APPALACHIAN SEARCH & RESCUE CONFERENCE, INC.

2617 Jefferson Drive Alexandria, Virginia 22303

BLUE RIDGE MOUNTAIN RESCUE GROUP, ASRC
P.O. Box 440 Newcomb Hall
Charlottesville, VA 22903

BASIC EMERGENCY MEDICAL TECHNICIAN COURSE
Fall 1977

SCHEDULE

	Date	Topics	Reading Assgt.
Sept.	8 (Th)	Preliminary meeting for prospective students.	
	12 (M)	Introduction: What is an EMT? What is EMS? Training and legal aspects.	Sect. I
	15 (Th)	Introduction to Emergency Medicine: the human body, basic life support.	Sect. II
	19 (M)	CPR skills.	Sect. III, Red Cross booklets.
	22 (Th)	CPR skills.	
	26 (M)	The respiratory system: illness, injury, and special adjunctive devices. Oxygen therapy.	
	29 (Th)	The circulatory system: hemostasis, fluid balance, shock, IV therapy.	
Oct.	3 (M)	Written and practical test: Sections I-III.	
	6 (Th)	Skin, muscle, and soft tissue injuries.	Ch. 12-14
	10 (M)	The skeletal system, general principles of emergency orthopedic care, principles of splinting and bandaging.	Ch. 15-17
	13 (Th)	Orthopedics: the upper extremity.	Ch. 18
	17 (M)	Orthopedics: the lower extremity. Traction.	Ch. 19
	20 (Th)	Spine injuries.	Ch. 20
	24 (M)	Splinting and bandaging.	Sect. IV
	27 (Th)	Written and practical test: Sections I-IV (mid-term).	
	31 (M)	The head and nervous system, neurological tests.	Sect. V
Nov.	3 (Th)	The abdomen and GU system, medical emergencies.	Sect. VI-VII
	7 (M)	Childbirth, obstetric and gynecological emergencies, pediatrics, and psychiatric emergencies.	Sect. VIII-IX
	10 (Th)	Environmental injuries: heat, cold, radiation, drowning, electrocution.	Sect. X
	14 (M)	Written and practical test: Sections I-X	
	17 (Th)	Administrative matters and vehicles.	Sect. XI-XII
	21 (M)	Triage, patient examination (primary and secondary surveys).	
	24 (Th)	Review.	
Dec.	5 (M)	Written final tests.	
	8 (Th)	Practical Final test.	

EMT COURSE

Revised Schedule

			Homework due
OCTOBER			
31	(M)	Midterm.	
NOVEMBER			
3	(Th)	Head and nervous system, Eye, Abdomen and GU systems.	
7	(M)	OB/GYN, Emergency childbirth, Pediatric problems, Psychiatric problems.	Ch. 36
10	(Th)	Heat and Cold, Burns, Aquatic problems, other environmental problems	Ch. 40-44
14	(M)	Poisoning, Dyspnea, Communicable disease, Alcohol and drugs, Epilepsy, Diabetes, Unconscious states.	Ch. 32-35, 39, 45
17	(Th)	Vehicles, Communications, ED procedures, lifting and moving patients, Heart attack and Stroke.	Ch. 30-31, 48, 50
21	(M)	Patient assessment, IV Therapy. Written test.	Ch. 25-29
DECEMBER			
1	(Th)	Practical test. Review.	
5	(M)	Final exam-- written.	
8	(Th)	Final exam-- practical.	

Weekend sessions:

Additional semi-technical evacuation sessions (you must attend at least one) are on Nov. 13 (Sun) and Nov. 19 (Sat).

The extrication session will be held on Nov. 12 (Sat). Meet at 0900 at Jordan Hall; bring leather gloves, raingear, and appropriate outdoor clothing including sturdy shoes.

I will let you know as soon as the water extrication session is scheduled.

NOTICE:

For the Nov. 12 session, read Chapter 47 and do the workbook section for that chapter in preparation for the session.

UNIVERSITY OF VIRGINIA
SCHOOL OF MEDICINE
CHARLOTTESVILLE, VIRGINIA 22901

OFFICE OF THE DEAN
(804) 924-5XX 5006

September 12, 1977

Mr. Keith Conover
Emergency Medical Training Coordinator
Blue Ridge Mountain Rescue Group, ASRC
P.O. Box 440
Newcomb Hall
Charlottesville, Virginia 22903

Dear Mr. Conover:

Your request for classroom space has been confirmed as follows:

EMT Course
Monday and Thursday
7 - 10:00 P.M.
Jordan Hall 1-17
September 12 - December 8, 1977

EXCEPTION: November 24, 1977 (Thanksgiving)

Since we cannot provide a cleaning crew to pick up after each class session, we request you leave the room clean for the next users. Your cooperation in this is most appreciated.

Sincerely,

Jane A. Fitzgerald

Jane A. Fitzgerald

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BASIC EMERGENCY MEDICAL TECHNICIAN COURSE
Fall 1977

The past decade has witnessed a vast change in the field of emergency medical care--emergency care now starts at the scene of an accident or sudden illness, rather than at the hospital door. A large part of this change has been due to the improved training of ambulance attendants and others involved in the delivery of emergency care in the field. One of the principal agencies involved in upgrading the training of ambulance attendants was the U. S. Department of Transportation (DOT), which first formulated standards for ambulance attendants as EMTs. Since the DOT was primarily concerned with highway safety, the EMT program was oriented primarily towards situations where EMTs were riding an ambulance and had readily available the equipment found on an ambulance (the DOT also formulated standards for ambulance equipment). The basic EMT course as outlined by DOT consists of a minimum of 81 hours of classroom, practical, and clinical training.

The course offered by the BRMRG will meet all requirements for certification of students as ambulance EMTs (EMT-As), but will include additional material relevant to wilderness and search and rescue emergency medical care. One major addition will be the material found in the American National Red Cross Advanced First Aid and Emergency Care course. Most of this additional material concerns improvised splinting and bandaging techniques wich will be of great use to wilderness EMTs (EMT-Ws); all students completing the class will recieve Red Cross Advanced First Aid cards. Since much of the Red Cross course is covered in the EMT lesson plans, this will only add three or four classes to the course. Techniques specific to wilderness emergency care will add another three or four classes; the total course hours will number approximately one hundred.

There are no prerequisites for the course, but a knowledge of first aid will be helpful. The class size is limited to 20 students, so membership in a search and rescue unit or rescue squad will influence acceptance into the course. The cost for the course will be $25.00 per student, which will cover the cost of non-reusable supplies, handouts, supplementary texts, and certain personal equipment such as a pair of bandage scissors and a stethoscope. (Part of the fee may be waived if you already own this equipment). The principal text and its workbook must be purchased by the student and is available at University Bookstore: Emergency Care and Transportation of the Sick and Injured and workbook (second edition). This is a new edition of the "orange book"; neither the first edition of the orange book or the first edition of the "yellow book" will be adequate. For more information, contact:

Keith Conover, Course Coordinator 296-2269

APPALACHIAN
SEARCH & RESCUE
CONFERENCE, INC.

2617 Jefferson Drive Alexandria, Virginia 22303

BLUE RIDGE MOUNTAIN RESCUE GROUP

EMT COURSE

FALL 1977

Draft Schedule (July 9, 1977)

Session No.	Date	Topic(s)
0	Sept. 8 (Th)	Preliminary meeting.
1	13 (T)	Introduction, etc.
2	15 (Th)	Anatomy and physiology, diagnosis and triage.
3	20 (T)	Respiratory system and chest injuries.
4	22 (Th)	Circulatory system, bleeding, shock.
5	27 (T)	CPR.
6	29 (Th)	CPR.
7	Oct. 4 (T)	Test, sections I-III.
8	6 (Th)	Skin, muscles, wounds.
A&B	8 (Sat)	Extrication.
9	11 (T)	Skeletal system, splinting and bandaging.
10	13 (Th)	Upper extremity.
11	18 (T)	Lower extremity, traction splinting.
12	20 (Th)	Head and spine injuries.
13	25 (T)	Splinting and bandaging practice.
14	27 (Th)	Test, sections I-IV.
E	29 (Sat)	Water extrication.
15	Nov. 1 (T)	Nervous system, GU system, abdomen.
16	3 (Th)	Medical emergencies, mental health problems.
17	8 (T)	OB, GYN, pediatrics, environmental injuries.
18	10 (Th)	Environmental injuries.
C&D	12 (Sat)	Mountain rescue.
19	15 (T)	Test, sections I-X.
20	17 (Th)	Vehicles, communications, records.
21	22 (T)	Review.
22	24 (Th)	Review.
F	Dec. 3 (Sat)	Final examinations.

CALL STRIDOR BORING MOON WOOD.

TAY WISE 295-2343 OFFICE

APPALACHIAN SEARCH & RESCUE CONFERENCE, INC.

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P.O. Box 440 Newcomb Hall
Charlottesville, VA 22903

CHARLES W. MIKE MILLER

BASIC EMERGENCY MEDICAL TECHNICIAN COURSE
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DR TURNER ✓	→7 (M)	Childbirth, obstetric and gynecological emergencies, pediatrics, and psychiatric emergencies.	Sect. VIII-IX
YORKE DAYTON HEAD INJS.	→10 (Th)	Environmental injuries: heat, cold, radiation, drowning, electrocution.	Sect. X
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BRMRG BASIC EMT COURSE
First Exam

1. How many valves are in the heart?

   A. Two
   B. Four
   C. Six
   D. Eight

2. The lung is covered with a smooth glistening set of membranes known as the:

   A. alveoli
   B. bronchi
   C. pericardium
   D. pleura

3. Which pair of pulses are from the same extremity?

   A. Precordial and femoral
   B. Brachial and radial
   C. Brachial and femoral
   D. Carotid and femoral

4. If a patient's blood pressure is 120/80, the 80 indicates the:

   A. systolic pressure
   B. diastolic pressure
   C. infusion pressure
   D. pulse pressure

5. When the diameter of a structure increases, it is called:

   A. aspiration
   B. constriction
   C. dilation
   D. injection

6. Constriction of the pupils may indicate:

   A. drug addiction
   B. cardiac arrest
   C. shock
   D. heat exhaustion

7. Blood pressure levels vary with age and sex. A useful rule of thumb for for the normal systolic pressure in the male is _____ to a level of 140-150 mm Hg.

   A. 120 plus the age of the patient
   B. 100 plus the age of the patient
   C. 80 plus the age of the patient

8. A single blood pressure reading of 120/90 is a good indication that:

   A. the patient is in shock
   B. the patient is hypertensive
   C. single readings aren't generally good indicators of anything

9. A blood pressure of 100/60 in a normal male is better than 120/100 in a hypertensive male.

   A. True
   B. False

10. Contraction of the heart results in_____, and peripheral resistance results in_____.

    A. infusion pressure, diffusion pressure
    B. diastolic pressure, systolic pressure
    C. systolic pressure, diastolic pressure
    D. pulse pressure, blood pressure

11. Normal diastolic pressures in a male are:

    A. 50-70 mm Hg
    B. 65-80 mm Hg
    C. 85-100 mm Hg

12. A small pulse pressure can result in inaudible Korotkoff sounds and therefore make detection of the blood pressure with a stethoscope impossible.

    A. True
    B. False

13. Which of the following is <u>not</u> a possible cause of unequal pupils?

    A. A stroke
    B. Head injury
    C. Shock
    D. A glass eye

14. The oral (oropharyngeal) airway will:

    A. act as a substitute for careful positioning of the head and jaw
    B. frequently open the airway when other maneuvers fail
    C. not be tolerated by a fully conscious patient and may cause vomiting in a semi-conscious patient

15. What is the most common cause of death in an unconscious victim?

    A. Shock
    B. Pneumonia
    C. Airway obstruction
    D. Choking on vomit

16. The control center for breathing is located in the:

    A. frontal lobe
    B. the medulla
    C. spinal cord
    D. diaphragm

17. In mouth-to-nose ventilation, the rescuer must open the victim's mouth to allow him to exhale because:

    A. the soft palate acts as a valve preventing exhalation.
    B. the tongue falls back, obstructing the airway.
    C. the nose is a narrower air passage than the mouth.
    D. it allows air to escape from the stomach safely.

18. If a neck breather (laryngectomee) victim's chest doesn't rise from the rescuer's first breath, it may be necessary to:

    A. plug the stoma while performing mouth-to-mouth ventilation.
    B. extend the victim's neck further.
    C. hold the victim's mouth and nose shut.
    D. remove the metal or plastic tube from the neck opening.

19. A patient who has a crushing "stove in" chest injury accompanied by blood-shot eyes and cyanosis of the skin of the head, neck, and shoulders may have:

A. hemothorax
B. subcutaneous emphysema
C. traumatic emphysema
D. pericardial tamponade

20. Injury where the lung is collapsed by blood in the pleural space is called:

A. hemothorax
B. subcutaneous emphysema
C. traumatic asphyxia
D. pericardial tamponade

21. _____occurs following a stab wound to the heart. The signs of this condition include distant heart sounds, a weak pulse with possible pulsus paradoxus, and a diminished pulse pressure.

A. hemothorax
B. subcutaneous emphysema
C. traumatic asphyxia
D. pericardial tamponade

22. The prescence of air in tissues under the skin, which is often due to a lung lacerated by a broken rib, is called:

A. hemothorax
B. subcutaneous emphysema
C. traumatic asphyxia
D. pericardial tamponade

23. A sucking chest wound where the wound has formed a one-way valve, resulting in pressure above atmospheric pressure in the pleural space, is called:

A. spontaneous pneumothorax
B. tension pneumothorax
C. hemothorax
D. subcutaneous emphysema

24. A sucking chest wound results in pneumothorax but does not impair heart function.

A. True
B. False

25. Paradoxical respiration may be caused by:

A. sucking chest wound or back (spinal cord) injury
B. flail chest or neck (spinal cord) injury
C. pneumothorax or pericardial tamponade
D. flail chest or traumatic asphyxia

THE FOLLOWING QUESTIONS ARE ON BASIC CARDIAC LIFE SUPPORT, WITHOUT ADJUNCTS.

26. The first time that you give breaths to a non-breathing adult you give:

A. one long, steady breath.
B. two quick, full breaths.
C. one quick, full breath.
D. four quick, full breaths.

27. After determining that a victim is unconscious, with no apparent back or neck injuries, your next step would be to:

A. check breathing without tilting the head backwards.
B. check the carotid pulse.
C. open the airway and check for breathing.
D. check the pupils of the eyes.

28. An infant's pulse is checked:

A. at the temple.
B. at the wrist.
C. at the precordium (below the left nipple).
D. on the side of the neck, near the Adam's apple.

