# EMERGENCY MEDICAL TECHNICIAN - ENHANCED

VDH VIRGINIA DEPARTMENT OF HEALTH

*Protecting You and Your Environment*

U.S. Department of Transportation

**National Highway Traffic Safety Administration**

*In cooperation with*

U.S. Department of Health & Human Services
Public Health Service

HRSA

Health Resources & Human Services Administration
Maternal & Child Health Bureau

***PUBLISHED IN COOPERATION WITH***:

# Virginia Standard Curriculum

Revised June 2008

# EMT-Enhanced: VIRGINIA STANDARD CURRICULUM

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# PREFACE

The National Highway Traffic Safety Administration (NHTSA) has assumed responsibility for the development of training courses that are responsive to the standards established by the Highway Safety Act of 1966 (amended). Since these courses are designed to provide national guidelines for training, it is NHTSA's intention that they be of the highest quality and be maintained in a current and up-to-date status from the point of view of both technical content and instructional strategy. The Virginia Office of Emergency Medical Services supports these efforts and strives to maintain compliance with these objectives.

The Virginia Office of Emergency Medical Services supported NHTSA with the revision of the 1985 *Emergency Medical Technician-Intermediate: National Standard Curriculum*, as it was deemed of high value to the Commonwealth in carrying out our annual training programs and as a future basis for the *EMT-Enhanced: Virginia Standard Curriculum*. Although a unique program for Virginia, the *EMT-Enhanced: Virginia Standard Curriculum* was developed not to directly conflict with the recommendations of the *National Emergency Medical Services Education and Practice Blueprint*, the *EMT and Paramedic Practice Analysis*, and the *EMS Agenda for the Future* wherever possible.

The *EMT-Enhanced: Virginia Standard Curriculum*, represents an entry level advanced care provider and can be used as either a terminal objective in itself or a transition to higher levels of education and/or certification at the EMT-Intermediate or EMT-Paramedic levels. This curriculum was developed as a sub-set of lessons from the *Emergency Medical Technician-Intermediate: National Standard Curriculum* and contains only lessons and didactic information also included in the EMT-Intermediate program. As a sub-set of the EMT-Intermediate program, the *EMT-Enhanced: Virginia Standard Curriculum* is designed to maintain consistency with national prehospital care guidelines, while meeting the specific needs of Virginia's EMS agencies and providers.

The *EMT-Enhanced: Virginia Standard Curriculum* represents the minimum required information to be presented within a course leading to certification as a Virginia EMT-Enhanced. It is recognized that there is additional specific education that will be required of EMT-Enhanced who operate in the field, i.e. ambulance driving, heavy and light rescue, basic extrication, special needs, and so on. It is also recognized that this information might differ from locality to locality, and that each training program or system should identify and provide special instruction for these additional training requirements. This curriculum is intended to prepare a medically competent EMT-Enhanced to operate in the field. Enrichment programs and continuing education will help fulfill other specific needs for the EMT-Enhanced's education.

ACKNOWLEDGMENTS

The Virginia Office of Emergency Medical Services formed the committee of experienced and knowledgeable EMS educators listed above to develop the *EMT-Enhanced: Virginia Standard Curriculum*. Each of these individuals and their organizations played a significant role in the development of the curriculum and are hereby recognized for their efforts. Their efforts have helped assure that the EMT-Enhanced program will meet a need to prepare individuals to provide appropriate and effective patient care.

The Virginia Office of Emergency Medical Services recognizes that the bulk of the EMT-Enhanced program was developed by the NHTSA EMT-Intermediate Curriculum Project and the contributions of the Project Director, Principal Investigator, Co-Medical Directors, and all the members of the Writing Groups and the National Review Team. A listing of these individuals is contained in the *Emergency Medical Technician-Intermediate: National Standard Curriculum* and is available for review upon request.

The Virginia Office of Emergency Medical Services wishes to thank these individuals and organizations for allowing it to utilize the *Emergency Medical Technician-Intermediate: National Standard Curriculum* as a basis for the *EMT-Enhanced: Virginia Standard Curriculum*.

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# THE EMT-Enhanced: VIRGINIA STANDARD CURRICULUM

## History

The *EMT-Enhanced: Virginia Standard Curriculum* is a new program developed in 2000-2001 as a replacement for the Virginia EMT Shock-Trauma program which was developed in the early 1980s with a revision in 1989. This replacement curriculum was designed to replace the older EMT Shock-Trauma program in order to place a greater emphasis on the care and treatment of medical emergencies with less concentration upon IV fluid replacement in shock as its primary field objective.

Additionally, the *EMT-Enhanced: Virginia Standard Curriculum* was designed to better integrate Virginia's prehospital advanced life support programs with the 1994 *EMT-Basic: National Standard Curriculum*. This curriculum is designed to expand the scope of practice of the older Virginia EMT Shock-Trauma curriculum. It is designed to provide a foundation for professional practice and additional education while introducing the process of clinical problem solving and decision making.

## The Curriculum Development Process

The Virginia EMT-Enhanced Curriculum Development Committee was formed in March 2000 to begin the process of reviewing the *Emergency Medical Technician-Intermediate: National Standard Curriculum* for development of the *EMT-Enhanced: Virginia Standard Curriculum* at the direction of the Virginia EMS Advisory Board. This committee met numerous times to review the EMT-Intermediate lesson plans and identify those components of that program for inclusion in the *EMT-Enhanced: Virginia Standard Curriculum*. The content of this curriculum was developed by identifying the current practice of Virginia EMT Shock-Trauma level providers from throughout the Commonwealth in an effort to design a program that would have minimal impact upon current field skills practiced while enhancing overall quality of patient care provided.

Three pilots of the EMT-Enhanced curriculum were conducted in Patrick, Loudoun and Bedford Counties (Boonsboro). These sites were asked to implement a draft of the curriculum and provide feedback to the Curriculum Development Committee. Each of the pilot sites and their field exam sites were an important component of the curriculum and examination development process. The Curriculum Development Committee gained valuable insight into the implementation of this curriculum from the pilot courses.

