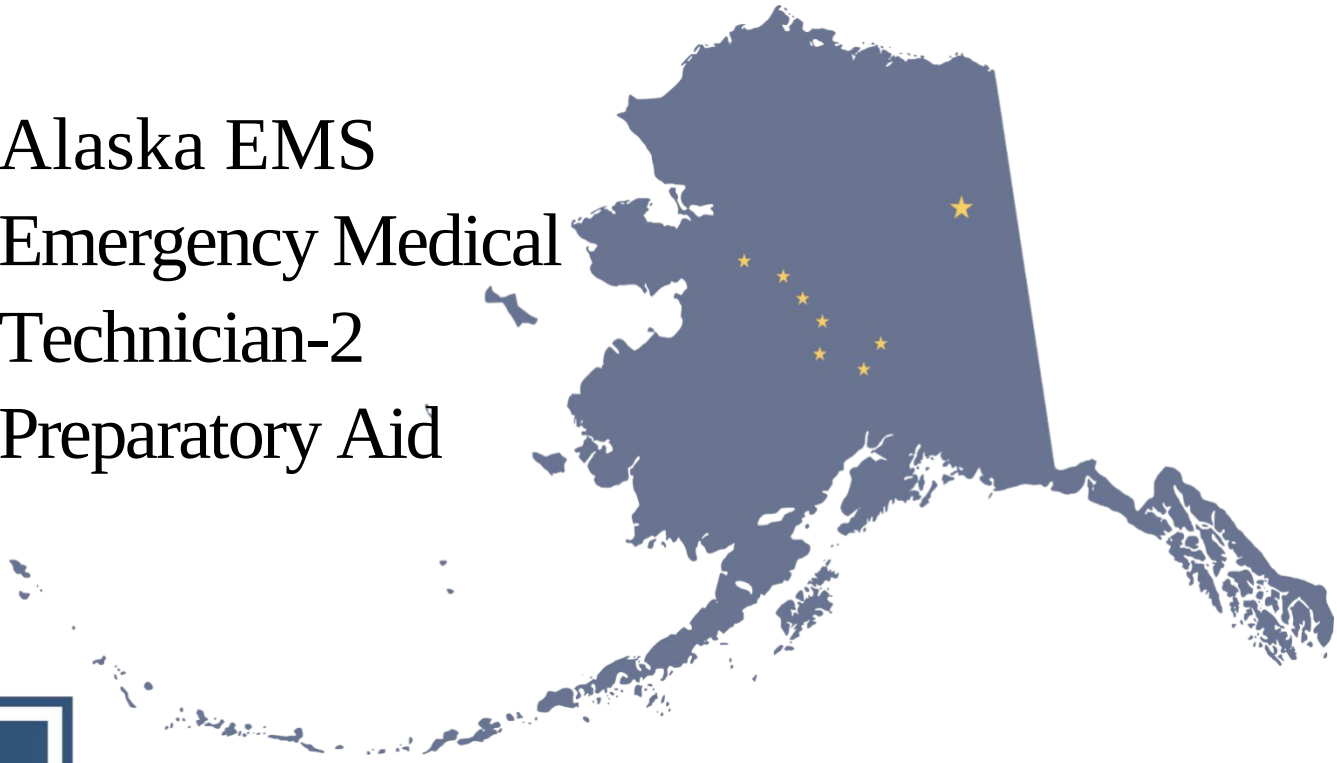
# Alaska EMS Emergency Medical Technician-2 Preparatory Aid



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**PREFACE**

The purpose of this outline is to present a framework for the instruction of Alaska Emergency Medical Technician-2 initial training program approved by the Alaska Department of Health and Social Services to qualified students. A qualified student is one that is: currently certified as an Alaska EMT-1; has completed 10 patient contacts; and, has completed 5 patient care reports.

The EMT-2 curriculum builds on a presumed shared base of Alaska EMT-1knowledge, skills, and proficiency prior to course start, including:

- All 2019 Scope of Practice (or more recent) EMT-1 skills and content*, including intramuscular injections and inserting supraglottic advanced airway devices, and
- All Alaska-specific content required for Alaska reciprocity

*This may require successful completion of a 2019 Scope of Practice transition course.