29. Breaths are given how often to a non-breathing adult victim?

A. once every second
B. once every five seconds
C. once every two seconds
D. once every three seconds

30. Artificial respiration is given to an infant at a rate of _____ breaths per minute.

A. 12
B. 15
C. 18
D. 20

31. The victim is unconscious and not breathing. You have given him the appropriate first breaths. The next step is to:

A. thump on his chest with your fist.
B. check his pulse.
C. give chest compressions.
D. continue with mouth-to-nose respirations.

32. An adult who is sitting in a car needs CPR. What will you do?

A. Start CPR right away, but don't move him.
B. Start artificial respiration right away, but don't move him.
C. Get him on a soft surface, then begin CPR.
D. Get him on a hard surface, then begin CPR.

33. The longest pause permitted in CPR for checking the pulse is:

A. 5 seconds.
B. 15 seconds.
C. 30 seconds.
D. 60 seconds.

34. The longest pause permitted in CPR permitted for moving a patient or for intubation is:

A. 5 seconds.
B. 15 seconds.
C. 30 seconds.
D. 60 seconds.

35. The pulse is checked in an unconscious victim:

A. right after you check for breathing.
B. right after you give the initial breaths.
C. before you tip the head and check for breathing.
D. while you tip the head and check for breathing.

36. Chest compressions are given to a small child, using the:

A. heel of one hand, with the other hand on top of it.
B. heels of both hands, side by side.
C. tips of two fingers.
D. the heel of one hand.

37. A conscious victim is choking. He is coughing and attempting to breathe. He is getting some air into his lungs, and back out. You should:

A. Allow him to continue coughing on his own without interference.
B. Administer four abdominal thrusts.
C. Administer four sharp blows between the shoulder blades.
D. Perform a finger probe.

38. When performing external cardiac compression on an infant, pressure should be applied at the:

A. center of the lower half of the breastbone.
B. middle of the breastbone.
C. area left of the center of the breastbone.
D. area right of the center of the breastbone.

39. The only sign that need be present for a rescuer to assume that the victim is in cardiac arrest is:

A. lack of respirations.
B. lack of a carotid pulse.
C. fixed and dilated pupils.
D. cyanosis.

40. Chest compressions are given to an infant, using the:

A. heel of one hand, with the other hand on top of it.
B. heels of both hands, side by side.
C. the tips of two fingers.
D. heel of one hand.

EMT COURSE

SKILLS CHECKLIST #1: Vital Signs

1. Explain procedure to patient if appropriate.
2. Place BP cuff around upper arm with center of inflation bag over brachial artery.
3. Palpate brachial pulse at antecubital fossa (with fingers, not thumb).
4. *Count pulse over 15 seconds; x4 = pulse rate. Note: regular or irregular, full or thready.
5. Continue to keep fingers on pulse; count respirations over 15 seconds, x4 = respiratory rate. (Count over a full minute if irregular or slow) Don't let patient know you are counting respirations. Note: quality and regularity. Note patterns.
6. Place stethoscope in ears with earpieces pointing forwards; place diaphragm over pulse location. Best to hold with thumb over stethoscope head and fingers on far side of arm, or vice versa.
7. Close thumb wheel and pump cuff to 200 mm Hg. Crack open thumbwheel and let the pressure drop (about 10 mm Hg/sec.)
   For adults: note pressure when solid sounds are first heard (systolic) and when sounds disappear (diastolic).
   For children: note pressure when sounds first appear (systolic) and when sounds suddenly become softer (diastolic).
   Don't keep cuff inflated for long periods.
   As soon as diastolic pressure is noted, open thumbwheel fully.
8. If no BP can be auscultated by the above method, obtain a systolic estimate as follows:
   Palpate the pulse at the wrist (radial or ulnar artery) or at the elbow (brachial artery in antecubital fossa). Inflate cuff to 200 or 20 above when pulse disappears, then slowly deflate cuff until pulse reappears. Note the pressure then open thumbwheel fully.
9. Touch face or neck with back of hand to estimate temperature.
10. Pull down lower eyelids to check color, check pupil equality and response to light.
11. Check alertness, orientation to time, person and place, and level of distress; obtain estimate of level of consciousness.

GLASGOW COMA SCALE

Best Motor Response	Obeys spoken command	M6
	Localises	5
	Withdraws	4
	Abnormal flexion	3
	Extensor response	2
	None	1
Verbal Response	Oriented x3	V5
	Confused conversation	4
	Inappropriate words	3
	Incomprehensible sounds	2
	None	1
Eye Opening	Spontaneous	E4
	To speech	3
	To pain	2
	None	1

1) Which of these signs of shock is often the EMT's first warning that shock is developing?
   A) Falling Blood Pressure
   B) Rapid "thready" (weak) Pulse
   C) Cold and Clammy Skin
   D) Restlessness and Anxiety

2) Which of these is not a sign of circulatory shock?
   A) Shallow, labored, rapid, possibly gasping or irregular respirations
   B) Inability to remember climbing out of wrecked automobile
   C) Patient has marked thirst
   D) Eyes become dull or lusterless, with dilated pupils.

3) Matching (each letter will be used once in this question)

____Allergic Reaction (severe).	A) Respiratory Shock
____Severe Infection.	B) Psychogenic Shock
____Usually not helped by elevating legs.	C) Anaphylactic Shock
____Fainting.	D) Septic Shock
____Starts with adequate circulation, but insufficient oxygen in blood.	E) Cardiogenic Shock

4) Matching (one of letters on right will not be used in this question)

____Can be avoided or stopped by injection of Epinephrine (Adrenalin), a drug.	A) Respiratory Shock
____Temporary, self-cured form of shock.	B) Psychogenic Shock
____Patient may need to be transported in sitting position.	C) Anaphylactic Shock
____Might have been avoided if O_2 and/or artificial ventilation had been administered earlier.	D) Septic Shock
	E) Cardiogenic Shock

5) Matching (some letters not used, some letters used more than once)

____Contraction of the heart.	A) Cyanosis
____Relaxation of the heart.	B) Sphygmomanometer
____Causes blood return to the heart.	C) Infusion
____Top number as blood pressure is written.	D) Transfusion
____Bottom number as blood pressure is written.	E) Dilation
____Works like a calibrated tourniquet.	F) Constriction
____"fight or flight" part of autonomic nervous system- acts in emergencies.	G) (central) venous pressure
____Blue color of skin.	H) Systole, systolic
____I.V. administration of blood.	I) Diastole, diastolic
____I.V. administration of non-blood fluids.	J) Sympathetic nervous system
____Caused by I.V. needle coming out of vein.	K) Parasympathetic nervous system
____Increase in diameter.	L) Pathetic nervous system
____Decrease in diameter.	M) Infiltration

Bonus Question: which letter in #5 stands for something that doesn't exist? _____

EMT COURSE

TEST #2

1. Virginia law requires that every ambulance engaged in emergency service must have _____ "emergency medical care attendants" (EMTs or people with Advanced First Aid cards) on board.

   A. 1
   B. 2
   C. 3
   D. 4

2. Unless a specific exception is found in the Code of Virginia, all ambulance and other emergency vehicles are bound by the same traffic rules as any other vehicle.

   A. True
   B. False

3. An ambulance may proceed through a stop sign without coming to a full stop only if flashing or alternating red lights are shown, and the ambulance is sounding a siren or other audible emergency signal.

   A. True
   B. False

4. You may assume implied consent in which of the following cases?

   A. A minor with no readily available parent
   B. A drunk who mumbles"leave me alone!" but cannot tell you where he is, what his name is, or what month it is
   C. A person who apparently overdosed on sleeping pills, and who insists he is to be left alone; but who can relate name, address, time, and place

5. A proper size oropharyngeal airway should be selected by measuring

   A. from the mouth to the center of the ear.
   B. from the mouth to the point of the jaw.
   C. from the nose to the adam's apple.
   D. from the patella to the symphysis pubis.

6. Oxygen regulators should be oiled regularly.

   A. True
   B. False

7. High flow oxygen should be given to COPD patients

   A. never.
   B. only when cyanotic.
   C. with caution, and only when needed, as the patient may suffer a respiratory arrest from high flow O_2.
   D. continuously.

8. The sympathetic nervous system is considered to be a subset of the _____ nervous system. (This is a functional, as opposed to structural, division of the nervous system.)

   A. parasympathetic
   B. "fight or flight"
   C. autonomic
   D. automatic

9. CSF is not necessary for proper function of the human body, and is easily replaced after injury.

   A. True
   B. False

10. The proper order of the meninges, from inside to outside, is

   A. arachnoid, pia, dura.
   B. pia, dura, mater.
   C. pia, arachnoid, dura.
   D. mater, fater, coccyx.

11. A condition of changed sensation (as opposed to absent sensation) is called

   A. anesthesia.
   B. paresthesia.
   C. paralysis.
   D. paresis.

12. It is possible to have injury to the bony spine without injury to the spinal cord, and without neurologic deficit.

   A. True
   B. False

13. Diaphragmatic breathing (a type of paradoxical respiration) is an indication of

   A. cervical spine injury.
   B. thoracic spine or lumbar spine injury.
   C. flail chest.
   D. an opera singer.

14. The two types of epileptic seizures are

   A. petit mal and grand mal.
   B. convulsive and silent.
   C. left hemisphere and right hemisphere.
   D. tonic and clonic.

15. The three phases of a convulsive seizure are

   A. petit mal, grand mal, and post-mal.
   B. tonic, clonic, and postictal.
   C. tonic, clonic, and multiclonic.
   D. precambrian, cambrian, mesozoic.

16. Any person having a seizure should be forcibly restrained, and a padded tongue blade or similar object should always be placed in the mouth.

   A. True
   B. False

17. Seizures may be caused by high temperatures ("febrile seizures"), especially in young children, and the proper treatment for such seizures is to bring the child's temperature back down to near normal.

   A. True
   B. False

18. Since hypercapnia (high CO_2) in the brain causes feflex vasodilation and a resulting increase in ICP (intercranial pressure), anyone with a CVA (cerebrovascular accident) or head injury should be given O_2.

A. True
B. False

19. It has been shown that an area of (in most people) the left cerebral hemisphere is responsible for controlling speech and speaking. However, it has been shown recently that the equivalent area of the right cerebral hemisphere, although it cannot control speech, can understand speech. If this is true, then, it provides a reasonable way to logically solve the next question.

A person is aphasic after a CVA. It is quite possible that the person, even though perhaps appearing totally unresponsive, may be conscious and may be able to hear and understand every word said around him.

A. True
B. False

20. A person suffers a head injury as a result of an auto accident. She is "knocked out" for a few minutes, but is alert and oriented when you arrive. En route to the hospital, she complains of feeling "funny" and then becomes unconscious. You should

A. not worry.
B. transport as fast as possible, and alert the ER of the situation; any decrease in level of consciousness (LOC) after a head injury is a probable sign of a neurosurgical emergency.
C. Maintain ABCs, and transport Code 2 (urgent, but not top priority) as she has probably sustained a concussion.
D. Stop your ambulance, institute CPR, and call for a MICU.

21. Neurogenic shock is believed to be caused by

A. reflex vasodilation of capacitance blood vessels as a result of sudden vagal (parasympathetic) stimulation resulting from grief or other emotional states.
B. beestings.
C. vasodilation of blood vessels in the lower extremities due to loss of sympathetic nervous enervation from spine injury.
D.(nobody knows what causes it.)

22. The long bones of the appendicular skeleton consist of cancellous and compact bone, and are surrounded by a membrane known as the periosteum. The long part (diaphysis) is hollow, but filled by marrow. Are these statements correct?

A. correct
B. not correct

23. The three generally recognized types of muscle are

A. skeletal (striated)(voluntary); smooth (involuntary); cardiac.
B. long; smooth; intestinal.
C. voluntary (smooth); involuntary (striated); cardiac.
D. syncytial; non-syncytial (separate); (with intercalated discs)

24. The shoulder girdle consists of

A. the scapula, clavicle, and patella.
B. the scapula, sphenoid, and arytenoid.
C. the scapula and clavicle.
D. the scalpel, clavichord, and sterno.

25. The scapula of the shoulder girdle articulates only with the head of the humerus, whereas the ilium articulates with the sacrum as well as the head of the femur.

A. True
B. False

26. The innominate bones/also known as the "os coxae" are formed from the ischium, ilium, and pubis. They form a socket that is the parallel of the glenoid in the shoulder girdle. This socket is known as the

A. glenoid fossa.
B. amygdaloid fossa.
C. acetabular fossa.
D. submaxillary fossa.

27. The medial malleolus (bump of the ankle, internal) is formed by

A. the end of the tibia.
B. the end of the fibula.
C. the end of the fibia.
D. the talus bone.

28. The portion of the femur most susceptible to injury, especially in older people, is the

A. neck.
B. shaft.
C. head.
D. condyles.

29. Tendons _____, while ligaments _____.

A. connect bones to bones; connect muscles to cartilage
B. connect muscles to bones; connect bones at joints
C. connect aponeoroses and ligaments; connect tendons and muscle
D. connect; don't

30. A sprain is _____, but a strain is _____.

A. ligamentous injury; muscle injury
B. muscle injury; ligamentous injury
C. tendon injury; ligamentous injury
D. ligamentous injury; bone injury

31. Ecchymosis is

A. ugly
B. discoloration (bruising)
C. swelling
D. whiteness

32. Fractures resulting from degenerative disease processes are known as

A. fatigue fractures.
B. autonomic fractures.
C. pathologic fractures.
D. greenstick fractures.

33. Incomplete fractures, only found in young children, are _____ fractures.

A. fatigue
B. autonomic
C. pathologic
D. greenstick

34. Fractures resulting from many stresses in the same area are known as _____ fractures.

A. fatigue
B. autonimic
C. pathologic
D. greenstick

35. Air splints should be inflated by pump if possible.

A. True
B. False

36. Which of the following is an appropriate splinting method for a fractured clavicle?

A. air splint
B. padded board splint(s)
C. traction splint
D. sling and swathe

37. An appropriate method for splinting a fractured tibia:

A. air splint
B. padded board splint(s)
C. traction splint
D. sling and swathe

38. An appropriate method for splinting a femur shaft fracture:

A. air splint
B. padded board splint(s)
C. traction splint
D. sling and swathe

39. Tight wrapping (e.g. Ace bandages) should be placed over a dislocated elbow, so as to reduce swelling.

A. True
B. False

40. Protruding bone ends should always be carefully cleaned before splinting.

A. True
B. False

41. A dressing is _____.

A. used to cover a bandage
B. sterile if possible
C. used mostly to absorb blood; need not be sterile
D. used on salad

42. Impaled objects should always be left in place, except when

A. in the chest (sucking chest wound).
B. in the eye.
C. in the face or cheek.
D. causing problems with airway maintenance.

