



Advisory Circular

Subject: Air Medical Resource Management

Date: 9/22/2005
Initiated by: AFS-300

AC No:
00-64

1. PURPOSE. This Advisory Circular (AC) provides guidance and information to establish minimum guidelines for Air Medical Resource Management (AMRM) training. The focus of this training is for all air medical service (AMS) operations team members, including pilots, maintenance technicians, flight nurses, flight paramedics, flight physicians, medical directors, specialty team members (such as neonatal teams), communications specialists (dispatchers), program managers, maintenance staff, operational managers, support staff, and any other air medical team members identified by specific needs. Like all AC material, this AC is not mandatory and does not constitute a regulation. This AC is issued for guidance purposes to outline one method of best practice for compliance to the rules.

2. APPLICATION. These guidelines recommend training in AMRM for all air medical team members of air ambulance carriers and providers operating under Title 14 Code of Federal Regulations (14 CFR) parts 43 (Maintenance, Preventive Maintenance, Rebuilding, and Alteration), 91 (General Operating and Flight Rules), and 135 (Operating Requirements: Commuter and On-Demand Operations and Rules Governing Persons on Board such Aircraft). Public service and governmental operators such as fire and law enforcement agencies conducting air medical transport as part of their mission profile should also consider incorporating this type of training.

3. REGULATIONS AND GUIDANCE MATERIAL.

a. Related 14 CFR Parts Include:

- (1) Part 1, Definitions and Abbreviations.
 - (2) Part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration
 - (3) Part 61, Certification of Pilots, Flight Instructors, and Ground Instructors.
 - (4) Part 65, Certification: Flight Crewmembers other than Pilots.
 - (5) Part 91, General Operating and Flight Rules.
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- (6) Part 119, Certification: Air Carriers and Commercial Operators.
- (7) Part 135, Operating Requirements: Commuter and On-Demand Operations and Rules Governing Persons on Board such Aircraft.
- (8) Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports.

b. Related Guidance Materials (as revised) include:

- (1) AC 00-6, Aviation Weather For Pilots and Flight Operations Personnel.
- (2) AC 00-24, Thunderstorms.
- (3) AC 0045, Aviation Weather Services.
- (4) AC 00-54, Pilot Windshear Guide.
- (5) AC 00-57, Hazardous Mountain Winds and they're Visual Indicators.
- (6) AC 60-22, Aeronautical Decision Making.
- (7) AC 61-134, General Aviation Controlled Flight into Terrain Awareness.
- (8) AC 90-87, Helicopter Dynamic Rollover.
- (9) AC 90-95, Unanticipated Right Yaw in Helicopters.
- (10) AC 91-32, Safety in and Around Helicopters.
- (11) AC 91-42, Hazards of Rotating Propeller and Helicopter Rotor Blades.
- (12) AC 91-65, Use of Shoulder Harness in Passenger Seats.
- (13) AC 120-51, Crew Resource Management Training.
- (14) AC 120-54, Advanced Qualification Program.
- (15) AC 120-71, Standard Operating Procedures for Flight Deck Crewmembers.
- (16) AC 120-72, Maintenance Resource Management Training.
- (17) AC 135-14, Emergency Medical Services/Helicopter (EMS/H).
- (18) AC 135-15, Emergency Medical Service/Airplane (EMS/A).

- (19) FAA-H-8083-21, Rotorcraft Flying Handbook.
- (20) FAA-H-8261-1, Instrument Flying Handbook.
- (21) FAA Order 8300.10, Airworthiness Inspector's Handbook.
- (22) FAA Order 8400.10, Air Transport Operations Inspector's Handbook.
- (23) FAA Order 8700.10, General Aviation Operations Inspector's Handbook.

NOTE: We encourage interested persons to access FAA publications at the following URL: <http://www.faa.gov> . Persons may purchase copies of FAA Orders from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. The Government Printing Office (GPO) online bookstore is at <http://bookstore.gpo.gov/index.html> .

c. Other Related Reading Materials.

