GAMUT metrics (all metrics to be included)

b. Quality Indicators listed in Emergency Critical Care to also include:

- Plateau pressure <– >31

8. Volume requirements*

a. Number of transports admitted to an ICU directly or admitted to a critical care unit or other acute care (such as OR, cardiac catheterization lab, etc.) versus total number of transports.

b. Number of newborn transports (newborn defined as infants not requiring mechanical thermoregulation and/or respiratory support) versus total number of transports

c. Number of High Risk OB transports versus total number of transports (A transport that is directly related to pregnancy that may endanger the mother or fetus of a gestational age greater than 20 weeks. This does not include pre-existing conditions or trauma in the pregnant patient.)

d. Number of IABP transports versus total number of transports

e. Number of transports to a PICU versus total number of transports

*Volume requirements: Number of transports in this category versus total number of transports will be tracked by the program. CAMTS will track, trend and analyze averages from all programs to determine a volume requirement in the future.

03.01.05 Specialty Care

1. Scope of Care – Capability to deliver out-of-hospital care at a specialty or subspecialty level during interfacility transport (e.g., comparable to that of a tertiary or quaternary such as an ICU, PICU, NICU, or tertiary perinatal center).

a. A neonatal transport is defined as the ability to support the care of infants that continue to need mechanical thermoregulation and/or respiratory support. Respiratory support should include the capability to provide blended gases. Neonatal Transport includes both preterm and term infants who require critical care or any infant under 5kg.

b. Specialty high risk OB transports are defined as transports that include the use and interpretation of external fetal monitor, fetal doppler and tocolytics.

c. A specialty care pediatric transport is defined as the ability to support an infant or child with life-threatening physiologic derangement, including respiratory, cardiac and/or central nervous system, and meeting criteria for admission to a Pediatric ICU.

2. Clinical Crew (as appropriate to the specialty)

3. Medical Director - Board-certified based on the program scope of care. Additional specialty and/or sub-specialty physician liaison(s) as required by the scope of care.

4. Equipment - Includes all equipment in BLS, ALS, Emergency Critical Care and Intensive Care plus:

a. Transcutaneous ventricular assist devices (e.g. LVAD, BiVAD, RVAD)

b. Extracorporeal membrane oxygenation (ECMO) therapies and devices

c. Inhaled gases (e.g., nitric oxide, helium oxygen, aerosolized prostacyclin)

d. Neonatal isolette with heart rate monitoring device and size appropriate ventilator (with blender for adjustable oxygen delivery), thermoregulation control and infusion devices (syringe pumps).

e. Fetal doppler/fetal heart rate monitoring device (if transporting High Risk Obstetrics – HROB). For long range transports, external cardiotocography monitoring device is required.

5. Medications Includes all interventions in BLS, ALS, Emergency Critical Care, Intensive Care plus:

a. Maintenance of tertiary/quaternary critical care formulary (tocolytics for HROB)

6. Interventions - Includes all interventions in BLS, ALS, Emergency Critical Care and Intensive Care plus:

a. Ability to perform tube thoracostomy (if in scope of care)

b. Ability to place central line (if in scope of care)

c. Managing cardiac assist device

d. Managing extracorporeal oxygenation device

e. Ability to place endotracheal tube and maintain oxygenation and ventilation on a multi modality ventilator with capabilities for all age populations transported, including the capability to deliver inhaled specialty gases.

7. Quality

a. GAMUT metrics (all metrics to be included)

8. Volume requirements – Number of patients as pertinent to the following:

a. Number of neonatal transports to a NICU versus total number of transports

b. Number of back transports to a lower level of care versus total number of transports

c. Number of Specialty HROB transports versus total number of transports

d. Number of ECMO transports versus total number of transports

e. Number of IABP transports versus total number of transports

f. Number of transports to a PICU versus total number of transports

g. Number of transports requiring VADS

h. Number of transports requiring inhaled gases

i. Number of central lines inserted

j. Number of arterial lines inserted

k. Number of tube thoracotomies performed

l. Number of intubated patients

03.02.00 MEDICAL DIRECTION

The medical director(s) ensures the competency and currency of all medical personnel working with the service. He or she does so by working with the clinical supervisor and by being familiar with the scope of practice of the transport team members and the regulations in which the transport team practices.

03.02.01 The medical director(s) must be licensed and authorized to practice in the location in which the medical transport service is based and have educational experience in those areas of medicine that are commensurate with the mission statement of the medical transport service (i.e., adult trauma, pediatric, neonatal transport, etc.) or utilize specialty physicians as consultants when appropriate.

03.02.02 The medical director(s) must have experience in both air and surface emergency medical services and must have education as a medical director (see Section 03.01.00 for each type) as appropriate to the mission statement and be familiar with the general concepts of appropriate utilization of air and surface interfacility services. In addition, the medical director must be current and demonstrate competency or provide documentation of equivalent educational experiences directed by the mission statement and scope of care. Certifications are required as pertinent to the program's scope of care. If a physician is board-certified in an area appropriate to the mission and scope of the service, certifications #1., 2., 11., and 13. are optional.

1. Advanced Cardiac Life Support (ACLS) according to the current standards of the American Heart Association or approved equivalent

2. Advanced Trauma Life Support (ATLS) according to the current standards of the American College of Surgeons or approved equivalent

3. Altitude physiology/stressors of flight if involved in rotor wing or fixed wing operations (RW/FW)

4. Appropriate utilization of medical/surface interfacility services

5. Emergency Medical Services

6. Ambulance rules/regulations (S)

7. Hazardous materials recognition and response

8. Human Factors – Crew Resource Management – AMRM (Air Medical Resource Management). (See References)

9. Infection control

10. "Just Culture" and "Informed Culture" or equivalent education is strongly encouraged. (See References)

11. Neonatal Resuscitation Program (NRP) or equivalent according to the current standards of the American Academy of Pediatrics (AAP) and the American Heart Association (AHA)
12. Patient care capabilities and limitations (i.e., assessment and invasive procedures during transport)

13. Pediatric Advanced Life Support (PALS) according to the current standards of the American Heart Association (AHA) or Advanced Pediatric Life Support (APLS) according to the current standards of the American College of Emergency Physicians (ACEP) or national equivalent

14. Stress recognition and management

15. Sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue

16. The medical director must demonstrate continuing education in transport pertinent to the program's mission and scope of care.

03.02.03 The medical director(s) is actively involved in the quality management (QM) program for the service.

03.02.04 The medical director(s) is actively involved in administrative decisions affecting medical care for the service.

03.02.05 The medical director(s) sets and annually reviews medical guidelines for current accepted medical practice, and medical guidelines are in a written format.

03.02.06 The medical director(s) is actively involved in the hiring process, training and continuing education of all medical personnel for the service

03.02.07 The medical director(s) is actively involved in the care of critically ill and/or injured patients; maintaining involvement in EMS or teaching medical students may be considered as active involvement. [from interpretation guidelines sent out]

03.02.08 The medical director(s) receives safety and risk management training on an annual basis (strongly encouraged)

Examples of evidence to meet compliance:
There is evidence of the medical director's involvement with the program through meeting attendance records, education records, chart reviews etc.

Examples of evidence to exceed compliance:

Medical director(s) attends Just Culture training and achieves advanced transport management certifications, such as Certified Medical Transport Executive.

03.02.09 The medical director(s) is actively involved in orienting physicians providing on-line (in-transport) medical direction according to the policies, procedures and patient care protocols of the medical transport service.

03.02.10 Specific policies must address diseases affected by altitude with maintenance of adequate oxygen saturation and treatment of oxygen desaturation. There is a mechanism to assure transports can be accomplished with the oxygen supply that is available according to patient needs and transport distances. Volume expansion in hollow organs must also be addressed. Policies will be consistent with principles of aeromedical physiology. (RW/FW)

03.02.11 The medical director(s) ensures that surface transport is appropriate and safe for the patient's specific disease process/needs. (For example: patients requiring use of a hyperbaric chamber are usually transported by surface, but in some geographic locations, the distance would be prohibitive for surface transport.)

03.02.12 The medical director(s) must set a policy that insures compliance with federal EMTALA regulations. This policy must address bedside-to-bedside care for ALS and Critical Care providers to prevent any diminution in level of care. The policy must also address situations where it may not be necessary or may be indicated due to time sensitivity to proceed from bedside to bedside with the patient. These incidents must be ~~may be~~ examined by the QM process.

03.02.13 The medical director(s) should maintain open communications with referring and accepting physicians and be accessible for concerns expressed by referring and accepting physicians regarding controversial issues and patient management.

03.02.14. Medical Control

1. Medical Control Physicians – On-line medical control physicians who are trained and identified by the service must have the appropriate knowledge base and experience sufficient to ensure proper medical care and medical control during transport for all patient types served by the medical transport service.

2. If the medical control physician's experience is lacking in a clinical area, he or she must seek prompt consultation as appropriate to ensure proper medical care and medical control during transport for all patient types served by the medical transport service. This consultant should be an appropriate designated physician or the patient's receiving attending physician.

3. Written policies and procedures indicate what therapies can be performed without on-line medical direction.

4. Medical control physicians are provided with triage guidelines to determine appropriate transport mode and team composition and on-scene triage guidelines developed and accepted by the specific EMS region. See References. (RW)

a. Triage guidelines may include provisions for auto launch if part of the scope of service

5. There is a policy that prohibits "freelance responses" to disasters (responding without being specifically requested) [consolidating duplicate from 03.05.03 1e]

Examples of evidence to meet compliance:
There is a formal outline and names and dates of medical control physicians who have completed this training. There is a formal medical control schedule in place and crews are aware of who to call and how to call (i.e., through Communications Center, etc.) in the event Medical Control is required. Additionally, formal names and documentation of respective training for all physicians considered medical control should be on file at the program with evidence of said training readily available for review.

Examples of evidence to exceed compliance:
The medical director is involved in EMS on a regional and/or national basis. The medical director participates in peer-reviewed published research regarding medical transport.

03.03.00 CLINICAL CARE SUPERVISOR

Clinical Care Supervisor – Responsibility for supervision of patient care provided by the medical personnel (i.e., EMT, NRP, RT, RN, RCP, etc.) must be defined by the service. All medical personnel must be supervised by someone knowledgeable and legally enabled to perform clinical supervision. The clinical care supervisor and medical director(s) must work collaboratively to coordinate the patient care delivery given by the various professionals and to review the overall system for delivery of patient care.

03.03.01 If transport nurses are part of the medical team, they must report to a nurse or physician on clinical issues.

03.03.02 The clinical supervisor is actively involved in the Quality Management/Quality Assurance/Performance Improvement of the program.

03.03.03 The clinical supervisor is actively involved in all administrative decisions affecting patient care.

03.03.04 The clinical care supervisor is actively involved in hiring, training and continuing education for all personnel who work for the service.

03.03.05 The clinical care supervisor must ensure adequate mechanisms for the evaluation of clinical practice of patient care providers.

03.03.06 The clinical care supervisor must demonstrate currency in the following or equivalent educational experiences as appropriate to the mission statement and scope of care and/or the clinical care supervisor must have immediate access to personnel with appropriate knowledge and experience as consultants.

1. Advanced Cardiac Life Support (ACLS) according to the current standards of the American Heart Association (AHA) or American Safety & Health Institute (ASHI)

2. Advanced Trauma Life Support (ATLS) according to the American College of Surgeons, ATLS audit, ATCN for Nurses, Transport Nurse Advanced Trauma Course (TNATC) or Transport Professional Advanced Trauma Course (TPATC) or equivalent (not required for neonatal teams who do not provide adult care) (See Education Matrix for equivalent criteria)

3. Human Factors – Crew Resource Management – AMRM (Air Medical Resource Management). (See References)

4. "Just Culture" or equivalent education – strongly encouraged
5. Neonatal Resuscitation Program (NRP) or equivalent according to the current standards of the American Academy of Pediatrics and the American Heart Association – a required certification if medical personnel care for high-risk OB patients and/or neonatal patients (See Education Matrix for equivalent criteria)

6. Pediatric Advanced Life Support (PALS) or Advanced Pediatric Life Support (APLS) according to the current standards of the American Heart Association (AMA) or Emergency Nursing Pediatric Course (ENPC) according to the current standards of the Emergency Nurses Association for neonatal team members transporting patients greater than 28 days

7. Patient care capabilities and limitations during transport (i.e., assessment and invasive procedures)

8. Infection control and prevention

9. Stress recognition and management

10. Altitude physiology/stressors of flight if involved in rotorwing or fixed wing operations (RW/FW)

11. Appropriate utilization of medical/surface interfacility services (S)

12. Emergency Medical Services

control*es of evidence to exceed compliance:*
The clinical supervisor attends Just Culture training and achieves advanced certifications such as CEN, CCRN, CFRN, RNC, CTRN, and/or CMTE.

03.04.00 PROGRAM MANAGER

The program manager may have overall responsibility for a program or for a specific base with or without additional clinical responsibilities. (Follow criteria above if clinical responsibilities are part of the position description.)

03.04.01 The program manager must demonstrate currency in the following or equivalent educational experiences as appropriate to the mission statement and scope of care. Didactic education initially and on an annual basis must include but not be limited to:

1. Human Factors – Crew Resource Management – AMRM (Air Medical Resource Management) See References

2. “Just Culture” or equivalent education – strongly encouraged

3. Sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue

4. Stress recognition and management

5. Safety and risk management training on an annual basis (strongly encouraged)

6. Quality Management, QM/QA/PI of the program and its implication to best practices

7. Knowledge of FAR’s or national aviation authority’s regulations as well as local and regional ambulance regulations as appropriate to scope of care

8. Specific transport management certification, such as Certified Medical Transport Executive (CMTE) is strongly encouraged.

Examples of evidence to exceed compliance:
The program manager attends Just Culture training and achieves advanced certifications, such as Certified Medical Transport Executive (CMTE).

03.05.00 ORIENTATION, TRAINING, AND CONTINUING EDUCATION PROGRAM REQUIREMENTS

A planned and structured program must be required for all regularly scheduled critical care and ALS providers. Competency and currency in these competencies must be ensured and documented through relevant continuing education programs/certification programs or their equivalent listed in this section.

03.05.01 Patient Care Education (See Education Matrix for determining education needed per type of care.) The orientation, training and continuing education must be directed and guided by the transport program’s scope of care and patient population, mission statement and medical direction. A written education plan is required and updated on an annual basis. There is an education coordinator or an employee designated to track and trend education requirements.