43. Eye irrigation fluid must be sterile.

A. True
B. False

44. Lacerated eyelids may be treated with gentle direct pressure, except when

A. there is foreign material in the eye or lacerations to the globe.
B. (no exceptions).
C. there is a skull fracture.
D. there are chemical burns to the eyes.

45. Which of the following is located in the upper left abdominal quadrant?

A. liver
B. stomach
C. appendix (vermiform)
D. sigmoid colon

46. Which of the following is located in the upper right abdominal quadrant?

A. liver
B. stomach
C. appendix (vermiform)
D. sigmoid colon

47. Rupture of solid abdominal organs tends to cause _____, while rupture of hollow organs tends to cause _____.

A. peritonitis, septicemia
B. bleeding and shock, peritonitis
C. bleeding, septicemia
D. peritonitis, convulsions

48. Should dry cotton applicators ("Q-tips") be used to remove foreign objects from the cornea? From the sclera?

A. no; yes
B. yes; no
C. yes; yes
D. no; no

49. Heat burns to the eyelids should be treated by

A. moist dressings
B. dry, opaque (dark) dressings
C. flushing with water or saline for 20 minutes
D. ointment

50. Light burns of the eyes ("snowblindness") should be treated by

A. moist dressings
B. dry, opaque dressings
C. flushing with water or saline for 20 minutes
D. ointment

51. Alkalai burns to the eyes should be treated by

A. moist dressings
B. dry, opaque dressings
C. flushing with water or saline for 20 minutes
D. ointment

52. The _____lie outside the peritoneal (abdominal) cavity proper, although they are often considered "abdominal" organs.

A. large intestine and appendix
B. kidneys
C. liver and gallbladder
D. cerebrum and cerebellum

53. The _____intestine primarily absorbs food, and the _____ intestine primarily absorbs water.

A. large, small
B. small, large
C. small, small
D. large, large

54. The pancreas contains ductless glands that secrete _____ and ducted glands that secrete _____.

A. insulin, bile
B. bile, insulin
C. insulin, digestive enzymes
D. digestive enzymes, adrenalin

55. Cholecystitis is a disease which has a classic symprom of pain after ingesting fatty or greasy foods. It is a disease of the

A. urinary bladder.
B. gallbladder.
C. intestines.
D. kidneys.

56. The _____connects the kidney and the urinary bladder, and the ____ _____connects the urinary bladder to the outside.

A. ureter; urethra
B. ureter; vas deferens
C. urethra; vas deferens
D. ureter; epididmyis

57. The shape of the eye is maintained by the

A. aqueous humor.
B. vitreous humor.
C. lateral recti muscles.
D. good humor.

58. The lining of the eyelids (a membrane) is known as the

A. conjunctiva.
B. conjugal.
C. sclera.
D. cornea.

60. The iris is a muscle.

A. True
B. False

61. This test is a pain.

A. True
B. Too true

NAME_____

EMT COURSE

TEST #2: PRACTICAL

1. SECONDARY SURVEY (use separate checklist)

2. CPR (use separate checklist)

3. SPECIFIC INJURIES I

A. Avulsed eye

Ø. Information given: (from 1° and 2° surveys) No other injuries.

_____ 1. Secure patient's hands, explaining why.
_____ 2. Place dressing around eye, but not touching eye
_____ 3. Moisten eye with sterile saline.
_____ 4. Cup placed over eye.
_____ 5. Cup secured with roller gauze.
_____ 6. Uninjured eye covered; explain why.

F___ LP___ HP_____

B. Skull fracture

Ø. Information given: unconscious, questionable airway status, no other apparent injuries.

_____ 1. Maintains careful watch on airway.
_____ 2. Stabilizes neck with traction and cervical collar.
_____ 3. Patient turned to traumatic coma position, little or no neck movement.
_____ 4. Open wound covered with sterile dressing properly.
_____ 5. Triangular bandage or roller gauze properly applied.
_____ 6. Student explains that patient should be backboarded prior to transport.

F___ LP____ HP____

4. SPECIFIC INJURIES II

A. Humerus fracture

Ø. Information given: only injury is closed midshaft humerus fx. (circ.+ enervation OK)

_____ 1. (optional) Humerus is splinted to padded board splint.
_____ 2. Sling applied to wrist (but not elbow).
_____ 3. Wide swathe applied.
_____ 4. Circulation and enervation checked after splinting.

F____ LP____ HP____

B. Knee fracture

Ø. Information given: only injury is closed knee fx; pt. refuses to allow knee to be straightened, due to pain. Circulation and enervation are OK.

_____ 1. Two medium-length board splints are padded, and positioned on either side of leg posterior to knee.
_____ 2. Cravats or roller gauze used so as to prevent leg from both flexion and extension.
_____ 3. Circulation and enervation assessed post splinting.

F____ LP____ HP____

5. SHORT BACKBOARDING (separate checklist)

6. TRACTION SPLINTING (separate checklist)

BLUE RIDGE MOUNTAIN RESCUE GROUP
EMT SURVEYS
CHECKLIST

PRIMARY SURVEY

1. Assure Patent Airway (open or clear airway as necessary; use separate checklist for airway obstruction procedures, if appropriate) _____

2. Assure Prescence and Adequacy of Breathing (as appropriate: seal sucking chest wound; splint flail chest; possibly reduce tension hemothorax; administer O_2 or positive pressure ventilation if indicated) _____

3. Assure Adequate Circulation Palpate carotid pulse and observe quickly for signs of severe shock; survey quickly for severe bleeding. (institute external cardiac compression if no carotid pulse; give O_2 and keep from chilling for shock; control severe bleeding using proper sequence of pressure, elevation, pressure on supplying artery, and tourniquet (PEST), putting TK and time on forehead for tourniquet) _____

SECONDARY SURVEY

1. Gather Subjective Information
   a. Chief complaint _____
   b. Rescue and incident circumstances _____
   c. Background of problem if appropriate _____
   d. Patient's age _____
   e. Previous medical history _____
   f. Current medications _____
   g. Allergies _____

2. Get Vital Signs
   a. Alertness and obvious distress _____
   b. Orientation to time, person, and place _____
   c. State of consciousness (note as conscious and oriented, conscious and disoriented, responsive to verbal stimulus, responsive to pain, unresponsive to pain) _____
   d. Pulse (15 sec. count x 4; note rate, regularity, and quality) _____
   e. Respirations (count and note as with pulse; pt. should be unaware you are taking a respiration count) _____
   f. Blood pressure (take full BP if possible; if not, make palpable systolic estimate and note as such) _____
   (additional items often considered as vital signs covered below)

3. Do Physical Exam
   a. Scalp--wetness, bumps, tenderness, wounds _____
   b. Ears--CSF or blood _____
   c. Face-- injuries, paralysis _____
   d. Conjunctiva--color _____
   e. Pupils--equality and reactivity to light (PERL) _____
   f. Mouth--possible obstructions or injuries, smell _____
   g. Cervical spine--pain, tenderness, deformity _____
   h. Neck--medic alert tag, stoma, trachea position _____
   i. Shoulders and clavicles--evidence of fracture or dislocation _____
   j. Arms--
      feel bilaterally for tenderness and deformity _____
      check sensory enervation (do check with no stimulus) _____
      check radial pulses _____
      check finger movement _____
      check strength _____
      check arm motions _____

k. Chest--
   equal expansion and air entry _____
   anterior-posterior and lateral compression for pain _____
   obvious penetration or injury _____

l. Abdomen--
   obvious penetration or injury _____
   tenderness to light touch _____
   gaurding and rebound tenderness _____

m. Lumbar spine--tenderness or deformity _____

n. Pelvis--compression pain
   i. pressure inwards on anterior superior iliac crests _____
   ii. pressure outwards on iliac drests _____
   iii. pressure on symphisis pubis _____

o. Legs--same checks as with arms _____

p. Back--lacerations, exit wounds, flank tenderness _____

4. Make Assessment
   a. Tentative diagnoses _____

5. Make Treatment Plan
   a. On-scene treatment _____

   b. Continuing evaluation plans _____

   c. Additional medical assistance requested _____

   d. Transportation mode, position, and urgency _____

Notes:
1. Order is not crucial, except that primary survey must be quickly completed, and all items should be covered.
2. Primary survey may be nothing more than talking with patient briefly.
3. Identify self as to name and EMT status.
4. This checklist is primarily for teaching purposes.

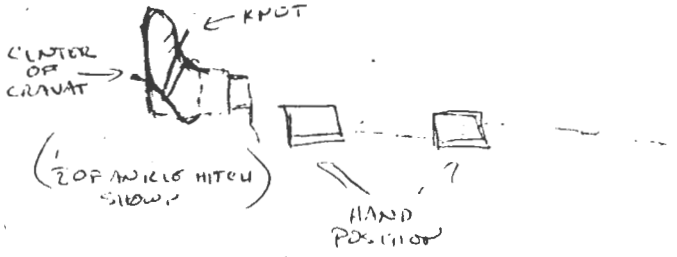
Evaluation:
- ✓ done
- not appropriate, so not done
- O omitted improperly
- X done improperly

student_____ date_____ Instructor_____

Grade F LP HP

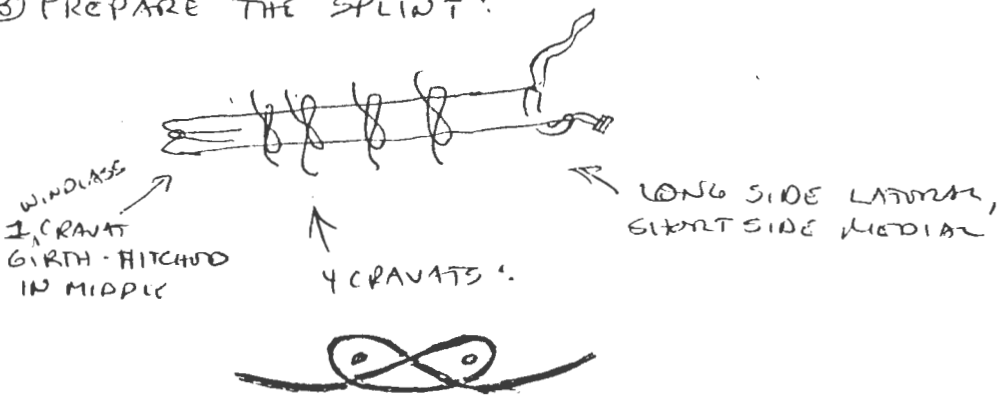
THOMAS HALF-RING TRACTION SPLINT APPLICATION FOR FRACTURED FEMUR.

① IF PATIENT IS IN SEVERE PAIN, APPLY MANUAL TRACTION AT ONCE. (IF NOT, DELAY APPLICATION OF TRACTION UNTILL ANKLE HITCH IS APPLIED.) DON'T REMOVE TRACTION! (EVER!)



② APPLY ANKLE HITCH AS SHOWN. PAD THE ANKLE!

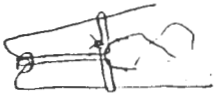
③ PREPARE THE SPLINT:



④ PLACE THE SPLINT IN PLACE. PAD THE GROIN AND (FRACTURE AT THE ISCHIAL TUBEROSITY) TIGHTEN THE STRAP

⑤ TUCK ENDS OF WINDLASS CRAVAT THROUGH ANKLE HITCH, AROUND SPLINT RAILS, THEN TIE TOGETHER:

(STILL PULLING TRACTION)



⑥ TIGHTEN WINDLASS (STILL SUPPORTING LEG, BUT WINDLASS TAKES TRACTION)

⑦ TIE SUPPORT CRAVATS, W/ KNOTS ON LATERAL SIDE, W/ LEG IN MIDLINE OF SPLINT (NOT SAGGING) REMOVE SUPPORT

EMT COURSE

Skills Checklist #2: Airway Obstruction and Artificial Respiration

Instructor: YOU HAVE COME ACROSS A VICTIM WITH A DEATHLIKE APPEARANCE.

1. Check for response to voice and touch. ____

Instructor: VICTIM IS UNRESPONSIVE.

2. Call out "HELP!" ____

3. Perform proper head tilt and check for breathing: ____
   -proper hand position
   -ear at victim's mouth, listening and feeling
   -looking at victim's chest
   -allow adequate time for check (3-5 seconds).

Instructor: VICTIM IS NOT BREATHING.

4. Attempt four quick breaths. ____

Instructor: VICTIM'S AIRWAY IS OBSTRUCTED.

5. Reposition head and attempt to ventilate again. ____

Instructor: AIRWAY IS STILL OBSTRUCTED.

6. Administer four back blows: ____
   -roll victim towards rescuer
   -strike sharply between shoulder blades 4 times.

7. Administer four manual thrusts: ____
   -turn victim's head away from rescuer
   -rescuer with shoulders in line with victim's body
   -proper hand position and thrust technique.

8. Finger probe: ____
   -keep head turned away
   -open mouth with cross-finger technique
   -sweep back of mouth with with one or two fingers

9. Reposition head and attempt to ventilate. ____

Instructor: AIRWAY IS STILL OBSTRUCTED.

10. Repeat above sequence two or three times, or until successful. ____

Instructor: TOO MUCH TIME HAS ELAPSED; TRY THE TRIPLE AIRWAY MANUVER.

11. Position head for triple airway manuver: ____
    -fingers under points of victim's jaw
    -thumbs on victim's chin, holding mouth open
    -heels of hands maintaining head tilt

Instructor: YOU ARE GETTING AIR IN.

12. Check pulse. ____

Instructor: VICTIM HAS A PULSE.

13. Administer ventilations at the proper rate for one minute ____

(POSSIBLE VARIATIONS:

1. Mouth-to-nose instead of mouth-to-mouth.
2. Chest thrust instead of abdominal thrust.)

(Note that for trained EMTs, that at a point between steps 5 and 6, it would be appropriate to attempt to visualize the obstruction and remove it. Also, step 11 would be replaced by performing a cricothyroid membrane puncture)

EMT COURSE
Skills Checklist #3: CPR

Instructor: YOU HAVE COME UPON A VICTIM WITH A DEATHLIKE APPEARANCE.

1. Check for response to voice and touch. ____

Instructor: THE VICTIM IS UNRESPONSIVE.

2. Call out "HELP!" ____

3. Perform proper head tilt and check for breathing. ____

Instructor: VICTIM IS NOT BREATHING.

4. Give four quick, full breaths: ____
   -proper head tilt and nose seal
   -adequate seal around mouth
   -quick breaths, without deflation in between

5. Check carotid pulse: ____
   -maintain head tilt with one hand on victim's forehead
   -place fingers in notch between trachea and muscle mass
   -allow adequate time for check (5-10 seconds)

Instructor: VICTIM HAS NO CAROTID PULSE.

6. Begin one-rescuer CPR: ____

   A. proper hand position
      -find xiphoid process
      -place two fingers of one hand on sternum above xiphoid
      -place heel of other hand on sternum next to fingers of first hand
      -place first hand on top of second
      -keep fingers off the chest wall.