The National Registry of EMT's must also be acknowledged for their contribution to the design and development of the examinations and final evaluation tools that were used in the pilot program, by allowing the full use of their practical station evaluation forms

and support materials. They provided the entire design and development of the skill sheets that are contained within this curriculum.

**NOTE**: The following sections are taken almost entirely from the *Emergency Medical Technician- Intermediate: National Standard Curriculum* with only slight modification to address specific needs of this program.

## Curriculum Goal and Approach

A curriculum is only one component of the educational process. Alone, it cannot assure competence. The goal of this curriculum is to be part of an educational system that produces a competent entry level EMT-Enhanced.

### Educational Model

The Educational Model was developed to achieve the goals of the *Emergency Medical Technician-Intermediate: National Standard Curriculum* was used to develop this course. This Educational Model also went thought extensive community and peer review and was deemed equally applicable to the Virginia EMT-Enhanced program. This is a graphical representation of the major components of the curriculum. The EMT-Enhanced Educational Model was designed to be consistent with, and build upon, the Educational Model for the EMT-Basic and the EMT-Intermediate.

The Educational Model is not intended to imply a rigid order or sequence of the material. Course planners and educators should adapt and modify the order of the material to best meet their needs and those of their students.

The material in the preparatory module sets the stage for the rest of the course. Although there is no requirement to adhere to the order of the model, most educators agreed that this information should be presented early in the course. Additionally, Airway and Ventilation and Patient Assessment are fundamental skills and knowledge areas and should be presented toward the beginning of the course of study. In the Educational Model, the Medical and Trauma modules appear on either side Patient Assessment. In general, it is assumed that most programs will cover this material after the Preparatory, Airway, and Patient Assessment material.

The Model is also designed to emphasize the role of professional education as part of

| Continuum of Life Long Learning |
|---|

life long learning (fig. 1).

Basic Education ➔Competencies/Prerequisites ➔ Professional Education ➔ Continuing Education

The *Emergency Medical Technician-Intermediate: National Standard Curriculum* Diagram of Educational Model is attached as Appendix A.

**Competencies**

Advanced Life Support Course coordinators often comment that poor basic skills become problematic when attempting to teach many parts of ALS courses. Deficiencies in basic skills are difficult to overcome throughout the course, but are most evident when teaching communication skills, documentation, and pharmacology math skills. It is not the intent of professional education to teach basic skills, but rather build on an existing base of academic competencies. The EMT-Enhanced curriculum assumes competence in English and math prior to beginning the course.

Documentation skills rely far more heavily on spelling, grammar, vocabulary and syntax than on the mastery of the specialized form of report writing that is found in health care. If, through program evaluation, a program identifies less than satisfactory results in documentation skills, it should raise the prerequisite level of English competence.

Similarly, if a program has difficulty with the student's pharmacology math skills, it is suggested that the prerequisite level of math competence be increased, rather than attempting to remediate these basic skills in the context of EMT-Enhanced education.

Because of the variability in the roles and responsibilities of current EMT-Shock Traumas throughout the state, no Functional Job Analysis was conducted. It is, however, suggested that programs assess applicant's basic skills prior to entry into training. If the competence of the applicant is low, the student should be encouraged to remediate the deficiency prior to pursuing EMT-Enhanced certification. If the program chooses to enroll students with low basic skills levels, it is the program's responsibility to provide individual tutoring, increase course time, provide remedial education, or require co-requisite course work to improve the candidates basic skills prior to graduation.

**Course Length**

Basic academic skills play a very important role in course length and attrition rate. Attrition rate is a function of the groups basic academic skills and the length of the course. If course length remains constant, and the basic skills of the applicants

decreases, the attrition rate will rise. Correspondingly, if a program seeks to decrease its attrition rate or increase examination performance, it may do so by increasing the basic academic skills of its students, increasing course length, or both. This information should be taken into account in course planning.

The emphasis of EMT-Enhanced education should be competence of the graduate, not the amount of education that they receive. The time involved in educating a EMT-Enhanced to an acceptable level of competence depends on many variables. Based on the experience in the pilot and field testing of this curriculum, it is expected that the average program, with average students, will achieve average results in approximately 108-120 total hours of instruction (78-80 classroom/practical laboratory, 48-50 clinical, 24-48 field internship.) The length of this course will vary according to a number of factors, including, but not limited to:

-student's basic academic skills competence
-faculty to student ratio
-student motivation
-the student's prior emergency/health care experience
-prior academic achievements
-clinical and academic resources available
-quality of the overall educational program

This project included three pilots and field testing of developmental drafts of the curriculum. Based on input from the pilot test, the field tests, and peer review, there were no significant changes to the curriculum after pilot and field testing. The Curriculum Development Committee used the pilots and field test data to develop recommended time frames for the EMT-Enhanced course. These time frames are meant only as a guide to help in program planing. Training institutes MUST adjust these times based on their individual needs, goals and objectives. These times are only recommendations, and should NOT be interpreted as minimums or maximums. Those agencies responsible for program oversight are cautioned against using these hours as a measure of program quality or having satisfied minimum standards. Competence of the graduate, not adherence to arbitrary time frames, is the only measure of program quality.

## Prerequisites

EMT-Basic certification is one of the prerequisites for the EMT-Enhanced curriculum.

<u>EMT-Basic</u>
It has been a long held tradition to use EMT-Basic certification as a prerequisite for more advanced EMS education, and this curriculum continues that requirement. EMT-

Enhanced are required to be competent in *all* of the skills and knowledge of and EMT-Basic, and this knowledge base and skills competence should be verified during EMT-Enhanced education.

Other Virginia prerequisites for EMT-Enhanced course enrollment are found in the state regulations governing emergency medical services in Section **12VAC5-31** of the Virginia Adminsitrative Code.