- (1) Driskell, J., Adams, R., and John, A. (1992). *Crew Resource Management: An Introductory Handbook, Final Report*, DOT/FAA/RD-92/26.
- (2) Orlady, H. W. (Eds.)(1986). *Cockpit Resource Management Training: Proceedings of a NASA/MAC Workshop*, NASA Conference publication No. 2455. Moffett Field, CA, NASA Ames Research Center.
- (3) Federal Aviation Administration (1990). *National Plan for Aviation Human Factors*, Washington, DC.
- (4) Helmreich, R., and Wilhelm, J. (1991). *Outcomes of crew resource management training*, International Journal of Aviation Psychology, 1 (iv), 287-300.
- (5) Helmreich, R. and Foushee, H. C. (1993). "Why Crew Resource Management: Empirical and Theoretical Bases of Human Factors Training in Aviation." from E. Wiener, B. Kanki, and R. Helmreich (Eds.), *Cockpit Resource Management*, pp. 3-41. San Diego, CA, Academic Press.
- (6) Gregorich, S., and Wilhelm, J. (1993). "Crew Resource Management Training Assessment," from E. Wiener, B. Kanki, and R. Helmreich (Eds.), *Cockpit Resource Management*, pp. 173-198. San Diego, CA, Academic Press.
- (7) Wiener, E., Kanki, B., and Helmreich, R. (Eds.)(1993). *Cockpit Resource Management*. San Diego, CA, Academic Press.
- (8) Helmirich, R., and Merritt, AC, (1998). *Culture at Work in Aviation and Medicine*, Burlington, VT, Ashgate Publishing.

(9) Helmreich, R. L, Wilihelm, J.A., and Merritt, A. C., *Culture, Error and Crew Resource Management*.

(10) E. Salas, C.A. Bowers, and E. Edens (Eds.), *Applying resource management in organizations: A Guide for Professionals*. Hillsdale, NJ, Erlbaum

(11) ICAO (1998), *Human Factors Training Manual Doc 9683-AN/950*. Montreal, Canada, International Civil Aviation Organization.

(12) Air Transport Association (1998), *ATA Specification 104 Guidelines for Aircraft Maintenance Training*. Washington, DC, Air Transport Association.
www.airlines.org

4. BACKGROUND. Air Ambulance Emergency Medical Service is a very demanding and time critical/mission orientated operation. One consistent priority that needs to be addressed by each individual air ambulance organization is the safety of the flightcrew, medical crew, patient passengers, and support personnel. No operator goes out anticipating the occurrence of an accident, and like most aviation accidents there is rarely a single event that is the cause of an accident. It is usually a multitude of contributing factors that lead to potentially catastrophic results. Preventing accidents is the responsibility of everyone involved and takes the dedicated involvement of all of the aviation and medical professionals involved in the operation to provide the public the safest possible air ambulance service. Remember, the patient does not get a choice of when or where they may have to take an air ambulance flight, the carrier and service involved, or even if they will take a flight.

5. PHILOSOPHY OF AMRM. Air Medical Resource Management has been conceived to enhance the safety culture within the Air Medical Community by promoting team cohesiveness and adaptation during change through management of all available resources.

6. DEFINITIONS. The following terms have been defined specifically for the purpose of this AC:

a. Air Medical Resource Management (AMRM). AMRM addresses the challenge of optimizing the human/machine interface and related interpersonal issues, with maximum focus on communication skills and team building curricula. These issues include effective teambuilding, information transfer through communications, problem solving, decision-making, maintaining situational awareness, and establishing an operational environment conducive to optimal human performance even in challenging situations. AMRM is comprised of four elements:

(1) Presentation Skills Profile (Train the Trainer),

(2) Initial Indoctrination/Awareness,

(3) Recurrent Practice and Feedback, and

(4) Continuing Reinforcement.

b. Assertiveness. This is the ability to verbalize a series of “rights” that belong to every team member. Some of these “rights” include: the right to express feelings and ideas, the right to ask for information, and, most importantly, the ability to question decisions when in doubt. Assertiveness also includes achieving and maintaining a proper balance between respecting authority, practicing assertiveness, and recognizing when a crewmember is exercising assertiveness in an appropriate manner. Accomplishing the right task, at the right time, for the right reason, every time is necessary for effective AMRM.