   B. apply proper compressions
      -shoulders over sternum of victim
      -elbows straight
      -compress $1\frac{1}{2}$-2 inches
      -smooth compressions, 50% systole, 50% diastole
      -maintain proper hand position
      -proper rate (80/minute, or 15/12 seconds) and number (15)
      -use body weight, not muscles

   C. provide proper ventilation
      -proper head tilt and nose seal
      -adequate seal around mouth
      -two quick full breaths without allowing deflation between
      -complete breaths and return to compressions within 5-6 sec.

   D. return to compressions, measure position properly.

7. Continue one-rescuer CPR for a total of 4 cycles of 15 compressions and 2 breaths. ____

8. Stop for 5 seconds, check for return of pulse and respirations. ____

Instructor: VICTIM HAS NO PULSE OR RESPIRATIONS

9. Continue with one-rescuer CPR. ____

Second Rescuer: "I am certified in CPR. Do you want help?"
First rescuer nods yes.
Second Rescuer: "Do you want me to take over respirations?"
First rescuer nods yes.

10. First rescuer finishes cycle of 15 compressions and 2 ventilations, then switches to a compression rate of 60/minute, counting out loud; no pauses after 'five'! ____

Second rescuer interposes breaths after each fifth compression.

11. On instructor's signal, first rescuer calls out "SWITCH ON THREE NEXT TIME!" ____

Second rescuer gives next breath, then moves to side of victim opposite first rescuer. Second rescuer takes over compressions on 4.

12. First rescuer gives three compressions, then moves to victim's head, and gives breath after fifth compression. ____
    -breaths given properly
    -if a breath is missed, interpose one after NEXT compression, then continue as before
    -breaths are given immediately after fifth compression
    -periodically feels for carotid pulse produced by second rescuer's compressions.

Second Rescuer: "CHANGE ON THREE NEXT TIME!"

13. After next breath, first rescuer moves to side of victim opposite second rescuer and prepares to begin compressions: ____
    -places two fingers in proper position on sternum next to second rescuer's hands.

14. First rescuer begins compressions: ____
    -proper hand position
    -proper compressions
    -no pause between compressions 3 and 4
    -no pause after fifth compression.

15. After about 5 minutes of CPR since first check, first rescuer calls "Stop CPR. Check for pulse and respiration." ____

Second rescuer checks pulse and respirations.

Instructor: "VICTIM HAS PULSE AND RESPIRATIONS. CEASE CPR".

EMT COURSE

QUIZ: MEDICAL EMERGENCIES

1. "Collateral circulation" means that a single area is served by more than one artery. Thus an obstruction of one of the small arteries off of the main coronary arteries would not necessarily result in a myocardial infarction.

   A. True
   B. False

2. Most "Codes" or cardiac arrests are a result of an upset in the electrical activity of the heart. These electrical abnormalities or "arrythmias" may be caused by strange electrical signals from dying areas of heart muscle.

   A. True
   B. False

3. CAD (Coronary Artery Disease) is commonly a result of a general atherosclerosis disease process.

   A. True
   B. False

4. Which of the following is <u>not</u> considered an indicator of high risk of heart disease?

   A. Male
   B. Quiet personality (not agressive)
   C. Overweight
   D. Smoking

5. Angina Pectoris ("chest pain" in Latin) is a result of coronary artery insufficiency, is usually brought on by exertion, eating, exposure to cold, or strong emotional upsets, and is usually relieved by sublingual nitroglycerine tablets.

   A. True
   B. False

6. AMI (Acute Myocardial Infarction) can cause fatal arrythmias, chest pain, and congestive heart failure (CHF), or they may be "silent", with no associated signs or symptoms (although signs and symptoms may develop after the infarction, as tissue in the infarcted area is dying).

   A. True
   B. False

7. A patient with a history of heart disease tells you he has chest pain. You observe him take two nitroglycerine tablets, and he tells you he took one before you arrived. After 10 minutes the pain is still severe. You should

   A. give him another nitroglycerine tablet.
   B. start CPR.
   C. ask him if he has a headache, and check the label on the nitroglycerine bottle.
   D. rush him to the hospital Code 3 (urgently), start him on 100% oxygen, and ask for a Mobile ICU/CCU to meet you en route.

8. A person suspected of having sustained an AMI should be transported lying flat and with 100% oxygen, in the vast majority of cases.

   A. True
   B. False

9. Which of the following would lead one to suspect AMI instead of angina?

   A. relieved by nitroglycerine and rest
   B. onset sudden and not related to exertion, exposure, eating, or emotiom
   C. crushing chest pain with radiation to the left arm, but for less than 10 minutes.

10. A person with "thumping in his chest" and with an irregular pulse should be suspected of having this arrythmia as a result of a MI.

    A. True
    B. False

11. A massive infarction of the left heart will usually lead to congestion in the lungs, wheras a failure of the right ventricle will result usually in ascites (fluid in the abdomen), edema of the legs and ankles, and possibly swelling of internal organs such as the liver.

    A. True
    B. False

12. Insulin shock, resulting from too much insulin or too little food (or both) is of sudden onset, looks in many ways like shock, (except for a blood pressure that is often normal), and is relieved by the administration of sugar.

    A. True
    B. False

13. It is permitted for EMTs to place small amounts of "instant glucose" in the mouth of an unconscious patient suspected of being in insulin shock.

    A. True
    B. False

14. Sugar should be given to any unconscious or semiconscious patient with diabetes, as sugar will not harm a patient in diabetic coma.

    A. True
    B. False

15. It is possible for a person to be a carrier of an infectious disease without showing any outward signs or symptoms of the disease.

    A. True
    B. False

EMT COURSE

QUIZ: ENVIRONMENTAL EMERGENCIES

1. A burn patient must be treated properly. After stopping the burning process, airway and breathing are the next priorities. The major cause of death in victims of a fire is

   A. burn shock, resulting from edema and evaporation.
   B. breathing problems resulting from asphyxiation and pulmonary burns.
   C. cardiac arrest.

2. Jewlery, especially rings, should always be removed from burned limbs.

   A. True
   B. False

3. Painful partial thickness burns of a small area (i.e. less than 10% of the body surface) should be treated by immediate immersion in cold water, application of a soothing ointment or sulfamylon cream, application of a dry sterile dressing, and transport to a medical facility.

   A. True
   B. False

4. Large burns should be covered with dry sterile dressings, as "wet treatment" of large areas may easily cause hypothermia.

   A. True
   B. False

5. The proper treatment for decompression sickness or "the bends" is

   A. immediate recompression.
   B. massive infusions of IV fluids.
   C. treatment for shock.
   D. CPR.

6. Which of the following poisonings should be treated by inducing vomiting (assuming that contact with a Poison Control Center cannot be made)?

   A. hydroflouric acid
   B. drain cleaner (e.g. Drano or lye)
   C. Tylenol, an aspirin substitute
   D. strychnine-type rat poison

7. Anaphylaxis should be treated with _____ in an emergency.

   A. insulin
   B. sugar
   C. adrenaline (epinephrine)
   D. meat tenderizer

8. If you are faced with a victim of a snakebite of a possibly poisonous snake (copperhead or rattlesnake), you should keep the patient calm, and keep him quiet and laying down if possible. The injured limb should be dependent (below the rest of the body) and may be splinted. <u>If</u> signs of envenomation develop, and it is a long way to a hospital, you should

(8) A. pack the limb in ice, apply a tourniquet proximal to the injury, and transport.
B. apply a lymph constrictor and transport.
C. apply a lymph constrictor, make cruciate (cross-shaped incisions) over the fang marks, and suck or massage as much poison out as possible.
D. possibly apply a lymph constrictor, make linear incisions over the fang marks only on non-vulnerable areas (e.g. not on face or hands) and suck or massage out blood and venom.

9. Heat exhaustion
A. should be treated as a form of shock.
B. is a true medical emergency.
C. is characterized by a fruity odor on the breath, and by air-hunger (Kussmaul) respirations.
D. is characterized by severe cramps which do not respond to stretching or massage.

10. Heatstroke

A. should be treated as a form of shock.
B. is a true medical emergency.
C. is characterized by a fruity odor on the breath, and air-hunger (Kussmaul) respirations.
D. is characterized by severe cramps which do not respond to stretching or massage.

11. The term "hypothermia weather", referring to weather presenting a great risk of hypothermia to EMTs and others, means

A. temperatures near freezing, with wind and rain.
B. winter snowstorms with temperatures below -15°C.
C. neither of the above.

12. A person with frostbitten feet may walk on them, but only after they have been rewarmed.

A. True
B. False

13. A person with severe chronic hypothermia is in grave danger of going into ventricular fibrillation or other arrythmias. Therefore, EMTs must be extremely careful not to jostle or bump such a patient.

A. True
B. False

14. When a hypothermic patient is rapidly rewarmed (e.g. by near-complete immersion in a bathtub full of hot water)

A. "afterdrop", or paradoxical cooling of the body core below its previous temperature, may develop.
B. blood from the periphery, which is cold, anoxic, and has toxic metabolic waste products, may rush back to the core and cause cardiac arrest or other arrythmias.
C. excessive vasodilation in the periphery may cause a relative hypovolemia and shock.
D. (all of the above are true.)

15. Which of the following is not a good place to put hot packs when rewarming a htpothermia victim?

A. neck
B. groin
C. thighs
D. armpits

16. Since frostbite is usually caused by an external impairment of circulation, or brought on as a result of exhaustion, fatigue, hypothermia, or other predisposing conditions, wearing a pair of boots designed for one pair of socks with two pair of socks for warmth invites frostbite.

A. True
B. False

17. Which of the following is not a good reason for avoiding cotton clothes in the winter?

A. Cotton clothing "wicks" water easily, so that if a small part is touced to water, the entire piece becomes wet. For example, a pair of cotton blue jeans will become wet in a rainstorm if even a small part is exposed to rain.
B. Cotton is almost totally useless as insulation when wet.
C. Cotton is not a good insulator when dry.

18. Which of the following clothing materials are most appropriate for EMTs involved in cold weather search and rescue tasks? (where wetness will be probable)

A. goose down
B. wool
C. cotton
D. cotton/polyester knits

19. Rapid, hard massage is the treatment of choice for deep frostbite.

A. True
B. False

20. A patient has sustained partial-thickness burns over half of the front of the torso, half of the back of the torso, and one leg. The ER has asked you for an estimate of the percent of body surface area burned. Using the rule of nines, you calculate that _____ has been burned.

A. 9%
B. 18%
C. 27%
D. 36%
E. 45%

For questions 1-7, a patient is described who needs some sort of treatment involving airway maintenance, artificial ventilation, or oxygen (O_2) administration. Fill in the blank with the letter referring to the proper treatment. There may be more than one acceptable answer for some questions, and even doctors may disagree in some cases. (But you, the EMT, will be faced with exactly these choices!)

Choices:

A) Airway Care only - start by extending neck or drawing jaw foreward, patient may then be transported on his side or on his back with shoulders propped up to keep neck hyperextended. Constantly observe to make sure airway remains open!

B) Airway Care plus 24% oxygen by Ventimask (low flow oxygen)

C) Airway Care plus 40- 100% oxygen by"rebreather mask" or similar device (high flow oxygen)

D) Airway Care plus artificial ventilation (use AMBU bag with O_2 if immediately available and if you can ventilate effectively this way, otherwise rely on mouth-to-mouth or mouth-to-nose)

E) If conscious and struggling, slap back and/or give vigorous squeeze to upper abdomen. If unconscious and therefore not struggling, reach down throat with first two fingers (or "Choke Saver" instrument) and attempt to grasp foreign body; if unsucessful try slapping or squeezing abdomen and repeat attempt at grasping foreign body. If removal of foreign body impossible, attempt to ventilate patient- sufficient air may pass around obstruction to lungs.

F) Try to calm patient- have patient breathe and rebreathe his/her expired air from small paper bag held in front of mouth and nose.

You are called to see:

1) 89 year old man has had a "stroke" and cannot talk or move his right side. He is lethargic (sleepy appearing) but conscious and appears to be breathing normally 18 times per minute. Skin color appears normal.

2) 60 year old man with"difficulty breathing" for the past hour. He has become increasingly "short of breath" the last two days and has been coughing up yellow sputum for the past three days. He says he has been chronically "short of breath" for 5 years, but never this bad. He normally coughs up white "phlegm" in the morning, and has smoked two packs of cigarettes each day for the past 40 years. Obviously, he admits having a "Smoker's cough", and says his doctor tells him he has a "Lung Problem"

3) 20 year old student hit by car fracturing both femurs, and sustaining possible internal injuries. Appears awake, but complains of sleepiness. Pulse 120, blood pressure palpable at 90, forehead sweaty.

4) 50 year old executive had sudden onset of "crushing" substernal chest pain which radiates (extends out) to his left arm 15 min. ago, and pain has not gotten any better. He is also "short of breath", is very sweaty, and feels more comfortable sitting up than lying down. On questioning, he admits to smoking one-half pack of cigarettes per day for twenty years, but never got"short of breath" before, except while chasing his dog. He denys coughing up "phlegm" each morning, and his doctor has never said anything about any "lung problems".

5) 35 year old former psychiatric patient found by family unconscious in bed with several empty pill bottles at bedside. You find patient unarousable, but with palpable carotid pulse (rate 100) and very slow <u>shallow</u> breathing. Patient's neck and shoulders have slight bluish gray color.

6) 16 year old girl with "difficulty breathing" beginning shortly after shouting fight with boyfriend 20 minutes ago. You find her agitated and breathing noisily 40 times per minute. There is no history of recent eating, drinking, choking, or injury. She is able to speak in excited but otherwise normal voice. She complains of numbness and discomfort in her fingers and in her chest. (chest discomfort appears to be in a ringlike distribution around the lower part of her ribcage)

7) 70 year old man sitting near you in restaurant falls out of chair onto floor. His wife screams,"He had this funny look on his face- I asked him what was wrong and he just stared at me and then fell over!" Patient has palpable carotid pulse and blue color of neck and shoulders.