Before the course, students should spend time focusing on the areas of medical terminology, Alaska-adopted skill sheets, and anatomy/physiology. Students can draw the information to study these areas from the Alaska EMT-I Curriculum, ***Alaska EMS Psychomotor Portfolio***, ***Alaska Certification and Licensure Manual***, and the ***Cold Injury Guidelines***. Patient assessment and care objectives are intended to reflect patients of any age, unless specifically noted otherwise.

This curriculum is designed to be consistent with the version of American Heart Association's Guidelines for CPR and Emergency Cardiovascular Care in effect at the time of writing. In the event that the contents of the curriculum deviate from current BLS or ACLS standards, the BLS or ACLS standards will take precedence, except if specific protocols exist for the area of conflict, such as in the ***Cold Injuries Guidelines*** exist.

# TABLE OF CONTENTS

# Lesson 1: PREPARATORY

The EMT-2 has a variety of duties and is imperative they understand their legal, moral and ethical responsibilities. These responsibilities occur during training and in the practice of patient care.

## ROLES AND RESPONSIBILITIES

1.1 Define the following terms:
   a. Ethics
   b. Professionalism
   c. Professional
   d. Health care professional
   e. Certification
   f. Registration

1.2 Describe professional behavior.

1.3 Discuss skill deterioration and methods of prevention.

## EMS SYSTEMS

**Cognitive objectives:**

1.4 Define medical control per 7 AAC 26.640 (medical director responsibilities: certified persons). (add pediatric medical direction in education strategies)

1.5 Describe the responsibilities of the physician medical director, per 7 AAC 26.640 (medical director responsibilities: certified persons).

1.6 Describe quality assurance programs including evaluation of patient care, physician run critiques, and run report reviews.

1.7 Define exposure to airborne or bloodborne pathogens and describe post-exposure management.

## MEDICAL/LEGAL CONSIDERATIONS

**Cognitive objectives:**

1.8 Define the following terms:
   a. abandonment
   b. advance directives
   c. assault
   d. battery
   e. breach of duty
   f. confidentiality
   g. consent (expressed, implied, informed, involuntary)
   h. do not resuscitate (DNR) orders
   i. duty to act
   j. emancipated minor
   k. false imprisonment
   l. gross negligence
   m. immunity
   n. liability
   o. libel
   p. minor

q. negligence
r. proximate cause
s. scope of practice
t. slander
u. standard of care
v. tort

1.9 Describe the protections afforded by AS 18.08.086 (liability).
1.10 Describe AS 09.65.090 ("Good Samaritan Law").
1.11 Describe the responsibility of the EMT in terms of AS 47.17.010 and AS 47.24.010 (Abuse Reporting).
1.12 Describe the responsibility of the EMT in terms of AS 08.64.369 (Specific Injury Reporting).
1.13 Describe the conditions under which an EMT may follow Do Not Resuscitate Orders or Comfort One.
1.14 Describe the importance of patient consent in prehospital care and the legal consequences of breaches of consent.
1.15 Describe the importance of patient confidentiality and the legal consequences of breaches of confidentiality.

**Psychomotor objectives: none**

## COMMUNICATIONS/ DOCUMENTATION

**Cognitive objectives:**

1.16 Describe the importance of verbal communication of patient information to the receiving facility
1.17 Describe and organize patient assessment and treatment information, in a standardized format, that should be included in the verbal report to the provider/clinician.
1.18 Review the components of a legally defensible EMS report.
1.19 Understand the importance of appropriate and consistent data collection.

**Psychomotor objectives:**

1.20 Demonstrate proper use of a mobile or portable transmitter in a real or simulated patient situation to transmit patient assessment and treatment information, placing emphasis on medications administered
1.21 Properly complete an EMS patient care report, including a narrative in a standardized format, based on a real or simulated patient situation.

