



COLORADO
Department of Public
Health & Environment

Emergency Medical and Trauma Services Branch

Intravenous Therapy And Medication Administration Course Curriculum

For the Colorado Emergency Medical Technician (EMT)
(Previously known as EMT-Basic)

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TABLE OF CONTENTS

- I Introduction
- II Course curriculum
- III Clinical experience
- IV Medical acts allowed in Chapter Two Rules - Colorado EMT
- V Skills permitted in Chapter Two Rules - Colorado EMT
- VI Course outline
- VII Course learning objectives
- VIII Skills Sheets
 - 1. Phlebotomy (Straight needle blood draw)
 - 2. Peripheral Intravenous Therapy
 - 3. Peripheral Intravenous Therapy with Blood Draw
 - 4. Glucose Testing Diagnostic Interpretation - Blood Glucose
 - 5. Dextrose Administration - Intravenous
 - 6. Narcan Administration - **Intravenous**
 - 7. Narcan Administration - Atomized
 - 8. Albuterol - Nebulized (optional)
 - 9. National Registry IV Sheets

INTRODUCTION

The Colorado Department of Public Health and Environment under the auspices of **6 CCR 1015-3, Chapter 2 “Rules Defining the Qualifications and Duties of Emergency Medical Services Medical Directors and the Authorized Medical Acts of Emergency Medical Technician”** establishes the scope of practice for all levels of EMS providers and is commonly referred to as the “The Practice Rules”.

Within the Practice Rules it is stated that a *Colorado certified* Emergency Medical Technician (EMT) (formerly called an EMT-Basic), upon completion of a education program approved by the Colorado Department of Public Health and Environment (CDPHE) Emergency Medical and Trauma Services (EMTS) section and under the authorization (sponsorship) of a Colorado licensed physician may establish a peripheral intravenous line, administer crystalloid fluids, collect venous blood samples, and administer certain medications.

There is no specific state certification for graduates of an EMT IV course. It is the responsibility of the Colorado licensed physician, prior to authorizing (sponsoring) a Colorado EMT to perform these skills, to assure that the sponsored EMT meets the eligibility requirement of successful completion of a state approved education program.

CURRICULUM

This curriculum was developed by the CDPHE EMTS section and the State Emergency Medical and Trauma Services Advisory Council (SEMTAC) to satisfy the requirements for a Department-approved EMT IV education group.

EMT IV Education Groups recognized by the EMTS section, are obligated to present, *at a minimum*, the full content of this curriculum.

1. REQUIREMENTS

- a. This document contains a description of the minimum curriculum content that a Colorado certified EMT must complete to be eligible for physician sponsorship in the performance of phlebotomy, intravenous therapy, and medication administration.
- b. Education programs should utilize this material in constructing their courses.
- c. Instructor and student supportive materials on the topics contained in this curriculum may be obtained from any source yet must reflect currently accepted standards of medical practice for the skills included.
- d. While the contents of this curriculum may be expanded to provide material relevant to other levels of health care providers, any material added to this curriculum by an EMT IV Education Group does not constitute authorization for performance of skills beyond those defined by the Practice Rules for EMT providers.

2. RECOMMENDED TIME

- a. Recommended classroom time to present this content is approximately 22 hours. The exact time may vary slightly based on the number and experience level of the class participants and the addition of any optional content.

CLINICAL EXPERIENCE

Clinical experience is required of each student prior to successful EMT IV Therapy course completion.

1. EDUCATION

- a. Clinical experience shall consist of no less than ten (10) successful venipunctures utilizing over-the-needle intravenous catheters or butterfly needles.
- b. No less than four (4) of the required ten (10) successful venipunctures must be performed on actual patients in a clinical environment.

2. CLINICAL AGREEMENTS

- a. The education program must have written agreements/contracts in place with all clinical sites and/or agencies prior to presenting the IV Therapy course.

MEDICAL ACTS ALLOWED

Before a Colorado certified EMT may perform invasive procedures related to the collection of human blood samples, the initiation of intravenous therapy, or the administration of intravenous, atomized or nebulized medications, the EMT must complete the following requirements in the sequence listed:

1. EDUCATION

- a. Successful completion of a course of study approved by the Colorado Department of Public Health and Environment (CDPHE), Emergency Medical and Trauma Services (EMTS) section which contains *at a minimum* the material included in this curriculum.

2. AUTHORIZATION

- a. Formal sponsorship is required for the performance of any or all skills listed within the Practice Rules by a Colorado licensed physician who is registered with EMTS as a recognized EMS Medical Director.
- b. This medical sponsorship shall not include basic or advanced life support skills not listed in the Practice Rules, unless the sponsoring physician has applied for and received a waiver to the Practice Rules from the Department.

SKILLS PERMITTED

1. Human venipuncture for the following purposes:
 - a. Determination of blood glucose measurements
 - b. Collection of a venous blood samples
 - c. Initiation of intravenous therapy to include the following purposes
 - (i) Fluid replacement utilizing sterile-crystalloid solutions
 - (ii) Medication administration route utilizing sterile crystalloid solutions
2. Venous sites permitted shall be limited to the following in both adults and children:
 - a. Peripheral veins (excluding external jugular) `
 - b. Scalp veins
 - (i) Note: Ages, sites, and time limitations related to venipuncture should be determined by the current Practice Rules and local medical direction (protocols)
3. Measurement and interpretation of blood glucose levels
4. Administration of intravenous Dextrose
5. Administration of intravenous and atomized naloxone (Narcan)
6. Administration of nebulized albuterol (Proventil)