Matching Question: place letter on right in space on left

8)

____ Ambu bag without O_2 line.	A) 15-18%
____ Ambu bag with O2 line attached.	B) 20% (actually closer to 21%)
____ Mouth to mouth ventilation.	C) 24% (some models 28% or 35%)
____ Ventimask	D) up to approx 50%
____ "rebreather mask"	E) approx 60-80%

9) A patient with chronic bronchitis and/or emphysema must not receive high flow (over 24%) oxygen because, in some of these patients: (note: one answer is correct- the others are imaginary and have no resemblence to the way the body functions- so forget them)

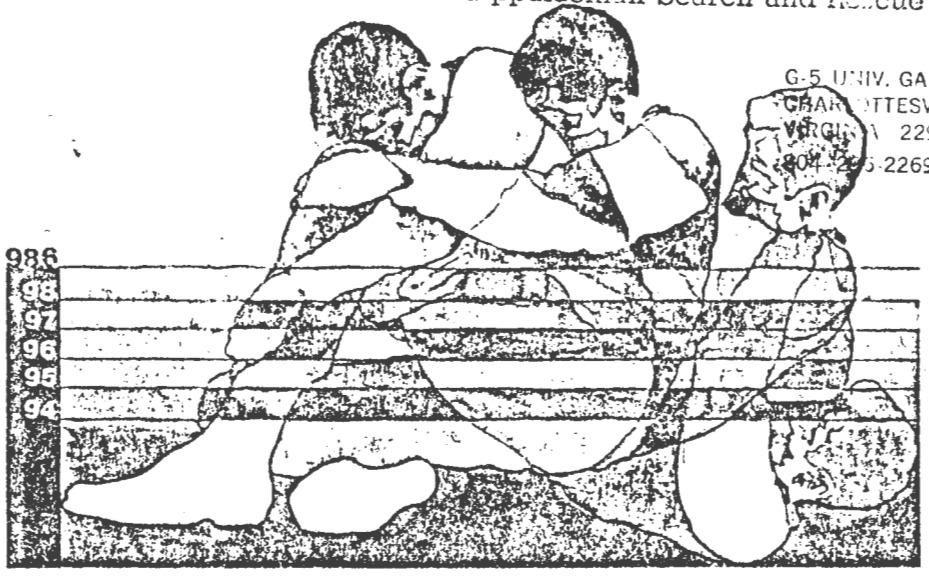
A) His respiratory center is driven only by his lack of oxygen- too much oxygen stops his breathing long enough for his excess CO_2 to narcotize him and stop his breathing forever.

B) His respiratory center is driven only by his excess of CO_2, too much oxygen depresses the reaction of his respiratory center to CO_2.

C) Such a patient is more susceptable to oxygen toxicity (oxygen poisoning).

D) He becomes addicted to the increased oxygen, and cannot re-adjust to h

Growing weak by degrees



Cold can be the death of you—even a drop of as little as 6°

At 11 p.m. on Dec. 22, 1963 fire broke out aboard the Greek luxury liner *Lakonia* as it cruised the Atlantic near Madeira, and passengers and crew were forced into the water. The air temperature was over 60°, the sea almost 65° and rescue ships were in the area within a few hours. Nevertheless, 125 people died, 113 of these fatalities being attributed to hypothermia, the lowering of the body's inner heat, perhaps no more than 6° from the normal 98.6°.

The temperature of the hands and feet can drop 40° to 50° below normal body temperature without lasting harm. But a relatively small drop in the temperature of the body core will kill you; it makes no difference whether you're in water, the wilderness, a house out of fuel or a car out of gas.

The rule of thumb is that you can survive three weeks without food and three days or so without water, but without warmth you are lucky to last three hours. Though few people know it, the head is the most efficient portion of the body's heating system. A man who leaves his head unprotected, even in a minor wind, may lose up to one-half of the body's total heat production. There is an old mountaineer's maxim: "When your feet are cold, put on your hat."

Hypothermia is a danger even in mild temperatures, say between 30° and 50°. Indeed, the majority of cases develop in this seemingly harmless range. Being wet and in the wind at such temperatures can be fatal, for the thermal conductivity of water is 240 times that of still air.

The moment your body begins to lose heat faster than it produces it, hypothermia threatens. As heat loss continues, the temperature of the body's inner core falls below normal. Hands and arms (the extremities most needed in order to survive) are affected first. When body temperature drops to 95°, dexterity is reduced to the point where you cannot open a jackknife or light a match.

According to recent research by the Mountain Rescue Association, the body reacts in a series of predictable ways when inner-core temperature falls. At 2.5° below normal, shivering begins, an automatic body process to create heat. But it takes energy to shiver—comparable to what is expended sawing wood—and the heat loss continues. The more the core temperature drops, the less efficient the brain becomes. Although you may have a pack on your back with a sleeping bag and food in it, you may not have the sense to use them.

If the core temperature drops to 94°, you will stop shivering but every now and then will experience uncontrollable shaking. Your system, automatically getting rid of carbon dioxide and lactic acid, also releases blood sugar and a little adrenaline, giving you a surge of energy, which causes the violent shaking. This last desperate effort by the body to produce heat utilizes a tremendous amount of energy.

"Now," you think, "I must be getting warmer because I am not shivering anymore." By this time you are pretty irrational. If someone were to ask you your name and telephone number, you probably wouldn't know them, for the brain has become numb.

If nothing is done, death usually occurs within 1½ hours after the shivering starts. In fact, a shivering person can go from fatigue to exhaustion to cooling beyond the recovery point so quickly he may perish before rescuers can build a shelter or get a fire started.

The speed with which hypothermia develops depends on the amount of energy available at the onset of the survival situation. If you were warm and fresh when the plane crash-landed or the car broke down, your energy reserves may be considerable. If, however, you were hiking in rugged terrain most of the day, you surely have a depleted supply of energy. The trick is to use your brain to conserve what energy remains. This is done by limiting muscular action and reducing body heat loss.

Clothing is important primarily for the insulation it provides by creating a dead air space between your warm body and the air outside. There is no clothing that is effective in every situation. Duck down, best for stopping wind, is no use when wet. The clear plastic covering that protects against rain is not, by itself, a good insulator against cold. Before braving the elements, learn which clothes are merely bulk and which will keep you warm.

Wool has the peculiar virtue of drying from within, keeping the body warm even when wet. Never wear jeans when there is any possibility of exposure to cold. Gene Fear, Chairman of the President's

Case 2: A man unaccustomed to drinking returns home, pulls into his garage, and falls asleep before he turns off the engine or leaves the car. A faulty exhaust system leaks carbon monoxide gas into the car. The wife, hearing the car running for an unusual amount of time, is alerted and calls the emergency squad. Upon your arrival you find the victim cyanotic and with slow and irregular pulse and respiration rates.

9. What is the appropriate emergency care for carbon monoxide poisoning?
   A. _____
   B. _____
   C. _____
   D. _____

10. What can be the distinct skin color of a person in the initial stage of carbon monoxide poisoning?

_____

11. Poisons are categorized according to the route of entry into the body. List the four ways poisons can enter the body.
   A. _____
   B. _____
   C. _____
   D. _____

Case 3: An early morning call involves a woman with respiratory difficulty. Arriving at the home, you find a middle-aged woman lying on a sofa, disheveled and in a state of relaxation. Her husband is berating her and almost forcibly pouring hot coffee down her throat. He explains that they had been at their local lodge drinking most of the night. When they returned home he noticed her taking a quantity of sleeping pills. The woman's pulse and respiration rate are slow but steady. Her pupils react to light slowly.

12. What is the appropriate emergency care for this apparent accidental poisoning?
   A. _____
   B. _____

13. What information should you provide the hospital during transport?
   A. _____
   B. _____
   C. _____
   D. _____

14. This case represents what classification of poisoning by mouth?

_____

15. What symptoms would you eventually expect to be
   A. _____
   B. _____
   C. _____
   D. _____
   E. _____

16. What are the two classes of corrosive substances that are ingested by mouth?
   A. _____
   B. _____

17. What symptoms would you expect to be present in a person who has ingested a corrosive substance?
   A. _____
   B. _____
   C. _____
   D. _____
   E. _____

Answers are on page

The following bibliography can be consulted by the EMT for information regarding the emergency care of poisoning.

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Commentary on Emergency Management of Poisoning

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Acute, accidental poisoning rates high among causes of death; 3,000 children die from accidental poisoning each year. Morbidity runs even higher as a result of scarred esophagi and brain damage. Among female adults, ingestion of drugs is a favorite method of attempting suicide.

The critical period for action is at the time and site of poisoning. Knowing how and when to administer syrup of ipecac is

ANSWER KEY

Remove clothing
Maintain airway
Treat for shock

Cover with clean, sterile dressing
Apply cool, sterile water if possible

2. D. All degrees would probably be exhibited
3. Critical
4. A. Give nothing by mouth
5. Critical
6. CPR
7. A. Thermal burn
8. Exit wound or second burn
9. Remove clothing
   Flood affected area with water
10. Flood with alchohol
    Carbolic acid is not water soluble
11. C. Brush the powdered chemical off, flood with copious amounts of water
12. B. Alkalis
13. Check for contact lenses and if present, remove
14. A. < 20%
    B. < 15%
    C. < 2%
    D. 15-30%
    E. < 10%
    F. > 30%
    G. > 10%
15. Face, hands, feet, respiratory tract, fractures, soft tissue injuries

ANSWER KEY for Graduate Review

1. Induce vomiting
2. Emergency transport
3. Syrup of ipecac and water
4. A. Vomitus
   B. Poison container
5. True
6. Irritant
7. A. Lips and mouth stained and discolored; white and shriveled
   B. Metallic taste in mouth
   C. Severe stomach pain
   D. Shock
8. All responses should be checked
9. A. Get victim into fresh air
   B. Resuscitate with bag mask or mechanical resuscitator for most effective oxygen inhalation
   C. Perform CPR if no pulse is discernible
   D. Emergency transport
10. Cherry-red
11. A. Inhaled
    B. Ingested
    C. Injected
    D. Absorbed
12. A. Induce vomiting
    B. Emergency transport
13. A. Type of poison
    B. Quantity of poison
    C. Patient's age
    D. Patient's weight
14. Neurotoxic
15. A. Weariness, drowsiness
    B. Cyanotic face
    C. Constricted pupils
    D. Shallow, irregular breathing
    E. Pulse—immediately—strong and slow; later—rapid and weak
16. A. Acids
    B. Alkalis
17. A. Lips and mouth stained, seared, burned
    B. Severe pain in mouth, throat, stomach
    C. Intense thirst
    D. Shock
    E. Difficulty talking and swallowing

graduate review

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You are invited to submit your comments and suggestions for future topics to *Emergency Medical Services*, Review and Evaluation, 15300 Ventura Blvd., Suite 301, Sherman Oaks, California 91403, or telephone 213/990-8393.

The following are actual cases involving emergency medical care of some summertime emergencies. They present an opportunity for self-evaluation and review. As a result of working through them, you should be able to

- Distinguish the major heat conditions and list the emergency care for each;
- Describe the emergency care for fractures and dislocations;
- Recall the causes of fresh and salt water drowning;
- Describe the emergency care for blunt trauma to the forehead.

Case 1: On a hot, humid summer day you respond to a call at a local park. A middle-aged man, apparently a jogger, has collapsed. His skin is hot to the touch and very dry. He is unconscious and breathing very shallowly.

1. What major heat condition is this man apparently suffering from?

_____

2. What is another major heat condition?

_____

3. Following are signs and symptoms of the two major heat conditions you should have listed above. Write the name of the heat condition that corresponds to each sign or symptom.

A. _____ skin—flushed, hot, dry
B. _____ skin—pale, clammy
C. _____ profuse sweating
D. _____ absence of sweating
E. _____ breathing—rapid (shallow)
F. _____ breathing—rapid (snoring)
G. _____ mental confusion, delirium

4. For the apparent heat condition described in Case 1, what is the appropriate emergency care?

A. _____
B. _____
C. _____

5. What is the emergency care for the other common heat condition?

A. _____
B. _____
C. _____

Case 2: You arrive at a little league baseball game and find the catcher of one team sitting on the bench, crying and in obvious pain. You notice that his left arm is "hanging funny" from the shoulder area. The youngster informs you that he has extreme pain in the left shoulder area and cannot move his left arm when requested.

6. What is the most probable nature of this youngster's injury?

_____

7. List the additional signs usually present with this type of injury.

A. _____
B. _____
C. _____

8. Should you try to put this youngster's arm back in place at this time?

Yes_____
No_____

9. Should you ever attempt to correct similar injuries of this nature at the scene?

Yes_____
No_____

10. If Yes, give example, if No, why not?

_____

_____

11. List the emergency care for these types of injuries.

A. _____
B. _____
C. _____
D. _____
E. _____

Case 3: A young girl bicyclist has glanced off a moving car and is now lying in the street. The child is bleeding from her right forearm and a portion of bone can be seen protruding from the open wound.

12. What type of fracture does this child have?

_____

13. What is the other major type of fracture?

_____

14. What are the three major variations of this type of fracture you listed in question 13?

A. _____
B. _____
C. _____

15. As a general rule, air splints should be used (check *all* appropriate answers).

A. _____ below the elbow
B. _____ below the knee
C. _____ full arm
D. _____ full leg

16. Unless there is presence of some immediate danger, what is the key word in treating fractures of any type?

_____

17. When splinting fractures, the splint should be applied (A)_____ and (B)_____ the adjacent joints.

Case 4: You arrive upon the scene approximately two minutes after an apparent drowning victim has gone under and been retrieved from a fresh water lake. The victim is now receiving mouth-to-mouth resuscitation from a bystander. Before taking over, you check for vital signs. No pulse can be determined.

18. What is the immediate emergency care in this situation?

_____

19. A salt water drowning death is usually caused by

A. _____ chemical imbalances in blood chemistry causing ventricular fibrillation
B. _____ fluid being drawn from the blood into the lungs causing saturation

of the lung tissue

20. From the list below, number in order the manner in which you would attempt to make a water rescue—number 1 being the procedure of first choice.
A. _____row a boat or canoe
B. _____throw a rope or life ring
C. _____swim out to make rescue
D. _____reach with a long pole or branch

Case 5: Upon responding to a residential call, you learn that several children had been playing on a swing set. One child had been hit on the forehead by another child who came back on the swing. The child was knocked several feet behind the swing set by the impact and appears dizzy, confused, and very weak. There was no bleeding. Pupils reacted slowly to light.

21. You would most likely suspect
A. _____skull fracture
B. _____brain concussion
C. _____both, as the signs and symptoms are almost identical

22. Emergency care for this child would include
A. _____
B. _____
C. _____
D. _____
E. _____

23. With any head injury, always suspect
A. _____the worst, inform the parents the child may die
B. _____neck and back injury
C. _____the best, no real emergency care is needed if there is no bleeding or other major sign of injury

Answers are on page 101.

The following bibliography can be consulted by the EMT for information regarding the emergency care of summertime emergencies.