**Life Long Learning/Continuing Education**

Continuing education is an integral component of any professional education process and the EMT-Enhanced must be committed to life-long learning. The EMT-Enhanced curriculum must fit within the context of a continuing educational system. This is necessary due to the continually changing dynamics and evolution of medical knowledge.

This curriculum is designed to provide the student with the essentials to serve as an entry level EMT-Enhanced. We recognize that enrichment and continuing education will be needed in some cases to bring the student to full competency. We strongly urge employers and service chiefs to integrate new graduates into specific orientation training programs.

It is important to recognize that this curriculum does not provide students with extensive knowledge in hazardous materials, blood-borne pathogens, emergency vehicle operations or rescue practices in unusual environments. These areas are not core elements of education and practice as identified in the *National EMS Education and Practice Blueprint*. Identified areas of competency not specifically designed within the EMT-Enhanced: Virginia Standard Curriculum should be taught in conjunction with this program as a local or regional option.

## EMT-Enhanced EDUCATION

Society is becoming more demanding in all areas in education. The current trend in professional education is to demonstrate, in quantitative ways, the value and quality of the program. Simply adhering to standards is no longer adequate to convince the stake holders that educational programs are satisfying the needs of its constituency. Government, society, and the profession are demanding that educational programs are held accountable for the product that they are producing. This section of the curriculum

briefly describes critical components, along with adherence to the EMT-Enhanced: National Standard Curriculum, that will enable programs to objectively demonstrate their value and quality.

## Sponsorship

EMT-Enhanced education was not designed to take place exclusively in an academic environment. Although an academic environment has services such as a library, student counseling (education, academic, psychological, career, crisis intervention), admissions, financial aid, learning skills centers, student health services, etc. these services may not be as necessary at this entry level of ALS education.

The financial resources should be adequate for the continued operation of the educational program to ensured each class of students is funded to complete the course. The budget should reflect sound educational priorities including those related to the improvement of the educational process.

Admissions of students should be made in accordance with clearly defined and published practices of the instruction and the Virginia Office of Emergency medical Services. Specific academic, health related, and/or technical requirements for admission shall be clearly defined and published. The standards and /or prerequisites must be made know to all potential applicants.

The program should be responsible for establishing a procedure for determining that the applicant's or students' health will permit them to meet the written technical standards of the program. Students should be informed of and have access to health services. The health and safety of students, faculty, and patients associated with educational activities must be adequately safeguarded.

Accurate information regarding program requirements, tuition and fees, institutional and programmatic policies, procedures, and supportive services shall be available to all prospective students and provided to all enrolled students. There should be a descriptive synopsis of the current curriculum on file and available to candidates and enrolled students. There should be a statement of course objectives, copies of course outlines, class and laboratory schedules, clinical and field internship experience schedules, and teaching plans on file and available.

Student and faculty recruitment and student admission and faculty employment practices shall be non-discriminatory with respect to race, color, creed, sex, age, disabling conditions, and national origin.

The program and sponsoring institution should have a defined and published policy and procedure for processing student and faculty grievances.

Policies and processes for student withdrawal and for refunds of tuition and fees shall be published and made known to all applicants. Polices by which student may perform service work while enrolled in the program must be published and made known to all concerned in order to avoid practices in which students are substituted for regular staff.

Student records shall be maintained for student admissions, attendance, academic counseling and evaluation. Grades and credits for courses shall be recorded and permanently maintained by the sponsoring institution.

## Program Planning/Communities of Interest

As with all professional education, it is critically important that EMT-Enhanced education programs are planned, executed and evaluated in a continuous quality improvement model. Only through a thorough assessment of the needs of the community, the establishment of goals to meet those needs, and program evaluation relative to those needs, will a program be able to demonstrate its quality and value.

Every professional education program is designed and conducted to serve a number of communities of interest. It is incumbent on the program director to identify who is being served by the program, and adapt the program to best meet those needs. The program's goal statement should help to clarify the communities that the program serves. Although students are the consumer of the educational program, they are not the customer of the product. Ultimately, the program serves the employers of graduates, not students. Typically, the communities of interest include directors, managers, and medical directors who hire or supervise graduates. Other communities of interest might include: colleagues, government officials, hospital administrators, insurance companies, patients, and the public.

As part of the planning process, the program should regularly assess the communities of interest, and establish objectives to best serve them. One way to survey the communities of interest is to establish an advisory board consisting of representatives from various communities of interest and regularly question them as to their expectations of entry level EMT-Enhanced. The program would use this information for program planning. Specifically, the program should use this information to clarify how to achieve their program goals and objectives.

## Program Goal

Each EMT-Enhanced program should have a program goal. The program goal is a statement of the desired outcome of the program, and typically references graduating competent entry-level providers. By design, program goals are broad based, but establish the parameters by which the effectiveness of the program will be evaluated. A program may have multiple goals, but most use one for clarity. For example, a typical program goals statement might read:

> The goal of the ABC EMT-Enhanced Education program is to produce competent, entry level EMT-Enhanced to serve in career and volunteer positions in XYZ county.

If the program provided additional training that is clearly not within the definition of the entry level practitioner, then additional information should be included in the goal. Education planning should be based on the program goal, the mission of the sponsoring institution, and the expectations of the health care community. The goal should be made know to all members of the communities of interest, especially the students and faculty.

The goal will be used to select appropriate curricular materials, clinical experiences, and many other aspects of program planning.

**Program Objectives**

Objectives are more specific statements of the outcomes of the program, and are derived from the program goal in conjunction with the communities of interest. The program can establish as many objectives as they see fit to accurately reflect the program goal. Often, programs find it useful to establish objective along the three domains of learning. Examples might include:

> Program Cognitive Objective:
> At the completion of the program, the graduate of the ABC EMT-Enhanced Education Program will demonstrate the ability to comprehend, apply, and evaluate the clinical information relative to his role as an entry level EMT-Enhanced in XYZ county.
>
> Program Psychomotor Objective:
> At the completion of the program, the student will demonstrate technical proficiency in all skills necessary to fulfil the role of entry level EMT-Enhanced in XYZ county
>
> Program Affective Objective:

At the completion of the program, the student will demonstrate personal behaviors consistent with professional and employer expectations for the entry level EMT-Enhanced in XYZ county.