IV THERAPY AND MEDICATION ADMINISTRATION COURSE OUTLINE

MODULES (with suggested time breakdown)	RECOMMENDED MODULE TIMES	RECOMMENDED EMT CE HOURS
1. Course Introduction <div style="text-align: right; padding-right: 20px;"> Didactic 0:30 Lab 0:00 </div>	0:30	Preparatory - 0.5 CEU
2. Roles, Responsibilities, Legal Considerations <div style="text-align: right; padding-right: 20px;"> Didactic 1:00 Lab 0:00 </div>	1:00	Preparatory - 1.0 CEU
3. Cellular and Vascular Anatomy and Physiology <div style="text-align: right; padding-right: 20px;"> Didactic 1:30 Lab 0:00 </div>	1:30	Medical - 1.5 CEU
4. Principles of Shock <div style="text-align: right; padding-right: 20px;"> Didactic 1:30 Lab 0:00 </div>	1:30	Medical - 1.5 CEU <i>or</i> Trauma - 1.5 CEU
5. Body Substance Isolation <div style="text-align: right; padding-right: 20px;"> Didactic 0:30 Lab 0:00 </div>	0:30	Preparatory - 0.5 CEU
6. Venipuncture Site Selection and Preparation <div style="text-align: right; padding-right: 20px;"> Didactic 0:45 Lab 0:45 </div>	1:30	Assessment - 1.0 CEU
7. Phlebotomy Equipment <div style="text-align: right; padding-right: 20px;"> Didactic 0:15 Lab 0:30 </div>	0:45	Elective - 0.5 CEU
8. Phlebotomy /Venipunctures Technique <div style="text-align: right; padding-right: 20px;"> Didactic 0:30 Lab 1:00 </div>	1:30	Medical - 1.0 CEU
9. Intravenous Therapy Equipment <div style="text-align: right; padding-right: 20px;"> Didactic 0:15 Lab 0:30 </div>	0:45	Elective - 0.5 CEU

MODULES (with suggested time breakdown)	RECOMMENDED MODULE TIMES	RECOMMENDED EMT CE HOURS
10. Intravenous Therapy Venipuncture Technique Didactic 0:30 Lab 1:00	1:30	Medical - 1.0 CEU <i>or</i> Trauma - 1.0 CEU
11. Combining Phlebotomy and Intravenous Therapy Technique Didactic 0:15 Lab 0:45	1:00	Medical - 0.75 CEU <i>or</i> Trauma - 0.75 CEU
12. Drip Rate Calculation Didactic 0:30 Lab 0:30	1:00	Medical - 0.75 CEU
13. Maintenance of Intravenous Therapy Didactic 0:30 Lab 0:30	1:00	Medical - 0.75 CEU
14. Discontinuation of Intravenous Therapy Didactic 0:30 Lab 0:30	1.00	Medical - 0.75 CEU
15. Intravenous Therapy in the Management of Adult Care Didactic 1:30 Lab 0:00	1:30	Medical - 1.5 CEU <i>or</i> Trauma - 1.5 CEU
16. Intravenous Therapy in the Management of Pediatric Care Didactic 1:30 Lab 0:00	1:30	Pediatrics - 1.5 CEU
17. Documentation Didactic 0:30 Lab 0:00	0:30	Preparatory - 0.5 CEU

MODULES (with suggested time breakdown)	RECOMMENDED MODULE TIMES	RECOMMENDED EMT CE HOURS
18. Blood Glucose Testing and Administration of Intravenous Dextrose Didactic 0:30 Lab 1:00	1:30	Assessment - 1.0CEU <i>or</i> Medical -1.0 CEU
19. Administration of naloxone (Narcan), Intravenous and Atomized Didactic 0:30 Lab 0:30	1.0	Medical - 0.75 CEU
20. Administration of Nebulized albuterol (Proventil) - Optional Didactic 0:30 Lab 0:30	1.0	Assessment - 0.75 <i>or</i> Medical - 0.75 CEU
TOTAL CLASSROOM HOURS	21.5 hours	Preparatory - 2.0 Assessment - 2.0 Pediatrics - 1.5 Medical - 10 Trauma - 4.0 Elective - 1.0
21. Cognitive Testing	Varies	(A minimum of a final, cumulative written exam is required)
22. Psychomotor Skills Testing	Varies	
23. Clinical Requirements	Varies	
24. Clinical Experience	Varies	

COURSE LEARNING OBJECTIVES

1. COURSE INTRODUCTION

Upon completion of Module 1, the EMT should be able to:

Cognitive Objectives

- 1.1. Describe this course's duration, completion requirements, and policies and procedures
- 1.2. Briefly describe the history of IV Therapy
- 1.3. Describe the purpose of this courses as it relates to the EMT IV

Psychomotor Objectives

None identified

Affective Objectives

- 1.4. Briefly describe personal attitudes regarding the performance of intravenous skills

2. ROLES, RESPONSIBILITIES, AND LEGAL CONSIDERATIONS

Upon completion of Module 2, the EMT should be able to:

Cognitive Objectives

- 2.1. Briefly describe the purpose of the Practice Rules and the regulatory body which establishes those Rules
- 2.2. Summarize the provision in the Practice Rules which authorizes the EMT to establish Intravenous Access
- 2.3. Describe the relationship between the EMT IV and his/her medical director
- 2.4. State the local protocol for authorization of the EMT to establish IV Therapy (content to be established by local education programs)
- 2.5. Differentiate between protocols and standing orders by definition and field practice
- 2.6. Describe the need for a standard of care
- 2.7. Describe the ethical responsibilities of an EMT IV
- 2.8. Describe the importance of professionalism for an EMT IV
- 2.9. Discuss the importance of documentation as it applies to the EMT IV
- 2.10. List and describe the legal issues of concern to an EMT IV
 - 2.10.1. Briefly describe the approach to be taken with a patient refusing IV Therapy
 - 2.10.2. Discuss the principles of consent to treatments as they apply to the EMT IV
 - 2.10.3. Discuss abandonment as it applies to the EMT with additional IV Therapy education
 - 2.10.4. Discuss considerations when obtaining a blood alcohol sample

Psychomotor Objectives

None identified

Affective Objectives

- 2.11. Present a variety of patient scenarios, describe the appropriate action the EMT IV should take from an ethical, legal, and/or Practice Rules standpoint and explain the rationale behind those decisions.