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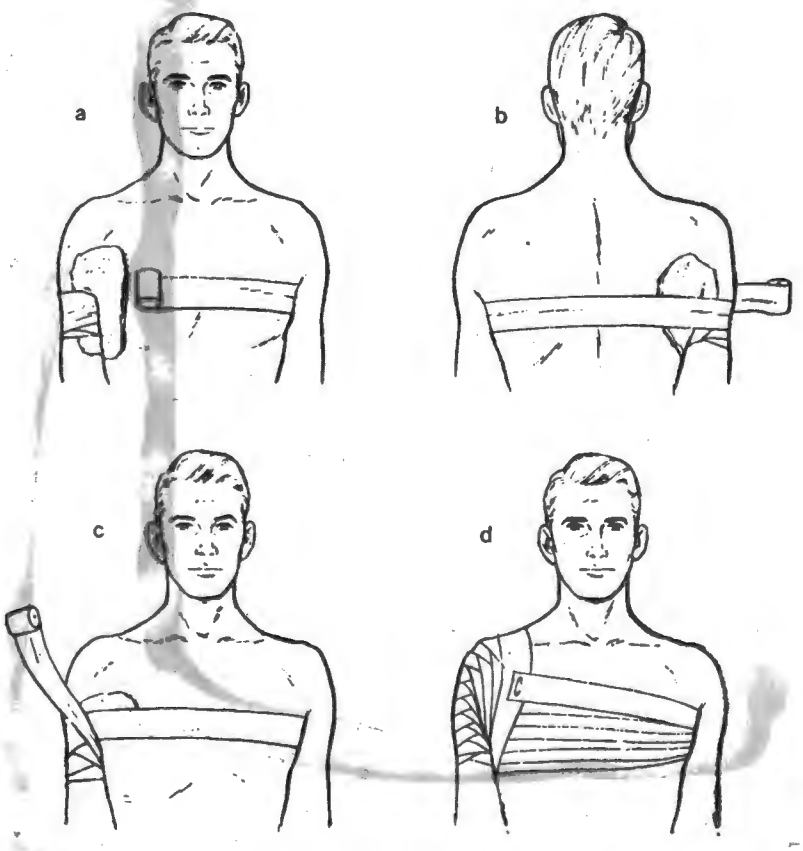

FIGURE 14-11 The spica of the shoulder

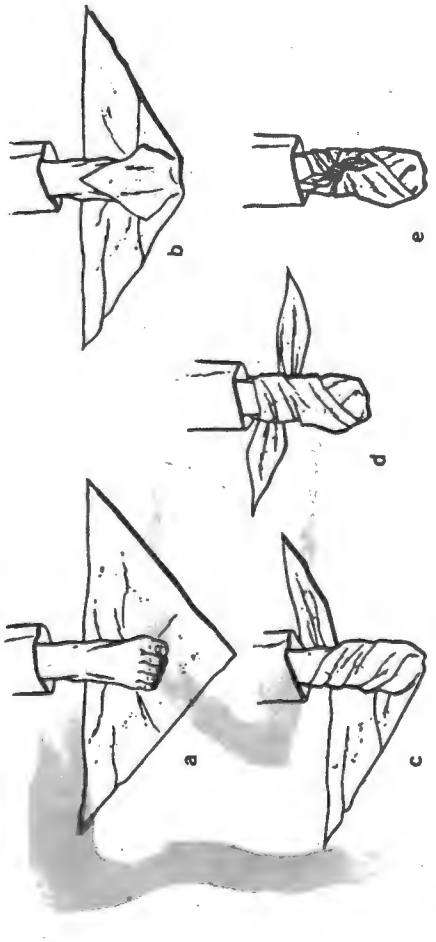

FIGURE 14-23 Triangle of the foot.

-4-

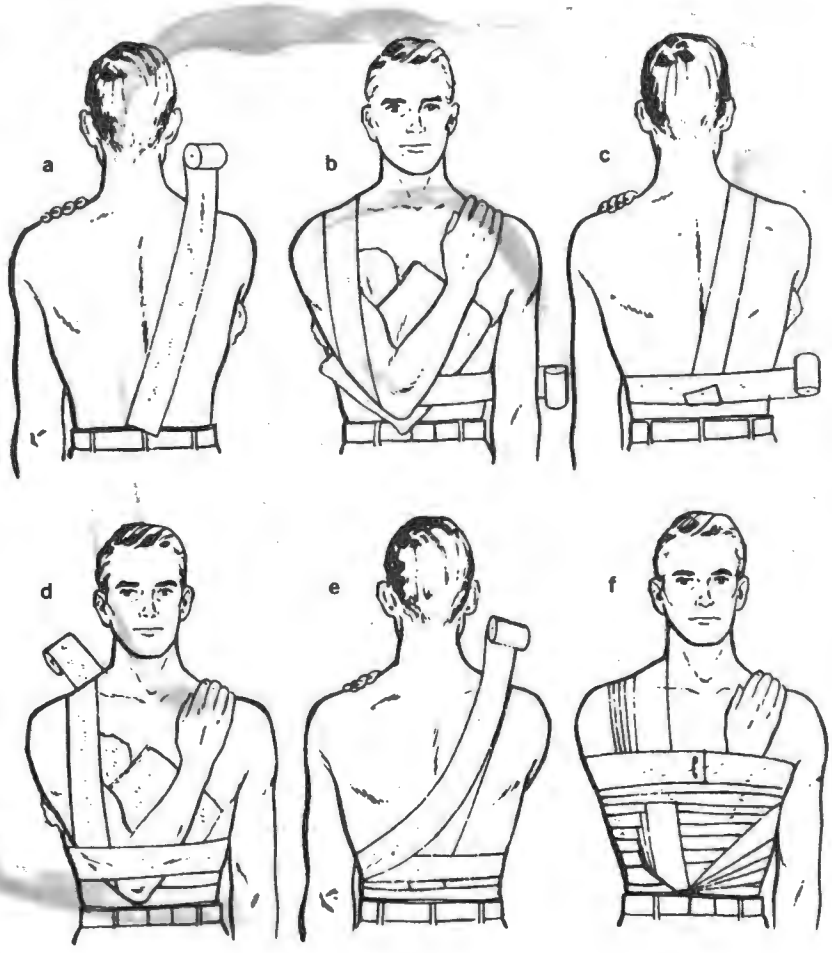

FIGURE 14-12 The velpeau.

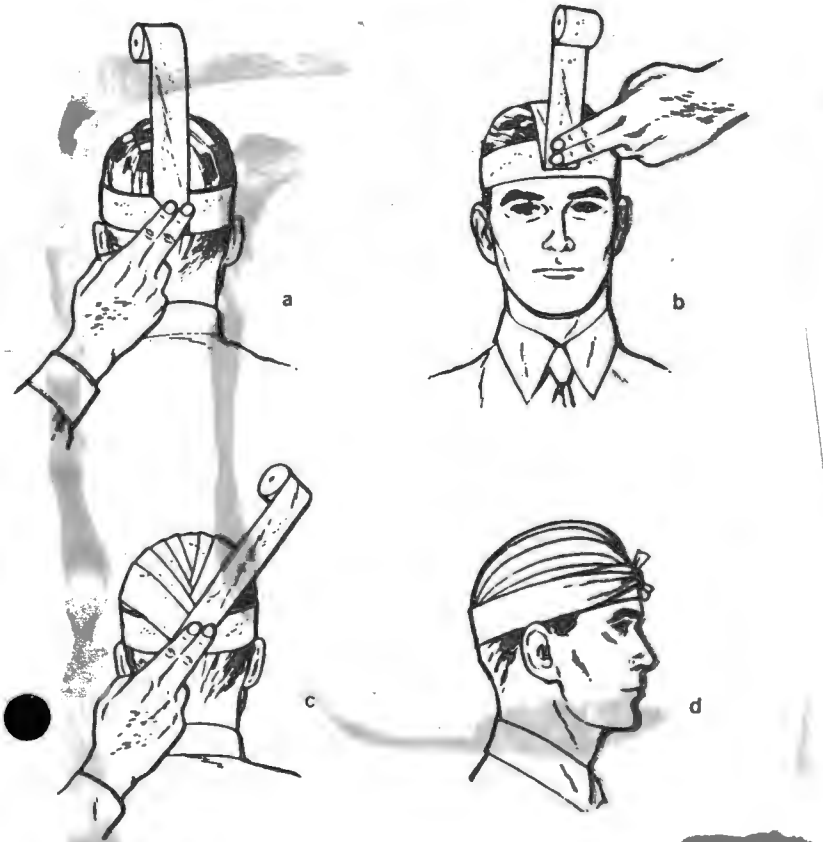

FIGURE 14-9 Re... bandage.

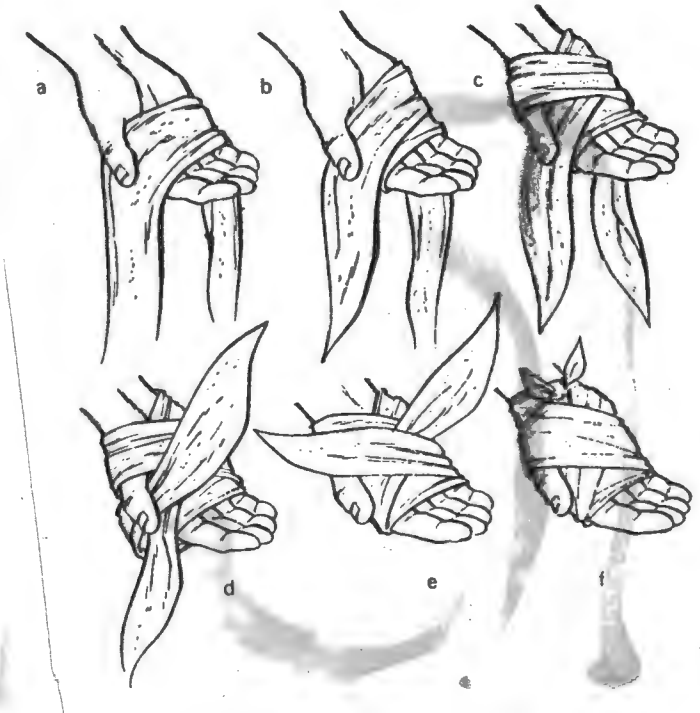

FIGURE 14-32 Cravat of the pa...

graduate review

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Here is the first of a continuing series designed to aid the EMT in evaluating his knowledge of emergency care procedures.

Each issue will feature review cases and exercises directed at the first level EMT—researched and developed by David A. Gallup, Ed.D., Assistant Professor of Medicine and Educational Specialist, and registered EMT, employed by the Office of Medical Education at Hahnemann Medical College and Hospital in Philadelphia, Pennsylvania. Thomas W. Bonekemper, M.D., Assistant Professor of Medicine and Coordinator of Primary Care at Hahnemann checks the cases for authenticity and appropriate emergency care; John R. Boker, Ph.D., Assistant Professor of Medicine at Hahnemann and an Educational Psychologist, is involved in writing and setting the cases up for self-review.

At the end of each column, commentary will be provided by an expert in the field reviewed.

You are invited to submit your comments and suggestions for future topics to *Emergency Medical Services*, Review and Evaluation, 15300 Ventura Blvd., Suite 301, Sherman Oaks, California 91403, or telephone 213/990-8393.

The following are actual cases involving emergency medical care of burns. They present an opportunity for self-evaluation and review. As a result of working through them, you should be able to

- Describe the emergency care for thermal, chemical, and electrical burns.
- Use the Rule of Nines to determine the severity of a given burn.
- Differentiate between the severity of burns.

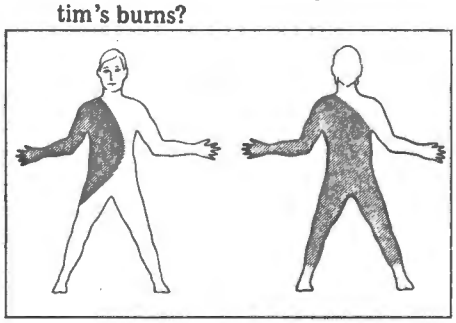
Case I: A 15-year-old male was joy riding in his parent's car, driving on the wrong side of the road, when he met an oncoming vehicle head-on. The driver of the other car was killed on impact. The youth was trapped in the wrecked car when the gasoline tank exploded. Initial examination revealed minor lacerations and abrasions as a result of the impact. No fractures were detected. Burns were sustained on the posterior aspects of the legs, thighs, buttocks, and back. The burns also involved the left lateral aspect of his chest and abdomen, left arm, forearm, and hand.

1. What emergency burn care should the E.M.T. administer once the victim has been removed from the vehicle?

_____

2. You would expect this patient to have burns of what degree?
   A. ___ 1st degree
   B. ___ 2nd degree
   C. ___ 3rd degree
   D. ___ all degrees would probably be exhibited

3. The diagram below illustrates the area covered by the burns. Using the Rule of Nines to notify the hospital ER, what is the severity of the victim's burns?



_____

4. During transportation to the ER the victim complains of thirst. You should
   A. ___ give the patient a drink of water
   B. ___ let the patient suck on ice cubes
   C. ___ give nothing by mouth

Case II: An 18-month-old child has bitten through a household electrical cord. He has a third degree burn around his mouth.

5. What is the severity of this burn?

_____

6. Electrical burns may result in paralysis of the breathing center and ventricular fibrillation. It may be necessary to initiate

_____

7. An electrical burn is most often accompanied by a
   A. ___ thermal burn
   B. ___ chemical burn

8. After life support is initiated and accompanying burns extinguished, victims sustaining an electrical burn should be examined for

_____

Case III: A 24-year-old female working as a research chemist in a large industrial plant has spilled acid on her left hand. She has started to flood her hand with copious amounts of water.

9. What is the normal emergency care for the majority of chemical burns?

_____

10. An exception to the normal emergency care for burns is in dealing with carbolic acid. What is the emergency care you would institute for this type of acid burn? Why?

_____

11. In dealing with powdered forms of chemicals, particularly lime, the initial emergency care procedure would be to
   A. ___ lavage with copious amounts of water
   B. ___ do nothing, transport immediately
   C. ___ brush the powdered chemical off, lavage with copious amounts of water

12. What class of chemical inflicts the deepest and longest lasting burns?
   A. ___ acids
   B. ___ alkalis

13. In chemical burns affecting the eyes, what should be done before instituting any emergency care?

_____

14. Please complete the following chart, giving the appropriate percentage of total body surface affected. Write the answer on the line beside each letter.

Severity/ degree	1st degree	2nd degree	3rd degree
Minor	A. ___	B. ___	C. ___
Moderate		D. ___	E. ___
Critical		F. ___	G. ___

15. Exceptions to determining severity of burns would involve the following body areas or injuries:

_____

Answers are on page 100

The following bibliography can be consulted by the EMT for information about the emergency care of burns.

graduate review

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You are invited to submit your comments and suggestions for future topics to *Emergency Medical Services*, Review and Evaluation, 15300 Ventura Blvd., Suite 301, Sherman Oaks, California 91403, or telephone 213/990-8393.