c. Communication. This is the means or process of exchanging information which conveys meaning from one team member to another.

d. Complacency. This is a condition where a person is satisfied with a situation to the extent that a degradation of vigilance occurs.

e. Human Factors. Human factors is the multidisciplinary field devoted to optimizing human performance and reducing human error. It incorporates the methods and principles of the behavioral and social sciences, engineering, and physiology and is the applied science that studies people working together in concert with machines. Human factors embraces variables which influence individual performance and/or team or crew performance. Inadequate system design or inadequate operator training can contribute to individual human error that leads to system performance degradation. Further, inadequate design and management of crew tasks can contribute to group errors that lead to system performance degradation. Human Factors entails a multidisciplinary effort to generate and compile information about human capabilities and limitations and to apply that information to equipment, systems, facilities, procedures, jobs, environments, training, staffing, and personnel management for safe, comfortable, effective human performance.

f. Situational Awareness. Situational Awareness is the accurate perception of the factors and conditions currently affecting the safe operation of the aircraft and crew.

g. Team Members are a group of independent individuals working together to complete a specific task.

h. Teamwork is joint action by a group of people, in which each person subordinates his or her individual interests and opinions to the unity and efficiency of the group in order to complete the specific task at hand.

i. Team Situation. This is maintaining a collective awareness across the entire team of important current and predictable job-related conditions.

7. BASIC CONCEPTS OF AMRM. AMRM concentrates on air medical team member attitudes and behaviors and the effects they have on others.

a. Operational Environment. The operating environment comprises and demands interactions among:

- (1) Chief Pilots,
 - (2) Chief Flight Nurses,
 - (3) Executive Administrators,
 - (4) Directors of Operations and Safety,
 - (5) Medical Directors,
 - (6) Maintenance Technicians/Aircraft Maintenance Staff,
 - (7) Communications Specialists including Medical, Dispatch, and Flight
- Following,

- (8) Program and Operations Managers,
- (9) Pilots,
- (10) Flight Nurses,
- (11) Flight Paramedics,
- (12) Flight Physicians,
- (13) Field Services, Local Agencies,
- (14) Meteorology Services, and
- (15) Support and administrative staff.

b. Communications. Communications training should include, but is not limited to:

(1) **Assertiveness.** Assertive people have personality characteristics that maintain higher levels of awareness of the issues or situation leading to more successful outcomes and better decision making. Assertiveness can increase an individual's confidence in analyzing situations and making good decisions.

(2) **Conflict Resolution.** Conflict can be useful when viewed as an opportunity for discussion and managing problems that are inevitable. Team conflict could be caused by personality, values, perspective, goals, or cultural differences. Steps to manage team

conflict are to clarify the issue, set goals, consider options, remove barriers, make agreements, and acknowledge the solution.

(3) Barriers. Barriers result from the inability of team members to distinguish the various communication channels in which we speak. These channels include facts, feelings, values, and opinions. When two or more are in a discussion, any one of the channels can cause distortion.

(4) Culture Change. Embracing a culture that values all team members' input is necessary for effective AMRM. Every member of the team must be valued for insight and input from top to bottom and bottom to top. Effective AMRM requires organizations to evaluate and often change their culture of decision making and their hierarchies. Organizations may be plagued with a high proportion of negative norms based within their bureaucratic cultures. An important step to take is for all cultural change work group members to discuss where the organization is headed and what type of cultural change behavior is necessary to move it forward. Even when a very dysfunctional culture is inherited from the past, individual employees are often aware of the cultural change needed in order for the organization to adapt and survive. Similarly, they are also aware of what work environment they prefer for their own sanity and satisfaction and how cultural change could achieve it. A certain amount of planning and problem solving may have to occur before any new directions can be articulated.

(5) Feedback. Giving feedback should be based on specific actions, be descriptive, not evaluative (describe actions in observable terms rather than judgemental terms), timely, and ongoing. Giving feedback reduces uncertainty, solves problems, builds trust, strengthens relationships, and improves work quality.