1. Initial training program requirements for all full-time and part-time ~~Critical Care and ALS~~ providers: each ~~Critical Care and ALS [~~think these terms got carried over from our old mission types] provider must successfully complete a comprehensive training program or show proof of recent experience/training in the categories listed below prior to assuming independent responsibility.

a. Pre-hire qualifications must include requiring experience relevant to the program’s scope of care and patient population(s).

b. Initial and ongoing training need not be absolutely equivalent depending on roles in patient care for different providers as defined by the program and/or state regulations, but training must have basic equivalencies. Both medical personnel members need to be didactically trained. (For example, a paramedic or nurse may not be allowed to do a procedure by regulation, but that provider needs to be familiar with the steps in the procedure in order to assist the other provider in the performance of that procedure.)

c. Didactic Component of Initial Education must be specific and appropriate for the mission statement and scope of care of the medical transport service. Measurable objectives need to be developed and documented for each experience. The transport program will provide a basic outline of initial education that is not limited to, but must include:

- Advanced airway management
- Altitude physiology/stressors of flight (RW/FW)
- Anatomy, physiology and assessment for adult, pediatric and neonatal patients as outlined within the program's scope of care and patient population. (For example, if the program's scope of care includes all age groups of patients, then the anatomy, physiology and assessment of neonates, pediatric and adult patients must be included.)
- Cardiac emergencies and advanced cardiac critical care
- Didactic education that is mission specific and specific to scope of care and patient population, for example:
    - Burn emergencies (thermal, chemical and electrical)
    - Compliance issues and regulations
    - Disaster and triage
    - EMS radio communications
    - Environmental emergencies
    - Equipment education – airway, breathing and circulation equipment, defibrillators, pacemakers, monitors, IABP etc.
    - Hemodynamic monitoring devices (such as pacemakers, automatic implantable cardiac defibrillator (AICD), intra-aortic balloon pump, central lines, pulmonary artery and arterial catheters, ventricular assist devices and extracorporeal membrane oxygenation (ECMO) as appropriate to program's scope of care

o High risk obstetric emergencies defined as “A transport that is directly related to pregnancy that may endanger the mother or fetus of a gestational age greater than 20 weeks. This does not include pre-existing conditions or trauma in the pregnant patient.”(Specific training guidelines can be found in References.)

o Highway scene safety management (RW)

o Human Factors – Crew Resource Management – AMRM (Air Medical Resource Management)

o Infection control and prevention

o “Just Culture” or equivalent education – strongly encouraged

o Mechanical ventilation and respiratory physiology for adult, pediatric and neonatal patients as appropriate to the mission statement and scope of care of the medical transport service specific to the equipment

o Metabolic endocrine emergencies

o Multi-trauma (chest, abdomen, facial)

o Neonatal emergencies (respiratory distress, surgical, cardiac) (Reference definitions and specific training guidelines.)

o Oxygen quality controls include: hazard awareness, how to read cylinder levels, basic understanding of Compressed Gas Association (CGA) connections; how to safely transport liquid oxygen cylinders (if utilized) and knowledge of cylinder durations as per local and national regulations. (e.g. FDA Section 211.25(a) and NFPA 53M)

o Pediatric medical emergencies

o Pediatric trauma

o Pharmacology

o Quality Management – didactic education that supports the medical transport service’s mission statement and scope of care

o Respiratory emergencies

Examples of evidence to exceed compliance:

**TEAMSTEPPS and LEAN are examples of processes that provide teamwork, root cause analysis and problem solving. (See References)*

- Safety and risk management training (strongly encouraged). See specific Safety Education – 03.05.02
- Scene management/rescue/extrication

- Sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue

- State EMS rules and regulations (Province or Government) rules regarding surface and air transport

- Stress recognition and management

- Toxicology

- Transport vehicle orientation/safety and in-transport procedures/general vehicle safety including all types of vehicles the team may be exposed to including depressurization procedures for fixed wing (as appropriate) (See Safety Education 03.05.02)

*(See References for in-flight fire warnings from laptop battery failures and other high-energy batteries.)

d. Clinical Component of Initial Training – Clinical experiences will be based on the program's mission, scope of care and patient population. Measurable objectives need to be developed and documented for each experience listed below reflecting hands-on experience versus observation only.

If simulation teaching/learning modalities are used as an adjunct to or substitution for clinical experiences, there must be documentation that the learning objectives were met. A four step process (found in the Education Matrix) provides guidelines to submit simulation education for approval by CAMTS (if simulation is the only training used to comply with ongoing clinical experiences). Simulation modalities may include the use of dynamic human patient simulators, standardized patients (trained medical actors), computerized interactive devices, virtual reality and serious gaming. Examples can be found in references. The following areas will be included for the scope of practice areas in which the team transports.

- Critical care (adult, neonatal, pediatric)

- Emergency care (adult, neonatal, pediatric)

- Invasive procedures on mannequin equivalent for practicing invasive procedures. An approved mannequin or simulator may be used. (See Education Matrix for guidelines for use of a mannequin and HPS.)

  - Neonatal intensive care

- o Obstetrics
- o Pediatric critical care
- o Pre-hospital care
- ○ Tracheal intubations

• ~~Since~~ Airway management is an essential life-saving measure. For endotracheal intubations, no less than 5 successful live, (animal labs are also acceptable), cadaver, or HPS ~~airway management~~ experience is required for each provider for each age group in scope of care. ~~each type of airway listed within the program protocols (endotracheal, supraglottic, nasal, etc.)~~ Supraglottic, nasal and other airway measures for each age group in scope of care may be practiced on static mannequins .

• Alternative airway management will be included for all transport team members. Alternative airways must be selected and utilized based on the mission and scope of practice of the transport team. For example, a combitube is not appropriate for a neonatal team, but a laryngeal mask airway (LMA) may be.

2. Continuing education/staff development must be provided and documented for all full-time and part-time Critical Care and ALS Providers. These must be specific and appropriate for the mission statement and scope of care of the medical transport service.

a. Didactic continuing education must include an annual review of:

- Human factors – Crew Resource Management - AMRM (Air Medical Resource Management) (See References)
- Infection control
- "Just Culture" or equivalent education – strongly encouraged.
- Safety and risk management training on an annual basis (strongly encouraged)
- Sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue
- State EMS rules and regulations regarding surface and air transport
- Stress recognition and management

b. Clinical and laboratory continuing education must be developed and documented on an annual basis as pertinent to scope of care to follow. If simulation teaching/learning modalities are used as an adjunct to or substitution for clinical experiences, there must be

documentation that the learning objectives were met. Simulation may include the use of dynamic human patient simulators, standardized patients (trained medical actors), computerized interactive devices, virtual reality and serious gaming. Examples can be found in references.

- Critical care (adult, pediatric, neonatal)
- Emergency/trauma care
- Invasive procedure labs
- Labor and delivery
- Skills maintenance program documented to comply with number of skills required in a set period of time according to policy of the medical transport service (i.e., endotracheal intubations, chest tubes)

~~Since airway management is an essential life-saving measure~~, No less than 1 successful live, cadaver, HPS or static mannequin airway management experience per quarter is required for each ~~Critical Care or ALS~~ provider, for each type of airway listed within the program protocols (endotracheal, supraglottic, nasal, etc.) and for each age group in scope of care.

3. Competencies – Policies ensure that clinical competency is maintained by currency in the following or equivalent training as appropriate for the position description, mission statement, and scope of care of the medical transport service. The Education Matrix – Addendum B, contains a listing of the current national and national courses that are available for educational preparation of transport crews and is intended to assist in the determination of compliance with the standards. In addition, the supporting associations are listed. These associations have websites where additional information can be obtained.

There are other courses that have been developed by programs, hospitals, local and state agencies that may be used to meet used to meet educational requirements such as the Critical Care Paramedic Course (CC-EMT). No matter what is chosen, a national course as listed below or a locally developed course, specific objectives, content outlines and measurable outcomes need to be included in what is developed and must be submitted to CAMTS as an attachment to the PIF application and must include primary and secondary assessment, advanced physiology and advanced skills. Trauma competency equivalents are noted in the Education Matrix. Education developed by the program as an equivalent must be submitted to the CAMTS Education Committee for pre-approval. Courses offered outside the U.S. should mirror the courses below and must be submitted with an accreditation application.

a. Basic Life Support (BLS) – documented evidence of current BLS certification according to the American Heart Association (AHA) Health Care Provider course

b. Advanced Cardiac Life Support (ACLS) – documented evidence of current ACLS according to the AHA (not required for neonatal teams who do not provide adult care)

c. Advanced Trauma Life Support (ATLS) according to the American College of Surgeons, ATLS audit, ATCN for Nurses, Transport Nurse Advanced Trauma Course (TNATC) or Transport Professional Advanced Trauma Course (TPATC) or equivalent (not required for neonatal teams who do not provide adult care) (See Education Matrix for equivalent criteria)

d. Pediatric Advanced Life Support (PALS) or Advanced Pediatric Life Support (APLS) or Emergency Nursing Pediatric Course (ENPC) according to the AHA, ACEP and ENA (PALS, APLS or ENPC required for neonatal team members transporting pediatric patients greater than 28 days old)

e. Neonatal Resuscitation Program (NRP) or equivalent (see Education Matrix for equivalent criteria) according to the current standards of the American Academy of Pediatrics and the American Heart Association or equivalent – NRP required if medical personnel care for high-risk OB and/or neonatal patients

f. Current nursing certifications (such as CEN, CCRN, RNC, CFRN and CTRN) pertinent to scope of care and patient population required for nurses who have been employed for more than 2 years. C-NPT strongly encouraged for teams that transport pediatric (requiring specialized care in a PICU) and/or neonatal patients

g. Current paramedic certifications (such as NRP) strongly encouraged for paramedics who have been employed for more than 2 years and are conducting ALS/BLS and critical care transports. In addition, FP-C or CCP-C certifications required for paramedics who conduct critical care transports and have been employed for more than 2 years

h. Current respiratory therapists' certifications (RRT and ACCS for adult or NPS or CNPT for pediatric/neonatal teams) required for respiratory therapists who conduct critical care transports and have been employed for more than 2 years. ~~(such as RRT and NPS) strongly encouraged – CNPT or ACCS strongly encouraged for pediatric and neonatal teams~~

Examples of evidence to meet compliance:
Initial and ongoing education is tracked and documented that includes certifications, currencies and clinical experiences. If education and clinical experiences are obtained outside the program (or by the same employer, but different department) these are documented.

Examples of evidence to exceed compliance:
Just Culture courses are completed by more than 50% of the staff. Nursing and paramedic certifications are required and current for all staff.

4. Independent Specialty Care Providers

a. Education requirements for Independent Specialty Care Providers Education requirements will be similar to the initial training program for Critical Care and ALS Providers (Didactic and Clinical Components) and specific for the specialty area (i.e., neonatal vs. pediatric).

b. Continuing education must be provided and documented for specialty care providers and must be specific and appropriate for the mission statement and scope of care of the medical transport service:

- Didactic continuing education programs specific to the specialty
- Ongoing clinical experiences specific to the specialty
- Clinical competency maintained by currency in specialty education required by position description (i.e., American Heart Association/American Academy of Pediatrics, or Pediatric Advanced Life Support pertinent to appropriate specialty) or equivalent

03.05.02 Safety Education

1. Education Specific to the In-Flight and Surface Transport Environment – Completion of all the following educational components must be documented for each of the medical personnel. These components must be included in initial education as well as reviewed on an annual basis with all regularly scheduled, part-time or temporarily scheduled medical personnel and specialty care providers as appropriate for the mission statement and scope of care of the medical service.

a. Altitude physiology

b. Day- and night-flying protocols

c. EMS communications (radios) and familiarization with EMS system

d. Extrication devices and rescue operations (ranging from familiarity to explicit training depending on the service's mission statement) (RW)

e. General aircraft safety. (It is strongly recommended to have the aircraft physically present when providing this training.) This training addresses: (RW/FW)

- Aircraft evacuation procedures (exits and emergency release mechanisms) to include emergency shutdown – engines, radios, fuel switches, electrical and oxygen shutdown
- Aviation terminology and communication procedures to include knowledge of emergency communications knowledge of emergency communications frequency
- In-flight and surface fire suppression procedures (use of fire extinguishers)

- In-flight emergency and emergency landing procedures (i.e., position, oxygen, securing equipment)

- Safety in and around the aircraft, including national aviation rules and regulations pertinent to for medical team members, patient(s), and lay individuals

- Specific capabilities, limitations and safety measures for each aircraft used, which includes specific training for backup or occasionally used aircraft

- Use of emergency locator transmitter (ELT)

- Minimal safety requirements on ground support ambulances used away from base for fixed wing operations, for example, adequate number and functioning seat belts for all team members, no loose equipment

f. Ground operations (RW)

- Landing sites
    - On-scene requirements
    - Hospital landing site changes or special needs review
- Patient loading and unloading – policy for rapid loading/unloading procedures
- Refueling policy for normal and emergency situations

g. Hazardous materials recognition and response (Even if not part of the service's mission statement, personnel must be able to recognize a hazardous materials situation if encountered.)

h. Highway scene safety management (See References)

i. Medical patient transport considerations (assessment/treatment/preparation handling/equipment)

j. Survival training/techniques/equipment that is pertinent to the environment/geographic coverage area of the medical service (Includes water egress survival training if enroute travels are routinely over large bodies of water such as rivers, lakes, bay areas based on the program risk assessment)

- Smoke in the cockpit/cabin, firefighting in the cockpit/cabin
- Emergency evacuation of crew(s) and patient(s)

- Hands-on practice of survival techniques and the use of the items contained in the survival kit are conducted at least once every two years

Examples of evidence to meet compliance:
Water egress survival training should include: hazards to aircraft and personnel during overwater operations; pre-ditching, considerations and procedures; emergency ditching and evacuation procedures; upright emergency evacuation; emergency evacuation; surface water survival and rescue water skills. Fixed wing services that are required by FARs to carry emergency equipment, such as inflatable rafts, should provide this training.

Examples of evidence to exceed compliance:
For underwater escape training, use full immersion/inversion dunker capable of inducing disorientation and accurately replicating the aircraft interior if traversing rivers or larger bodies of water on a regular basis. Rescue/recovery training – helicopter at sea simulation should be provided if traversing rivers or larger bodies of water on a regular basis.

2. Completion of all the following educational components must be documented for each of the surface transport personnel. These components must be included in initial education as well as reviewed on an annual basis with all regularly scheduled, part-time or temporarily scheduled personnel or specialty care providers as appropriate for the mission statement and scope of care of the surface interfacility service. (S)

a. EMS communications (radios) and familiarization with EMS system

b. Extrication devices and rescue operations (ranging from familiarity to explicit training, depending on the service's mission statement)

c. General safety (It is strongly recommended to have the surface vehicle physically present when providing this training.) This training addresses:

- Evacuation procedures (exits and emergency release mechanisms)
- Fire suppression procedures (location and use of fire extinguishers)
- Patient loading and unloading procedures
- Refueling procedure with patient(s) on board
- Use of road or marine hazard equipment
- Specific capabilities, limitations and safety measures for each surface vehicle used, which includes specific training for backup or occasionally used surface vehicles

d. Hazardous materials recognition and response

e. Survival training/techniques/equipment that is pertinent to the environment/geographic

coverage area of the medical transport service.

3. Specialty personnel

a. Specialty personnel who are added to the regularly scheduled transport team (as for neonatal, pediatric, perinatal or IABP transports) must follow the criteria listed below:

- Specialty care personnel must have appropriate licensure or certification requirements by appropriate agencies or governing bodies and have relevant specialty experience as described by program policy.

- Liaison roles with the host medical transport service ensure cohesive and safe operational relationships, and well-defined roles and policies.

- Specialty care personnel must be accompanied by one regularly scheduled medical personnel.

- Pre-transport safety briefings are performed prior to each transport.

- Specialty care personnel are familiar with the program's policies, safety and survival techniques as they relate to the specific aircraft or surface vehicle.

b. Specialty personnel who contract with a transport service but are not accompanied by regularly scheduled team members must follow the criteria listed below. Training is documented and verified on an annual basis.

- Specialty care personnel must be educated in in-flight and surface treatment modalities, altitude physiology, general aircraft and ambulance safety, and emergency procedures as listed in Section 03.05.02

03.05.03 Community Outreach Safety Program

1. The medical service must facilitate integration of all emergency services and transport modalities by supporting joint continuing education programs and operational procedures. These integration efforts must include but are not limited to the following:

a. Staff from varied teams are trained in hazardous materials recognition.

b. Staff from varied teams are trained in disaster response and triage.

c. The medical transport service must be integrated with and communicate with other public safety agencies, including ground emergency service providers. This may include participation in regional quality improvement reviews, regional disaster planning and mass casualty incident drills that include an integrated response to terrorist events.

d. There is a response plan to all types of disaster, including weapons of mass destruction, terrorist events and natural disasters.

~~e. There is a policy that prohibits "freelance responses" (responding without being specifically requested) to disasters.~~ [duplicate of 03.02.14. #5 except that one doesn't have "to disasters" at end of sentence]

f. All personnel are familiar with the plan to respond to disasters.

g. FEMA or other Emergency Management classes are provided for scene and disaster response.

h. Interface of the medical team with response teams from other regional organizations

- For services that respond to incident scenes and support disaster response, staff has completed the Federal Emergency Management Agency Independent Study Courses on Incident Command. (See Education Matrix)

- For services that are involved in national disaster response, at least one member of the management staff must also have completed IS-800b. – National Response Framework, An Introduction. (see FEMA IS Course requirements at the end of Section 03.00.00)

2. A planned and structured safety program must be provided to public safety/law enforcement agencies and hospital personnel who interface with the medical service that includes: (RW)

a. Identifying, designating and preparing an appropriate landing zone (LZ)

b. Personal safety in and around the helicopter for all ground personnel

c. Procedures for day/night operations, conducted by the medical team, specific to the aircraft

d. High and low reconnaissance

e. Two-way communications between helicopter and ground personnel to identify approach and departure obstacles and wind direction

f. Approach and departure path selection

g. Procedures for the pilot to ensure safety during ground operations in a LZ with or without engines running

h. Crash recovery procedures specific to the aircraft make and model must minimally include: (RW)

- Location of fuel tanks

- Oxygen shut-offs in cockpit and cabin
- Emergency egress procedures
- Aircraft battery – stay away from it
- Emergency shut-down procedures

i. Education regarding “weather shopping” must be included. (RW) (See References)

2. Records are kept of initial and recurrent safety training of pre-hospital, referring and receiving ground support personnel. (RW)

03.06.00 MEDICAL CONFIGURATION OF THE TRANSPORT VEHICLE

(See 03.00.00 for determining equipment needed specific to each Medical Mission Type)

03.06.01 Any in-service aircraft/ ambulance must be configured in such a way that the medical transport personnel can provide patient care consistent with the mission statement and scope of care of the medical transport service. Patient care issues are considered when choosing the aircraft or surface transport vehicle.