3. CELLULAR AND VASCULAR ANATOMY AND PHYSIOLOGY

Upon completion of Module 3, the EMT should be able to:

Cognitive Objectives

- 3.1 Define the following terms:
 - 3.1.1. Homeostasis
 - 3.1.2. Isotonic
 - 3.1.3. Hypotonic
 - 3.1.4. Electrolytes
 - 3.1.5. Intracellular fluid
 - 3.1.6. Extracellular fluid
 - 3.1.7. Interstitial fluid
 - 3.1.8. Intravascular fluid
 - 3.1.9. Crystalloid solution
 - 3.1.10. Colloid solution
- 3.2. Describe the principles of the body's fluid balance
 - 3.2.1 Explain the role of water
 - 3.2.2 Explain the role of electrolytes
- 3.3. Describe how osmotic pressure, oncotic pressure, and diffusion influence fluid balance in the body
- 3.4. Identify the properties of isotonic, hypertonic, and hypotonic intravenous therapy
- 3.5. solutions
- 3.6. Explain the effects of infusion of isotonic, hypertonic, and hypotonic IV solutions Upon the intracellular, intravascular, and interstitial spaces
- 3.7. Describe the role each of the following systems have on body fluid regulation
 - 3.7.1. Cardiovascular system
 - 3.7.2. Renal system
 - 3.7.3. Nervous system
 - 3.7.4. Respiratory system
- 3.8. List the components of blood and their function
- 3.9. Briefly describe the anatomy of the circulatory system
 - 3.9.1. List three differences between veins and arteries
- 3.10. Define and explain the significance of hemoglobin and hematocrit
- 3.11. Briefly describe the blood clotting process
- 3.12. State at least three factors which may alter the body's ability to form clots
- 3.13. List indications for blood transfusion and potential complications

Psychomotor Objectives

None identified

Affective Objectives

None identified

4. **SHOCK PRINCIPLES**

Upon completion of Module 4, the EMT should be able to:

Cognitive Objectives

- 4.1. Review various types of shock and the role of IV therapy for:
 - 4.1.1. Hypovolemic shock
 - 4.1.2. Cardiogenic shock
 - 4.1.3. Distributive shock
 - 4.1.3.1 Anaphylactic shock
 - 4.1.3.2 Neurogenic shock
 - 4.1.3.3 Septic shock
 - 4.1.4. Obstructive shock
- 4.2. Discuss the physiologic effects of shock on the circulatory system
- 4.3. Describe the signs and symptoms of shock (hypoperfusion)
- 4.4. List the three stages of shock (hypoperfusion)
- 4.5. Discuss how to assess and recognize a patient in shock (hypoperfusion)
- 4.6. Describe the management and treatment of shock (hypoperfusion)

Psychomotor Objectives

None identified

Affective Objectives

- 4.7 Estimate the volume of simulated blood loss in different setting

5. **BODY SUBSTANCE ISOLATION (BSI)**

Upon completion of Module 5, the EMT should be able to:

Cognitive Objectives

- 5.1. Discuss the importance of body substance isolation (BSI) based on OSHA standards.
- 5.2. Define pathogens
- 5.3. Define routes of exposure
- 5.4. Describe the steps the EMT IV should take to avoid exposure to pathogens
- 5.5. List the personal protective equipment necessary when initiating venipuncture

Psychomotor Objectives

None identified

Affective Objectives

- 5.6. Explain why the practice of body substance isolation (BSI) is important
- 5.7. Explain the need for the EMT IV serving as an advocate for the use of appropriate protective equipment

6. VENIPUNCTURE SITE SELECTION AND PREPARATION

Upon completion of Module 6, the EMT should be able to:

Cognitive Objectives

- 6.1. Identify peripheral IV sites
- 6.2. List three commonly used peripheral IV sites
- 6.3. List advantages and disadvantages to each site listed in 6.2
- 6.4. Explain the complications associated with the use of lower extremity veins for IV initiation
- 6.5. List factors which may affect the size and condition of a vein
- 6.6. Describe methods that may be used to distend a vein for identification and venipuncture
- 6.7. Explain why site selection should be based on patient's clinical presentation
- 6.8. Describe the steps in preparing a site for venipuncture
- 6.9. Given the following patient scenarios, describe the site that should be explored first for starting an IV
 - 6.9.1. Cardiac arrest
 - 6.9.2. Major systems trauma
 - 6.9.3. Burns
 - 6.9.4. Pediatric
- 6.10. Explain how a venous constricting band might become a source of contamination
- 6.11. List the steps in venipuncture site preparation
- 6.12. Define the following terms:
 - 6.12.1. Septic
 - 6.12.2. Aseptic
 - 6.12.3. Venous constricting band
 - 6.12.4. Anticubital space
 - 6.12.5. Clean
 - 6.12.6. Sterile

Psychomotor Objectives

- 6.13. Demonstrate the techniques of locating a suitable venipuncture site
- 6.14. Demonstrate three techniques to distend a vein for venipuncture
- 6.15. Demonstrate proper aseptic technique in venipuncture site preparation

Affective Objectives

- 6.16. Explain how a non-critical patient situation might alter IV site selection

7. PHLEBOTOMY EQUIPMENT

Upon completion of Module 7, the EMT should be able to:

Cognitive Objectives

- 7.1. List the equipment necessary to perform phlebotomy venipuncture
- 7.2. Identify on a mannequin or live model two commonly used sites to obtain blood samples using phlebotomy/ straight needle venipuncture techniques

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- 7.3. List common blood collection tubes, the additives they contain, and the tests performed with the blood collection tubes
 - 7.3.1. Red top
 - 7.3.2. Blue top
 - 7.3.3. Green top
 - 7.3.4. Yellow top
 - 7.3.5. Lavender top
 - 7.3.6. Marbled top

Psychomotor Objectives

- 7.4. Select the equipment necessary to perform phlebotomy venipuncture
- 7.5. Assemble the equipment needed to perform phlebotomy venipuncture

Affective Objectives

None identified

8. PHLEBOTOMY VENIPUNCTURE TECHNIQUE

Upon completion of Module 8, the EMT should be able to:

Cognitive Objectives

- 8.1. Identify at least two sites that are commonly used to perform phlebotomy venipuncture
- 8.2. Explain common questions to ask patients prior to performing phlebotomy venipuncture
 - 8.2.1. Allergies
 - 8.2.2. Medications
 - 8.2.3. Pertinent medical history
- 8.3. Understand different types and sizes of needles and intravenous catheters
- 8.4. Explain how to properly prepare a patient prior to phlebotomy/venipuncture
- 8.5. Explain to the patient the process for performing phlebotomy/venipunctures
- 8.6. Describe the importance of obtaining consent from the patient prior to phlebotomy/venipuncture
- 8.7. Explain proper site preparation prior to phlebotomy/venipuncture
- 8.8. Describe the proper technique for performing phlebotomy/venipuncture
- 8.9. Explain the proper technique for labeling and handling of blood tubes after performing phlebotomy/venipuncture
- 8.10. Explain the correct method for terminating phlebotomy/venipuncture
- 8.11. Explain how to take care of the site after performing phlebotomy/ venipuncture
- 8.12. Define appropriate documentation in regards to phlebotomy/venipuncture

Psychomotor Objectives

- 8.13 Demonstrate the following phlebotomy/venipuncture techniques (human/mannequin)
 - 8.13.1. Patient assessments
 - 8.13.2. Proper preparation
 - 8.13.3. Patient preparation
 - 8.13.4. Equipment preparation
 - 8.13.5. Site selection
 - 8.13.6. BSI precautions
 - 8.13.7. Site preparation
 - 8.13.8. Venipuncture insertion
 - 8.13.9. Management of blood collection tubes
 - 8.13.10. Termination of phlebotomy
 - 8.13.11. Site maintenance
 - 8.13.12. Documentation

Affective Objectives

- 8.14 Discuss possible anxieties a patient might have regarding venipuncture and how to alleviate them

9. INTRAVENOUS THERAPY EQUIPMENT

Upon completion of Module 9, the EMT should be able to

Cognitive Objectives

- 9.1. List the equipment necessary to perform venipuncture technique using an over the needle catheter and a butterfly needle
 - 9.1.1. Fluid
 - 9.1.2. Administration set
 - 9.1.3. Over the needle catheter selection
 - 9.1.4. Venous constricting bands
 - 9.1.5. Cleaning solution
 - 9.1.6. Securing device
 - 9.1.7. Tape

Psychomotor Objective

- 9.2. Demonstrate proper assembly of the equipment listed in 9.1

Affective Objectives

None Identified

10. INTRAVENOUS THERAPY VENIPUNCTURE TECHNIQUE

Upon completion of Module 10, the EMT should be able to:

Cognitive Objectives

- 10.1. Describe the proper technique for adult and pediatric intravenous therapy
 - 10.1.1. Patient assessments
 - 10.1.2. Proper authority
 - 10.1.3. Patient preparation
 - 10.1.4. Equipment assembly
 - 10.1.5. Site selection
 - 10.1.6. BSI precautions
 - 10.1.7. Site selection
 - 10.1.8. Venipuncture performance
 - 10.1.9. Site maintenance
 - 10.1.10. Documentation

Psychomotor Objectives

- 10.2. Demonstrate on a mannequin or live model intravenous venipuncture technique for an adult and pediatric patients
 - 10.2.1. Patient assessments
 - 10.2.2. Patient consent
 - 10.2.3. Patient preparation
 - 10.2.4. Equipment assembly
 - 10.2.5. Site selection
 - 10.2.6. BSI precautions
 - 10.2.7. Site selection
 - 10.2.8. Venipuncture performance
 - 10.2.9. Site maintenance
 - 10.2.10. Documentation

Affective Objectives

None identified

11. METHOD OF COMBINING PHLEBOTOMY AND INTRAVENOUS THERAPY TECHNIQUES

Upon completion of Module 11, the EMT should be able to:

Cognitive Objectives

- 11.1. Describe the reasons for combining blood draws with IV insertion
- 11.2. Describe two types of equipment used to combine phlebotomy and IV insertion:
 - 11.2.1. Syringe
 - 11.2.2. Luer type adapter
- 11.3. List common problems that may be encountered when combining phlebotomy and IV insertion
 - 11.3.1. Occlusion of the vein
 - 11.3.2. Failure to release the tourniquet
 - 11.3.3. Lack of preparation of equipment prior to insertion

Psychomotor Objectives

- 11.4. Demonstrate the correct technique for combining phlebotomy and IV insertion technique

Affective Objectives

None Identified

12. DRIP RATE CALCULATION

Upon completion of Module 12, the EMT should be able to:

Cognitive Objectives

- 12.1. Describe how to convert pounds to kilograms
- 12.2. Explain how to convert cc/ml to liters, kg to grams, mg to micrograms
- 12.3. Explain how to calculate the desired amount of medication using patient weight in an acute patient environment
- 12.4. Convert known dose of a medication on hand to desired dose
- 12.5. Calculate physician orders to gtts per minute with macro, micro and blood pump administration sets
- 12.6. Describe how to calculate physician orders to gtts per minute with macro, micro and blood pump administration sets
- 12.7. Describe the conversion process for a known dose of a medication on hand to desired dose
- 12.8. Demonstrate how to convert cc/ml to liters, kg to grams, mg to micrograms
- 12.9. Calculate amount of medication using patient weight in a acute patient Environment
- 12.10. Demonstrate how to convert pounds to kilograms using long division and the "three AM" rule

Affective Objectives

None identified

13. MAINTENANCE OF INTRAVENOUS THERAPY

Upon completion of Module 13, the EMT should be able to:

Cognitive Objectives

- 13.1. Describe the need to obtaining vital signs before and after starting an IV
- 13.2. Name three critical changes that occur from fluid administration and the associated changes in the patients vital signs
- 13.3. Explain how and where to listen to breath sounds
- 13.4. Identify the breath sounds
 - 13.4.1. Rales
 - 13.4.2. Rhochi
 - 13.4.3. Wheezes
 - 13.4.4. Absent breath sounds

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- 13.5. List three indication of fluid overload
 - 13.6. Describe three ways to confirm the patency of an IV
 - 13.7. List three reasons why an IV should be immediately discontinued
 - 13.8. Explain how to correct an IV that has stopped flowing

Psychomotor Objectives

- 13.9. Demonstrate how to obtain vital signs before and after application of the IV
- 13.10. Recognize three critical changes that occur from fluid administration and the associated changes in the patients vital signs
- 13.11. Demonstrate listening to breath sounds
- 13.12. Demonstrate three ways to confirm the patency of an IV
- 13.13. Properly document IV administration
- 13.14. Demonstrate how to correct the flow of an IV that has stopped flowing