Goals and objectives must be consistent with the needs of the communities of interest, e.g. the program sponsors, employers, students, medical community, and profession. There may be some goals that are important institutional goals that are not useful program goals. The only goals that are considered program goals are those that relate specifically to the competencies attained in the program.

## Use of the Goals and Objectives in Program Evaluation

Program goals and objectives form the basis for program assessment. Once the goals and objectives are established, they serve as a mechanism to evaluate the effectiveness of the program. By utilizing a variety of evaluation methodologies (performance of graduates on certification exams, graduate surveys, employer surveys, medical director surveys, patient surveys) the program can evaluate their effectiveness at achieving each objective. For example, if graduates consistently perform poorly on the respiratory section of certification exams, and graduates, employers, and medical directors all state that students are weak in respiratory, the program should critically evaluate this section of their curriculum.

Programs are encouraged to evaluate each objective in as many ways as possible. For example, graduate cognitive skills could be evaluated by performance on standardized tests, certification exams, graduate surveys, employer surveys, and medical director surveys. This provides much more information than using one source of data.

## Course Design

The EMT-Enhanced program should consist of four components of instruction: didactic instruction, skills laboratory, clinical education, and field internship. The first three typically occur concurrently, and the field internship serves as a verification that the student is serving as a competent, entry level practitioner.

### Didactic Instruction

The didactic instruction represents the delivery of primarily cognitive material. Although this is often delivered as lecture material, instructors are strongly encouraged to utilize alternate delivery methods (video, discussion, demonstration, simulation, etc.) as an

adjunct to traditional classroom instruction. The continued development and increased sophistication of computer aided instruction offers many options for the creative instructor. It is not the responsibility of the instructor to cover all of the material in a purely didactic format, but it is the responsibility of the program director to assure that all students are competent over the material identified by the declarative section.

Skills Laboratory

The skills laboratory is the section of the curriculum that provides the student with the opportunity to develop the psychomotor skills of the EMT-Enhanced. The skills laboratory should be integrated into the curriculum in such a way as to present skills in a sequential, building fashion. Initially, the skills are typically taught in isolation, and then integrated into simulated patient care situations. Toward the latter part of the program, the skills lab should be used to present instructional scenarios to emphasize the application and integration of didactic and skills into patient management.

Clinical Education

Clinical education represents the most important component of EMT-Enhanced education since this is where the student learns to synthesize cognitive and psychomotor skills. To be effective, clinical education should integrate and reinforce the didactic and skills laboratory components of the program. Clinical instruction should follow sound educational principles, be logically sequenced to proceed from simple to complex tasks, have specific objectives, and be closely supervised and evaluated. Students should not be simply sent to clinical environments with poorly planned activities and be expected to benefit from the experience.

The ability to serve in the capacity of an entry level EMT-Enhanced requires experience with actual patients. This process enables the student to build a database of patient experiences that serves to help in clinical decision making and pattern recognition. A skilled clinical educator must point out pertinent findings and focus the beginner's attention.

Program directors should be cautioned against using time as a criteria to determine the quantity of clinical education. More than any other phase of EMT-Enhanced education, minimum amounts of patient contacts and frequency of skills performed must be established for clinical education. It is acceptable to use a time based system to help in program planning, but a system must be used to assure that every student satisfies each and every clinical objective.

Typically, clinical education for the EMT-Enhanced takes place in both the hospital and field environments:

Hospital Clinical - Because of the unpredictable nature of emergency medicine, the hospital environment offers two advantages in EMT-Enhanced education: volume and specificity. In the hospital setting, the EMT-Enhanced student can see many more patients than is possible in the field. This is a very important component in building up a “library” of patient care experiences to draw upon in clinical decision making.

The use of multiple departments within the hospital enables the student to see an adequate distribution of patient situations. In addition to emergency departments, which most closely approximate the types of patients that EMT-Enhanced should see, clinical education should take advantage of critical care units, OB/GYN, operating rooms/anesthesia, recovery, pediatrics, psychiatric, etc. This will help assure a variety of patient presentations and complaints. These also provide a more holistic view of health care and an appreciation for the care that their patients will undergo throughout their recovery. This places emergency care within context.

EMT-Enhanced programs throughout the Commonwealth are encouraged to create clinical learning experiences in many environments. There is application to emergency medical care in almost any patient care setting. When a particular location lacks access to some patient populations, educational programs have created innovative solutions. Programs are encouraged to be creative and seek out clinical learning experiences in many settings. Examples include: morgues, hospices, nursing homes, primary care settings, doctor’s offices, clinics, laboratories, pharmacies, day care centers, well baby clinics, and community and public health centers.

Field Clinical - It is unreasonable to expect students to derive benefit from being placed into a field environment and performing. Field clinical represents the phase of instruction where the student learns how to apply cognitive knowledge and the skills developed in skills laboratory and hospital clinical to the field environment. In most cases, field clinical should be held concurrently with didactic and hospital clinical instruction.

Field instruction, as well as hospital clinical, should follow a logical progression. In general, students should progress from observer to participant to team leader. The amount of time that a student will have to spend in each phase will be variable and depend on many individual factors. One of the largest factors will be the amount and quality of previous emergency care experience. With the trend toward less and less EMT experience prior to EMT-Enhanced education, program directors must adjust the amount of field experience to the experience

of the students.

Clinical affiliations shall be established and confirmed in written affiliation agreements with institutions and agencies that provide clinical experience under appropriate medical direction and clinical supervision. Students should have access to patients who present common problems encourage in the delivery of advanced emergency distributed by age and sex. Supervision should be provided by instructors or preceptors appointed by the program. The clinical site should be periodically evaluated with respect to its continued appropriateness and efficacy in meeting the expectations of the programs. Clinical affiliates should be accredited by the Joint Commission on Accreditation of Healthcare Organizations.