1. Configuration of the transport vehicle interior must not compromise the ability to provide appropriate care or prevent providers from performing emergency procedures if necessary.

2. Medical transport personnel have access to the patient in order to begin and maintain basic and advanced life support treatment. If there is an unusual configuration, crew must be able to demonstrate optimal methods of airway and other interventions and management

3. The transport vehicle configuration allows for stabilizing the patient’s airway and childbirth procedures if that is part of the service's mission.

4. The service's mission and ability to transport two or more patients must not compromise the airway or stabilization or the ability to perform emergency procedures on any on-board patient.

a. The transport vehicle must have access for simultaneous airway management if there is a two-patient configuration.

b. For all transports, there are written guidelines describing types of patients that can be transported in a two patient stretcher configuration if the transport vehicle configuration does not allow for full access to the second patient.

c. For all transports, strict policies will address weight limitations, patient condition based on anticipated needs, and patient position in the transport vehicle.

d. Policies will be written and adhered to for one or more patient transports if the interior configuration of the transport vehicle does not allow for uninhibited access to one or more patients while enroute. Policies will address under what circumstances two critical patients may or may not be transported, including staffing and equipment.

e. A policy prohibits dual patient transport inside the same isolette unless the situation is conjoined twins or twins are transported with full complements of equipment for each and show no evidence of infection in one or different infections in both. In the event that one twin arrests, there must be mitigation, i.e., additional warming method that can be applied to the non-arresting twin. (RW/FW/S)

5. Airway and alternate airways – There must be access and necessary space to ensure any on-board patient's airway is maintained and to provide adequate ventilatory support from the secured, seat-belted position of medical transport personnel.

a. In an ambulance it is strongly encouraged that seating be designed in the ambulance so that patient care can be rendered from a seat-belted position. Use of shoulder harnesses on side facing bench seats are discouraged based on peer reviewed studies regarding front end collisions. (See References) (S)

b. There is a policy addressing that patients who are on a ventilator are maintained on a ventilator throughout the transport

c. Cuff pressure manometer (unless the cuff is filled with saline and not air) (RW/FW)

6. Delivering Oxygen – Oxygen is installed according to national and national aviation and ground ambulance regulations. Medical transport personnel can determine how oxygen is functioning by pressure gauges mounted in the patient care area.

a. Each gas outlet is clearly identified.

b. Oxygen flow can be stopped at or near the oxygen source from inside the aircraft or ambulance. The following indicators are accessible to medical transport personnel while enroute:

- Quantity of oxygen remaining
- Measurement of liter flow

c. A variety of oxygen delivery devices consistent with the service's scope of care must be available.

d. Adequate amounts of oxygen for anticipated liter flow and length of transport with an emergency reserve must be available for every mission.

e. For those flights meeting the definition of “long range” (any patient leg in excess of 3 hours measured in time, not distance, because of winds, where there are no alternative

capabilities for patient care needs or aviation operations) additional policies must be in place to address the following:

- Ability to obtain oxygen when away from the base
- Adequate/required fittings, connections, tools, and appliances for servicing the oxygen
- Adequate crew training to meet FAA or equivalent oxygen servicing regulations

f. An appropriately secured portable oxygen tank with a delivery device must be carried on the transport vehicle so that oxygen delivery is not disrupted when transferring the patient to a hospital or other receiving facility. A portable oxygen tank is never to be secured between patient's legs or immediately adjacent to the patient while aircraft or ambulance is in motion.

g. There must be a backup source of oxygen of sufficient quantity to get safely to a facility for replacements in the event the main system fails. For air transports, this backup source can be the required portable tank as long as the portable tank is accessible in the patient care area during flights. For those flights meeting the definition of "long range," additional policies must be in place to address how additional portable oxygen can be obtained if planned surface transport times are exceeded.

h. There is appropriate storage of oxygen in the facility according to national health and safety guidelines (in the U.S. OSHA standards).

i. Oxygen flow meters and outlets must be padded, flush mounted, or so located to prevent injury to medical transport personnel, patients or passengers.

7. Maintaining IV Fluids

a. IV supplies and fluids are readily available.

b. Hangers/hooks are available that secure IV solutions in place or a mechanism to provide high flow fluids if needed.

c. All IV hooks are padded, flush mounted, or so located to prevent head trauma to the medical transport personnel in the event of a hard landing in the aircraft or emergency stop/maneuver of the ambulance.

d. Glass IV containers are not used unless required by specific medications and are properly secured.

e. A minimum of three IV infusion pumps (may be in the same device if individually metered lines) are on the transport vehicle or immediately available for critical care transports and as appropriate to the scope of care~~. IV infusion pumps that have a~~

~~customizable medication formulary and dosage calculations are encouraged.~~[8.a. below requires dosage calculation ability]

f. ~~Cuff pressure manometer (unless the cuff is filled with saline and not air) (RW/FW)~~ Moved to 5. c.

8. Medications consistent with the service's scope of care are accessible.

a. The transport service has a method of assuring that all medications and intravenous fluids are appropriately calculated. Examples of effective methods include the use of drug calculation lists, internet based programs and pre-programmed drug delivery systems such as those found in medication pumps. A customizable medication formulary within the IV pump is encouraged.

b. Medications are easily accessible.

c. Controlled substances are in a locked system and kept in a manner consistent with local and national regulations.

- Controlled substances are logged in and out in manner consistent with local and national regulations.

- For services that transport medications between bases, a policy exists that assures safe and secure transport of medications between bases that is consistent with state and/or national laws. In the U.S., there is a DEA license required for each base that stores and dispenses narcotics. A hospital pharmacy that stocks controlled substances for various locations needs a terminal distribution license, for example.

- If program's transports involve team members lodging overnight with controlled substances, there is a policy to address securing/storage.

- Policies include requirements for accounting for and disposing of unused controlled substances.

d. Storage of medications allows for protection from extreme temperature changes if environment deems it necessary.

e. If there is a refrigerator on the vehicle for medications, a temperature monitoring and tracking policy is required, and the refrigerator is used and labeled "for med use only".

f. There is a method to check expiration dates of medications and supplies on a regular basis.

9. Pressure Ulcers – Policies and procedures are written and followed to prevent pressure ulcers for transports longer than 2 hours and/or reduce the impact of pressure ulcers during transport.

a. Patient assessment and documentation of pressure ulcers is done prior to, during and following each transport, according to program policy

b. Pressure reducing devices and/or methods are used when needed.

10. Medical supplies and equipment must be consistent with the service's mission statement and scope of care. Additionally, the following equipment must be on the transport vehicle and available per Type of Care.

a. Cardiac monitoring capabilities: A cardiac monitor capable of performing defibrillation, external cardiac pacing and 12 lead capture is secured and positioned so that the display is visible.

b. Extra batteries or power source are available for cardiac monitor/defibrillator or external pacemaker.

11. Defibrillator:

a. Defibrillator is secured and positioned for easy access.

b. Semiautomatic or automatic external defibrillator is required for some BLS Providers (where permitted as scope of care for EMT).

c. Pediatric paddles/pads are available if applicable to the scope of care of the medical transport service.

d. A defibrillator with appropriate size pads and settings must be available for neonatal transports (if neonatal transports are conducted).

12. External pacemaker on-board or immediately available as a carry-on item.

13. Advanced airway and ventilatory support equipment:

a. Laryngoscope and tracheal intubation supplies, including laryngoscope blades, bag-valve- mask, endotracheal cuff pressure manometer (for air transport if cuff is air filled) and oxygen supplies, including PEEP valves; appropriate for ages and potential needs of patients transported

b. A mechanical ventilator, with CPAP and BiPAP (Bi-Level) capabilities, and circuit appropriate to age and scope of care on-board for critical care transports as pertinent to the scope of care of the medical transport service.

c. Equipment for alternative airways on-board transport vehicles at all times and protocol for management of missed airway attempts

d. Two suction units, one of which is portable and both of which must be required to deliver adequate suction

e. Pulse oximetry on-board for critical care missions or immediately available for ALS

f. End-tidal CO2 continuous wave-form monitoring capabilities available

g. If inhaled nitric oxide or other inhaled gases are used, policies address the following:

- Monitoring
- Cylinder safety
- Transportation regulations
- Occupational exposure
- Equipment issues
- Weight
- Mounting in the vehicle
- Delivery of the drug
- Emergency procedures(for example troubleshooting for battery failure, delivery fault, system failure)

14. Automatic blood pressure device, sphygmomanometer, doppler or arterial line monitoring capability on-board or immediately available

15. Devices for decompressing a pneumothorax and performing an emergency cricothyroidotomy available if applicable to scope of care of the medical transport service

a. Fetal doppler heart rate monitoring required for high risk OB transports

b. Blood Products

- For services who administer blood, there must be a policy addressing:
  - o The program has a written agreement with a certified blood bank.
  - o Determination of when the blood product was released from the Blood Bank. Blood must be maintained at a controlled temperature of ~~2-8~~ 1 – 10 [my Blood Bank recently corrected me on this as to range for blood transport] degrees C during transport and must be infused within 4 hours of removal from thermal control. The temperature of the cooling mechanism is monitored and recorded.

- o How the blood will be verified to match the patient including at least two health care providers in the process

- o Documentation of type of blood product, type, quantity, time it was started and stopped, Unit #, amount infused during the transport and whether or not a reaction occurred

- o Procedure to follow if a suspected or actual transfusion reaction occurs

- o Policy on disposition of unused blood

- If blood products are stored by the service, policy addresses:

  - o Proper storage conditions (Red blood cell products 1-6 degrees Centigrade or 33.8 -42.8 degrees Fahrenheit) [FYI,This is correct temp range for blood storage v. transport]

  - o Continuous monitoring and documentation of refrigerator temperature readings to ensure it is in range, including an audible alarm mechanism if temperature falls out of range

  - o Daily checks and documentation of the monitoring equipment and automatically recorded temperature readings

  - o Procedure to follow if temperature falls out of range

16. Isolette/Incubator (within the scope of the program)

    a. Isolette must regulate temperature and oxygen while allowing visibility and easy access to the neonate.

    b. There is a capability to mix oxygen with air within the range of 21% to 100%

    c. Corrected gestational age is an acceptable trigger for use of an isolette versus a portable infant transport unit. For example, a 24 week gestation at one month of age may still need consistent servo heat versus a warming pad.

    d. Ventilator must be specific to age and size of the patient

17. The transport vehicle design and configuration must not compromise patient stability in loading, unloading or transport operations.

    a. The transport vehicle must have an entry that allows loading and unloading without excessive maneuvering (no more than 45 degrees about the lateral axis and 30 degrees about the longitudinal axis) of the patient, and does not compromise functioning of monitoring systems, intravenous lines, and manual or mechanical ventilation.

b. There is a written policy on conducting CPR during transport.

c. A minimum of one stretcher must be provided that can be carried to the patient.

- Aircraft stretchers and the means of securing it in-flight must be consistent with national aviation regulations. Ambulance stretchers must comply with state and national laws.

- Policy indicates the maximum gross weight allowed on the stretcher (inclusive of patient and equipment) as consistent with manufacturer's guidelines.

- The stretcher must be large enough to carry the 95th percentile adult patient, full length in the supine position. (Estimated 95th percentile adult American male is 5'10" tall (177 cm.). and 242 lbs. (110.2 kg.) – may differ internationally)

- The stretcher must be sturdy and rigid enough that it can support cardiopulmonary resuscitation. If a backboard or equivalent device is required to achieve this, such device will be readily available.

    - The head of the stretcher is capable of being elevated at least 30 degrees for patient care and comfort.

    - If the ambulance stretcher is floor-supported by its own wheels, there is a mechanism to secure it in position under all conditions. These restraints permit quick attachment and detachment for patient transfer.

    - The stretcher mattress must be sealed to prevent absorption of blood and other body fluids, easily cleanable. The stretcher must have adequate padding for comfort and prevention of potential skin breakdown.

d. Securing the patient:

- Patients transported by air are restrained with a minimum of three cross straps. Cross straps are expected to restrain the patient at the chest, hips and knees.

- Patients that are loaded head forward must additionally be restrained with a shoulder harness restraint. (RW/FW)

- Belt locations must be adjustable along the length of the stretcher to accommodate patients' specific medical situations, for example, pregnant patients or specific injury locations.

- Patients under 40 pounds (18 kg.) must be provided with an appropriately sized restraining device (for patient's height and weight), which is further secured by a locking device.

o All patients from 10 to 40 pounds (4.5-18 kg) must be secured in a five-point safety strap device that allows good access to the patient from all sides and permits the patient's head to be raised at least 30 degrees.

o For infants up to 10 pounds (4.5 kg), a baby pod, car bed or heated bed may be used.

o If a car seat is used, it must have a nationally approved safety sticker, such as applies to FAA 135.128 or AHJ regulation.

e. Securing Equipment

• Isolette:

o There must be some type of restraining device within the isolette to protect the infant (under 10 pounds or 4.5 kg) in the event of air turbulence or poor road conditions.

o Isolette must be capable of being opened from its secured position in order to provide full access to the infant in the event of complicated airway problems or extrication from the isolette becomes necessary.

• Medical equipment will at no time share a seat belt intended for patient being secured to the stretcher. (head, side rails, or between/beneath/top of the patient's legs).

• Ancillary equipment (chargers, battery packs, etc.) must be secured to prevent becoming a projectile in the event of turbulence or a crash.

• Velcro is not to be used as a primary or exclusive securing device for medical equipment or ancillary devices.

• If straps or belts are used to secure equipment, they must be rated to keep the weight and configuration in place to a minimum of 5g's.

• Rated cargo nets are strongly preferred over individual straps or belts to secure equipment bags.

18. Supplemental lighting system will be installed in the transport vehicle in which standard lighting is insufficient for patient care.

a. A self-contained lighting system powered by a battery pack or a portable light with a battery source must be available.

b. There must be adequate lighting for patient care: Use of red lighting or low intensity lighting in the patient care area is acceptable if not able to isolate the patient care area from effects on the cockpit or on a vehicle operator.

c. For those flights meeting the definition of “long range,” additional policies must be in place to address how adequate cabin lighting will be provided during fueling and or technical stops to ensure that proper patient assessment can be performed and adequate patient care provided.

19. A minimum of four (4) electric power outlets is strongly encouraged with an inverter or appropriate power source of sufficient output to meet the requirements of the complete specialized equipment package without compromising the operation of any electrical transport vehicle equipment. Extra batteries are required for critical patient care equipment.

a. The electrical load is reviewed to minimize use of additional power cords and power strips.

b. Fixed wing aircraft are required to have two inverters in the aircraft, independent of each other (if conducting international transports)

20. Medical transport personnel must ensure that all medical equipment is in working order and all equipment/supplies are validated through documented checklists for both the primary and backup transport vehicle.

a. Equipment must be periodically tested and inspected by a certified clinical engineer.

b. Equipment inspections and records of inspections are maintained according to the program’s guidelines.

c. For long range transports, adequate back-up battery supply must be available to ensure all medical equipment remains functional during technical stops, should a power failure exist, etc.

21. The floor, sides and ceiling in the patient cabin of the aircraft or ambulance must be a surface capable of being cleaned and disinfected in accordance with national health and safety regulations with the appropriate disinfectant. Non-fabric sides/ceilings are strongly encouraged. Floors are not carpeted.

22. The interior of the aircraft must be climate controlled to avoid adverse effects on patients and personnel on board. (RW/FW/S)

a. Cabin temperatures must be measured and documented every 15 minutes during a patient transport until temperatures are maintained within the range of 50-95 degrees F (10-35 degrees C) for aircraft and range of 68-78 degrees F (20-25.5 degrees C) for ground vehicles. Thermometer is to be mounted inside the cabin.

b. The program has written policies that address measures to be taken to avoid adverse effects of temperature extremes on patients and personnel on board.

c. In the event cabin temperatures are less than 50 degrees F or greater than 95 degrees F, the program will require documentation be red flagged for the QM process to evaluate what measures were taken to mitigate adverse effects on the patient and crew and what outcomes resulted.

d. For those flights meeting the definition of "long range," additional policies must be in place to address how adequate cabin temperature will be maintained during fueling and/or technical stops to ensure patient, crew and passenger comfort.