# LESSON 2: BASIC ANATOMY, PHYSIOLOGY, AND PATHOPHSYIOLOGY

At the completion of this section, the student will be able to:

**Cognitive objectives:**

2.1 Identify common medical abbreviations relevant to the EMT.

2.2 Describe the anatomy of the adult and pediatric respiratory tract, and recall that pediatric/neonatal airway is significantly different in appearance when visualized:

- a. Oropharynx
- b. Nasopharynx
- c. Hypopharynx
- d. Tongue
- e. Larynx
- f. Epiglottis
- g. Vallecula
- h. Trachea
- i. Carina
- j. Bronchus
- k. Bronchioles
- l. Alveoli
- m. Lungs
- n. Ribs and intercostal muscles
- o. Diaphragm
- p. Pleural space

2.3 Describe the differences between ventilation, respiration and oxygenation.

2.4 Describe the route of air during inspiration.

2.5 Describe the conditions that reduce airflow through the airway.

2.6 Describe gas exchange across the alveolar-capillary membrane (O2/CO2).

2.7 Describe and understand the mechanics of ventilation including chest wall involvement and pressure differentials

2.8 Confirm understanding of the mechanical elements of inhalation and exhalation to demonstrate necessity of chest wall and diaphragmatic movement.

2.9 Describe conditions that can complicate exhalation and inhalation and the mechanisms by which they reduce ventilation, including:

- a. Open pneumothorax
- b. Simple pneumothorax
- c. Tension pneumothorax
- d. Diaphragmatic injury
- e. Flail chest
- f. Constrictive airway disease

2.10 Define perfusion.

2.11 Discuss the components of perfusion (Fick Principle) including:

a. Adequate FiO2 (oxygen level)
b. Adequate number of red blood cells
c. Adequate on-loading of oxygen onto red blood cells
d. Adequate transport of oxygenated red blood cells and
e. Adequate off-loading of oxygen to the tissues.

2.12 Describe problems that occur with decreased perfusion.

2.13 Define ischemia and infarction.

2.14 Describe the anatomy of the circulatory system, including:
a. Heart
b. Great vessels
c. Pulmonary circulation
d. Peripheral circulation

2.15 Describe the anatomy of the Central Nervous System, including the following:
a. Brain
b. Spinal cord
c. Meninges
d. Cranial nerves

2.16 Describe the differences between the sympathetic nervous system and the parasympathetic nervous system, and the effects of stimulating each system.

2.17 Describe baroreceptors and chemoreceptors, and their roles

2.18 Describe the layers and function of the skin, specifically:
a. Epidermis and dermis (cutaneous)
b. Superficial fascia (subcutaneous)
c. Deep fascia

2.19 Describe the skin, bones, vessels and subcutaneous tissue as it relates to hemorrhage control.

2.20 Discuss the benefits and complications of hemorrhage control by the following means:
a. Direct pressure
b. Tourniquets

2.21 Discuss the changes in anatomical development over the lifespan including:
a. Infancy (fontanelles, motor development, congenital defects)
b. Pediatrics (personality/social development, injury patterns,)
c. Geriatrics (Degenerative disc disease and deformities)

## **Psychomotor objectives:** none

# Lesson 3: PHARMACOLOGY

## PRINCIPLES OF PHARMACOLOGY

**Cognitive objectives:**

3.1 State the 6 "rights" of medication administration:
   a. Right Patient
   b. Right Medication
   c. Right Dose
   d. Right Route
   e. Right Time
   f. Right Documentation

3.2 Demonstrate functional use of the metric system as it applies to medication administration

## ADMINISTRATION

**Cognitive objectives:**

3.3 Describe, compare, and contrast the various drug administration routes

3.4 Describe appropriate delivery of vaccines for use during community vaccination programs.

3.5 Drug Terminology:
   a. Antagonism
   b. Bolus
   c. Contraindications
   d. Cumulative Action
   e. Depressant
   f. Habituation
   g. Hypersensitivity
   h. Idiosyncrasy
   i. Indication
   j. Potentiation
   k. Refractory
   l. Side Effects
   m. Stimulant
   n. Synergism
   o. Therapeutic Action
   p. Tolerance
   q. Untoward Effect

**Psychomotor objectives:**

3.6 Demonstrate withdrawal of medication from an ampule, vial (single dose or multi-dose), and auto-injector.

3.7 Demonstrate preparation and administration of medications given by the following routes:

a. Aerosolized/nebulized
b. Inhaled
c. Intramuscular
d. Intranasal
e. Sublingual
f. Oral