Affective Objectives

None identified

14. DISCONTINUATION OF INTRAVENOUS THERAPY

Upon completion of Module 14, the EMT should be able to:

Cognitive Objectives

- 14.1. Explain the reasons for contacting on line medical control prior to discontinuing an IV
- 14.2. Explain the importance of describing the signs and symptoms of infection after an IV has been removed
- 14.3. Describe preparing the proper equipment for discontinuing an IV
- 14.4. Explain to the patient the procedure for discontinuing and IV

Psychomotor Objectives

- 14.5. Simulate contacting on line medical control prior to removal of an IV
- 14.6. Describe to the patient the signs and symptoms of infection after an IV has been removed
- 14.7. Demonstrate preparing the proper equipment for discontinuing an IV
- 14.8. Describe to the patient the procedure for discontinuing an IV
- 14.9. Prepare the equipment for discontinuation of the IV
- 14.10. Demonstrate removing an IV with aseptic technique

Affective Objectives

None Identified

15. INTRAVENOUS THERAPY IN THE MANAGEMENT OF ADULT CARE

Upon completion of Module 15, the EMT should be able to:

Cognitive Objectives

- 15.1. Explain the following aspects of patient care in the adult trauma patient, medical patient and patient in cardiac arrest using a patient case study or scenario
 - 15.1.1. Indications for IV insertion
 - 15.1.2. Contraindications for IV insertion; both patient condition and scene concerns
 - 15.1.3. List appropriate sites for intravenous therapy for an adult trauma patient
 - 15.1.4. Review differences for site selection and over the needle catheter size based on patient condition
 - 15.1.5. State the recommended/desired flow rate
 - 15.1.6. List acceptable techniques for vein distention
 - 15.1.7. Possible complications associated with IV insertion
 - 15.1.8. Review problem solving techniques for possible IV complications
 - 15.1.9. Review equipment necessary for IV site phlebotomy, as dictated by case study/scenario
 - 15.1.10. Indications of fluid overload as a result of IV therapy
 - 15.1.11. Methods of managing a patient with fluid overload as a result of IV therapy

Psychomotor Objectives

- 15.2. Demonstrate the technique for site selection for venipuncture for an adult patient
- 15.3. Demonstrate the proper aseptic technique for venipuncture
- 15.4. Demonstrate the appropriate phlebotomy techniques
- 15.5. Demonstrate how to appropriately secure an IV
- 15.6. Demonstrate how to regulate volume administration set drip rates

Affective Objectives

- 15.7. Explain conditions that may alter IV site selection
- 15.8. Explain how patient condition may alter the size and type of over the needle IV catheter and administration set used

16. INTRAVENOUS THERAPY IN THE MANAGEMENT OF PEDIATRIC CARE

Upon completion of Module 16, the EMT should be able to:

Cognitive Objectives

- 16.1. Given a patient case study or scenario explain the following aspects of patient care in the pediatric trauma patient, medical patient and patient in cardiac arrest
 - 16.1.1. Indications for IV insertion
 - 16.1.2. Contraindications for IV insertion; both patient condition and scene concerns
 - 16.1.3. List appropriate sites for intravenous therapy for a pediatric trauma patient

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- 16.1.4. Review differences for site selection and over the needle IV catheter size based on patient condition, anatomy, etc.
 - 16.1.5. State the recommended/desired flow rate
 - 16.1.6. List acceptable techniques for vein distention in a pediatric trauma patient
 - 16.1.7. Possible complications associated with IV insertion
 - 16.1.8. Review problem solving techniques for possible IV complications
 - 16.1.9. Review equipment necessary for IV site phlebotomy, as dictated by case study/ scenario
 - 16.1.10. Indications of fluid overload as a result of IV therapy
 - 16.1.11. Methods of managing a patient with fluid overload as a result of IV therapy

Psychomotor Objectives

- 16.2. Demonstrate the technique for site selection for venipuncture for a pediatric patient
- 16.3. Demonstrate the proper aseptic technique for venipuncture
- 16.4. Demonstrate appropriate IV site phlebotomy techniques
- 16.5. Demonstrate how to appropriately secure an IV
- 16.6. Demonstrate how to regulate volume administration set drip rates

Affective Objectives

- 16.7. Explain how patient condition may alter IV site selection
- 16.8. Explain how patient condition may alter the size and type of IV over the needle catheter and administration set used

17. DOCUMENTATION

Upon completion of Module 17, the EMT should be able to:

Cognitive Objectives

- 17.1. Discuss the documentation requirements for establishment of an IV
- 17.2. Describe the components of a written report and information that should be included
- 17.3. Identify the various sections of a written report and how it pertains to the EMT
- 17.4. Describe what information is required in each section of the patient care report and how it pertains to the EMT
- 17.5. Define special considerations concerning patient refusals, specifically with IDDM patients
- 17.6. Describe the legal implications associated with the written report
- 17.7. Discuss local considerations

Psychomotor Objectives

- 17.8. Demonstrate different patient care report techniques and formats
- 17.9. Compose an accurate patient care report containing the minimum data set for IV initiation and medication administration

Affective Objectives

- 17.10. Recognize the importance of accurate documentation

18. BLOOD GLUCOSE TESTING AND ADMINISTRATION OF INTRAVENOUS DEXTROSE

Upon completion of Module 18, the EMT should be able to:

Cognitive Objectives

- 18.1. State the indications for blood glucose testing
- 18.2. State appropriate blood glucose levels in both adult and pediatric patients
- 18.3. Describe patient presentations that indicate the need for the administration of glucose
- 18.4. State the situations in which physician consultation would be indicated for the administration of Dextrose
- 18.5. Identify the following aspects of Dextrose administration in the adult and pediatric patient
 - 18.5.1. Therapeutic effects
 - 18.5.2. Indications
 - 18.5.3. Contraindications
 - 18.5.4. Side effects
 - 18.5.5. Complications with administration
- 18.6. Differentiate between hypoglycemia and hyperglycemia
- 18.7. State the local protocols for the administration of Dextrose
- 18.8. Discuss the importance of drawing a tube of blood just prior to the administration of Dextrose