The following are actual cases involving emergency medical care of poison cases. They present an opportunity for self-evaluation and review. As a result of working through them, you should be able to

- List the four routes of entry into the body for poisons;
- Classify poisons that are taken orally;
- List the symptoms of poisons that are taken orally;
- Describe the emergency care for specific types of poisoning;
- Recall the poisons that should not be vomited.

Case 1: A frantic young mother fears that her 2-year-old daughter has accidentally eaten some rat poison. Unfortunately, the toddler is too young to reliably tell what she has done. No unusual signs or symptoms are immediately present when the EMT arrives at the scene.

1. What should be the appropriate action of the EMT for this apparent accidental poisoning?

_____

2. What should be done next?

_____

3. What is the best method to administer the emergency care in Question 1 above?

_____

4. What items should accompany the patient to the hospital?
   A. _____
   B. _____

5. The three general classifications of poisons that enter the body by mouth are: corrosives, irritants, and neurotoxants.
   A. ____ True
   B. ____ False

6. The poisoning in this case is an example of which above classification?

_____

7. What symptoms would you expect to eventually appear in this patient if she did in fact ingest some of the rat poison?
   A. _____
   B. _____
   C. _____
   D. _____

8. There are certain poisons that should not be vomited. These poisons include: (check *all* that apply)
   A. ____ acids (hydrochloric, sulfuric, nitric)
   B. ____ alkalis (lime, potash, ammonia)
   C. ____ petroleum-based products (gasoline, kerosene, oil)
   D. ____ volatile liquids (lighter fluid, alcohol)

ANSWER KEY for Graduate Review

1. Heat stroke
2. Heat exhaustion
3. A. Heat stroke
   B. Heat exhaustion
   C. Heat exhaustion
   D. Heat stroke
   E. Heat exhaustion
   F. Heat stroke
   G. Heat stroke
4. A. Transport to medical facility
   B. Cool victim
   C. Maintain airway
5. A. Cool victim
   B. Administer cool water, salt added
   C. Treat for shock, transport
6. Dislocated shoulder
7. A. Swelling of injured area
   B. Discoloration
   C. Shortening or lengthening of extremity
8. No
9. Yes
10. Dislocation of lower jaw may be reduced if transportation will be delayed
11. A. Support injured area
    B. Immobilize area
    C. Do not attempt to straighten
    D. Treat for shock
    E. Transport to medical facility
12. Compound
13. Simple
14. A. Green stick
    B. Comminuted
    C. Impacted
15. A. Below the elbow
    B. Below the knee
16. Immobilization
17. A. Above
    B. Beyond
18. Start CPR
19. B.
20. A. 3
    B. 2
    C. 4
    D. 1
21. C
22. A. Keep victim lying quiet
    B. Head elevated and immobilized
    C. Apply cold pack to forehead
    D. Maintain airway, support with oxygen
    E. Transport carefully
23. B

CO SYMPTOMS AT A GLANCE

CO SYMPTOMS AT A GLANCE

MILD EXPOSURE
(5% to 20% COHb)
Less than 5%, usually no symptoms
Slight headache
Slight dyspnea (shortness of breath)
Throbbing temples
Lassitude
Fatigue
Irritability
Loss of appetite
Slight changes in perception and psychomotor performance

MODERATE EXPOSURE (20% to 50% COHb)

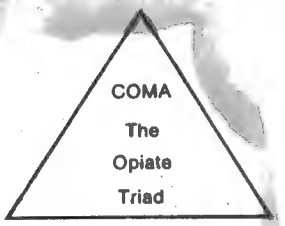
Frontal band-like headaches
Dyspnea on exertion
Impaired judgment
Elevated blood pressure
Ataxia (muscular incoordination)
Muscular weakness
Heart palpitations (pounding)
Tinitus (ringing in ears)
Dulled sensations
Exhaustion
Confusion
Amnesia (loss of memory)
Slurred speech
Dimness of vision
Blurred vision
Diplopia (double vision)
Disorientation
Vertigo (dizziness)
Nausea
Vomiting
Muscle twitching
Flushed face
Diaphoresis (excessive sweating)
Drowsiness
Stupor
Tachycardia (rapid heart beat)
Tachypnea (rapid respirations)
Pressure on chest
Difficult breathing
Syncope (fainting)
Cyanotic (blue, pale, or pink lips or skin)
Possible coma
EKG abnormalities brought on by myocardial hypoxia (insufficient oxygenation)

SEVERE-LETHAL EXPOSURE (50%to 90% COHb)

Unconsciousness; semi-comatose
Loss of or change in reflexes
Paralysis
Dilated, constricted, or sluggish pupils
Cheyne-Stokes respirations
Incontinence of urine and/or feces
Intermittant convulsions
Deep coma
Clinical shock
Elevated temperature above 102.2° F.
Cerebral edema (swelling of the brain)
Intracranial hypertension (high blood pressure within the skull)
Respiratory and cardiovascular arrest
Death

TABLE I

SYMPTOMS OF NARCOTIC INTOXICATION



Slow
Shallow respirations

Pinpoint pupils*

Cold, clammy skin

Decreased body temperature

Flaccid muscles

Irregular, stowed heart rate

Decreased blood pressure

Convulsions
(more common with certain agents)

*Pupils may dilate with prolonged hypoxia and overdose with meperidine.

Chart 1

HAZARD	RISK POPULATION	PREVENTION
THE SCALD		
Too hot water from faucet	Infants, toddlers, aged, infirm	Test water before bathing; turn down water temperature control on water heater (125 is a reasonable compromise between safety and efficiency).
Pots on stove or table top tipped over on self		Keep pot handles away from edges.
Electrical appliances pulled off counter	Toddlers	Shorten cords, tuck away safely.
Hot liquids being carried with child underfoot		Put toddlers in playpen or high chair, keep others out of kitchen "traffic lanes" at meal preparation time.
Splashed hot fats/oils	Meal preparers	Wear mitts; take time.
CONTACT BURNS		
Hot pans, coils, toasters	Meal preparers	Wear mitts; use pot holders, not dishtowels.
Radiators, heater vents	Toddlers	Screen them off.
Irons	Adults and children	Set iron in stable place.
Heating pads	Invalids	Make sure thermostat works, and heat is not excessive for long periods of contact.
FLAME BURNS		
Stove (climbed upon)	Children (2-6 yrs)	Remove any goodies from above or near stove.
Stove (reached over)	Children (6-14 yrs)	Supervise all cooking.
	Elderly in housecoats Meal preparers	Roll up long sleeves; Beware of loose sleeves or ruffles.
Matches (playing)	Children (2-6 yrs)	Keep matches out of reach; teach proper match use.

HAZARD	RISK POPULATION	PREVENTION
FLAME BURNS		
Smoking materials	Smokers-in-bed	Don't!
Gasoline (playing)	Young boys (6-14 yrs)	Store out of reach; teach about danger.
Gasoline (working)	Smokers	Do not smoke around gasoline.
Candles	Children (6-14 yrs)	Place out of reach; supervise lighting.
Open outdoor fires (leaves/trash)	Toddlers, boys (4-10)	Supervise, and keep toddlers away from area.
Camp fires, barbecues	Adults and children	Use lighter fluid before starting fire, never on a half-started fire.
Tents, camping gear (stoves, lanterns)	Campers (6-14)	Get fire-proof tent; don't use open flame inside tent.
House fires	Everyone	Install smoke detectors; Plan and practice home escape drills.
ELECTRIC BURNS		
High tension wires	Boys (9-15 yrs)	Don't climb high tension poles or play around rail yards or generators.
	General adults	Look up before moving aluminum ladder, or boat with aluminum mast.
Extension cords	Children (1-6 yrs)	Avoid use of extension cords.
CHEMICAL BURNS		
Splashed chemicals or caustic agents	Industrial workers Household cleaners	Use with extreme care.
Lye, drain-openers (swallowed)	Toddlers	Store out of reach.
PULMONARY BURNS		
Smoke, not gases	Whoever breathes them.	In smoke-filled room, get low and get out.

Council on Mountain Safety, says: "If we could just get the jeans off them we could save a lot of lives." Denim is relatively loose-woven. It not only allows water to penetrate but permits wind to blow away warm air that should remain trapped between body and clothing. Cotton absorbs water like a wick and quickly becomes soaking wet. If even an inch of cotton sweat shirt extends beyond the sleeve of one's rain gear, water will be drawn up until the whole sleeve is sopping.

If you find yourself without proper protection, use your wits. Lives have been saved by the knowledge that clothing may be padded with any soft, fluffy or relatively bulky material. Dry grass, moss, cattail down and milkweed have all been used as emergency insulation. Pieces of paper packed inside your clothes are also helpful.

Dry clothing and adequate shelter are the keys to survival. But it may take too much energy to collect materials and build a shelter which, in the end, may be insufficient to conserve body heat. It may be better to emulate the chipmunk, scooping out a body-size cave under a downed log where you can stay dry and insulated against the cold.

The threat of hypothermia is not confined to winter months. Even on warm summer days you must be prepared for cold wet winds. In late August of 1959 Alfred Whipple Jr., 20, and Sidney Crouch Jr., 21, became stranded on Cannon Mountain cliff, a sheer rock face near the Lafayette campgrounds in New Hampshire. Even as rescuers tried to reach them, strong winds and rain closed in. Before the lightly clad youths could be reached, their body temperatures had been so reduced by 38° driving rain that both died shortly after a rescue team found them. At a loss, authorities finally labeled the cause of death "exposure to nonfreezing cold."

Uncounted numbers of Americans are exploring the wilderness these days, in cars and trucks, on motorbikes and snowmobiles, in small private planes. Too many of them fail to realize that with such motorized transportation you can penetrate farther into the wilderness in 30 minutes (less in an airplane) than you can walk out alive.

When stranded during a storm in a car or truck, you are well advised to stay where you are. Even after the fuel tank has run dry and the heater no longer works, you will still have a wealth of resources. An automobile has seats and insulation that can be torn up and made into sleeping bags and padding. The crankcase oil and the tires will burn. Mirrors can signal aircraft. If you will use your wits and resist the temptation to panic, you can remain safe and reasonably warm until help comes.

Hypothermia can occur wherever the wind blows, but what isn't obvious is that it also can happen in the home. With inflation elderly people often cannot afford to buy simple things like fuel and nourishing food. In bad weather they can suffer hypothermia.

A Eugene, Ore. physician thinks hypothermia could explain many puzzling drownings, particularly among the young. Dr. Latham Flanagan Jr. says, "You hear of a lot of cases where kids, known to be good swimmers, suddenly stop swimming and sink out of sight. Most cases seem to happen around Memorial Day or the Fourth of July. We think the reason is that the water is still very cold at that time. The swimmer's body temperature drops 6° to 8°, his mind slows down and he becomes irrational. He can't remember where he is going or why."

Lieut. Commander A. B. Ford of the U.S. Coast Guard Office of Boating Safety says, "I am of the opinion that hypothermia plays a greater role in boating fatalities than would be apparent by the casualty reports, because in most cases drowning is the listed cause. In most of the cases there are no witnesses or survivors to explain the actual circumstances."

Hypothermia warning signs include intense shivering, poor coordination, stumbling, thickness of speech and loss of memory. Even mild symptoms demand immediate, drastic treatment. The best procedure is to submerge the victim in a tub of hot water and, if he is conscious, to force him to drink quarts of warm, heavily sugared liquids or beef broth. In the field, if symptoms of advanced hypothermia are evident, the victim should not be moved from the spot until treatment has been given.

If symptoms are mild, get the victim into the best available shelter. Replace wet clothing with dry and put as much insulation as you can between him and the ground. Try to keep him awake while administering liquids. If there are no dry clothes to put on him, strip him and place him in a sleeping bag with another person (also stripped). If you have a double bag, put the victim between two warm people. Skin-to-skin contact is an effective field treatment.

Recent findings suggest that loss of life from immersion hypothermia could be avoided if knowledge of its hazards was more widespread. In a boating accident put on warm clothing, if possible, as well as a life-jacket (experiments show that damp clothing can provide considerable thermal insulation when submerged) and, once clear of the craft, float unless land is close enough to reach by swimming. Many of those who swam unnecessarily after leaving the *Lakonia* exhausted themselves, accelerating the fall in their body temperature.

Hypothermia is deadly because it is so subtle. We have all shivered at some time, with no discernible harm, because shelter and warmth were nearby or we had plenty of energy reserves to produce heat for a long time. What one rarely remembers about hypothermia is its effect on the mind.

In April 1968, bush pilot Robert Gauthier was discovered alive in the arctic wilderness of Canada's Northwest Territories, 58 days after his light plane had gone down. The 39-year-old Gauthier had been overlooked in the intensive search that had followed his disappearance on Feb. 2. Although he was 50 pounds lighter and his feet were frostbitten, he was in good condition. He told rescuers he had made a normal landing after his plane ran out of fuel. He had hardly ventured out of the plane, fearing wolves he had seen outside, and existed on emergency rations and a supply of raw fish he was carrying as freight. The temperature had fallen, at times, to 60° below and was seldom above zero during the ordeal. Had he tried to walk out in winter, Gauthier would have perished within hours.

Few of us will ever have to face this sort of ordeal, but the rules for survival are the same, no matter where the emergency develops. The strongest are not always the ones who live. Most likely it will be those who think clearly. Your brain is your best survival tool. END

_____ County EMT-1 REPORTING FORM

EMERGENCY MEDICAL REPORT

IDENTIFICATION OF SCENE: Agency _____

Patient
Name _____ Age____ Sex M F

Phone _____ City _____

Relative's
Name _____ Phone _____

Type of Emergency (Auto accident?)

PATIENT ID
DATE: / /

SUBJECTIVE (Background) (Note: Code letters – Pr= Problem / Ba = Background)

General	Trauma	Cardiac
Pr. _____	Pr. _____	Pr. _____
Ba. _____	Ba. _____	Ba. _____

Past Health ☐ Heart Disease ☐ Emphysema ☐ Diabetes ☐ Seizures ☐ Hypertension

Allergies _____
☐ Penicillin?

Medications: ☐ Digitalis? ☐ Water pills? ☐ Insulin? ☐ Blood pressure pills? ☐ Dilantin? ☐ Nerve pills?

OBJECTIVE (Exam)

General ☐ Alert? ☐ Confused?
☐ Oriented X 3 ☐ Coma? ☐ Pale?
☐ Code Blue? ☐ Cyanotic? ☐ In Pain?
☐ Short of Breath?