## MEDICATIONS

**Cognitive objectives:**

3.8 For each of the following medications give the following: 1) state the generic and trade names, 2) classification, 3) indications, 4) contraindications, 5) precautions including compatibility, 6) medication form(s), 7) dose, 8) route of administration, 9) action,10) side effects and 11) re-assessment strategies:

a. Aspirin (ASA)
b. Bronchodilators via metered dose inhaler, or nebulized (medical director required if not patient's own. On-line medical control required if EMT has no medical director.)
c. Epinephrine 1mg/1ml IM (anaphylaxis)
d. Epinephrine auto-injector
e. Opioid antagonist
f. Oral glucose
g. Oral over the counter (OTC) analgesics for pain or fever
h. Oxygen (O2)
i. Nitroglycerin (sublingual) (NTG)
j. Autoinjector antidote (e.g., DuoDote®) for chemical/hazardous material exposures

**Psychomotor objectives:**

3.9 Given a patient scenario, state and/ or demonstrate the correct drug, dosage, and administration route(s) for:

a. Bronchodilators (metered dose inhaler or via nebulizer)
b. Epinephrine 1mg/ 1ml IM
c. Opiate antagonist (Naloxone)
d. Nitroglycerin (Sublingual)

# Lesson 4: PATIENT ASSESSMENT

Upon the completion of this section, the student will be able to:

**Cognitive objectives:**

4.1 Establish priorities of care based on life-threatening conditions.

4.2 Discuss techniques for evaluating the effectiveness of ventilation

4.3 Discuss the methods/techniques listed below for assessing placement of an advanced airway device and the limitations of each:
- a. Auscultation of lung sounds and gastric sounds
- b. Chest rise
- c. Clinical change in condition

4.4 Describe the mechanisms for evaluating the effectiveness of perfusion, including:
- a. mental status
- b. peripheral and central pulses
- c. skin color
- d. temperature
- e. condition

4.5 Utilize a standardized approach to pediatric assessment (such as the Pediatric Assessment Triangle) to evaluate severity of a pediatric patient's condition, given case or hypothetical scenarios.

4.6 Describe reasons for, and mechanisms of, patient reassessment in the resuscitation process.

4.7 Discuss important components that must be identified by the EMT while taking an appropriate history from a patient, including SAMPLE and OPQRST.

4.8 Identify "Load and Go" criteria that, if found during any phase of the assessment or exam, should dictate immediate transport with treatment en route to an appropriate facility.

4.9 Given a list of hypothetical patients and assessment findings, identify those requiring immediate intervention on scene prior to transport to an appropriate facility, and why.

**Psychomotor objectives:**

4.10 Demonstrate appropriate bloodborne and airborne pathogen protective equipment the EMT must use when in potential exposure situations.

4.11 Demonstrate the use of a standardized neurological assessment tool (e.g., GCS-40).

4.12 Demonstrate the use of a standardized stroke assessment tool (e.g. Cincinnati Prehospital Stroke Scale, BEFAST).

4.13 As part of an integrated approach to care, perform a patient assessment for both a medical and a trauma patient.

4.14 Identify the following upper airway sounds and discuss the medical significance of each:
- a. Stridor
- b. Grunting
- c. Gurgling
- d. Snoring

4.15 Identify the following lower airway sounds and discuss the medical significance of each:
   a. Crackles
   b. Wheezes
   c. Silent chest and
   d. Normal lung sounds.

# Lesson 5: MEDICINE/ MEDICAL EMERGENCIES

At the completion of this section, the student will be able to:

**Cognitive objectives:**

5.1 Explain the importance of urgent transport to an appropriate facility or team with a higher level of care.

5.2 Differentiate conditions in which the EMT should provide treatment on scene, versus prioritizing limited scene times.