Psychomotor Objectives

- 18.9. Demonstrate proficiency in performing and interpreting a blood glucose test
- 18.10. Demonstrate the appropriate technique for the administration of Dextrose
- 18.11. Demonstrate the appropriate technique for the administration of oral glucose

Affective Objectives

None Identified

19. ADMINISTRATION OF INTRAVENOUS AND ATOMIZED INTRANASAL NALOXONE (NARCAN)

Upon completion of Module 19, the EMT should be able to:

Cognitive Objectives

- 19.1. Discuss the general factors that may cause an alteration in a patient's behavior
- 19.2. Describe the patient presentation requiring the possible administration of Narcan
- 19.3. Discuss the advantages and disadvantages of various routes of Narcan administration (i.e. intravenous vs. intranasal)
- 19.4. Discuss the importance of patient and provider safety prior to and after administration of Narcan
- 19.5. Identify the following aspects of Narcan administration in the adult and pediatric patient
 - 19.5.1. Therapeutic effects
 - 19.5.2. Indications
 - 19.5.3. Contraindications
 - 19.5.4. Side effects
 - 19.5.5. Complications with administration
- 19.6. State the local protocols for the administration of Narcan.

Psychomotor Objectives

- 19.7. Demonstrate the appropriate technique for the administration of intravenous Narcan
- 19.8. Demonstrate the appropriate technique for the administration of atomized intranasal Narcan

Affective Objectives

None Identified

20. ADMINISTRATION OF NEBULIZED ALBUTEROL

- 1. *This module of the “Intravenous Therapy and Medication Administration Curriculum” may be optional for some students.*
- 2. *Students who have successfully completed this material as a portion of their EMT initial curriculum are not required to repeat this information.*
- 3. *If the student has not covered this information and has not demonstrated both cognitive and psychomotor competency, this information should be covered.*

Upon completion of Module 20, the EMT should be able to:

Cognitive Objectives

- 20.1 List various caused of respiratory distress
- 20.2 Describe the signs and symptoms of a patient in respiratory distress
- 20.3 Identify the indications for the administration of nebulized Albuterol
- 20.4 Describe the patient presentation requiring the administration of Albuterol
- 20.5 Identify the following aspects of Albuterol administration in the adult and pediatric patient
 - 20.5.1 Therapeutic effects
 - 20.5.2 Indications
 - 20.5.3 Contraindications
 - 20.5.4 Side effects
 - 20.5.5 Complications with administration
- 20.6 State the local protocols for the administration of Albuterol

Psychomotor Objectives

- 20.7 Demonstrate the appropriate technique for the administration of nebulized Albuterol

Affective Objectives

- 20.8 Recognize the importance of patient coaching and calming techniques

IV Therapy and Medication Administration Skill Sheet
Phlebotomy (Straight Needle Blood Draw)

Student _____ Evaluator _____

Date _____ Start time _____ End Time _____

	Possible Points	Points Awarded
Takes BSI precautions	1	
Explains procedure to patient	1	
Identifies the need for drawing a blood sample: <ul style="list-style-type: none"> • As part of IV initiation for blood testing (1 point) • Blood glucose determination (1 point) • Legal (Blood alcohol, felony draw, etc. w/o IV) (1 point) 	3	
Checks and prepares equipment	1	
Applies tourniquet	1	
Palpates suitable vein	1	
Cleanses site appropriately	1	
Performs venipuncture: (1 point each) <ul style="list-style-type: none"> • Correct insertion angle/direction • Fills blood tubes as indicated • Gently inverts tubes with additives repeatedly • Removes tourniquet and needle 	4	
Properly dresses puncture site	1	
Manages blood tube properly: <ul style="list-style-type: none"> • Places tubes into small biohazard bag (1 point) • Labels the bag with patient's name (1 point) • Secures bag with patient (1 point) 	3	
Documents the procedure	1	
Disposes of needle in proper container	1	
TOTAL	19	

Critical Criteria

_____ Failure to take appropriate body substance precautions

_____ Exhibits improper or dangerous technique

_____ Contaminates equipment or site without correction

_____ Failure to dispose of needle in an appropriate container

IV Therapy and Medication Administration Skill Sheet

Peripheral Intravenous Therapy

Student _____ Evaluator _____

Date _____ Start time _____ End Time _____

	Possible Points	Points Awarded
Takes or verbalizes body substance isolation precautions	1	
Identifies the need for an IV Identifies the need for blood samples	2	
Explains the procedure(s) to the patient	1	
Checks selected IV fluid for: <ul style="list-style-type: none"> • Proper fluid (1 point) • Clarity (1 point) • Expiration date (1 point) 	3	
Selects appropriate catheter	1	
Selects proper administration set	1	
Connects IV tubing to the IV bag	1	
Prepares administration set (fills drip chamber and flushes tubing)	1	
Cuts or tears tape (at any time prior to venipuncture)	1	
Applies tourniquet	1	
Palpates suitable vein	1	
Cleanses site appropriately	1	
Performs venipuncture: (1 point each) <ul style="list-style-type: none"> • Correct insertion angle/direction • Notes or verbalizes flashback • Advances the catheter • Occludes vein proximal to the end of the catheter • Removes stylet and properly disposes of needle 	6	
Releases tourniquet	1	
Connects IV tubing and runs for brief period to assure patent line (1 point) Examines site for inflammation and/or infiltration (1 point)	2	

Secures catheter and tubing (tapes securely or applies a transparent dressing, taking care to not block the IV tubing connection.	1	
Adjusts flow rate appropriately	1	
Disposes of bio hazards in proper container	1	
Demonstrates correct technique in stopping IV therapy and the removal of IV catheter.	3	
TOTAL	30	

Critical Criteria

- _____ Did not take body substance precautions
- _____ Contaminates equipment or site without appropriately correcting situation
- _____ Exhibits improper or dangerous technique
- _____ Failure to successfully establish IV within 3 attempts
- _____ Failure to dispose/verbalize disposal of needle in proper container
- _____ Failure to clean IV site after discontinuation and removal of catheter

IV Therapy and Medication Administration Skill Sheet
Peripheral Intravenous Therapy with Blood Draw