(6) Communications Skills at Work. Be aware of both verbal and body language being used, how they are used, and their impact on others. Use validated techniques for giving/receiving as a tool for developing open channels of communication to enhance the flexibility and performance of the team members. It is important to remember that while new forms of electronic media can increase and speed communications, non real time and faceless communication carry risks of increased misunderstanding.

c. Team Building. Team Building should include, but should not be limited to:

(1) Definition of Team Roles. A team is identified as a group of interdependent individuals working together to complete a specific task. A team works together in a way to address the challenge of optimizing the human/machine interface and accompanying interpersonal activities. These activities include team building, information transfer, problem solving, decision-making, and maintaining situational awareness.

(2) Individual Competencies are a complex combination of an individual's knowledge, skills, and abilities, as demonstrated to the team's members, which are critical to the effective and efficient function of the team or organization.

(3) Commitment. All team members must depend on one another's knowledge, skills, and abilities to complete the mission.

(4) Inclusiveness. An effective team has to take into consideration or account for all factors within its scope, including the specified extremes or limits as well as all areas between them.

(5) Team Identification. Taken together, a team is defined as a group of individuals working together to complete a specific task. All team members depend on one another's knowledge, skills, and abilities to complete the task in the safest manner possible.

(6) Team Mission Statement. The team mission statement should address the need to prevent aircraft accidents by improving team performance through better team coordination.

(7) Briefing. An effective briefing should be interesting and thorough and establish a "team concept" environment that will encourage open/interactive communications. Briefings should:

(a) Be interactive and emphasize the importance of questions, critique, and the offering of information by all team members,

(b) Establish a team concept encouraging all to participate and help with the flight,

(c) Cover pertinent safety and security issues,

(d) Identify potential problems such as weather, delays, and abnormal system operations,

(e) Provide guidelines for crew actions centered on standard operating procedures (SOP),

(f) Set expectations for handling deviations from the SOPs, and

(g) Specify duties and responsibilities of all team members.

(8) Debriefing. This would relate to the effectiveness of the group and/or individual performance on the mission. Debriefings deal with positive as well as negative aspects of performance. Debriefings should be:

(a) Specific,

(b) Objective,

- (c) Usable,
- (d) Constructively given, and
- (e) Involve the whole crew interactively.

d. Decision Making. Decision making training should include, but is not limited to:

(1) Judgement. Judgement plays an important part in all phases of the operation. Knowing the goals, each team member involved should be trained to ensure that they are capable of making the best, most-informed decisions possible to ensure the mission is completed safely.

(2) Situational Awareness. Many common problems can be linked to situational awareness failures, which could include:

(a) Situational awareness for aviation crewmembers includes experience and training, physical flying skills, team work (CRM), spatial orientation, and health and attitude.

(b) Operational clues to loss of situational awareness include incomplete communications, ambiguity, unresolved discrepancies, use of undocumented procedures, preoccupation or fixation, no one flying, no one looking, confusion, deviations from SOPs or briefings, violations of limits and regulations, and failure to meet targets/goals.

(3) Risk Management. Establishment of a System Safety Risk Management Assessment Program optimizes safety by identifying operational hazards and related risk, then eliminating or mitigating them to a safe state by using established policies and procedures. The operator's procedures manual should contain clearly defined procedures for maintaining operational control during all phases of the EMS operation with total support from upper management. There is no "one size fits all" tool for developing a risk assessment program and operators should consider their own operational and environmental needs in developing its risk assessment tools and plan.

(4) Aeronautical Decision Making (ADM). ADM is a systemic approach to the mental process used by aircraft pilots to consistently determine the best course of action in response to a given set of circumstances.

(5) Standard Operating Procedures (SOP). To achieve consistent safe flight operations, SOPs must be clear, comprehensive, available, and understood by flight crewmembers. When flight crewmembers understand the underlying reasons for an SOP, they are better prepared to conduct a safe operation and provide feedback for improvements.

(6) Evaluation of Options. This training should focus on how to deal with last minute changes or conditions from the norm. Such changes could include a change in aircraft (backup ship), turning the mission over to another operation closer to the patient because of marginal weather conditions at your location, change of crewmember, or patient status change. Developing a Risk Assessment Matrix is one means for reducing crew anxiety.