## Field Internship

The final ability to integrate all of the didactic, psychomotor skills, and clinical instruction into the ability to serve as an entry level EMT-Enhanced is conducted during the field internship phase of the program. The field internship in not an instructional, but rather an evaluative, phase of the program. The field internship should occur toward the end of the program, with enough coming after the completion of all other instruction to assure that the student is able to serve as an entry level EMT-Enhanced. During the field internship the student should be under the close supervision of an evaluator.

Field internship must occur within an emergency medical service which demonstrates medical accountability. Medical accountability exists when there is good evidence that the EMS providers is not operating as an independent practitioner, and when field personnel are under direct medical control of on-line physicians or in a system utilizing standing orders where timely medical audit and review provide quality improvement.

Quality improvement is also a required component of EMS training. The role of medical direction is paramount in assuring the provision of highest quality out-of-hospital care. Medical Directors should work with individuals and systems to review out-of-hospital cases and strive to achieve a sound method of continuous quality improvement.

## Student Assessment

Any educational program must include several methods for assessing student achievement. As mentioned before, quizzes of the cognitive and psychomotor domains should be provided regularly and frequently enough to provide the students and the faculty with valid and timely indicators of the student's progress toward and the achievement of the competencies and objectives stated in the curriculum. Ultimately,

the program director is responsible for the design, development, administration and grading of all written and practical examinations. This task is often delegated to others. Some programs use outside agency developed or professionally published evaluation instruments. This does not alleviate the program's responsibility to assure the appropriateness of these exam materials. All examinations used within the program must have demonstrated validity and reliability and conform to psychometric standards. Programs are encouraged to use outside sources to validate examinations and/or as a source of classroom examination items.

The primary purpose of this course is to meet the entry-level job expectations as indicated in the job description. Each student, therefore, must demonstrate attainment of knowledge, attitude, and skills in each area taught in the course. It is the responsibility of the educational institution, program director, medical director, and faculty to assure that students obtain proficiency in all content areas. If after counseling and remediation a student fails to demonstrate the ability to learn specific knowledge, attitudes and skills, the program director should not hesitate to dismiss the student. The level of knowledge, attitudes and skills attained by a student in the program will be reflected in his performance on the job as a EMT-Enhanced. This is ultimately a reflection on the program director, primary instructor, medical director and educational institution. It is not the responsibility of the certifying examination to assure competency over successful completion of the course. Program directors should only recommend qualified candidates for licensure, certification or registration.

Requirements for successful completion of the course are as follows:

> Cognitive - Students must demonstrate competency of all content areas. This is most often done using quizzes, regular topical exams, and some combination of comprehensive exams (mid terms and finals). Cognitive evaluations must be reliable and viable. Programs should incorporate psychometric principles whenever possible. For example, item analysis should be utilized to assure discrimination on achievement tests. Scores on tests of known validity and reliability should be correlated to teacher made examinations. Medical director should take examinations and provide content validity input. Examinations should be balanced to areas within the course. Pass/fail scores should be established with an understanding of standard setting. Decisions regarding the continuation of students in class need to be made following a pattern of performance. One test failure should not result in failure from the program. Grading practices should be standardized to prevent bias by instructional staff. Essay and open ended questions should be clearly written and acceptable answers should be known before the examination is administered. Test should be kept secure and reviewed by students during class time.

Programs should investigate methods to Special remedial sessions may be utilized to assist in the completion of a unit or module of instruction. Scoring should be in accordance with accepted practices.

Affective - Students must demonstrate professionalism, conscientiousness and interest in learning. The affective evaluation instruments contained within this curriculum were developed using a valid process and their use is strongly recommended. Just as with cognitive material, the program cannot hold a student responsible for professional behaviors that were not clearly taught. The professional attributes evaluated using this instrument references the material in the Roles and Responsibilities of the EMT-Enhanced section of the curriculum. The instruments can be incorporated into all four components of the program: didactic, practical laboratory, clinical and field internship. Students who fail to do so should be counseled while the course is in progress in order to provide them the opportunity to develop and exhibit the proper attitude expected of a EMT-Enhanced.

Psychomotor - Students must demonstrate proficiency in all skills. A complete list of skill competencies expected to be completed within the program should be available to each student. Students should know pass/fail score of any instrument utilized within an educational program. Whenever possible multiple evaluators recording performance of a student should be made. Scenarios should be medically accurate and flow as they would in a typical EMS call. In clinical and field internship all instructional staff must be familiar with psychomotor instruments and expectations. Inter-rater reliability between various instructional staff must be monitored by the program. Clinical and field instructional staff orientations may help resolve issues of inter-rater reliability. Course ending skills examinations should be administered. Special remedial sessions may be utilized to assist in the completion of a unit or module of instruction. Pass/fail scores should be in accordance with accepted practices. It is strongly recommended that program utilize the skills evaluation instruments provided in this curriculum.

Students should be evaluated in all three domains in didactic, practical laboratory, clinical and field internship. For example, the students cognitive knowledge can be evaluated in the clinical setting by direct questioning or discussions. Secondly, if an IV is started on a patient, the psychomotor skill should be evaluated. Finally, the affective domain, their professional attributes can be measured. This example also applies to skills laboratories. In the skills laboratory, the cognitive domain can be measured by asking questions about the skill, and the affective domain can be measured by their

attitude in learning and practicing the skills.

## Program Personnel

There are typically many individuals involved in the planning and execution of a EMT-Enhanced program. For clarity, the following terms are defined as they will be used throughout this document.

These identified roles and responsibilities are a necessary part of each EMT-Enhanced program. The individuals carrying them out may vary from program to program and from locality to locality as the exact roles interface and overlap. In fact, one person, if qualified, may serve in multiple roles.