23. It is strongly encouraged that crews have life preservers easily accessible on helicopter flights operated over water that is beyond autorotational distance from the shoreline – from take off until no longer over water. (RW)

Examples of evidence to meet compliance:
Cabin temperatures, tracking, trending and measures to mitigate adverse effects are expected to be documented as part of the QM process – not necessarily part of the patient's record.

03.07.00 INFECTION CONTROL

03.07.01 Policies and procedures addressing patient transport issues involving communicable diseases, infectious processes and health precautions for emergency personnel as well as for patients must be current with the local standard of practice or national standards (in the U.S., OSHA and as published by the Centers for Disease Control (CDC), also World Health Organization (WHO).

1. Policies and procedures must be written and readily available to all personnel of the medical transport service.

2. There is an Exposure Control Plan (ECP) consistent with national standards (in the U.S., OSHA guidelines). The ECP includes at a minimum:

a. A reference for work restrictions for personnel exposed to or infected with an infectious disease (reference Table 2.2 in Guide to Infection Prevention in EMS)

b. A list of the risks associated with EMS system responders and medical teams as well as diseases prevalent in coverage areas specific to the program such as pertinent national risks.

c. A bloodborne pathogen program consistent with the OSHA Bloodborne Pathogen Standard (http://www.osha.gov/SLTC/bloodbornepathogens/bloodborne_quickref.html)

3. Additional medical and agency resources pertinent to infection control must be identified and made available in policies to all medical transport personnel, for example, isolation precautions for specific diseases/conditions.

4. Education programs will include the institution's/service's infection control resources, programs, policies and CDC and OSHA recommendations (or equivalent national guidelines). In addition, initial and annual education regarding identification, management and safety related to patients with potentially infectious pathogens is documented.

5. Infection control policies and procedures will be reviewed on an annual basis.

6. Education programs and policies regarding latex allergies may include:

a. Patients and employees at risk for latex sensitivities and symptoms manifested by an allergic reaction

b. Maintaining a latex-safe environment

c. Methods to minimize latex exposure to lessen risks of allergic reactions in medical personnel

7. Preventive measures – Medical transport teams transporting patients must practice preventive measures lessening the likelihood of transmission of pathogens. Policies and procedures address:

a. Personnel health concerns and records of:

- Pre-employment and annual physical exams or medical screening to include:

o History of acute or chronic illnesses

o Illnesses requiring use of medications that may cause drowsiness, affect judgment or coordination

o Immunization history appropriate to the scope of practice – transport team members encouraged to have tetanus immunization (measles, mumps, and rubella (MMR) immunizations are encouraged for those born after 1957.) Hepatitis B vaccine must be offered and if the employee has not previously had the vaccination or does not have adequate titers and declines, the program must have a signed declination form if employee declines. The flu vaccine is strongly encouraged. [Recommended by CDC for all healthcare workers; program's hospital I just consulted requires it and our hospital is making it a requirement coming this flu season]

o Weight and lifting/strength/agility testing as appropriate to policies of the service

o Determination of whether individual is fit for duty

- Provide annual tuberculosis testing (purified protein derivative) especially if conducting international transports and other testing, screenings and vaccinations as consistent with current national guidelines (such as the CDC, AHJ, or WHO). This includes medical personnel, pilots and mechanics. (The CDC or WHO may deem the localized region low risk and annual testing not necessary, but this applies only if the service does not operate or respond outside of the local region)

- International immunization history of the transport team is documented if appropriate to the scope of care and per CDC or WHO recommendations.

b. Management of communicable diseases and infection control in the transport environment is outlined in policies.

- Use of gloves, eye and mouth protection. Personal protective equipment is readily accessible in the transport vehicle or issued to the medical transport team.

- Use of safety needles and blunt or other type system to lessen the risk of needle sticks to those who come in contact.

- Sharps disposal container for contaminated needles and collection container for soiled disposable items on the transport vehicle. Policy will promote proper disposal of sharps as well as tracking and investigation of sharps that are not properly disposed.

- Cleaning and disinfecting with appropriate disinfectant of the patient cabin/compartment area, equipment, and personnel's soiled uniforms.

- Mechanism for identifying those at risk for exposure to an infectious disease.

c. A plan for communication, as soon as possible (verbal, electronic), between the medical transport service personnel, EMS providers, and hospital when exposure is suspected/confirmed to include what follow-up is necessary.

- Follow-up is documented.

d. A policy for special precautions when transporting patients with known infectious diseases.

- There is also a method to verify patient’s immunization history for international transport.

- Blood specimens or other potentially infectious materials must be placed in a leak proof, sealed container during transport.

• Disposal of hazardous materials from the aircraft or ambulance meets federal OSHA Guidelines.

• N95 Particular Filter Masks must be fit tested for medical personnel who require respiratory protection (this includes pilots who may be susceptible to airborne infections).*

*OSHA **does** not ban **beards** per se, but it **does** require employers to ensure that **bearded employees** who are required to **wear** tight-fitting facepieces trim their **beards** so that they do not interfere with the sealing surface of the **respirator** or are not so large that they **could** interfere with valve function.

e. Proper cleaning or sterilization of all appropriate instruments or equipment

f. Hand ~~washing~~ hygiene ie performed before and after touching a patient , before clean/aseptic procedures, ~~each invasive patient intervention~~ after body fluids exposure risk, after touching patient's surroundings, before handling medications, and before and after removing gloves

~~• When hand washing facilities are not available, alcohol-based hand rub must be used.~~Hand washing with an antimicrobial soap and water is indicated when hands are visibly soiled, contaminated with proteinaceous material or exposed to body fluids. However, it is recognized that this may not be possible in the transport environment in which case an alcohol-based hand rub should be used. ~~An~~ An alcohol-based hand rub is preferred for all other hand hygiene. [
~~• If alcohol based hand rub cleaners are used, hands must be washed as soon as feasible with soap and running water.~~

g. Management maintains documentation related to any potentially infectious pathogens including confidential records of exposure incidents and post-exposure management. (Post exposure management includes identification and testing of source patient, baseline and follow-up testing of exposed employee, making counseling resources available, and offering Hepatitis B vaccination.) All transport team vaccination records are kept appropriately.

h. A policy addresses access to post exposure prophylaxis (PEP) medications for HIV, meningococcal infections, etc. The PEP medications must be available in a timely manner for all team members.

i. Where there is likelihood of occupational exposure, the following are prohibited: eating, drinking, applying cosmetics or handling contact lenses.

j. Food and drink will not be stored where blood or other potentially infectious materials are present. If the service performs transports with long in-flight times, there must be a policy to address the nutritional needs of patients and personnel.

Compliance with FEMA Independent Study Courses – Standard 03.05.03, 1. h.

Position	IS-100#	IS-200.b	IS-700.a	IS-800.b
RW - Pilot	X	X	NR	NR
RW - Medical	X	X	NR	NR
FW - Pilot	NR	NR	NR	NR
FW - Medical	X	X	NR	NR
Ground	X	X	NR	NR
RW - Management	X	X	X	X*
FW - Management	X	X	X	X*
Ground - Management		X	X	X*
Medical Escort	NR	NR	NR	NR

Key to table

Any IS-100 course is acceptable, but IS 100.b is preferred

* Only one key manager is required. This should be the person responsible for disaster planning and coordinating a response.

X = required

NR = not required

IS 100.a – Introduction to the Incident Command System
IS 200.b – ICS for Single Resource and Initial Action Incidents
IS 700.a – National Incident Management System, An Introduction
IS 800.b – National Response Framework, An Introduction

04.01.00 THE AVIATION CERTIFICATE HOLDER

The FAA Part 135 Certificate Holder or other AHJ has the responsibility and authority to make all flight release decisions. (RW/FW) Reference 14CFR Part 135.77 in U.S.

04.01.01 The certificate holder must have procedures established for locating each flight for which an FAA (or other AHJ) flight plan is not filed. (See References 14CFR Part 135.79 – Flight locating requirements) (RW/FW)

04.02.00 COMMUNICATIONS EQUIPMENT

04.02.01 Communications equipment on the aircraft and ambulance – All communications equipment must be maintained in full operating condition and in good repair. Ambulance communications equipment must be capable of transmitting and receiving clear and understandable voice communications to and from the base station at a reasonable distance. Radios on aircraft and ambulances (as range permits) must be capable of transmitting and receiving the following:

1. Medical direction

2. Communications center

3. Air traffic control (aircraft)

4. Emergency Services (EMS, law enforcement agencies, fire, etc.) (Surface, RW and FW responding to EMS).

04.02.02 Pilot is able to control and override radio transmissions from the cockpit in the event of an emergency situation. (RW/FW)

04.02.03 Medical team must be able to communicate with each other during flight. Helmets with communications capabilities are required on RW.

04.02.04 If cellular phones are part of the on-board communications equipment, they are to be used in accordance with FCC regulations. (See References) (RW/FW)

1. For aircraft, cellular phones must be shut off or placed in airplane mode whenever required by the AHJ and the notice according to FCC or other AHJ regulations must be posted in the aircraft. (RW/FW)

2. A policy prohibits cellular phone or other communications devices without an acceptable integrated hands free system use while the vehicle is in motion or while refueling except for vital communications or as compliant with state or national regulations. Texting is strictly prohibited. (RW/FW/S)

3. Surface providers whose medical director(s) has established the requirement for transmission of biomedical telemetry may utilize the cellular telephone system for such communications.

04.03.00 COMMUNICATIONS SPECIALISTS

A Communication Specialist must be assigned to receive and coordinate all requests for the medical transport service.

04.03.01 Staffing

1. Scheduling and individual work schedules demonstrate strategies to minimize duty time fatigue, length of shift, number of shifts per week and day-to-night rotation.

a. Call volume and other required duties are considerations in the number of communication specialists on duty at any one time. (Programs must be able to demonstrate how they assign staffing levels, for example, number of communication specialists on duty per shift relevant to the number of vehicles and teams in service.)

b. There are relief personnel with the appropriate training available for periodic breaks.

c. Personnel must have at least 10 hours of rest with no work-related interruptions prior to any scheduled shift of 12 hours or more. The intent is to preclude back-to-back shifts with other employment, commercial or military flying, or significant fatigue-causing activity prior to a shift.

d. On-site shifts are routinely scheduled for a period not to exceed 12 hours. Shifts in excess of 18 hours are not acceptable. In addition:

• Personnel must have the right to call “time out” and be granted a reasonable rest period if a team member determines that he or she is unfit or unsafe to continue duty, no matter what the shift length. There must be no adverse personnel action or undue pressure to continue in this circumstance.

• Management must monitor transport volumes and personnel’s use of the “time out” policy to ensure that personnel utilize the right to call “time-out” appropriately.

• A risk assessment that addresses fatigue and focuses on volume and other distractions in the communications center.

2. Communications personnel are provided with an opportunity to join wellness programs offered by the medical transport service.

04.03.02 Training of the designated person must be commensurate with the scope of responsibility of the Communications Center personnel.

1. Initial training, which must include:

a. Assistance with the hazardous materials response and recognition procedure using appropriate reference materials.

b. Computer literacy and software training.

c. Crew Resource Management (CRM) pertinent to communications.

d. Customer service/public relations/phone etiquette.

e. Familiarization with equipment used in the field and inter-facility settings.

f. General safety rules and emergency procedures pertinent to medical transportation and transport following procedures.

g. Knowledge of EMS – roles and responsibilities of the various levels of training – BLS/ALS, EMT/Paramedic.

h. Knowledge of national aviation regulations and Federal Communications Commission or AHJ regulations or equivalent as pertinent to medical transport service. (RW/FW)

i. Medical terminology and obtaining patient information.

j. Navigation techniques/terminology, ~~transport following~~ [repeat of f. above] and map skills – including an understanding of GPS navigation and approaches. (RW/FW)

k. Post Accident/Incident Plan (PAIP).

l. Quality management.

m. Sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue.

n. State and local regulations regarding EMS.

o. Stress recognition and management to include resources for Critical Incident Stress Debriefing or other type of post critical incident counseling.

p. Types of radio frequency bands used in medical and ground EMS.

q. Understanding weather interpretation and how to retrieve current and forecasted weather to assist the pilot during a transport if other means are not in place within the organization. (RW/FW)

2. There is evidence of annual training and of training as policies and equipment changes occur and also includes:

a. AMRM or Crew Resource Management (CRM) pertinent to communications.

b. Post Accident/Incident Plan (PAIP).

c. Sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue.

d. Stress recognition and management to include resources for Critical Incident Stress Debriefing or other type of post critical incident counseling.

Examples of evidence to meet compliance:
If the FAA Part 135 Certificate Holder is not the employer of communications center staff, there is evidence of interface with training and policies that meet the Certificate Holder's operational control specifications.

3. Certifications (such as EMT, EMD, NAACS Certified Flight Communications Course or equivalent) are strongly encouraged, and if required by position description, must be current. NAACS Certified Flight Communicator Course or equivalent education (see criteria for equivalent education in References) is encouraged within 2 years of hire. Emergency Medical Dispatch (EMD) certification is encouraged within 2 years of hire if the service receives emergency requests for transport from the general public.

04.04.00 COMMUNICATIONS QM PROGRAM

Communications is part of the program's QM program (and there are QM criteria specific to Communications), and communications personnel are involved in staff, safety and QM meetings

04.05.00 SHIFT BRIEFINGS

There are shift briefings conducted at the beginning of each shift to assure continuity between shifts that include communications personnel.

04.06.00 POST TRANSPORT DEBRIEF

A post transport debrief is conducted after each transport that includes the communications specialist when communications issues are involved. (RW/FW/S)

04.07.00 FORMAL MEETINGS

Formal periodic meetings (separately held or part of the program's staff meetings) are strongly encouraged for which minutes are kept on file. Minutes will include who is presiding, discussion and who was present. There are defined methods, such as a communications book or electronic mechanisms, for disseminating minutes and information between meetings.

04.08.00 COMMUNICATIONS POLICIES - must be in writing and include the following:

04.08.01 Transport requests are accepted from authorized personnel with sensitivity to cultural differences and without discrimination due to race, creed, sex, color, age, religion, national origin, ancestry or handicap. “Emergency calls” or other requests that involve a patient with a potentially life-threatening illness or injury who requires rapid transportation and intervention at a location within the defined service area are accepted without prescreening for the ability to pay.

04.08.02 There is a written policy that at the time of a request, the pilot is not informed of the patient condition or age unless there are operational considerations (for example: weight, extra equipment etc.)(RW/FW)

04.08.03 There is a written policy designed to discourage “shopping” by first responders and other requesting agents that specifically addresses how the program interfaces with other air medical services in the same coverage area to alert them of a weather turn-down. It is recognized that programs in a common geographic area may experience differing weather conditions and that programs may have differing capabilities. Programs (RW/FW that respond locally to small clinics – essentially scene flights) should:

1. Ask the requesting agent if another flight program had turned down the request.

2. Notify the requesting agent that the programs in their coverage area share weather information and turn-downs for safety reasons.

3. Notify other programs within their coverage area of the turn-down as soon as possible.

4. Provide the on duty pilot with contact information from other programs for questions about the weather concerns and details (fog, precipitation, wind, etc.).

5. Inform the on-duty pilot immediately if notified of a weather turn-down by another program.

6. Have written evidence of tracking the requests turned down for weather and of participation in regionalnotification systems as described in 1 through 5 above.

04.08.04 A readily accessible post accident/incident plan must be part of the transport following protocol so that appropriate search and rescue efforts may be initiated in the event the aircraft or surface ambulance is overdue, radio communications cannot be established nor location verified. There must be a written plan to initiate assistance in the event the ambulance is disabled.

1. Post accident/incident plans are easily identified, readily available, and understood by all program personnel and minimally include:

a. List of personnel (with current phone numbers) to notify in order of priority (for communication specialist to activate) in the event of a program incident/accident (for air or surface). This list must minimally include sponsoring organization individuals where applicable, risk management/attorney [added slash], family members of team members, family of patient, referring hospital, receiving hospital, security (as applicable), human

resources (as applicable), media relations or pre-identified individual who will be responsible for communicating with the media, state health department and other team members.

b. Notification plans include appropriate family members and support services to family members following a tragic event. There must be timely notification of next of kin. Next of kin is no longer strictly defined at the federal level so the crew member determines this on a data sheet and reviews annually. It is strongly recommended that:

- Family assistance includes coordination of family needs immediately after the event e.g. transportation, lodging, memorial/burial service, condolences, initial grief support services/referrals, (usually through appointment of a family liaison).