(7) Weather. All regulations put forth in the federal aviation regulations must be met at all times, recognizing that available weather reporting and actual conditions encountered during flight may be quite different. The safety of the air medical crew members, passengers, and patients must never be compromised. Training should include at least the minimum weather conditions permitted for departure, where to access current weather reports, how to make a sound decision (go/no-go--whether to continue or not), and how to ensure the aircraft configuration is adequate for the intended flight (i.e., IFR vs. VFR).

(8) Instrument Meteorological Conditions (IMC). In addition to requirements in 14 CFR part 61, training for IMC should include instruction on the Instrument Flight Rules (IFR) regulatory requirements, IFR approaches, enroute procedures, go-around procedures, flight planning, flight following, and emergency procedures, as examples. In addition, training should be provided for inadvertent IMC penetration to prevent Controlled Flight Into Terrain (CFIT), which has been a major contributor to accidents, especially as associated with low light and marginal visibility conditions.

e. Human Factors. Human Factors training should include, but should not be limited to:

(1) Stress. While stress is normal and healthy, excessive stress may lead to “distress,” a condition of command pressure experienced when a person perceives that demands exceed the personal and social resources the individual is able to mobilize. There are many proven skills we can use to manage stress and help us to remain calm and effective in high pressure situations. These include action-oriented skills to confront the problem causing the stress, emotionally oriented skills, which we do not have the power to change the situation but manage the stress by changing the interpretation of the situation and the way you feel about it. In the EMS environment, it’s important that the dispatch of the aircraft should be examined as an air transportation decision free from the emotion of the “life-saver” decision. The development of acceptance-oriented skills where something happens over which we have no power and no emotional control, and where focus must be on surviving the stress, is essential in stress management.

(2) Critical Incident Stress Management. Critical incident stress management is the personal analysis of the various kinds of stress experienced by team members in air medical operations. The two types of stress related environments that exist while flying complex, time critical medical missions, and performing other crewmember duties, are the air transportation operation and the lifesaver environment.

(3) Fatigue Countermeasures. The term “fatigue” has been used to describe many different experiences: sleepiness, physical tiredness, inability to focus mentally, time on duty, types and number of missions, prolonged stress, and other factors. The effects of fatigue, which concern the operational community, are those that affect crewmember alertness and performance. This type of fatigue stems primarily from sleep loss, circadian rhythm disruption, lack of fitness, inadequate food and fluid intake, and the interaction of these physiological variables.

(4) Flight Physiology. An understanding of flight physiology is crucial in aviation safety. Flight physiology involves the definitive effects on the human mind and body when exposed to the flight environment. Preventive measures must be used in order for flight crewmembers to cope with this environment and to understand the unique effects that can erode performance. Examples of physical effects on the crew are spatial disorientation, head position caused by looking out or down, and sitting sideways. The use of over-the-counter medications, caffeine, alcohol, drugs, etc., can also bring on detrimental effects.

(5) Flight Psychology. Flight psychology is the application of psychological principles to the unique environment of all aircrew members in order to enhance training, flight safety, and mission accomplishment. This has to be a cooperative effort between a clinical psychologist and the air medical services. The primary focus of the flight psychology program is stress management.

(6) Operational Implications of Stress. Operational implications for stress, which affect human performance, could include fixation, increased reaction time, reduced effective field of view, deterioration in cognitive performance and spatial processing, logical reasoning decrements, negative effects on attention and concentration, increased workload, etc.

(7) Preparation/Planning/Vigilance. These behaviors relate to crews’ anticipating contingencies and the various actions that may be required to address a changing operational environment. Excellent crews are always “ahead of the curve” and generally relaxed. They devote appropriate attention to required tasks and respond without undue delay to new developments. Examples of good behavioral markers are sharing what is happening with all team members, sharing all relevant information, watching for performance degradation in other crewmembers, demonstrating awareness of the plan, including team members in planning, and ensuring all crew members are aware of any changes in the plan.

(8) Workload Distributed/Distractions Avoided. These behaviors relate to time and workload management. They reflect how well the crew manages to prioritize tasks, share the workload, and avoid being distracted from essential activities. Examples of workload behavioral markers could include crewmembers’ speaking up when they recognize work overload, clear communication of task distribution and task priorities, and anticipation of potential distractions so that appropriate actions are taken.