### Course Coordinator

The Course Coordinator is the individual responsible for course planning, organization, administration, periodic review, program evaluation, continued development, and effectiveness. The program should have a Course Coordinator while the program is in progress, whose primary responsibility is to the educational program. The Course Coordinator should contribute an adequate amount of time to assure the success of the program. The Course Coordinator shall actively solicit and require the cooperative involvement of the medical director of the program.
The Course Coordinator must have appropriate training and experience to fulfill the role. They should have at lease equivalent academic training and preparation and hold all credentials for which the students are being prepared, or hold comparable credentials which demonstrate at least equivalent training and experience.

The Course Coordinator should have training and education in education and evaluation and be knowledgeable in administration of education and related legislative issues for EMT-Enhanced education. The Course Coordinator should assume ultimate responsibility for the administration of the didactic, clinical, and field internship phases of the program. It is the Course Coordinators responsibility to monitor all phases of the program and assure that they are appropriate and successful.

### Program Faculty

The depth and breadth of EMT-Enhanced education has evolved through the years and expanded considerably from the early days of emergency medicine. It is no longer reasonable to assume that one individual possesses the required depth of knowledge to be able to teach the entire program. As a result the Course Coordinator and/or Course Coordinator should use content area experts extensively through the program.

Course Medical Director(Physician Course Director)

Medical direction of the EMT-Enhanced is an essential component of out-of-hospital training. Physician involvement should be in place for all aspects of EMS education. The Course Medical Director of the EMT-Enhanced program should be a local physician with emergency medical experience who will act as the ultimate medical authority regarding course content, procedures, and protocols. All of the program faculty should work closely together in the preparation and presentation of the program.

The Course Medical Director can assist in recruiting physicians to present materials in class, settling questions of medical protocol and acting as a liaison between the course and the medical community. During the program the Medical Director will be responsible for reviewing the quality of care rendered by the EMT-Enhanced student in the clinical and field setting. The Course Medical Director should review all course content material and examinations. The medical director should periodically observe lectures and practical laboratories, field and clinical internships. The medical director should participate in clinical instruction, student counseling, psychomotor and oral testing, and summative evaluation.

Most importantly, the Course Medical Director is responsible to verify student competence in the cognitive, affective and psychomotor domains. Students should not be awarded course ending certificates unless the medical director and Course Coordinator can assure through documentation of completion of terminal competencies that each student has completed the full complement of education. Documentation of completion of course competencies should be affixed to the student file with signatures of the medical director and Course Coordinator at the completion of the course.

## Licensure, Certification and Registration

The Virginia Office of Emergency Medical Services requires specific evaluation of cognitive and psychomotor performance prior to official certification as a EMT-Enhanced. This is in addition to course completion and is required by state regulations. The Course Coordinator should contact the Virginia Office of Emergency Medical Services for certification information.

## Program Evaluation

On-going evaluation must be initiated to identify instructional or organizational deficiencies which affect student performance. The evaluation process should include

both objective and subjective methods. Main methods of objective evaluation generally used are: 1) Graduates' performance on standardized examinations, and 2) Graduates' performance in practice in accordance with established standards of care. Group and individual deficiencies may indicate problems in conducting the education program.

Subjective evaluation should be conducted at regular intervals by providing students with written questions on their opinions of the program's strengths and weaknesses. Students should be given the opportunity to comment on the instruction, presentation style and effectiveness. Students should also be asked to comment on the program's compliance with the specified course of instruction, the quality and quantity of psychomotor skills labs, clinical rotations, and the validity of the examinations.

The purpose of this evaluation process is to strengthen future educational efforts. All information obtained as part of the subjective evaluation should be reviewed for legitimacy and possible incorporation into the course. Due to the important nature of this educational program, every effort should be made to ensure the highest quality instruction.

## Facilities

The physical environment for the provision of the EMT-Enhanced program is a critical component for the success of the overall program. The facility should sufficient space for seating all students. Abundant space should be made available for demonstration during the presentation of the course material. Additional rooms or adequate space should be available to serve as a practice area. The facility should be well lit for adequate viewing of various types of visual aids and demonstrations. Heating and ventilation should assure student and instructor comfort and the seats should be comfortable with availability of desk tops or tables for taking notes. There should be an adequate number of tables for display of equipment, medical supplies, and training aids. A chalkboard (flip chart, grease board) should be in the main hall. A projection screen and appropriate audio visual equipment should be located in the presentation facility. Practice areas should be carpeted and large enough to accommodate six students, one instructor, and the necessary equipment and medical supplies. Tables should be available for practice areas, with appropriate and sufficient equipment and medical supplies.

## Equipment and Supplies

Sufficient supplies and equipment to be used in the provision of instruction shall be

available and consistent with the needs of the curriculum and adequate for the students enrolled. The equipment must be in proper working order and sufficient to demonstrate skills of patients in various age groups. It is recommended that all the required equipment for the program be stored at the facility to assure availability for its use.

## HOW TO USE THE CURRICULUM

There are seven modules of instruction in the core content. There are 13 units within the six modules. Each section has the following components:

### Unit Terminal Objective

The unit terminal objective represents the desired outcome of completion of the block of instruction. In most cases it is a very high level objective, which can make it difficult to evaluate. This global objective represents the desired competency following completion of the section. Although this objective may be viewed as the aggregate of lower level objectives, in many cases, the whole is greater than the sum of the parts.

### Objectives

These are the individual objectives of the curriculum. Mastery of each of these objectives provides the foundation for the higher order learning that is expected of the entry level provider. The instructor and student should strive to understand the complex interrelationships between the objectives. These objectives are not discrete, disconnected bits of knowledge, but rather fit together in a mosaic that is inherently interdependent. The objectives are divided into three categories: Cognitive, Affective, and Psychomotor.

| Cognitive | Affective | Psychomotor |
|---|---|---|
| mental process-- | emotional process-- | physical process-- |
| perception | feelings | muscular activity |
| reasoning | | |
| intuition | | |

To assist with the design and development of a specific unit, each objective has a numerical value, e.g., 3-2.1. The first number is the module of instruction, followed by a hyphen and the number of the specific unit. For example, 3-2.1 is:

| | |
|---|---|
| Module 3: | Patient Assessment |
| Unit 3-2: | Techniques of Physical Examination |
| Objective 3-2.2 | Describe the techniques of inspection, palpation, percussion, and auscultation. (C-1) |

At the end of each objective is a letter for the type of objective: C = Cognitive; A = Affective; and P = Psychomotor. (The example above is cognitive). The number

following the type of objective represents the level of objective: 1 = Knowledge; 2 = Application; and 3 = Problem Solving. (The example above is knowledge).