- Continuity includes follow through with the family after the event (e.g. submission of crew to national EMS memorial service, the continuation of grief counseling and support referrals, the inclusion of families in decision-making on anniversaries/memorials, and check-ins following release of NTSB reports, or equivalent, etc.).

c. Consecutive guidelines to follow in attempts to:

- Communicate with the aircraft or ambulance.

- Initiate search and rescue or ground support.

- Develop a back-up plan for transporting the ambulance patient in the event of an incident or accident and/or the aircraft or ambulance is inoperable.

- Identify an individual from the program as the scene coordinator to coordinate activities at the crash site. (RW/FW)

d. Preplanned time frame to activate the post accident/incident for overdue aircraft or ambulance.

e. A method to insure accurate information dissemination.

f. Coordination of transport of injured team members to higher level of care if needed and/or back to local area.

g. Procedure to document all notifications, calls, communications and to secure all documents and tape recordings related to the particular incident/accident.

h. Procedure to deal with releasing information to the press.

i. Resources available for CISD, Psychological First Aid (PFA) or other counseling alternatives.

j. Process to determine whether the program and/or component of the program (RW/FW/S) will remain in service. If it is determined that the program or a component of the program will go out of service, other regional transport services, primary customers, EMS, public service groups and other applicable groups are advised. [Deleted parentheses around the last sentence]

2. A drill is conducted semi-annually (one in daytime and one at night) to exercise the post incident/accident plan. This drill must include pilots, medical personnel, communications personnel, mechanics and administrative personnel. Written debriefing and critique of PAIP drills must be shared with all staff members.

a. A full drill must test each of the modes of transport (if the program has RW, FW and S or combination thereof) within a three-year time frame.

b. An actual incident may be used as appropriate if documented and documentation includes loop closure. A table top drill – defined as a drill where there are position challenges between the pilot and the communications specialist only and not covering all the components and disciplines listed in the PAIP is not considered a full drill.

04.08.05 An annual ~~general~~ test of emergency procedures in the communications center that includes an evacuation drill and capability to re-establish communications in the event of a fire, intruder on premises, catastrophic failure of the communications center, helipad mishaps, forces of nature etc.

04.08.06 Program is encouraged to participate in regional disaster preparedness drills.

Examples of evidence to meet compliance:
The PIAP plan and drills to test the plan include all modes of transport performed by the program. Results of the drill are disseminated to the entire staff. A drill to test other emergency procedures as they apply to the facility is planned and documented.

04.09.00 FLIGHT/TRANSPORT FOLLOWING

04.09.01 Public Safety Answering Points (PSAP), dispatch centers such as 911 centers or any other agency, hospital or service, must contact the program's communications center directly to request a transport. A specific base must not be contacted directly for a patient/victim response.

04.09.02 Satellite tracking systems are strongly recommended for all aircraft and required for aircraft that do not have a 406 MHz ELT. Initial coordination must be documented and continuous flight/transport following (or initiating and following surface transport) must be monitored and documented and must consist of the following:

04.09.03 Initial coordination to include communication and documentation of:

1. Time of call (Time request/inquiry received).

2. Name and phone number of requesting agency.

3. Age, diagnosis or mechanism of injury.

4. Referring and receiving physician and facilities (for interfacility requests) as per policy of the medical transport service.

5. Verification of acceptance of patient and verification of bed availability by referring physician and facility.

6. Destination airport, refueling stops (if necessary), location of transportation exchange and hours of operation. (RW/FW)

7. For those flights meeting the definition of “long range”, flight planning must include the need for Auxiliary Power Unit (APU), Ground Power Unit (GPU), catering, oxygen servicing, etc. if any technical stops are required/anticipated including contingency planning for alternative stops as well as safety and security for landings abroad. (RW/FW)

8. Weather checks prior to departure and during mission as needed.

9. Previous turn-downs of the mission (i.e. helicopter shopping) (RW/FW services that respond locally to small clinics – essentially scene flights).

10. Transportation coordination at sending and receiving areas. (RW/FW)

11. Time of Dispatch (Time medical personnel notified transport is a go, post pilot/vehicle operators’ OK).

12. Time Depart Base (Time of lift-off or departure from base or other site).

13. For interfacility transports, number and names of persons on board, including the patient and any family members.

14. Amount of fuel on board. (RW)

15. Estimated time of arrival (ETA).

16. Pertinent LZ information. (RW)

17. Time Arrive Location (Time transport vehicle arrives at landing zone, helipad, airport or referring area).

18. Time Depart Location (Time transport vehicle lifts off from landing zone, helipad, or airport or leaves referring area).

19. Time Arrive Destination (Time patient transferred to receiving clinical team; in unusual circumstances, this may not be at a healthcare facility).

20. Time Depart Destination (Time left patient destination. This will be recorded for transports not ending at base).

21. Time Arrive Base (Time arrive base after call completed).

22. Time Aborted (Time authorized transport is aborted/canceled after dispatch).

04.09.04 Concluding documentation for all modes of transport may include calculation of:

1. Call Received (by Communications Center).

2. Dispatch (time interval between call received and confirmed to depart).

3. Enroute (time interval between confirmation to depart and actual departure).

4. At referring (time interval between departure and arriving at scene or referring facility).

5. At patient (time interval between arriving at scene or referring facility and initial patient contact).

6. Bedside time (time interval between initial patient contact and completing packaging ready to move with the patient to the ambulance or aircraft).

7. Leave referring (time interval between departing scene or hospital bedside with the patient and driving or lifting off).

8. At receiving (time between driving or lifting off from scene or referring facility to arriving at receiving facility).

9. Transfer of care (time between arriving at receiving facility and completing turnover of care).

10. Available (time between turnover of care and return to aircraft or ambulance and back in service).

04.09.05 Additional criteria for fixed wing: operations must be conducted using VFR flight plans minimally and IFR flight plans whenever feasible.

1. Procedures ensure that pilots use Air Traffic Control (ATC) radar and/or communications services whenever operating under VFR and within the service area of an ATC facility or a communications service.

2. In addition to IFR flight plans, there are procedures to notify the communications center of the specific aircraft departure time, estimated time of arrival and arrival at the scheduled destination.

3. For a fixed wing service that flies only pre-scheduled flights, an answering service may serve as the receiving point for requests for service.

a. Answering service personnel must be trained to obtain specific information when receiving a request to schedule fixed wing patient transportation.

b. The items must include but not be limited to:

- Name and telephone number of caller.
- Patient type/condition.
- Date and time call received.
- Anticipated or scheduled date/time of departure.
- Location of patient and destination.

c. Specific methods must be used by the answering service for contacting the medical service coordinator (or designee) to relay request information, i.e., pager numbers, telephone and/or cellular numbers.

d. Guidelines of timely notification (less than 30 minutes) must be established. Alternate procedures for notification must be in place in case the coordinator is not available to receive the request/information.

e. An on-call roster of the medical team must be provided to the answering service. The roster includes a priority phone list of personnel to notify in the event of an emergency.

04.10.00 COMMUNICATIONS DURING A TRANSPORT

04.10.01 The medical transport service must provide direct communication capabilities for parties involved in the transport, i.e., medical personnel, ground ambulance providers, to ensure rapid dissemination of information, coordination of efforts and problem solving. In each case, direct contact between the parties must be established whenever possible as follows: (This also applies to Surface)

1. Direct or relayed communications to communications center (while in motion) specifying locations and ETA's, and deviations, if necessary.

a. A sterile cockpit is maintained below predetermined altitudes so that the pilot is able to transmit and receive vital information and to minimize distractions during any critical phase of flight. No external communications are permitted by the medical team and no patient information is transmitted at this time unless radios for medical report are isolated. (RW/FW)

b. There is a policy/procedure for diversions from original destinations (airports, hospital landing sites, alternative scene LZ's) (RW/FW)

2. There is a written policy that addresses direct or relayed communications to the communications center to specify all takeoff and arrival times.

3. For long range transports there are policies that outline plans for communications between crew members who may be separated while transporting the patient by surface or by hotel stays.

4. Time between each communication.

a. Time between each communication must not exceed 15 minutes while in flight unless a system of continuous automatic position tracking is utilized. (RW)

b. There is a policy to address continuous automatic position tracking, if utilized, to ensure there are also verbal communications at predetermined times. (RW/FW)

c. If an IFR or VFR flight plan has not been filed, time between communications must not exceed 15 minutes if a means to communicate, directly or indirectly, is available. (RW/FW)

d. Time between communications must not exceed 45 minutes while on the ground (RW/S) unless ground ambulance continuous tracking software is used.

e. Alternate agencies are used to relay communications when direct contact is not possible.

5. There is a written policy that while the aircraft is on a mission, a dedicated communicator assigned to flight follow will be present in the communications center at all times. (RW)

04.11.00 THE COMMUNICATIONS CENTER

04.11.01 Equipment and capabilities

1. At least one dedicated phone line for the medical transport service.

2. A system for recording all incoming and outgoing telephone and radio transmissions with time recording and immediate playback capabilities. Recordings must be kept for a minimum of 90 days but it is strongly encouraged to keep recordings for a minimum of two years.

3. Capability to immediately notify the medical transport team and on-line medical direction (through radio, pager, telephone, etc.).

4. A status display with information about pre-scheduled flights/patient transports, the medical transport team on duty, weather and maintenance status.

5. Current local aircraft service area maps and navigation charts must be readily available for avi-

ation operations. Mapping software could supplement current charts. Road maps or GPS software must be available for ground transports services.

6. Seating and workstations are ergonomically appropriate for each communications specialist on duty.

7. Backup emergency power source for communications equipment, or a policy delineating methods for maintaining communications during power outages and in disaster situations.

04.11.02 Policies and plans

1. Communications policy and procedures manual.

2. A method to keep noise and other distractions (traffic) from the communications area while the communications specialist is involved with a medical transport mission.

3. An evacuation plan that provides for continuous communications with transport personnel in the event there is a need to evacuate the communications center.

05.00.00 – ROTORWING STANDARDS

PREFACE – The standards below are as appropriate to the country of residence and the specific aviation regulator of that country as referenced by the term “Authority Having Jurisdiction” (AHJ). However, Federal Aviation Authority (FAA), Maintenance Repair Organization (MRO), European Aviation Safety Authority (EASA) or Transport Canada (TC) are considered the minimal regulations that all other national regulations are measured against. CAMTS Accreditation Standards, as a measure of quality, are part of a voluntary process and frequently exceed the AHJ’s aviation regulations.

05.01.00 OPERATIONS

05.01.01 Certificate holder must meet all Authority Having Jurisdiction (AHJ) regulations specific to the operations of the medical service in the country of residence, as applicable. This includes an AHJ regulator’s Certificate (public service medical transport agencies are included in this requirement) and Ambulance Operations Specifications specific to EMS operations. The transport service demonstrates compliance with the legal requirements and regulations of all local, state and federal agencies under whose authority it operates.

05.01.02 All “patient transport flights”* must be conducted under AHJ regulations for weather minimums, flight crew duty time limitations and weight and balance requirements. In the U.S., this refers to FAA Part 135 regulations.

*Patient transport flight is defined as any flight segment conducted by rotor or fixed wing equipment that is necessary for transporting patients and the medical teams required to care for such patients. Flight segments included in this definition are: flights for refueling and repositioning for a specific patient transport (including organ donor transports); picking up and returning medical teams to an assigned base; the actual flight segment involving patient movement; and any time medical teams are on board.

05.01.03 There is an established written policy to ensure that the pilot is notified of all carry-on baggage and/or equipment for weight and balance considerations (so that carry-on baggage/equipment is weight and placement acceptable).

05.01.04 There is a written policy and outline of passenger safety briefings in accordance with 14CFR Part 135.117 or national equivalent.

05.02.00 AIRCRAFT

Reference Section 03.06.00 Medical Configuration of the Transport Vehicle.

05.03.00 WEATHER

05.03.01 Visual weather minimums must be specified for day and night local, and day and night cross country.

05.03.02 The “local flying area” must be well defined by geographic or manmade features and limited to those areas as defined by the certificate holder and as consistent with AHJ regulations as applicable in the respective country if the same level of safety is verifiably achieved.

05.03.03 Cross country flights are those outside of the local flying area.

05.03.04 There is a system for obtaining pertinent weather information. The pilot in command (PIC) is responsible for obtaining weather information according to policy that must address at a minimum:

1. Routine weather checks

2. Weather checks during marginal conditions

3. Weather trending

05.03.05 Communication between pilots, medical personnel, and communication specialists at shift change regarding the most current and forecasted weather is part of a formal briefing.

05.03.06 VFR “response” weather minimums must meet or exceed “National Regulations” as applicable to the certificate holder or operator. In the U.S., FAA 135.609 must be met. Outside of the U.S., EASA, FAA AO21 or TC regulations must be applied.

1. Minimums are never to be considered as mandatory launch criteria. All factors are to be considered by the pilot who has final authority over a “go, no-go” decision. However, any team member who is uncomfortable with launching on or continuing flight into conditions perceived as hazardous has the absolute right to request the pilot return to safer conditions immediately or as soon as possible under IMC conditions.

2. Policies include provisions for patient care and transport alternatives in the event that the aircraft must use alternate landing facilities due to deteriorating weather.

05.03.07 Higher weather minimums are strongly encouraged for new and relief pilots.

05.03.08 When transitioning to an off-airport site after an instrument approach, the following must apply:

1. Local VFR weather minimums must be followed if within a defined local area and if the route and off-airport site are familiar.

2. Cross country VFR weather minimums must be followed if not in defined local area or if the pilot is not familiar with route and off-airport site.

3. For Point-In-Space (PINS) helicopter instrument approaches comply with FAR 135.613 or AHJ procedures.

05.04.00 PILOTS

05.04.01 There must be a minimum of four flight-ready pilots permanently assigned per single-pilot aircraft that is available 24 hours a day. Temporary staffing by fewer pilots is permitted for no more than 6 months while finding and training a replacement pilot provided such staffing meets crew rest requirements of the AHJ. No fewer than six permanently assigned pilots are required for two-pilot operations at a service that is available 24 hours a day. It is encouraged to have eight pilots or four 2-pilot crews for two-pilot operations at a service that is available 24 hours a day. This will be pro-rated for services that fly less than 24 hours per day.

1. Scheduling practices reflect consideration for minimizing duty-time fatigue, length of shift, number of shifts per week, and day-to-night rotation. The implementation and maintaining of an operator-specific fatigue risk management system (FRMS), based on a scientific analysis, is strongly encouraged.

2. Physical well-being is promoted by the employer wellness programs to include but not be limited to balanced diet, weight control, no smoking.

3. Operations facilities must include a quiet area for flight planning, training, record-keeping and rest.

Examples of Evidence to Exceed Compliance:
Two-pilot crews at night or both day and night shifts

05.04.02 The pilot determines that the aircraft is in airworthy condition (and that appropriate pre-flight, takeoff and landing procedures are followed.)

1. Prior to the first flight or shift of duty, the pilot:

a. Verifies that maintenance is not due on the aircraft

b. Performs a pre-flight inspection according to the manufacturer's checklist

2. Operational practices also include:

a. A walk-around inspection of the aircraft prior to each takeoff

b. Establishing contact (when possible) between the pilot and ground units securing an unprepared landing site before the landing occurs

c. Coordinating arrangements for the pickup or delivery of a patient at private or hospital helipads at least 15 minutes prior to landing

05.04.03 Pilot in command (PIC) qualifications: [added s]

1. The pilot must possess at least a commercial rotorcraft-helicopter and instrument helicopter rating.

2. If not exceeded by applicable national AHJ regulations, the pilot in command must possess 2000 total flight hours (or total flight hours of at least 1500 hours and recent experience that exceeds the operator's pre-hire qualifications such as current air medical and/or search and rescue experience or ATP rated) prior to an assignment with a medical service with the following stipulations:

a. A minimum of 1200 helicopter flight hours

b. At least 1000 of those hours must be as PIC in rotorcraft

c. 100 hours unaided (if pilot is not assigned to an NVG base/aircraft)

d. 50 hours unaided as long as the pilot has 100 hours aided (if assigned to an NVG base/aircraft)

e. A minimum of 500 hours of turbine time—1000 hours of turbine time strongly encouraged

3. ATP certificate and instrument currency is strongly encouraged.

Examples of Evidence to Exceed Compliance:
All pilots are ATP rated.