(9) Understanding of Basic Personality Types. The type of personality defines “what” is important to an individual and significantly influences the way one makes a decision.

(10) Understanding of Group Dynamics. The “group” may have its own way of making decisions. The group should be aware that perhaps their “informal” structure does in fact work in a formal organization.

f. Follow Up. AMRM Training should include, but is not limited to:

- (1)** Initial,
- (2)** Indoctrination,
- (3)** Awareness,
- (4)** Recurrent Practice,
- (5)** Feedback, and
- (6)** Continuing Reinforcement and Evaluation.

8. FUNDAMENTALS OF AMRM TRAINING IMPLEMENTATION. AMRM training should be customized to accurately and consistently reflect the operating philosophies, policies, practices, and procedures of the organization. Managers need to ensure that these elements are clearly defined and consistently implemented in procedures, training, and operational practices. Research findings and air medical operational experience suggests that the greatest benefits are achieved by adhering to the following practices:

a. Assess/Evaluate the Status of the Organization Before Implementation. It is important to know how widely AMRM concepts are understood and practiced before designing specific training. Surveys of air medical team members’ experience and capabilities can provide essential guidance for program development.

b. Commitment from All Managers, Starting with Senior Management. Air medical team members accept AMRM programs more positively when senior management, flight operations managers, and hospital management staff conspicuously support the basic concepts and provide necessary resources for training. Operations manuals should embrace AMRM training by providing necessary policy and procedures guidance.

c. Customization of the Training to Reflect Nature and Needs of the Organization. Using knowledge of the state of the organization, priorities should be established for topics to be covered including but not limited to special issues, such as the effects of mergers, introduction of advanced technology aircraft, medical equipment, aircraft equipment, communications equipment, and new team members.

d. Define the Scope of the Program. Implement special AMRM training for key personnel at each program, including developers/facilitators and supervisors. These individuals can be any member of each air medical flight program. Focus should be on their ability to instruct, facilitate, and teach the core elements of the program. It is also helpful to develop long-term strategies for program implementation.

e. Communicate the Nature and Scope of the Program before Implementation. Air ambulance medical programs should be provided with a preview of the training, including the Train the Trainer Course, with plans for initial and continuing training.

9. COMPONENTS OF AMRM TRAINING. Achieving success and safety in any field doesn't just happen. They require careful and detailed planning for implementation and are accomplished by providing quality training. To achieve the highest level of success and safety, a successful AMRM training program is comprised of four elements:

a. Presentation Skills Profile--“Train-the-Trainer Course.” To acquire a cadre of instructors, a Train-the-Trainer Course is the initial component of training for AMRM and provides an adequate number of qualified instructors as a resource for on-going/continuing training needs. It consists of classroom instruction on basic presentation skills and how to facilitate and instruct AMRM core components. Areas of inclusion for instructor training should be, but not limited to:

(1) What is your objective? Upon completion of this training, the student should be able to: Recognize and identify human factors elements by learning to:

- (a)** Understand human error and recognize contributing causes,
- (b)** Identify the chain of events that led up to an accident,
- (c)** Learn to develop safety nets,
- (d)** Be aware of individual's differences and behavioral styles,
- (e)** Be aware of how written communication can reduce human error, and
- (f)** Learn to develop effective communication skills.

(2) Who is your audience? Remember, each individual in the classroom has a different job function to perform. Even though their job functions are different in nature, they are all inter-related in some fashion, for accomplishing a successful and safe air medical transport mission. All audiences are different and instructors must be aware of the different personality types or behavioral styles, individual differences, and how they affect the way people perceive information and communicate with one another.

(3) How will you structure your presentation? Presentation material should be structured so each individual gains knowledge from the training. It has been found that individual learners have three sensory preferences for learning that must be considered when developing instructional material. Various personality types require different communication skills. These are:

- (a) Visual learners prefer to see and observe,
- (b) Auditory learners prefer to hear and listen, and,
- (c) Kinesthetic learners prefer to do rather than see or listen.

(4) How will you create impact? Adults want training that focuses on real-life problems and tasks rather than academic material only. They should be given an opportunity for active participation in an instructional setting that is safe, welcoming, comfortable, and where they are permitted to be a contributor.