## Declarative

This material is designed to provide Course Coordinators and faculty with clarification on the depth and breadth of material expected of the entry level EMT-Enhanced. **The declarative material is not all inclusive. The declarative section of the curriculum lack much of the specific information that must be added by the instructor.** The declarative information represents the bare minimum that should be covered, but the instructor must elaborate on the material listed. Every attempt has been made in development of the declarative material to avoid specific treatment protocols, drug dosages or other material that changes over time and has regional variations. It is the responsibility of the instructors to provide this information.

Specifically, the declarative material is used to help instructors develop lesson plans and instructional strategies. It is also designed to assist examination and publishers in developing appropriate evaluation materials and instructional support materials. **It is of upmost importance to note that the declarative material is not designed to be used as a lesson plan, but rather it should be used by instructors to help develop their own lesson plans.**

Some higher level objectives (C-2 and C-3) do not have specific corresponding declarative material. These objectives are include to help guide the instructor as to the appropriate depth of coverage. The prudent instructor will use both the objectives and declarative material to develop lesson plans and learning activities that teach to the appropriate level.

## Clinical Rotations

The clinical rotations that appear in the *EMT-Enhanced: Virginia Standard Curriculum* represent a stark departure from previous clinical education recommendations. In the past, clinical competence was determined simply by the number of hours spent in various clinical environments. As there is no assurance that time produced an adequate number of clinical exposures resulting in entry level clinical competence, a different approach was taken with this curriculum. In-kind services were provided by the Joint Review Committee for EMT-Paramedic Program Accreditation (JRC) in development of the *Emergency Medical Technician- Intermediate: National Standard Curriculum* these guidelines were incorporated into the *EMT-Enhanced: Virginia Standard Curriculum*.

The JRC survey all existing accredited paramedic programs and asked them to identify the number of psychomotor skills, patient age groups, pathologies, patient complaints and team leader skills they were currently utilizing in order to identify competent entry level paramedics. The results of the survey were then presented to the JRC sponsoring organization committee members who possess expertise in cardiology, pediatrics, anesthesia, surgery, emergency medicine and EMT-Enhanced education. Using both subject matter expertise and the results of the surveys of accredited programs, the JRC established the clinical rotation goals presented in this curriculum. Items presented in bold are essentials and must be completed by each student within the program. Items in italics are recommendations to achieve the essential.

Although these patient exposures cover a wide domain of skills, pathologies, complaints and ages, they can be achieved in either the clinical or field internship. For example, a student may demonstrate the ability to perform a comprehensive assessment, formulate and implement an treatment plan for patients with chest pain in either a hospital critical care unit or during an encounter in the field. If the patient in this example was not experiencing chest pain at the time of the student evaluation, but had experienced chest pain which resulted in admission to the critical care unit. This interaction would suffice for meeting the clinical rotation for one encounter with a chest pain patient. During this experience the student should complete an evaluated physical examination, a history based upon the initial and present condition of the patient and formulate a treatment plan for the patient based upon initial field or admission findings. This same principle of encountering patients who have identified pathologies or complaints within the past 48 hours will suffice for meeting the clinical rotation requirement.

Some categories can be counted more than once. For example if a student in the field internship encounter a patient with chest pain who was 68 years old and start an IV, the student would obtain credit for a complaint, an age and a skill. The established IV and chest pain assessment, and treatment and implementation plan must be evaluated and the patient age group credit must be recorded. Encounters without evaluation and recording should not be awarded credit.

Obviously during the education the best experience would occur in the field setting which most approximates the function of the job. Recognizing the extended field time that would be necessary to see the recommend variety of patient conditions and skills would be infeasible, the curriculum permits students to obtain these experiences in either hospital clinical or field. The team leaders skills can not be met during hospital rotations. The JRC recommends that a student will obtain credit for one patient for each encounter. For example if a patient has both chest pain and a syncope episode, the student can utilize this experience for either a chest pain patient or a syncope

patient, but not for both. The program must develop a clinical rotation patient tracking system in order to assure that each student encounters the recommended number of skills, ages, pathologies, complaints and team leader skills.

The clinical rotations contained within this curriculum were accomplished by EMT-Enhanced education programs at the time of the curriculum development. The Course Coordinator along with the community of interest should use feedback loops that are part of the program evaluation process to either increase or decrease the number of patient exposures based upon valid measurement instruments utilized in graduate surveys. If employers or graduates indicate the need for increased patient encounters in order to bring current graduates to the level of competency then the program should increase the number of encounters to correspond to this need. Likewise if graduates and employers indicate some rotations provided more than competent experience the program may reduce the number of patient encounters within the recognized category.

Although the categories were researched by the JRC, a Course Coordinator, medical director or community of interest may add different encounters in order to meet community needs. For example if a program is located in an area with a large geriatric population, the program may increase the number of encounters with geriatric patients to correspond to community needs.

## EDUCATING PROFESSIONALS

It has long been recognized that EMT-Enhanced (previously as EMT Shock-Trauma), as an integral part of the health care team, are health care professionals. As such, the education of EMT-Enhanced should follow a professional, rather than purely technical, model of instruction. Employers and patients are significantly increasing their expectations of EMT-Enhanced, and EMS education will need to respond.

In *Responsive Professional Education*, Stark, Lowther, and Hagerty (1986), propose that professional preparation is a combination of developing both professional competence and professional attitudes.