5.3 Define and describe the signs, symptoms and EMT management of an adult or pediatric patient with:
   a. Altered mental status
   b. Hypoglycemia
   c. Hyperglycemia
   d. Substance(s) abuse/overdose (including opioids and alcohol)
   e. Poisoning
   f. Stroke
   g. Chest pain of suspected cardiac origin
   h. Cardiac arrest
   i. Anaphylaxis
   j. Bleeding from non-traumatic causes
   k. Non-traumatic shock
   l. Seizures
   m. Heat related illness

5.4 Recall the national Poison Control Center phone number: 1-800-222-1222

5.5 Describe the EMT level management of the hypothermic and/or cold water drowning patient, per the Cold Injuries Guidelines.

**Psychomotor objectives:**

5.6 Demonstrate assessment and appropriate management for an adult or pediatric patient experiencing a medical emergency, when given a scenario, using an integrated assessment and care approach.

5.7 Demonstrate assessment and appropriate management for a patient experiencing a cardiac arrest emergency, when given a scenario, using an integrated assessment and care approach.

# Lesson 6: SHOCK AND RESUSCITATION

At the completion of this section, the student will be able to:

**Cognitive objectives:**

6.1 Define shock as inadequate systemic perfusion (hypoperfusion) that leads to anaerobic metabolism.

6.2 Discuss prevention of anaerobic metabolism.

6.3 Apply the relationship between blood pressure, cardiac output, and systemic vascular resistance as it relates to blood pressure and shock.

6.4 Recall factors that affect cardiac output and systemic vascular resistance.
- a. Physical impairments
- b. Medications that affect compensatory efforts

6.5 Describe compensatory mechanisms in the adult and pediatric patient with decreased perfusion.

6.6 Describe compensated shock, including both cardiac and peripheral effects.

6.7 Describe decompensated shock, including both cardiac and peripheral effects.

6.8 Compare and contrast the importance of the following signs and symptoms in the adult and pediatric patient with shock:
- a. Mental status
- b. Pulse rate, location, and quality
- c. Diastolic and systolic blood pressure
- d. Urine output
- e. Skin color, condition, temperature
- f. Ventilatory rate and effort and
- g. Reinforce awareness of pediatric differences in compensation of shock

6.9 Describe the signs, symptoms, and management of internal bleeding.

6.10 Differentiate the presentation and treatment of neurogenic shock

6.11 Describe the relationship between sources of trauma in hemorrhagic shock:
- a. Pelvis
- b. Long bone/ musculoskeletal
- c. Organ injury
- d. Vascular injury

6.12 Discuss management of a shock patient, including treating the cause, oxygenation, and warmth.

**Psychomotor objectives:**

6.13 Demonstrate the assessment of the patient's perfusion status, including:
- a. Mental status
- b. Respiratory rate
- c. Pulse rate and quality

d. Capillary refill time
e. Skin color, temperature, and condition and,
f. Blood pressure

6.14 Demonstrate management of a shock patient, including treating the cause, and providing oxygenation, and warmth as needed.

# Lesson 7: TRAUMA

**Cognitive objectives:**

7.1 Outline the importance of the trauma triad to include acidosis, coagulopathy, and hypothermia.

7.2 Define, differentiate, and describe the management of:
a. Superficial burns
b. Partial thickness burns
c. Full thickness burns
d. Chemical burns
e. Electrical burns and their indications of injury

7.3 Describe the assessment and treatment of airway burns

7.4 Calculate Total Body Surface Area (TBSA) when given scenarios for both adult and pediatric patients. (Note that skin is the largest organ system in the body)

7.5 Describe the signs, symptoms, and management of a patient with head trauma according to the ***Alaska Prehospital Trauma Guidelines.***

**Psychomotor objectives:**

7.6 Demonstrate assessment and integrated EMT level management of a simulated or hypothetical multi-system trauma patient.

# Lesson 8: APPENDIX

**INTRAMUSCULAR MEDICATION ADMINISTRATION**

**Cognitive Objectives**:

8.1 Describe the layers of the skin, as they relate to the practice of medication injection

8.2 Describe the indications, equipment needed, techniques used, precautions and general principles of administering medications by the IM route.

8.3 Describe potential complications that can occur with the IM route.

8.4 Discuss how to prevent and/or treat potential complications that could result from the IM route.

**Psychomotor objectives:**

8.5 Demonstrate the proper technique for the IM route.