Student _____ Evaluator _____

Date _____ Start time _____ End Time _____

	Possible Points	Points Awarded
Takes BSI precautions	1	
Identifies the need for an IV (1 point) Identifies the need for blood samples (1 point)	2	
Explains the procedure(s) to the patient	1	
Checks selected IV fluid for: <ul style="list-style-type: none"> • Proper fluid (1 point) • Clarity (1 point) • Expiration date (1 point) 	3	
Selects appropriate catheter	1	
Selects proper administration set	1	
Connects IV tubing to the IV bag	1	
Prepares administration set (fills drip chamber and flushes tubing)	1	
Cuts or tears tape (at any time prior to venipuncture)	1	
Applies tourniquet	1	
Palpates suitable vein	1	
Cleanses site appropriately	1	
Performs venipuncture: (1 point each) <ul style="list-style-type: none"> • Correct angle/direction • Notes or verbalizes flashback • Advances the catheter • Tamponades vein proximal to the end of the catheter • Removes stylet and properly disposes of needle 	5	
Performs blood draw: (1 point each) <ul style="list-style-type: none"> • Attaches vacutainer barrel to the IV catheter via luer lock adapter • Fills blood tubes as indicated • Gently inverts tubes with additives repeatedly • Connects IV tubing to the IV catheter 	4	
Releases tourniquet	1	

Attaches IV and runs for brief period to assure patent line (1 point) Examines site for inflammation and/or infiltration (1 point)	2	
Secures catheter and tubing (tapes securely or applies a transparent dressing) taking care to not block the IV tubing connection.	1	
Adjusts flow rate appropriately	1	
Disposes bio hazards in proper container	1	
Demonstrates correct technique in stopping IV therapy and the removal of IV catheter.	3	
TOTAL	33	

Critical Criteria

- _____ Did not take body substance precautions
- _____ Contaminates equipment or site without appropriately correcting situation
- _____ Exhibits improper or dangerous technique
- _____ Failure to successfully establish IV within 3 attempts
- _____ Failure to dispose/verbalize disposal of needle in proper container
- _____ Failure to clean IV site after discontinuation and removal of catheter

IV Therapy and Medication Administration Skill Sheet
Blood Glucose Testing and Diagnostic Interpretation

Student _____ Evaluator _____

Date _____ Start time _____ End Time _____

	Possible Points	Points Awarded
Takes BSI precautions	1	
Identifies indications for obtaining a blood glucose level: <ul style="list-style-type: none"> • Altered level of consciousness (1 point) • Suspected diabetic (1 point) • Non-traumatic seizures (1 point) • Unconscious patient of unknown etiology (1 point) 	4	
Identifies the normal parameters for blood glucose (70-120 mg/dl)	1	
Identifies potential complications: <ul style="list-style-type: none"> • Potential exposure to pathogens (1 point) • Arterial sample (1 point) • Clotted blood sample (1 point) • Glucometer malfunction (1 point) 	4	
Checks equipment: <ul style="list-style-type: none"> • Glucometer (1 point) • Test strip (1 point) • Lancet or spring-loaded puncture device (1 point) • Alcohol prep(s) (1 point) 	4	
Explains procedure to patient	1	
Turns on power to machine	1	
Preps finger tip with alcohol prep	1	
Punctures the prepped site with lancet/puncture device, drawing capillary blood	1	
Transfers a blood sample to test strip	1	
Dresses puncture site	1	
Records reading from monitor and documents is appropriately	1	
Disposes/verbalizes disposal of lancet/puncture device in appropriate container	1	
TOTAL	22	

Critical Criteria

- _____ Did not take body substance precautions
- _____ Failed to identify 2 or more indications for blood glucose testing
- _____ Failed to identify 2 or more potential complications of blood glucose testing
- _____ Failed to identify normal blood glucose parameters
- _____ Failed to dispose of lancet/ puncture in an appropriate container

IV Therapy and Medication Administration Skill Sheet

Intravenous Dextrose Administration

Student _____ Evaluator _____

Date _____ Start time _____ End Time _____

	Possible Points	Points Awarded
Takes BSI precautions	1	
Completes assessment(s) and determines patient needs medication	1	
Calls medical direction for order or confirms standing order	1	
Lists indications for intravenous Dextrose administration <ul style="list-style-type: none"> • Clinical condition suggests hypoglycemia (1 point) • Unconscious patient secondary to unknown etiology (1 point) • Non-traumatic seizures (1 point) • Glucometer reading <60 mg/dl (1 point) 	4	
Checks for known allergies, contraindications or incompatibilities: <ul style="list-style-type: none"> • Extravasations and tissue necrosis (1 point) • Requires a pre-administration blood sample to be drawn (1 point) 	2	
Checks medication to determine: <ul style="list-style-type: none"> • Expiration date (1 point) • Concentration (1 point) • Correctness (1 point) • Clarity (1 point) 	4	
Verbalizes the appropriate dosage for the medication	1	
Properly administers medication: <ul style="list-style-type: none"> • Draws up required dosage (1 point) • Instructs patient about the medication effects (1 point) • Administers medication in IV port-slow push (1 point) • Periodically flows IV to ensure patency of line (1 point) • Follows medication with a saline bolus/flush (20cc) (1 point) 	5	
Verbalizes the need for transport	1	
Verbalizes ongoing assessment including observing patient for desired/ adverse side effects	1	
Verbalizes proper documentation of medication administration	1	
TOTAL	22	

Critical Criteria

- _____ Did not take body substance precautions
- _____ Did not complete, or verbalize completion of, patient assessment
- _____ Contaminates equipment or site without appropriately correcting the situation
- _____ Administered medication without physician order (standing or verbal)
- _____ Administered, or attempted to administer, a medication to a patient with one or more contraindications for use
- _____ Administers improper medication dosage (wrong drug, incorrect amount, or administers the drug incorrectly)
- _____ Recaps needle or fails to dispose/verbalize disposal of syringe and other material properly
- _____ Uses or orders a dangerous or inappropriate intervention