(5) How will you design and display visual aids? Course media, used as aids in understanding the material, provides impact and must be relevant to the course content and the learning objectives that are to be achieved. Since media interacts directly with instructional methods, all instructional modules should include some type of live instructor/trainee interaction. Audio-visual aids help keep attention/focus.

(6) How will you stage your presentation? The physical environment is important and should provide for a relaxed and comfortable setting that promotes interactivity.

b. Initial Indoctrination/Awareness.

(1) The initial indoctrination/awareness component of AMRM training consists of classroom presentations that focus on interpersonal relations, including team building and communication skills, and the coordination involved in the decision making process. Emphasis on learning to assert oneself and maintaining the situation should also be included. It further provides a common terminology and conceptual framework for identifying coordination problems. Initial indoctrination may be accomplished by a combination of methods including lectures, group discussions, interactive play, videos, and role-playing exercises. It is advantageous to have interactive participation of all air medical team members and any other members operating in their environment.

(2) Indoctrination/awareness training modules for experienced air medical team members are not the only way AMRM training components can be provided. AMRM concepts should be addressed in air medical team member's initial qualification training for new team members (new hires).

(3) Curriculum development should continuously address AMRM skills that have been demonstrated to influence air medical team member performance.

c. Recurrent Practice and Feedback. AMRM training should be included as a regular part of recurrent training. Recurrent AMRM training should include refresher practice and feedback exercises. Advanced AMRM components may be introduced as the air medical team grows and develops comprehensive use of AMRM principles. Recurrent training allows participants to practice newly improved skills in communication and interpersonal relationships and to receive feedback on their effectiveness. Feedback has its greatest impact when it comes by way of self-critique and peer review. Feedback in a debriefing environment should focus on “the action” not “the individual.” Guidance from a facilitator with special training in assessment and debriefing techniques completes an effective practice/feedback process.

d. Continuing Reinforcement. AMRM concepts should be carried into every other type of training including technical and interdepartmental training so that those concepts are reinforced continuously. Dissimilar groups should all be brought together for joint AMRM training. The objective is to improve the effectiveness and safety of the entire operations team (cross-pollination) as a working system. This is accomplished through:

(1) Technical Training (e.g., initial and recurrent training) which includes:

(a) Simulation. Simulation training provides all team members a better opportunity to understand other team member’s responsibilities and job function. Simulations that could be used for training could include a mock air medical flight to emergency room staff and dispatchers or providing training on the helicopter emergency systems and procedures to the medical flight crewmembers. This could be something as simple as how to turn off the battery or operate the radios in cases where the pilot was incapacitated and could not perform these functions. Pilots could receive training on the procedures for deactivating the medical equipment installed on board.

(b) Case Studies. Most medical personnel receive training on lessons learned from previous medical cases. For air ambulance crewmember accident training, accident reports from the National Transportation Safety Board (NTSB), Aviation Safety Reporting System (ASRS), and the National Aviation Safety Data Analysis Center (NASDAC) are great training aids to be used for determining how and why an accident happened and how to prevent a reoccurrence of the accident.

(2) Interdepartmental Training (e.g., symposiums and seminars).

(a) Problem Solving. A problem solving method that could be used for resolution consists of four basic steps. First, find out what the problem is and determine if you have seen a similar problem before. Second, determine what strategies are available then choose one that seems as if it will work. Third, solve it by using the strategy you selected and work the problem. Fourth, look back and reread the question, did you answer the question, is your solution correct, and does it seem reasonable.

(b) Stress Awareness. Stress is individual, variable, and cumulative. When stress exceeds our capacity to resist or cope, there is likely to be a collapse. Identifying

the causes of stress is of the utmost importance. Causes could include, lifestyle stressors, mind stressors, body stressors, work stressors, and change stressors.

(c) Role Reversal. In order to better understand the other team member's position, their real needs must be understood. This can easily be accomplished by understanding:

- (1) What is the value or sense of the other position?
- (2) What might the other team member want or need?
- (3) How are our needs/interests the same?
- (4) What can I do to focus on our areas of agreement?
- (5) What can I do to meet their needs?