Historically, most EMS education has focused primarily on technical competence. Technical competence is only one component of professional competence. Professional competence includes six subcategories:

> *Conceptual competence* - Understanding the theoretical foundations of the profession
> *Technical competence* - Ability to perform tasks required of the profession
> *Interpersonal competence* - Ability to use written and oral communications effectively

*Contextual competence* - Understanding the societal context (environment) in which the profession is practiced
*Integrative competence* - Ability to meld theory and technical skills in actual practice
*Adaptive competence* - Ability to anticipate and accommodate changes (e.g. technological changes) important to the profession.

The main areas of focus of the National Standard Curriculum are on conceptual and technical competence. Unfortunately, conceptual, technical, and interpersonal competencies are only part of the competencies required for reflective practice.

It is incumbent on the program to keep contextual, integrative and adaptive competence in mind through the entire program. These are not discreet topic areas and do not easily lend themselves to behavioral objectives. Programs and faculty members must constantly weave these issues into the conceptual and technical components of the course.

Contextual competence is an appreciation for how the professional's practice fits into larger pictures. Professional practice in not conducted in a vacuum, but impacts, and is impacted upon, by many forces. Of course, entry level EMT-Enhanced understand how their practice affects individual patients. In addition, they must appreciate how their actions impact the EMS system where the work, the overall EMS system, the profession, the health care system, and society in general.

Teaching to improve contextual competence requires constant reinforcement of the interdependent nature of professional practice. Faculty must have a clear understanding of the relationship that EMS has with the health care system, the environment and society in general. Faculty must strive to repeatedly emphasize the "big picture" and not to fall into the trap of considering the individual practitioner, or the EMS profession, as a separate entity.

Integrative competence is generally built by having a strong mastery of the theoretical base of the content material. Students can often memorize treatment protocols (practice) without having a grasp of the underlying pathophysiology. In the short term, this enables them to pass the test, but results in poor ability to integrate the material. Eventually, this shortfall manifests itself as poor decision making and problem solving skills. Medical education must balance theory and practice and constantly emphasize the relationship between the two. Theory and practice are not discreet, mutually exclusive concepts, but rather the flip sides of the same coin.

Another way to improve integrative competence is to broaden the base of educational exposures of the student. It has been repeatedly demonstrated that a broad distribution

of course work, typical in liberal studies educational approach, increases integrative competence. Although not always possible, programs which are not satisfied with their graduates' ability to integrate theory and practice may find that adding additional courses from other disciplines will improve the students higher level cognitive skills.

It is effectively impossible for a centrally developed curriculum to identify specific objective and declarative material for contextual, integrative and adaptive competence, but their importance cannot be overstated. Individual instructors and programs must keep these competencies in mind as they are developing instruction strategies to build entry level competence. These competencies are often the result of leadership, mentoring, role modeling, a focus on high level cognition, motivation and the other teaching skills of the faculty.

Professional attitudes, in large part, represent the affective objectives of the program. Unfortunately the development of true professional attitudes are much more than the aggregate sum of the individual objectives. These attitudes represent the social climate, moral and ethical identity of the individual and the profession. These attitudes are influenced and shaped, through role modeling, mentoring, and leading by example. It is very difficulty to "teach" in a didactic sense and this is often interpreted by students as preaching. Generally, professional attitudes are best nurtured through leadership and mentoring. Faculty are encouraged to provide a positive role model for the development of professional attitudes in all interactions with students. EMT-Enhanced programs should take seriously their responsibility to develop the following professional attitudes:

> *Professional identity* - The degree to which a graduate internalized the norms of a professional
> *Ethical standards* - The degree to which a graduate internalizes the ethics of a profession
> *Scholarly concern for improvement* - The degree to which a graduate recognizes the need to increase knowledge in the profession through research
> *Motivation for continued learning* - The degree to which a graduate desires to continue to update knowledge and skills.
> *Career marketability* - The degree to which a graduate becomes marketable as a result of acquired training

Emergency medicine, like all professions, has a professional culture, personality, behaviors and attitudes that we consider acceptable. The opinion that others have about our profession are profoundly influenced by the professional identity of each of our members. It is very important that we shape our identity consciously, or run the risk of being misunderstood by others. The degree to which new graduates adopt the

behaviors and attitudes that the profession considers to be acceptable is a measure of our success in shaping each student's professional identity.

Ethical behavior is one of the cornerstones of professional attitudes. Ethics involves the critical evaluation of complex problems and decision making that takes into account the ambiguity that is most often present in professional decisions. Ethical behavior and decision making involves the ability to consider the greater social ramifications of your actions.

It is becoming increasingly important to have empirical data to validate clinical decisions. This fact is significantly increasing the role of research in medicine. Every medical professional must understand and appreciate the role of research in the future of health care. Of course, not all health care providers will be conducting research, but everyone must be committed to the concept of research as the foundation for decision making.

Primary professional education is just the beginning of a life long journey. The art and science of medicine changes over time. This requires that the professional adopt, from the beginning of practice, a sincere commitment to personal growth and continual improvement.

The last professional attitude is really a function of all that we have discussed. An individual's career marketability is a function of his ability to integrate professional competencies and professional attitudes into his own practice and work habits. Not only will this affect the ability to gain initial employment, but they will significantly impact his promotion potential. It is a very real and practical responsibility of education to prepare professionals for the work place and position them to be able to progressively be promoted. This keeps quality individuals intellectually stimulated, professionally challenged, and financially satisfied so they will not feel a need to leave the profession.

Professional education is a journey; not a destination. It is impossible, and fruitless, to dissect professionalism into increasingly smaller objectives. Mastery of hundreds or thousands of individual objectives does not assure that the graduate will integrate these objectives into professional behaviors. Like Humpty Dumpty, all of the parts may not be able to be assembled into a meaningful whole. There are many people who have mastered various parts of professional competence, but are not able to integrate and synthesize the skills into effective practice. This is the art of medicine, and is not taught specifically, but nurtured and allowed to grow through the creation of a supportive and positive environment.