IV Therapy and Medication Administration Skill Sheet

Intravenous Narcan Administration

Student _____ Evaluator _____

Date _____ Start time _____ End Time _____

	Possible Points	Points Awarded
Takes BSI precautions	1	
Completes assessment(s) and determines patient needs medication	1	
Calls medical direction for order or confirms standing order	1	
Lists indications for intravenous Narcan administration <ul style="list-style-type: none"> • Respiratory depression induced by narcotics (1 point) • Altered mental status unknown etiology (1 point) • Non-traumatic seizures unknown etiology (1 point) 	3	
Checks for known allergies, contraindications or incompatibilities: <ul style="list-style-type: none"> • Hypersensitivity (1 point) • Narcotic withdrawal (1 point) 	2	
Checks medication to determine: <ul style="list-style-type: none"> • Expiration date (1 point) • Concentration (1 point) • Correctness (1 point) • Clarity (1 point) 	4	
Verbalizes the appropriate dosage for the medication (adult and pediatric)	2	
Verbalizes consideration of restraining patient prior to medication administration	1	
Properly administers medication: <ul style="list-style-type: none"> • Draws up required dosage (1 point) • Instructs patient about the medication effects (1 point) • Administers medication in IV port-slow push (1 point) • Periodically flows IV to ensure patency of line (1 point) • Follows medication with a saline bolus/flush (20cc) (1 point) 	5	
Verbalizes the need for transport	1	
Verbalizes ongoing assessment including observing patient for desired/ adverse side effects	1	
Verbalizes proper documentation of medication administration	1	
TOTAL	23	

Critical Criteria

- _____ Did not take body substance precautions
- _____ Did not complete, or verbalize completion of, patient assessment
- _____ Contaminates equipment or site without appropriately correcting the situation
- _____ Administered medication without physician order (standing or verbal)
- _____ Administered, or attempted to administer, a medication to a patient with one or more contraindications for use
- _____ Administers improper medication dosage (wrong drug, incorrect amount, or administers the drug incorrectly)
- _____ Recaps needle or fails to dispose/verbalize disposal of syringe and other material properly
- _____ Uses or orders a dangerous or inappropriate intervention

IV Therapy and Medication Administration Skill Sheet
Atomized Intra-nasal Naloxone (Narcan) Administration

Student _____ Evaluator _____

Date _____ Start time _____ End Time _____

	Possible Points	Points Awarded
Takes BSI precautions	1	
Completes assessment(s) and determines patient needs medication	1	
Calls medical direction for order or confirms standing order	1	
Lists indications for intranasal Narcan administration <ul style="list-style-type: none"> • Respiratory depression induced by narcotics (1 point) • Altered mental status unknown etiology (1 point) • Non-traumatic seizures unknown etiology (1 point) 	3	
Checks for known allergies, contraindications or incompatibilities: <ul style="list-style-type: none"> • Hypersensitivity (1 point) • Narcotic withdrawal (1 point) 	2	
Checks medication to determine: <ul style="list-style-type: none"> • Expiration date (1 point) • Concentration (1 point) • Correctness (1 point) • Clarity (1 point) 	4	
Verbalizes the appropriate dosage for the medication (adult and pediatric)	2	
Verbalizes consideration of restraining patient prior to medication administration	1	
Properly administers medication: <ul style="list-style-type: none"> • Draws up required dosage (1 point) • Instructs patient about the medication effects (1 point) • Expels air from the syringe (1 point) • Assembles mucosal atomization device (MAD) to syringe securely (1 point) • Briskly compresses the syringe plunger (1 point) 	5	
Verbalizes the need for transport	1	

Verbalizes ongoing assessment including observing patient for desired/ adverse side effects	1	
Voices proper documentation of medication administration	1	
TOTAL	23	

Critical Criteria

- _____ Did not take body substance precautions
- _____ Did not complete, or verbalize completion of, patient assessment
- _____ Contaminates equipment or site without appropriately correcting the situation
- _____ Administered medication without physician order (standing or verbal)
- _____ Administered, or attempted to administer, a medication to a patient with one or more contraindications for use
- _____ Administers improper medication dosage (wrong drug, incorrect amount, or administers the drug incorrectly)
- _____ Recaps needle or fails to dispose/verbalize disposal of syringe and other material properly
- _____ Uses or orders a dangerous or inappropriate intervention

IV Therapy and Medication Administration Skill Sheet

Nebulized Albuterol Administration

Student _____ Evaluator _____

Date _____ Start time _____ End Time _____

	Possible Points	Points Awarded
Takes BSI precautions	1	
Completes assessment(s) and determines patient needs medication	1	
Calls medical direction for order or confirms standing order	1	
Lists indications for nebulized Albuterol administration <ul style="list-style-type: none"> • Bronchospasm due to reversible obstructive airway disease (asthma, bronchitis, acute bronchospasm) (2 points) • Prevention of exercise induced asthma (1 point) 	3	
Checks for known allergies, contraindications or incompatibilities: <ul style="list-style-type: none"> • Hypersensitivity (1 point) • Cardiac dysrhythmias associated with tachycardia (1 point) • Tachycardia caused by digitalis toxicity (1 point) 	3	
Checks medication to determine: <ul style="list-style-type: none"> • Expiration date (1 point) • Concentration (1 point) • Correctness (1 point) • Clarity (1 point) 	4	
Verbalizes the appropriate dosage for the medication	1	
Properly administers medication: <ul style="list-style-type: none"> • Instructs patient about the medication effects (1 point) • Assembles the nebulizer and connects to oxygen (2 points) • Provides appropriate oxygen flow (1 point) • Assists patient with use of the nebulizer (1 point) 	5	
Verbalizes the need for transport	1	
Verbalizes ongoing assessment including observing patient for desired/ adverse side effects	1	
Voices proper documentation of medication administration	1	
TOTAL	22	

Critical Criteria

- _____ Did not take body substance precautions
- _____ Did not complete, or verbalize completion of, patient assessment
- _____ Contaminates equipment or site without appropriately correcting the situation
- _____ Administered medication without physician order (standing or verbal)
- _____ Administered, or attempted to administer, a medication to a patient with one or more contraindications for use
- _____ Administers improper medication dosage (wrong drug, incorrect amount, or administers the drug incorrectly)
- _____ Uses or orders a dangerous or inappropriate intervention