(d) Inquiry/Advocacy/Assertion. Training in the potential benefits of team members' advocating the course of action that they feel is best, even though it may involve conflict with others. This can be accomplished by confronting complex and diverse issues by stimulating reflective thinking and increased awareness. There is a need to tap the insights of others to motivate fresh thinking by empowering others. Sticking with a topic longer could lead to a broader understanding of underlying problems by evoking more questions with a deeper meaning.

(e) Conflict Resolution. Conflict is healthy when effectively managed and viewed as an opportunity for discussion and managing problems, which are inevitable in human relations. Quality of decision making can be improved by allowing all points of view to be examined. Steps to managing team conflict are:

- (1) Clarify the issues,
- (2) Set goals for resolution,
- (3) Consider options,
- (4) Remove barriers,
- (5) Make agreements, and
- (6) Acknowledge the solutions.

NOTE: Effective AMRM skills are not gained by passively listening to classroom lectures but by active participation and recurrent practice.

10. THE CRITICAL ROLE OF THE DEVELOPER/FACILITATOR. The effectiveness of any training curriculum is directly related to the expertise of the developers and facilitators. Ideally, developers and facilitators should be current, qualified members of the air medical team who have additional training in the following AMRM topics:

- a. Listening and communicating.
- b. Role-playing, simulations, and group discussions.
- c. Team building.
- d. Debriefing and feedback.

11. ASSESSMENT IN AMRM TRAINING PROGRAMS. AMRM is a dynamic process that works most effectively when it is continually assessed to determine if the training is achieving its goals. Each organization should have a systematic assessment process that tracks the effects of the training program so that critical topics for recurrent training may be identified and continuous improvements may be made in all other respects. Experience has shown that AMRM training works most effectively if it is continually refreshed by subject matter that is timely, relevant, and usable. Assessment of the training program should include observation and feedback by program administrators and self-reports by participants using standard survey methods. Developers/facilitators should use every available opportunity to highlight the importance of AMRM skills and techniques. One of the best learning opportunities occurs when air medical team members examine their own behavior and performance with the assistance of a trained facilitator. The facilitator points out both positive and negative aspects of AMRM performance. Whenever highly effective performance is observed, it is vital that the underlying behaviors are discussed and reinforced.

a. The emphasis in this assessment process should be on all team members' performance. The essential areas of AMRM-related assessment include communications, decision-making, team building and maintenance, workload management, and situational awareness, always in balance with traditional technical proficiency. An additional assessment is to determine the impact of the AMRM training on organization-wide trends in team member performance.

b. For optimal assessment, data on team members' attitudes and behavior should be collected before AMRM indoctrination and again at intervals after the last component of AMRM training, to determine both initial and enduring effects of the program. The goal should be to obtain an accurate picture of the organization's significant corporate personality traits before formal adoption of AMRM training and to continue to monitor those traits after implementation.

c. Reinforcement and feedback are essential to effective AMRM training. Team members must receive continual reinforcement to sustain AMRM concepts. Effective

reinforcement depends upon usable feedback to crew members on their AMRM practices and on their job function performance.

d. Usable feedback requires constant assessment. Team members and those involved in training and evaluation should be able to recognize effective and ineffective AMRM behaviors. AMRM concepts should be critiqued during the briefing and debriefing phases of all training and checking events.

e. Summarizing the assessment process should include measurement and tracking of the organization's corporate culture as it is reflected in attitudes and operational norms, identifying topics needing emphasis within the AMRM program, and ensuring that all team members are well prepared and standardized.

12. SUMMARY. More and more operators in the air medical community are discovering the value of extending resource management training across organizational lines of business. Effective AMRM begins with training the trainers. It is implemented through initial training and strengthened by recurrent practice and feedback. Each and every person on the air medical team is a resource to the air medical community. All operators and programs engaged in the provision of air medical services are encouraged to include all middle and upper-level managers as well as all support staff in their training. It is sustained by annual continuous reinforcement that is part of the corporate culture and embedded in every element of the air medical team's training. Their objective is to improve the effectiveness of all the groups within the operator's team.

ORIGINAL SIGNED BY

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