05.04.04 Pilot training requirements

1. The certificate holder will maintain a national approved training program, as applicable, in accordance with 14CFR Part 135, subpart H, or the national equivalent. The training program must contain a procedure for evaluating previous experience and training to determine what specific training a new flight crewmember will require to satisfactorily meet all required training and checking standards. The certificate holder will also have a process in place to properly track experience levels of new PICs that must comply with the higher weather minimums as required under 14CFR Part 135.225 (e) or other national equivalent.

2. Initial training must, at a minimum, consist of the following and be verified by written criteria, outlines or curriculum. Use of AHJ regulations approved training devices and simulators (aircraft appropriate) are strongly encouraged along with mission specific scenario-based training.

a. Terrain and weather considerations specific to the program's geographic area

b. Orientation to the health care providers.

c. Orientation to infection control, medical systems installed on the aircraft and patient loading and unloading procedures

d. Orientation to the EMS and public service agencies unique to the specific coverage area

e. Inadvertent Instrument Meteorological Conditions (IIMC) recovery procedures conducted solely by reference to instruments or IFR currency

f. IFR currency encouraged

g. Controlled Flight into Terrain (CFIT) prevention training for day or night operations that includes Authority Having Jurisdiction regulations for acceptable vertical and lateral deviation limits from the proposed en route course and altitude based on terrain and obstructions

h. 50% of the recommended training hours must be conducted at night or in night conditions in a flight training device (FTD) or FFS. Full flight simulation is strongly encouraged.

i. Minimum requirements for specific training in aircraft type:

- Factory school or equivalent (ground and flight). Training must include normal, abnormal and emergency procedures as specified by the OEM.

- 5 hours as pilot in command or at the controls prior to EMS missions if transitioning from a single; from a twin to a single (only outside of EASA countries); from a twin to a single (only outside of EASA countries); or from a twin to a twin.

- 10 hours as pilot in command or at the controls prior to EMS missions if transitioning from a single to a twin engine aircraft

j. Minimum requirements for area orientation:

- 5 hours area orientation of which two hours must be at night as pilot in command or at the controls prior to EMS missions

- Training hours in aircraft type and area orientation may be combined depending on the experience and background of the pilot

k. Air Medical Resource Management (AMRM), consistent with national aviation regulations or Aeromedical Crew Resource Management (ACRM), consistent with Authority Having Jurisdiction regulations. (Interactive courses strongly encouraged) Specific content of AMRM/ACRM training and organization of topics must reflect an organization’s unique culture and specific needs, such that curriculum topics may include, but not be limited to:

- Aeronautical Decision Making

- Information processing
- Stress and performance
- Task Complexity

- Communications Processes and Decision Behavior
  - Briefings
  - Inquiry/advocacy/assertion
  - Crew self-critique re: decisions and actions
  - Conflict resolution
  - Communications and decision making
- Team Building and Maintenance
  - Leadership/followership/concern for tasks
  - Interpersonal relationships/group climate
- Workload Management and Situation Awareness
  - Preparation/planning/vigilance
  - Workload distribution/distraction avoidance
  - Individual factors/stress reduction

3. Annual recurrent training minimally includes the following and is verified by written criteria, outlines or curriculum. Use of AHJ regulations' approved training devices and scenario-based simulators are strongly encouraged along with mission specific scenario-based training for recurrent training cycles.

a. Authority Having Jurisdiction regulations training requirements

b. Inadvertent Instrument Meteorological Conditions (IIMC) recovery procedures conducted solely by reference to instruments every six months at a minimum or IFR currency if operating IFR. It is strongly recommended that quarterly IIMC training be implemented.

c. CFIT prevention training for day or night operations that includes AHJ regulations guidelines or pertinent national guidelines for acceptable vertical and lateral deviation limits from the proposed enroute course and altitude based on terrain and obstructions
d. Annual recurrent training must also include:

- Local routine operating procedures
- Area terrain hazards
- Review of landing sites at referring and receiving hospitals or any operational changes
- Scene operations procedures

e. Air Medical Resource Management (AMRM) or Aeromedical Crew Resource Management (ACRM), consistent with AHJ regulations. Specific content of AMRM or ACRM training and organization of topics must reflect an organization's unique culture and specific needs, such that curriculum topics may include, but not be limited to:

- Aeronautical Decision Making
- Information processing
- Stress and performance
- Task complexity
- Communications Processes and Decision Behavior
- Briefings
- Inquiry/advocacy/assertion
- Crew self-critique re: decisions and actions
- Conflict resolution
- Communications and decision making
- Team building and maintenance
- Leadership/followership/concern for tasks
- Interpersonal relationships/group climate
- Workload management and situation awareness

- Preparation/planning/vigilance
- Workload distribution/distraction avoidance
- Individual factors/stress reduction

f. Annual review of infection control, medical systems and installations on the aircraft, patient loading and unloading procedures and altitude physiology to include signs and symptoms of hypoxia.

3. The certificate holder must have a policy or procedure to address proficiency. This is in reference to pilots who are on-duty but have not flown recently due to weather or call volume.

Examples of evidence to exceed compliance:
All pilots undergo initial and annual scenario-based simulator training.

05.04.05 A planned and structured orientation must be provided to the relief pilot with criteria to be based on the mission statement. The relief pilot must have the same qualifications and limitations as a new pilot.

1. The orientation must, at a minimum, contain:

a. Role responsibilities

b. Area, weather, terrain, aircraft and program-specific orientation

2. Currency must be determined prior to the beginning of operations, and there is a risk assessment tool to identify the risks at a specific base such as area and terrain, weather and program-specific idiosyncrasies.

05.05.00 MAINTENANCE

05.05.01 Training – There must be a mechanic primarily assigned to each specific aircraft who must be appropriately qualified to maintain the aircraft operated by the medical service and who possesses two years of rotorcraft experience as a certified airframe and power plant mechanic prior to assignment with the medical service.

1. The mechanic primarily assigned to a specific aircraft must be factory schooled or equivalent in an approved program and appropriately certificated by AHJ regulations on the type specific air frame, the power plant and all related systems. The primarily assigned mechanic provides direct (on-site during maintenance) supervision to other mechanics assisting with maintenance that may not have this level of experience or training.

2. All mechanics must receive formal training on human factors and maintenance error reduction. (See References)

3. A policy is written that grants the mechanic permission without fear of reprisal to decline performing any maintenance critical to flight safety that he has not been appropriately trained for, until an appropriately trained mechanic is available to directly supervise or assist.

4. There must be an annual review of infection control, medical systems and installations on the aircraft, patient loading and unloading procedures for all mechanics.

5. At least one technician is available for each service with formal training on the aircraft electrical system and formal training on the autopilot system.

6. Training related to the interior modification of the aircraft:

a. Must prepare the mechanic for inspection of the installation as well as the removal and reinstallation of special medical equipment

b. Includes supplemental training on service and maintenance of medical oxygen systems and a policy as to who maintains responsibility for refilling the medical oxygen systems

05.05.02 Staffing – A single mechanic on duty or on call 24 hours a day must be relieved from duty for a period of at least 24 hours during any seven consecutive days, or the equivalent thereof, within any one calendar month. In addition:

1. It is strongly encouraged that mechanics must not be permitted to work more than 14 continuous hours.

2. Following extended maintenance such as 12-14 continuous hours, the mechanic is scheduled for ten hours of uninterrupted rest.

3. 1.5 mechanic full-time equivalents are encouraged for one 24-hour aircraft. For more than one aircraft, staffing must be appropriate to the hours the aircraft are in service, the availability of backup or on-call mechanics and the number of bases necessitating travel time or an agreement and/or contract be in place for an operator to provide maintenance services in the absence of the operator's maintenance staff.

4. Back-up personnel must be provided to the mechanic during periods of extensive scheduled or unscheduled maintenance or inspection. Complexity of the aircraft and an increased number of flight hours may be considerations for increased mechanic staffing.

05.05.03 Maintenance Facilities

1. The maintenance operation is certificated by the AHJ regulator or meets standards included in 05.05.04 through 05.05.07.

2. There must be a mechanism/procedure for alerting flight and medical personnel when the aircraft is not airworthy.

3. A hangar or similar-type facility must be available during inclement weather and for the mechanic to perform heavy maintenance. (Heavy maintenance is generally described as removal and installation of any component that requires a lift device or inspections that require five or more hours).

4. Specific workshop area criteria. Workshop area must be in close proximity to the helipad. A workshop area is defined as an area where a desk, shelves, workbench, storage, and telephone are available.

a. Workshop area must be climate-controlled, heated and cooled, to avoid adverse effects of temperature extremes.

b. Appropriate ventilation will be installed to clear the facility of hazardous fumes (such as those from fuels, solvents, oils, adhesives, cleaners) common to the aviation environment.

c. Workshop area must be well lit with the appropriate number of electrical outlets.

d. Floodlights must be available on the helipad – fixed and/or portable. Luminescence level will be equal to the modern office environment.

e. Hand cleaners, disinfectants and eye wash bottles are to be available.

f. Tools are locked in a secured area when not in use.

g. There is a policy to address the control of foreign object debris (FOD).

h. There is a tracking system for the mechanic to account for tools and parts after performing maintenance.

i. All consumables must be labeled and have current expiration dates listed on the can, bottle, tube, etc.

5. Storage of equipment, parts, and tools is orderly and clear of fire hazards and in compliance with national health and safety standards i.e., OSHA and Environmental Protection Agency (EPA) regulations.

6. There is a system to periodically track timed parts and expiration dates on shelf items.

a. All parts are properly tagged and environmentally protected.

- Parts are wrapped or boxed in a manner that prevents damage or contamination.

- Open ends of fabricated and bulk lines and hoses are capped or covered.

- Serviceable parts are kept in a separate area from unserviceable parts.

b. Parts received are inspected to ensure an approved vendor provided them and that the required certification documentation is provided.

c. Maintenance operation/provider has a Suspected Unapproved Parts System (SUPS) to verify all parts are properly documented, by appropriate means (such as a 8130 form). All parts must be traceable and overhauled or repaired by properly certificated organizations

7. Airworthiness directives and service bulletins are coordinated to ensure they are accomplished on time.

8. There is a method to track all deferred maintenance items and coordinate all requirements to support closure.

9. There is a method to track tool calibration status.

a. Tools requiring calibration have documentation or tags on the tools that list the last calibration date and the next due date.

b. If employee-owned tools are permitted on the premises, there is a system to ensure that these tools are currently calibrated.

05.05.04 The certificate holder will have a system in place to track all scheduled inspections as required by its Authority Having Jurisdiction regulations approved maintenance program. This system will include all Airworthiness Directives (AD) and applicable Instructions for Continued Airworthiness (ICA) or the national equivalent.

05.05.05 If the certificate holder has been issued Operations Specification D095 (Minimum Equipment Lists) or AHJ regulations specific to maintenance item, then there must be a method to track all deferred maintenance items and coordinate all requirements to support closure, as well as trends tracked to determine repetitive failures. If an MEL has been approved, a Non Essential Furnishings program should accompany the MEL.

05.05.06 The certificate holder has a policy and/or program in place to track and trend maintenance issues such as part failures, items deferred under an MEL, and engine trend data. The program should contain a process to collect, analyze, and use data collected. Suspected issues should be addressed when determined and appropriate.

05.05.07 Maintenance Distractions – A policy must be written and implemented to reduce the likelihood of interruptions and distractions to the mechanic, such as:

1. The mechanic's phone must have voice mail or messaging.

2. Aircraft tours, public relations events, janitorial services, etc., must be postponed or canceled if involving the aircraft while maintenance is being performed.

3. Mechanic's work site (hangar-helipad) must not be used as a gathering place/social area by the flight team while maintenance is being performed.

4. All calls and inquiries regarding the aircraft status will be screened.

05.06.00 FUEL QUALITY AND FUEL SYSTEMS

05.06.01 A policy must require that the pilot or designee stay with the aircraft when refueling to verify fuel type and quantity received during on-site and off-site refueling.

05.06.02 On-site refueling

1. If a certificate holder maintains and operates its own fuel farm, then there must be a written policy that clearly identifies who has responsibility for quality control checks on the fuel system.

    a. Daily, monthly, quarterly and annual checks are required.

    b. Documentation is consistent with national aviation guidelines (i.e., FAA AC 150-5230-4B) or national standard.

    c. If using a vendor's fuel farm, verify QA fuel quality compliance.

2. There is a procedure to ensure the fuel is free of contaminants before dispensing into the aircraft.

3. Procedures clearly demonstrate safe practices and fire prevention considerations at the on-site refueling facility.

    a. At least one B&C fire extinguisher is located no less than75 feet from the fuel dispensing station.

    b. There is a minimum of one remote fuel shut-off device.

4. There is a policy regarding on-site handling and disposal of waste fuel, oil and any other hazardous materials.

5. Fueling equipment shall be located 25 ft (7.6 m) from hangars and fixed fire protection equipment. (NFPA 4.7.2 or AHJ regulation)

6. Fueling equipment shall not hinder or obstruct access to exits or firefighting equipment. (NFPA 4.7.1 or AHJ regulation)

7. Any above ground storage tanks must be 50 feet from the edge of the final approach and take-off area (FATO). (4.3.3 or applicable AHJ regulations)

8. The fuel system is approved by the Environmental Protection Agency (EPA) or AHJ regulations.

9. If fuel is purchased routinely from a specific FBO, it is strongly encouraged to request and receive a quarterly fuel quality report from the FBO.

05.07.00 HELIPORTS (see references)

Evacuation drill

05.07.01 Primary and receiving hospital heliports~~(s)~~ should:

1. Be marked using A.C. 150/5390 as a guide with:

a. A painted H or similar landing designation

b. A cross to designate a hospital heliport if appropriate

c. Maximum size capacity information for all heliports

d. Maximum weight restriction information for all elevated heliports

2. Be identified by a correctly colored heliport beacon or strobe. A beacon may not be necessary when the location of the hospital can be readily apparent by the lights(s) on a prominent building or landmark near the heliport.

3. Have appropriately colored TLOF (Touchdown and Lift Off area) or FATO (Final Approach and Take Off area) perimeter lighting set at the appropriate spacing for night operations which do not extend greater than 2” above the TLOF or FATO horizontal plane, using FAA Advisory Circular entitled 150/5390 or other AHJ guidelines.

4. Have a device to identify wind direction and velocity (i.e., windsock) of the appropriate size and design located in an unobstructed area near the heliport environment which does not constitute a potential strike hazard for helicopters. For night operations the indicator shall be illuminated either externally or internally. A red obstruction light should be incorporated on the wind indicator as dictated by FAA or other AHJ obstruction standards.

5. Have at least one clear Final Approach and Take Off area (FATO) appropriately sized for the largest design helicopter that will potentially land at the site using FAA A.C. 150/5390 or other AHJ criteria as a guide.

a. The Touchdown and Liftoff area (TLOF) size (length, width, or diameter) must be:

- Ground Based: Equal to the rotor diameter (RD) of the largest design helicopter that will utilize the heliport but not less than 40 feet and must provide

adequate room for patient, staff and equipment ground movement. The TLOF shall have a non-skid surface which consists of a material that meets NFPA, IBC and IFC compliance standards.

• Elevated/Rooftop Based: If the FATO outside the TLOF is non-load bearing, increase the minimum width, length or diameter of the TLOF to the overall length of the largest design helicopter. All elevated TLOFs shall have an appropriate constructed safety net consisting of nonflammable materials as per the FAA advisory circular and NFPA-418 or other AHJ criteria.

b. Surface of the TLOF and FATO must be clear of all objects, including parked helicopters.

c. A parking area must be provided if more than one helicopter at a time is to be accommodated at one heliport unless there are provisions made for two separate FATO and TLOF areas of the appropriate size to accommodate two aircraft as indicated in the FAA Advisory Circular or other AHJ criteria.

6. Have at least two unobstructed approach and departure paths that conform to FAA AC 150/5390 or other AHJ criteria, oriented to be separated at least 90-135 degrees apart and oriented to take full advantage of the local and prevailing wind conditions.

7. Have adequate fire retardant chemicals of the correct quantity and type for the largest design helicopter and be readily available and located within the specified distance and location per NFPA-418 other AHJ criteria. At least one portable fire extinguisher of the correct category and rating shall be provided for each takeoff and landing area, parking area, aircraft tug and fuel storage and dispensing areas. All foam fire suppression system pull stations shall be correctly located and marked in a manner to distinguish them from fire alarm pull stations.

8. Heliport is designed so that fuel spills are directed away from access/egress points

9. Heliport has two access points oriented at least 90 degrees apart from one another and with unrestricted access for fire-fighting personnel

10. Smoking is not permitted within 50 feet of the TLOF edge

11. Heliport signage must include:

a. No smoking signs

b. Heliport warning signs, posted at access/egress points to the helipad

c. High Noise environment signs

d. Eye protection required signs

12. Have a documented and integrated emergency response plan which is practiced at least on an annual basis.

13. Have documented, ongoing safety and training programs for those personnel responsible for loading and unloading patients or working around the helicopter on the helipad which follows the guidance found in NFPA-418 Annex-B “Heliport Emergency Planning and Training for Safety Personnel” or other AHJ criteria.

a. Annual training includes:

- The emergency response plan
- Foreign Object ~~and~~ Debris (FOD) Identification and elimination procedures
- Operations of the heliport
- Safety procedures around the helicopter
- Communication systems
- Procedures for reporting inoperable equipment
- Operation of the fire protection system and equipment

14. Have evidence of adequate security – a minimum of one person to prevent bystanders from approaching the helicopter as it lands or lifts off, or perimeter security such as nonhazardous fencing, ornamental vegetation, roof top, etc. A means must exist to monitor the primary helipad if accessible to the public, i.e., through direct visual monitoring or closed circuit TV (a video recording system is strongly encouraged).

15. There must be a policy to address more than one running aircraft at any one time and a policy to address permission to land or take off from the heliport.

a. Communications policies will include:

- Procedures that coordinate arrivals and departures with referring and receiving hospital heliports – specific contact arrangements are pre-arranged for each frequently used location
- Procedures that coordinate arrivals and departures from hospital heliports with other air medical services in the region
- Staging if more than one aircraft is expected
- Air-to-air communications
- Hosting common frequencies

• Procedures that require communications specialists to ask if more than one aircraft is incoming to the same hospital heliport or scene

• Written agreements with local, regional or state agencies that incoming aircraft will announce in the blind on a common frequency when operating into hospitals and scenes where no common communication frequency has been pre-established. At 10 minutes from ETA, any inbound aircraft must communicate on 123.025 or commonly agreed-upon frequency.

b. Crew Coordination:

• Strict enforcement of sterile cockpit

• One medical crewmember taking active part in watching for obstructions during the critical stages of flight

• Before departing from a scene or a sending institution, the medical crew and the pilot must discuss any alternative hospitals that they might need to divert to if the patient's condition changes or weather deteriorates along the intended route. The pilot and medical crew are encouraged to pre-program any radios or navigation equipment for this alternative destination to minimize the workload required to effect this change, should the need arise as coordinated with the communications center.

c. It is strongly encouraged that the program develops designated landing sites for scene coordination with ground agencies where possible.

16. There is limited distance from the heliport to the hospital (positioned at the closest, safe location) in order to minimize any negative effects to the patient.

a. The stretcher transition area between the heliport and the hospital should be as smooth as allowable with as level a surface as possible while still adhering to National Fire Protection Association (NFPA) 418, International Building Code (IBC) and International Fire Code (IFC) or other AHJ criteria and have minimal spacing for structural seams.

b. Patient monitoring must continue without interruption between the helipad and the hospital.

c. The medical crew is continuously supplied and equipped so that emergent patient interventions can be performed as needed between helipad and hospital.

17. Hearing protection is provided for and used by all personnel who assist with patient rapid loading/ unloading.

18. Evidence of a system to communicate changes (construction, additions, obstructions, etc.) to the heliport for users of the primary TLOF must be available and may include a pilot's memo book or a database in the communications center. A system to record acknowledgment must be in place.

a. There is a system of photos used to familiarize pilots with helipad locations and conditions as a baseline for noting changes in conditions as well as providing a training aid for new pilots.

b. There needs to be approval by the appropriate AHJ regulations for programs that own or operate their own helipad. In the U.S. a current copy of the Airport Master Record (FAA Form 5010) is on file which includes the most up-to-date information for the heliport and the heliport point of contact.

05.07.02 For Rooftop Helipads

1. The egress points shall be remotely located from each other, not less than 30 ft (9./1 m) apart.

2. The rooftop landing pad surface shall be constructed of approved noncombustible nonporous materials.

3. Two means of egress from the rooftop landing pad to the building's egress system shall be provided.

4. The egress points shall be located at least 90 degrees from each other as measured from the center of the landing pad (TLOF).

5. An evacuation plan is in place and personnel involved in securing, loading and off-loading are tested through drills on an annual basis.

05.07.03 Temporary scene landing sites (see References) must be:

1. Secured

2. Illuminated at the perimeter with handheld floodlights, emergency vehicles or other lighting source that does not constitute a hazard to define the designated landing area at night

3. Free of overhead and/or ground obstructions

4. Free of debris

5. Appropriate to the size of the helicopter

6. As level as possible

06.00.00 – FIXED WING STANDARDS

PREFACE – The standards below are as appropriate to the country of residence and the specific aviation regulator of that country as referenced by the term “Authority Having Jurisdiction” (AHJ). However, Federal Aviation Authority (FAA), Maintenance Repair Organization (MRO), European Aviation Safety Authority (EASA) or Transport Canada (TC) are considered the minimal regulations that all other national regulations are measured against. CAMTS Accreditation Standards, as a measure of quality, are part of a voluntary process and frequently exceed the AHJ’s aviation regulations.

06.01.00 OPERATIONS

06.01.01 Certificate holder must meet all Authority Having Jurisdiction (AHJ) regulations specific to the operations of the medical service in the country of residence, as applicable. This includes an AHJ regulator’s Certificate (public service medical transport agencies are included in this requirement) and Ambulance Operations Specifications specific to EMS operations. The transport service demonstrates compliance with the legal requirements and regulations of all local, state and federal agencies under whose authority it operates.

06.01.02 All “patient transport flights”* must be conducted under AHJ regulations for weather minimums, flight crew duty time limitations and weight and balance requirements. In the U.S. this refers to FAA Part 135 regulations

*Patient transport flight is defined as any flight segment conducted by rotor or fixed wing equipment that is necessary for transporting patients and the medical teams required to care for such patients. Flight segments included in this definition are: flights for refueling and repositioning for a specific patient transport (including organ donor transports); picking up and returning medical teams to an assigned base; the actual flight segment involving patient movement; and any time medical teams are on board.

06.01.03 Long range fixed wing transports are defined as any patient leg in excess of 3 hours (measured in time, not distance because of winds) where there are no alternative capabilities for patient care needs or aviation operations.

06.01.04 There is an established written policy to ensure that the pilot is notified of all carry-on baggage and/or equipment for weight and balance considerations (so that carry-on baggage/equipment is weight and placement acceptable)

06.01.05 There is a written policy and outline of passenger safety briefings in accordance with 14CFR Part 135.117 or national equivalent.

06.02.00 AIRCRAFT

06.02.01 The aircraft should be a twin-engine or turbine single engine aircraft appropriate to the mission statement and scope of care of the medical service and listed on the air carrier’s Operations Specifications.

06.02.02 Pressurized aircraft with air conditioning are strongly preferred for medical transports. A physician familiar with altitude physiology must be consulted or written policies address altitude limits for specific disease processes of the patient to be transported in an unpressurized cabin.

06.02.03 Evidence of adequate security at the base of operations – A means must exist to monitor the aircraft (i.e., through direct visual monitoring or closed circuit TV) or the aircraft must be in a secured location with locked perimeter fencing or hangar available or be located at an airport certificated to operate under AHJ regulations, provided they are equal to or in excess of the United States Federal Regulation 49CFR Part 1542.

06.02.04 Reference Section 03.06.00 Medical Configuration of the Transport Vehicle

06.03.00 WEATHER AND OPERATING ALTITUDES

06.03.01 VFR or IFR flight plans are filed or communications center does flight following with every takeoff through post landing.

1. There is a system of obtaining pertinent weather information.

    a. The pilot in command (PIC) is responsible for obtaining weather information according to policy, which must address at a minimum:

        • Routine weather checks.

        • Weather checks during marginal conditions

        • Weather trending

2. Communication between pilots, medical personnel, and communication specialists regarding the most current and forecasted weather is part of a formal briefing.

3. Weather Minimums – If flying under VFR -weather minimums must meet the applicable national standard or exceed 14CFR Part 135.203 and 135.205 as follows:

    a. Visibility requirements

        • If the ceiling is less than 1000 feet (304 meters), visibility must be at least 2 miles.

    b. Operating VFR requires that the program provide flight following according to the criteria listed in 03.10.00

4. Minimum operating altitudes:

    a. Day – 1500 feet (457 meters) above the surface or less than 2000 feet (608 meters)horizontally from any obstacle.

b. Night – an altitude less than 1500 feet (457 meters) AGL above the highest obstacle of 5 miles from the course intended to be flown

06.04.00 PILOTS

06.04.01 Staffing: The pilot must be readily available within a defined call-up time to ensure expeditious and timely response. There must be a written policy describing the availability of pilots.

1. Scheduling practices reflect consideration for minimizing duty-time fatigue, length of shift, number of shifts per week and day-to-night rotation. The implementation and maintaining of an operator-specific fatigue risk management system (FRMS) based on a scientific analysis is strongly encouraged

a. The certificate holder has a written policy regarding pilots on call with the use of remote paging devices, cell phones or other electronic communication device. The policy indicates how the use of pagers impacts duty-time limitations.

Examples of evidence to exceed compliance:
Two-pilot operations are required even when the aircraft is legally flown with a single pilot.

2. Physical well-being is promoted by the employer wellness programs to include but not limited to balanced diet, weight control, and no smoking.

3. Certificate holder's operations facilities must include a quiet area for flight planning, training, record-keeping and rest.

06.04.02 Pilot determines that the aircraft is in airworthy condition.

1. Prior to the first flight of shift of duty, the pilot:

a. Verifies that maintenance is not due on the aircraft

b. Performs a pre-flight inspection according to the operator's checklist, as approved by the applicable AHJ.

2. A walk-around inspection of the aircraft is performed prior to each takeoff.

06.04.03 The pilot-in-command (PIC) qualifications.

1. Must possess airplane flight hours, as outlined in the tables below, prior to assignment with a medical service. If the aircraft is to be operated using a single Pilot in Command, with no Second in Command the following applies:

Cat/Class of Aircraft	Total Flight Exp. (hrs.)	Multi-Engine Exp. (hrs.)	PIC Exp. (hrs.)	Type (hrs.)
Single Engine Turbo-prop	2500	N/A	1000	50
Multi-engine Piston	2500	500	1000	50
Multi-engine Turbo-prop	2500	500	1000	100

2. Must possess airplane flight hours as outlined in the table below if the aircraft is to be operated with two, fully trained and qualified pilots:

Cat/Class of Aircraft	PIC Total Flight Exp. (hrs.)	Multi-Engine Exp. (hrs.)	PIC Exp. (hrs.)	SIC Total Exp (hrs.)
Single Engine Turbo-prop	2000	N/A	1000	500
Multi-engine Piston	2000	500	1000	500
Multi-engine Turbo-prop	2000	500	1000	800
Multi-engine Turbo-jet	3000	500	1500	1000

3. PIC must be ATP rated; SIC is strongly recommended to be ATP rated and must complete a certificate holder's approved SIC training program.

4. In aircraft that require two pilots, both pilots must be type-rated for that make and model, and both pilots must hold first class medical certificates if the certificate holder operates internationally. Both pilots must have training on Crew Resource Management (CRM) or Multi-pilot Crew Coordination (MCC)

5. When operating with two pilots, there should be a policy to avoid a "green on green" situation, ; where a lower experienced PIC is paired with a lower experienced SIC. The two pilots together must have a minimum combined flight experience of 250 hours in make and model.

Examples of evidence to exceed compliance:
All PIC's and SIC's are ATP rated, or both pilots hold a PIC Type Rating for the aircraft being operated.

06.04.04 Pilot training requirements

1. The certificate holder will maintain a national approved training program, as applicable, in accordance with 14CFR Part 135, subpart H, or the national equivalent. The training program must contain a procedure for evaluating previous experience and training to determine what specific training a new flight crewmember will require to satisfactorily meet all required training and checking standards. The certificate holder will also have a process in place to properly track

experience levels of new PICs that must comply with the higher weather minimums as required under 14CFR Part 135.225 (e) or other national equivalent.

2. Initial training must, at a minimum, consist of the following and be verified by written criteria, outlines or curriculum. Use of AHJ approved training devices and simulators along with mission specific scenario based training must be encouraged at initial and recurrent training cycles. Full motion simulator training strongly encouraged for all aircraft.

Examples of evidence to exceed compliance:
All pilots undergo initial and annual scenario-based simulator training.

a. Terrain and weather considerations specific to the program's geographic area

b. Orientation to the health care provider

c. Orientation to infection control, medical systems installed on the aircraft and patient loading and unloading procedures

d. Air Medical Resource Management (AMRM), consistent with national aviation regulations i.e., FAA Advisory Circular No. 120-51E, 2004 and FAA AC 00-64. Specific content of AMRM training and organization of topics must reflect an organization's unique culture and specific needs, such that curriculum topics may include, but not be limited to:

- Aeronautical Decision Making
    - Information processing
    - Stress and performance
    - Task Complexity
- Communications Processes and Decision Behavior
    - Briefings
    - Inquiry/advocacy/assertion
    - Crew self-critique re: decisions and actions
    - Conflict resolution
    - Communications and decision making
- Team Building and Maintenance
    - Leadership/followership/concern for tasks

- Interpersonal relationships/group climate

- Workload Management and Situation Awareness
  - Preparation/planning/vigilance
  - Workload distribution/distraction avoidance
  - Individual factors/stress reduction

e. Training in infection control, medical systems and installations on the aircraft, patient loading and unloading procedures

f. Minimum requirements for specific training in aircraft type:

- 25 hours in specific make and model of aircraft before flying as PIC on patient missions or completion of a established training program for the specific make and model aircraft and the successful completion of the check ride

3. Annual recurrent training to minimally include the following and verified by written criteria, outlines or curriculum:

a. Part 135 instrument proficiency check as required by national aviation regulations i.e., FAR 135.297 for operations that conduct IFR flights

b. Annual review of infection control, medical systems installed on the aircraft, and patient loading and unloading procedures

c. Air Medical Resource Management (AMRM) or ACRM consistent with Authority Having Jurisdiction regulation. Specific content of AMRM/ACRM training and organization of topics must reflect an organization's unique culture and specific needs, such that curriculum topics may include, but not be limited to:

- Aeronautical Decision Making
  - Information processing
  - Stress and performance
  - Task Complexity
- Communications Processes and Decision Behavior
  - Briefings
  - Inquiry/advocacy/assertion

- Crew self-critique re: decisions and actions
- Conflict resolution
- Communications and decision making

- Team Building and Maintenance
  - Leadership/followership/concern for tasks
  - Interpersonal relationships/group climate

- Workload Management and Situation Awareness
  - Preparation/planning/vigilance
  - Workload distribution/distraction avoidance
  - Individual factors/stress reduction

4. The certificate holder must have a policy or procedure to address proficiency. This is in reference to pilots who are on-duty but have not flown recently due to weather or call volume.

06.04.05 A planned and structured orientation must be provided to the relief pilot with criteria to be based on the mission statement. The relief pilot must have the same qualifications and limitations as a new pilot.

1. The orientation must, at a minimum, contain:

   a. Role responsibilities

   b. Area, weather, terrain, aircraft and program-specific orientation

2. Currency must be determined prior to the beginning of operations, and there is a risk assessment tool to identify the risks at a specific base such as area and terrain, weather and program-specific idiosyncrasies.

06.05.00 MAINTENANCE

06.05.01 The mechanic primarily assigned to a specific aircraft must possess a minimum of two years of airplane experience as a certified airframe and power plant mechanic prior to assignment with a medical service, or, in the case of a repair station, the Maintenance Repair Organization (MRO) will hold a FAA issued certificate under 14CFR Part 145, or the national equivalent, and hold the ratings and/or limitations within its Operations Specifications for the make/model for which it is performing scheduled maintenance upon.

1. The primary mechanic performing scheduled maintenance to a specific aircraft must be factory schooled or equivalent in an approved program on the type-specific airframe, the power plant and all related systems within 18 months of employment by the operator.

2. All mechanics must receive formal training on human factors and maintenance error reduction. (See References)

3. If not working for a maintenance organization certificated under 14CFR Part 145 or national equivalent, there is a written policy that grants the mechanic permission, without fear of reprisal, to decline from performing any maintenance critical to flight safety that he has not been appropriately trained for, until an appropriately trained mechanic is available to directly supervise.

4. There is an annual review of infection control, medical systems and installations on the aircraft, patient loading and unloading procedures for all mechanics.

5. There will be at least one technician or MRO available for each service with formal training on the aircraft electrical system and formal training on avionics.

6. Training related to the interior modifications of the aircraft:

a. Training must prepare the mechanic for inspection of the installation as well as the removal and reinstallation of special medical equipment.

b. There is supplemental training on service and maintenance of medical oxygen systems and a policy as to who maintains responsibility for refilling the medical oxygen system.

06.05.02 A single mechanic on duty or on call 24 hours a day must be relieved from duty for a period of at least 24 hours during any seven consecutive days, or the equivalent thereof, within any one calendar month. In addition:

1. It is strongly encouraged that mechanics must not be permitted to work more than 14 continuous hours.

2. Following extended maintenance, such as 12-14 continuous hours, it is strongly recommended that a mechanic must be scheduled for 10 hours of uninterrupted rest.

3. For more than one aircraft, maintenance staffing must be appropriate to the hours the aircraft are in service, the complexity of the aircraft, and the number of bases necessitating travel time. Backup personnel must be provided to the mechanic during periods of extensive scheduled or unscheduled maintenance or inspection, or an agreement and/or contract should be in place for a vendor to provide maintenance services in the absence of the operator’s maintenance staff.

06.05.03 Maintenance facilities:

1. The maintenance operation is certificated under 14CFR Part 145, OR meet standards 06.05.04 through 06.05.07.

2. There must be a mechanism/procedure for alerting flight and medical personnel when the aircraft is not airworthy.

3. The maintenance facilities are large enough to accommodate the aircraft, adequately lighted and properly equipped for required maintenance.

4. Specific workshop area criteria:

a. Workshop area must be in close proximity to the hangar. A workshop area is defined as an area where a desk, shelves, workbench, storage and telephone are available.

b. Workshop area must be climate controlled (heated and cooled) to avoid adverse effects of temperature extremes.

c. There is appropriate ventilation to clear the facility of hazardous fumes (such as fuels, solvents, oils, adhesives, cleaners) common to the aviation environment.

d. Work area must be well lit with the appropriate number of electrical outlets.

e. Floodlights must be available in the hangar or on the tarmac, fixed and/or portable. Luminescence level will be equal to the modern office environment.

f. Hand cleaners, disinfectants and eye wash bottles must be available.

g. Tools are locked in a secured area when not in use.

- There is a policy to address the control of foreign object debris (FOD).

- There is a tracking system for the mechanic to account for all of the tools and parts, after performing maintenance.

5. Storage of equipment, parts, and tools is orderly and clear of fire hazards and in compliance with OSHA and EPA regulations.

6. There is a system to periodically track timed parts and expiration dates on shelf items.

a. All parts are properly tagged and environmentally protected.

- Parts are wrapped or boxed in a manner that prevents damage or contamination.

- Open ends of fabricated and bulk lines and hoses are capped or covered.

- Serviceable parts are kept in a separate area from unserviceable parts.

- All consumables must be labeled and have current expiration dates listed on the can, bottle, tube, etc.

b. Parts received are inspected to ensure an approved vendor provided them and that the required certification documentation is provided.

c. Maintenance operation/provider has a Suspected Unapproved Parts System (SUPS) to verify all parts are properly documented, by appropriate means such as an 8130 form. All parts must be traceable and overhauled or repaired by properly certificated organizations.

7. There is a method to track tool calibration status.

a. Tools requiring calibration have documentation or tags on the tools that list the last calibration date and the next due date.

b. If employee-owned tools are permitted on the premises, there is a system to ensure that these tools are currently calibrated.

06.05.04 The certificate holder will have a system in place to track all scheduled inspections as required by its Authority Having Jurisdiction regulations approved maintenance program. This system will include all Airworthiness Directives (AD) and applicable Instructions for Continued Airworthiness (ICA) or the national equivalent.

06.05.05 If the certificate holder has been issued Operations Specification D095 (Minimum Equipment Lists) or AHJ regulations specific to maintenance item, then there must be a method to track all deferred maintenance items and coordinate all requirements to support closure, as well as trends tracked to determine repetitive failures. If an MEL has been approved a Non Essential Furnishings program should accompany the MEL.

06.05.06 The certificate holder has a policy and/or program in place to track and trend maintenance issues such as part failures, items deferred under an MEL, and engine trend data. The program should contain a process to collect, analyze, and use data collected. Suspected issues should be addressed when determined and appropriate.

06.05.07 Policy must be written and implemented to reduce the likelihood of interruptions and distractions to the mechanic, such as:

1. The mechanic’s phone must have voice mail or messaging.

2. Aircraft tours, public relations events, janitorial services, etc., must be postponed, if they involve the aircraft while maintenance is being performed.

3. Mechanic’s work site (hangar) must not be used as a gathering place/social area by the flight team while maintenance is being performed.

4. All calls and inquiries regarding the aircraft status will be screened.

06.06.00 FUEL QUALITY AND FUEL SYSTEM

06.06.01 A policy requires that the pilot or designee stay with the aircraft when refueling to verify fuel type and quantity dispensed when refueling at any location.

06.06.02 On-site refueling

1. If a certificate holder maintains and operates its own fuel farm, then there must be a written policy that clearly identifies who has responsibility for quality control checks on the fuel system.

    a. Daily, monthly, quarterly and annual checks are required.

    b. Documentation is consistent with national aviation guidelines (i.e., FAA AC 150-5230-4A B) or national standard.

    c. If using a vendor's fuel farm, verify QA fuel quality compliance.

2. There is a procedure to ensure the fuel is free of contaminants before dispensing into the aircraft.

3. Procedures clearly demonstrate safe practices and fire prevention considerations at the on-site refueling facility.

    a. At least one B&C fire extinguisher is located no less than75 feet from the fuel dispensing station.

    b. There is a minimum of one remote fuel shut-off device.

4. There is a policy regarding on-site handling and disposal of waste fuel, oil and any other hazardous materials.

5. Fueling equipment shall be located 25 ft (7.6 m) from hangars and fixed fire protection equipment. (NFPA 4.7.2 or AHJ regulation)

6. Fueling equipment shall not hinder or obstruct access to exits or firefighting equipment. (NFPA 4.7.1 or AHJ regulation)

7. Any above-ground storage tanks must be 50 feet from the edge of the FATO. (4.3.3 or applicable AHJ regulations)

8. The fuel system is approved by the Environmental Protection Agency (EPA) or AHJ regulations.

06.06.03. If fuel is purchased routinely from a specific FBO, it is strongly encouraged to request and receive a quarterly fuel quality report from the FBO.

07.00.00 – SURFACE STANDARDS

PREFACE – The term “ambulance” in this section refers only to ground ambulance being used for patient care and transport. The term “surface vehicle” refers to all vehicles that are not helicopters or airplanes such as ground ambulance, boat, snowmobile, all-terrain vehicle (ATV), etc. The standards apply to all such vehicles as appropriate to the type of service and limitations of the actual vehicle. Highly specialized vehicles may not meet all the standards, and the CAMTS Board will take that into consideration as part of any accreditation decisions. All other standards still apply.

The standards below are as appropriate to the country of residence and the specific regulator of that country as referenced by the term “Authority Having Jurisdiction” (AHJ). CAMTS Accreditation Standards, as a measure of quality, are part of a voluntary process and frequently exceed the AHJ’s regulations.

07.01.00 OPERATIONS

07.01.01 The surface vehicle will be licensed in accordance with the applicable authority having jurisdiction (AHJ) laws.

07.01.02 There is a written policy that addresses speed limitations and all aspects of traffic law compliance that pertain to ambulance operations.

07.01.03 There is a written policy that describes the appropriate use of operating with lights and sirens. The policy includes who can initiate use and under what circumstances, such as only when time is critical to the patient’s outcome. The ambulance must come to a complete stop at intersections as appropriate (where the traffic light is red or there is a stop sign) including when operating with lights and sirens. Transports using red lights and sirens are tracked and trended in the QM process (see Quality sections of 02.01.07).

07.01.04 There is a written policy that addresses a procedure to follow when the ambulance comes upon an accident scene. Policy must be consistent with state regulations.

07.01.05 There is a written policy that outlines a procedure to follow when the surface vehicle is involved in an accident with damage and/or injuries.

07.01.06 There is a written policy outlining the procedure for a mandatory drug test of the surface vehicle operator after any accident.

07.01.07 There is a written policy outlining the procedure to follow when the surface vehicle breaks down.

07.01.08 There is a written policy dealing with safety aspects of operating a vehicle:

1. Vehicle operator duty and rest time

2. Inclement weather and responsibility for aborting the transport if there is a safety concern

3. Driving and operator records (speeding and other traffic violations) are reviewed by management minimally on an annual basis

07.01.09 The transport service will know the capabilities and resources of receiving facilities and will transport patients to appropriate facilities within the service region based on direct referral, approved EMS plan, or services available when no direction is given.

1. State license for each surface vehicle is accessible as appropriate to state, local or national guidelines.

2. If mutual aid relationships are developed the following apply:

a. The service has written agreements specifying the circumstances under which mutual aid would be used.

b. A mutual aid agreement addresses reciprocity, liability, and cost sharing/billing issues, hours of operation, phone number, and access procedure.

3. Contracts with municipalities indicate realistic response times.

4. The medical transport service must be integrated with and communicate with other public safety agencies. This may include participation in regional quality improvement reviews, regional disaster planning and mass casualty incident drills.

5. The transport service demonstrates compliance with the legal requirements and regulations of all local, state and federal agencies under whose authority it operates.

6. The transport service demonstrates environmental integration with the local community with “drive friendly” procedures.

Examples of evidence to meet compliance:
Licenses to operate each ambulance are available and current.

07.02.00 Surface Vehicle

07.02.01 Ground ambulances must meet KKK 1822 standards or state licensure requirements in place at the time the vehicle was built.

07.02.02 The surface vehicle must have adequate interior lighting equipment to ensure complete observation of the patient and monitoring equipment used on the patient.

07.02.03 The surface vehicle must have the capability of shielding the cab from light in the passenger compartment during nighttime use.

07.02.04 Inside of the surface vehicle must be capable of maintaining temperature ranges to prevent adverse effects on the patient and crew. The temperature must be between 68 degrees F (20C) and 78 degrees F (25.5C) (see KKK reference). There is a procedure to monitor inside cabin temperatures.

07.02.05 The ambulance must have a fuel capacity to provide no less than a 175-mile (282 km) range.

07.02.06 The ambulance must have ground clearance of at least 6 inches (15 cm) at gross ambulance weight.

07.02.07 The ambulance must be able to fully perform at ambient temperatures minus 30 degrees (-1C) to 122 degrees F (50C).

07.02.08 The ambulance must be marked clearly to show the name of the service in letters not less than 3 inches high and to allow identification of the service from the sides and rear of the ambulance.

07.02.09 Lights and sirens:

1. The ambulance must be equipped with a siren capable of emitting sound that is audible under normal conditions from a distance of not less than 500 feet (152.4 meters).

2. The ambulance must have at least one light capable of displaying red light (with a 360 degree capacity) or strobe lights that are visible under normal atmospheric conditions from a distance of 500 (152.4 meters) feet from the front of the ambulance.

07.02.10 The ambulance is equipped with road hazard equipment to be used in the event of a breakdown.

1. Road hazard equipment must minimally include:

a. Flashlight

b. Road marking device – cones, flares or triangles, for example

c. Tools, wrench, screwdriver, hammer

d. Leather, heavy-duty gloves

e. Reflective vests

f. Equipment for dealing with snow as appropriate to the environment

07.02.11 Rescue equipment is on the surface vehicle according to AHJ requirement.

07.02.12 There is a means of communication other than a cell phone between:

1. The surface vehicle operator position and patient compartment

2. The surface vehicle and medical control

3. The surface vehicle and public safety agencies

07.02.13 Radio frequencies are consistent with the state EMS radio communications plans.

07.02.14 There is a public address amplifier with two exterior-mounted speakers on the ambulance

1. There is a power output of at least 45 watts

2. The amplifier is independent of the mobile radio unit.

~~**07.02.15** A policy prohibits cellular phone or other communications devices without an acceptable integrated hands-free system to be used while the ambulance is in motion or while refueling except for vital communications or as compliant with AHJ regulations. Texting is strictly prohibited. [~~ duplicate of 04.02.04]

07.03.00 WEATHER

07.03.01 There must be a written policy addressing weather/environmental conditions that prohibit transport, such as zero/zero visibility and highway patrol road closures.

07.04.00 VEHICLE OPERATOR

07.04.01 All persons who drive the ambulance must be at a minimum certified as an Emergency Medical Technician (EMT) or have equivalent training.

07.04.02 Surface vehicle operator must have a minimum of 2 years experience as a licensed driver or operator of an ambulance. [had program who wanted to interpret this as 2 years experience driving a car]

07.04.03 Ambulance operators are required to complete defensive driving training program that is developed by the provider or outside agency. The training must include an Emergency Vehicle Operations Course (EVOC) or equivalent, which consists of at least 4 hours of reviewed ambulance driving under emergency conditions.

07.04.04 Operators of boats or other surface vehicles must demonstrate completion of initial training.

07.04.05 The EVOC training program must be repeated for each surface vehicle operator at least every 2 years or more frequently if involved in an “at fault” accident.

07.04.06 Surface vehicle co-pilot responsibilities and duties:

1. Surface Vehicle co-pilot will have assigned duties to support the vehicle operator

    a. In navigation – setting/verifying GPS input

b. Lights and sirens response

c. Monitoring vehicle operator fatigue/impairment – the vehicle co-pilot is expected to stay alert on all legs of the transport

d. Cell phone and computer use not essential to transports are prohibited

07.05.00 VEHICLE MAINTENANCE

07.05.01 Each vehicle must be maintained in full operating condition and in good repair, and documentation of maintenance must be kept on file. In addition, there must be a regular documented preventive maintenance program in accordance with the requirements of the manufacturer and other regulatory agencies.

1. There are documented daily checks of the vehicle for damages and equipment failure.

2. Major fluid and tire pressure checks are completed twice a week at a minimum for surface vehicle.

07.05.02 There must be no evidence of damage penetrating the body of the surface vehicle ambulance or holes that may allow exhaust gases to enter the patient compartment.

07.05.03 The interior of the surface vehicle, including all storage areas, must be kept clean in compliance with OSHA (or equivalent) standards, that is free of dirt, grease and other biohazardous or noxious matter.

07.05.04 The surface vehicle must be cleaned after each patient transport as appropriate. All interior surfaces in the vehicle and medical equipment surfaces that came in contact with the patient must be immediately cleaned and disinfected or disposed of in a secure biohazard container.

07.05.05 The mechanic must have experience as a certified mechanic in a shop environment, or the maintenance must be done at a certified shop specific for the make and model of the surface vehicle

08.00.00 – SPECIAL OPERATIONS

The Commission on Accreditation of Medical Transport Systems has been asked on several occasions to provide standards and accreditation for special medical operations that provide medical care and/or potential medical transport that do not necessarily fit within the previous sections of these Standards. Some examples include medical coverage at sporting, concert or special events, special public safety operations, such as tactical rescue or “SWAT” call-outs, and citizen recovery from potentially unstable environments.

While CAMTS does not currently have specific Standards that are unique to these types of services, the Board will entertain an Accreditation status in the category of “Special Operation” if it believes the service is in substantial compliance with the current CAMTS Standards as they apply to the service as outlined within the program’s scope of services.

Accreditation in this area is not intended for single events, but for programs that routinely provide such services or for larger events that may spread over several days and/or venues.

If you are interested in the potential for accreditation under “Special Operations” and you believe your program is in substantial compliance with the current standards, as they would apply to your service, send a letter requesting consideration to the CAMTS Executive Director. The letter should include the locations(s), type and frequency of services provided, a description of the staff providing services (EMTs, medics, nurses, physicians, etc.) and any other information that clearly explains the services provided. The Board will then consider the request and, if approved for application, a customized application, program information form, and standards compliance tool will be developed. The Board will then consider the request. If it is approved, a customized application, program information form, and standards compliance tool will be developed. The program will then be considered as part of the normal blinded accreditation process.