Vitals

Time	BP	Pulse	Respiration

Skin ☐ Moist? ☐ Dry? ☐ Bruised?
☐ ____ % ____ degree Burn

Head ☐ Scalp Bleeding (☐ Spurting?)
☐ R/L Ear Blood or drainage

Pupils ☐ Small? ☐ Large? ☐ =
☐ Unequal – R > L or L > R

Mouth ☐ Clear of obstruction

Neck Trachea: ☐ Stoma present
C-Spine : ☐ Point Tenderness? ☐ No

Chest Movement: ☐ Symmetric ☐ Flail
Compression: ☐ Pain ☐ No Pain
Air Entry: ☐ Equal ☐ Unequal

Abdomen–Obvious Injury _____

Low Back ☐ Point Tenderness? ☐ No
Pelvis ☐ Compression Pain? ☐ No
Extremities –

	Arm R/L	Leg R/L
Deformity?		
Pulses?		
Wave?		

Other or Details: _____

ASSESSMENT (Conclusion/Diagnosis/Impression)

Suspected Problem: _____

Priority Threatened: ☐ AIRWAY ☐ BREATHING ☐ CIRCULATION ☐ CNS ☐ OTHER

PLAN

Airway Needs: ☐ Suctioning? ☐ Removal FB? ☐ Airway OPA/NPA
Breathing Needs: ☐ Positive pressure– ☐ Mouth to Mouth ☐ Mouth to Mask
☐ Demand Valve ☐ Bag Mask ☐ CPR
☐ Oxygen– ☐ 24% ☐ 28% ☐ 32% ☐ 40% ☐ 100% ☐ ____ Liter Flow
Circulation Needs: ☐ Leg Elevation ☐ Shock Trousers
Bleeding Control– ☐ Direct Pressure ☐ Elevation ☐ Pressure Point ☐ Tourniquet (Time Begun _____)
Splint _____ Positioning ☐ (Back) ☐ (Stomach) ☐ (Sitting) ☐ (Side)

TO _____ Hospital/Code _____/ Arrival ____ am/pm X _____
EMT-1

UNIVERSITY OF VIRGINIA MEDICAL CENTER
EMERGENCY MEDICAL SERVICE
CHARLOTTESVILLE, VIRGINIA 22901

Dear EMT Student;

We're glad to have you here in the E.R. In order to make your in-hospital training most valuable, we have listed objectives you should complete while here. It is hoped that each objective will be performed AT LEAST 8 times in your 10 hours here. We highly encourage you to seek out these objectives. You will be assigned to work with one nurse although you are welcome to work with others any time you see something that might interest you. Please feel free to ask any questions.

The nurse with whom you complete an objective will evaluate and initial in the appropriate box on your training sheet.

EXAMPLE

DATE		
VITAL SIGNS		
B/P, palpated	T/DDR	S/DDR
B/P, auscultated	S/DDR	S/DDR

evaluation/initials

O = observed and understood

T = still needs guidance, unsuccessful attempt

S = successful

EMERGENCY MEDICAL TECHNICIAN IN-HOSPITAL TRAINING

TRAINEE _____ RESCUE SQUAD _____

DATE								
VITAL SIGNS								
B/P, palpated								
B/P,auscultated								
Apical pulse								
Radial pulse								
Carotid Pulse								
Femoral pulse								
Dorsalis pedis & post tibial pulses								
Respirations								
Temperature								
PATIENT ASSESSMENT								
History								
Systems Review (head to toe)								
Auscultate lungs								
Abnormal findings								
Reassurance to pt.								
Communication								
CONTROL OF AIRWAY								
Head position								
Oxygen/mask								
Insert oral airway								
Use of Ambu bag								
Oral/nasal suctioning								

O = observed T = unsuccessful attempt S = successful

TRAINEE_____

DATE

NEUROLOGICAL SIGNS								
Level of consciousness (LOC)								
Pupil check (PERL)								
Motor Function								
Sensory Function								
Glasgow Coma Scale								
CIRCULATORY SUPPORT								
CPR-2 man (help or (observe)								
Control of bleeding and hemorrhage (observe)								
LABOR AND DELIVERY (optional)								
Taking a history								
Timing of contractions								
Auscultation of fetal heart tones								
Observation of normal delivery								
Control of post-partum hemorrhage (massaging uterus)								
Management of newborn (observe)								

O = observed T = unsuccessful S = Successful

DR. DAYTON

GLASGOW COMA' SCALE

Best Motor Response	Obeys	M6
	Localises	5
	Withdraws	4
	Abnormal flexion	3
	Extensor response	2
	Nil	1
Verbal response	Oriented	V5
	Confused conversation	4
	Inappropriate words	3
	Incomprehensible sounds	2
	Nil	1
Eye opening	Spontaneous	E4
	To speech	3
	To pain	2
	Nil	1

10/23/74

AMERICAN HEART ASSOCIATION

AFFILIATE FACULTY INSTRUCTOR COURSES
FOR CARDIOPULMONARY RESUSCITATION AND
EMERGENCY CARDIAC CARE

BASIC LIFE SUPPORT
COURSE TEST

The enclosed test consists of multiple choice test questions.

On the separate answer sheet provided, circle the correct answer or answers. Do the same on the question sheet also. Many questions require more than one answer.

eg:

The heart:

(a.) Pumps blood around the body
(b.) Is situated between the spinal column and breast bone
c. Is in the abdomen
d. Continues to beat during cardiac arrest

Answers: (a) (b) c d e

Please read the questions carefully.

10/23/74

AMERICAN HEART ASSOCIATION

BASIC LIFE SUPPORT - COURSE TEST

1. When a foreign body is obstructing the air passage and cannot be removed with fingers:

   a. Deliver firm blow over spine between shoulder blades
   b. Call for a surgeon
   c. Perform an emergency tracheotomy
   d. Keep probing in throat with fingers

2. External cardiac compression for a pulseless victim is too hazardous to perform:

   a. If the patient has numerous rib fractures and a "flail" chest
   b. If neck injury is present
   c. Following open heart surgery
   d. None of the above

3. The percentage of deaths from a heart attack before the victim reaches the hospital is:

   a. 20 - 30
   b. 40 - 50
   c. 50 - 60
   d. 70 - 80

4. In mouth-to-mouth resuscitation, tilting the head back is important because:

   a. Air cannot enter the stomach
   b. It allows the individual doing the breathing to more easily observe the victim's body and to notice when there is a pause after every fifth compression during which a breath may be interposed
   c. It extends the neck and lifts the tongue away from the back of the throat

5. Which of the following may be a patient's description of a heart attack?

   a. It was as if someone was standing on my chest
   b. Severe aching in my jaws
   c. Very great chest pain - the worst pain in my life
   d. A mild episode of indigestion
   e. My chest felt like it was on fire

6. When performing external cardiac compression on an infant:

   a. The compression rate should be 80-100 per minute
   b. Place two fingers over the lower half of the sternum
   c. Place two fingers over the middle of the sternum
   d. Interpose one ventilation between every fifth and sixth compression
   e. The compression rate and hand position is the same as for an adult

7. Hearing or feeling ribs fracture or costochondral separations during external compression:

   a. Is an indication to stop compressing as the lung may become punctured
   b. Indicates hand location should be reassessed
   c. Indicates the 60 lbs. of downward force is too much for this average adult victim
   d. Generally makes subsequent external compressions more difficult

8. Blowing a small amount of foreign matter into the lungs is less dangerous than delaying oxygenation.

   a. True
   b. False

9. The initial airway and breathing efforts fail to result in ventilation of a victim. Consider the following actions:

   1. Explore the throat for foreign objects and try again
   2. Reposition the head and neck and try again
   3. Proceed to external compression after four quick breaths if the pulse is absent
   4. Roll victim over and deliver a sharp blow between shoulder blades, re-explore the throat and try again
   5. If no ventilation can be established, do not proceed to external compression even if the victim is pulseless
   6. Do an emergency cricothyrotomy if qualified

   Which is the appropriate sequence of actions to be taken?

   a. (2, 1, 6, 3)
   b. (2, 1, 4, 6)
   c. (1, 4, 3, 6)
   d. (3, 2, 1, 4)

10. What is certain when the unconscious victim's chest is seen to move up and down?

   a. He is moving air in and out of his lungs
   b. He is not breathing
   c. He is making breathing attempts but may not be getting air into his lungs

11. Which of the following is generally not considered to be a warning sign of a heart attack?

   a. Pain in the legs
   b. Squeezing feeling in the chest
   c. Numbness or aching in the arms
   d. Aching jaw
   e. Nausea, sweating, and shortness of breath

12. One of the most common mistakes made in performing mouth-to-mouth breathing is that the operator does not hyper-extend the patient's head adequately.

a. True
b. False

13. When switching places with partner in performing CPR:

a. The rescuer at head moves first
b. The rescuer at chest rests during inflations
c. The rescuers change simultaneously to avoid interruption of rhythm
d. The rescuer at head gives three quick breaths before moving

14. Which of these persons is likely to be a victim of airway obstruction?

a. A stroke victim
b. A person suffering drug intoxication
c. A person with something in his windpipe
d. A person with spasms of his vocal cords

15. How far down should you depress the sternum for external cardiac compression in an adult?

a. ½ - 1 inch
b. 1½ - 2 inches
c. 2 - 2½ inches

16. What should you do first for the unconscious victim of illness or accident?

a. Get him to a physician or hospital
b. Apply effectively the ventilation and compression steps of CPR
c. Examine him for bleeding and fractures
d. Find out if he is breathing
e. Open the airway

17. A precordial thump is effective because:

a. It increases cardiac output to 60%
b. It is less tiring than external compression
c. It may result in creation of electrical activity sufficient to stimulate the heart
d. It creates negative pressure in the chest causing a spontaneous inhalation

18. The chest "thump" should be performed:

a. With the heel of the hand
b. By striking over the left chest
c. As part of the first step in a monitored patient with cardiac arrest
d. As the first step in an unwitnessed arrest
e. Starting 18 inches above the chest

19. If you find someone who is apparently unconscious lying on the floor of his apartment, your first step is to:

a. Run for help
b. Feel for a pulse
c. Position the head and check for breathing
d. Clean out mouth
e. Check the pupils

20. You are talking with an injured patient and suddenly he stops breathing. Consider the following actions:

1. Check the blood pressure
2. Open airway and feel for a carotid pulse
3. Check the pupils
4. Give a thump on sternum with your fist, if indicated
5. Elevate the head of the bed
6. Give four rapid breaths of mouth-to-mouth resuscitation
7. Administer oxygen
8. If pulse and breathing are not immediately restored, begin CPR

Which is the appropriate sequence of actions to be taken?

a. (6, 2, 8, 3)
b. (2, 4, 6, 8)
c. (3, 6, 2, 4)
d. (1, 8, 6, 7)
e. (2, 3, 4, 7)

21. Sometimes mouth-to-mouth breathing is all that it takes to revive an unconscious person.

a. True
b. False

22. A sharp blow on the sternum in an attempt to restore the heartbeat of an unwitnessed arrest victim is a waste of time.

a. True
b. False

23 Infants and small children are ventilated in basically the same way as adults, except that inflations are:

a. Faster and more forceful for children
b. Slower and more forceful for children
c. Faster and less forceful for children
d. Slower and less forceful for children

24. External cardiac compressions may lead to complications. The one most common of these is:

a. Punctured lung
b. Laceration of the liver
c. Fractured ribs
d. Contusion of the heart

25. When should the ventilator deliver the major portion of the breath during two-man CPR?

a. During the fifth downstroke
b. During the fifth upstroke
c. During the 15th upstroke
d. Whenever possible

26. Choose the correct statements:

a. You can usually feel a pulse at victim's neck if heart is beating
b. The best way to determine if the victim's heart is beating is to check pulse
c. If heart is not beating, begin CPR
d. The pulse at the wrists should not be used in CPR
e. If you have trouble finding a pulse, press hard

27. Always check for foreign matter in the victim's throat before starting to breathe for him.

a. True
b. False

28. What particular point must a rescuer remember when placing a small child in open airway position?

a. The child's head should be back as far as possible
b. A small child's neck is less flexible than an adult's
c. Forcing the child's head back too far may result in a collapsed airway

29. How fast should you breath for a nonbreathing adult, with a strong pulse?

a. 12 ventilations per minute
b. 16 ventilations per minute
c. 20 ventilations per minute

30. If a lone rescuer finds a nonbreathing and pulseless motor vehicle accident victim lying on his face in the road, and he suspects that the victim has a back injury, what should he do?

a. Turn the victim as a unit and begin CPR
b. Turn the victim's head to one side and begin CPR
c. There is nothing he can do until help arrives
d. Leave the victim in his present position, and do whatever he can to apply the principles of CPR

31. Artificial circulation is produced when the chest is compressed and squeezes the heart between:

a. The clavicle and the scapula
b. The sternum and the spine
c. The clavicle and the spine
d. The sternum and the xiphoid process

32. Stomach distension is a condition which often occurs during artificial ventilation. Which of the following methods should be used to alleviate this condition in a child?

a. Hold the child upright and pat his back gently
b. Exert gentle pressure on the child's epigastrium
c. Invert the child and strike sharply on the back
d. Apply heavy pressure on the child's upper abdomen

33. To perform cardiopulmonary resuscitation, a rescuer's initial effort to assure the patient's airway is open should be:

a. To listen to the chest for breathing sounds
b. To properly position the head
c. To clear foreign matter from the throat

34. If a foreign body obstruction is suspected, the victim should be turned and a sharp blow delivered between the shoulder blades before attempting removal by manual methods.

a. True
b. False

35. With a person who has drowned; one should not begin mouth-to-mouth respiration until an effort has been made to drain or suction most of the water from the lungs.

a. True
b. False

36. What ratio should a lone rescuer use when he performs CPR on an adult?

a. 5 compressions; 1 ventilation
b. 15 compressions; 1 ventilation
c. 5 compressions; 2 ventilations
d. 15 compressions; 2 ventilations

37. In order to provide CPR for a pulseless adult victim (given two rescuers):

a. Compress sternum 1½ to 2 inches
b. Give one breath after every five compressions
c. Perform 60 compressions each minute at rate of one/second
d. Pause briefly after every fifth compression to allow for one breath

38. If severe stomach distension occurs during resuscitation, it may:

a. Lead to air embolism
b. Reduce the amount of lung ventilation
c. Promote regurgitation

39. Your <u>initial</u> effort to obtain an airtight seal between your mouth and the face of an adult victim will usually be:

a. To pinch his nostrils and seal your mouth around his
b. To press your cheek against his nostrils and seal your mouth around his
c. To pinch his nostrils, lift his jaw with your thumb inside his mouth, and seal your mouth around his

40. When should you check the pulse of a victim of an unwitnessed arrest who is not breathing?

a. Before you start breathing for him
b. After the first four adequate breaths
c. After the first eight to ten adequate breaths

41. What is the most common cause of airway obstruction?

a. Tongue
b. Denture
c. Secretions
d. Foreign body

42. What too frequently happens to an unconscious person when he is lying on his back with a pillow under his head?

a. He aspirates vomitus into his airway
b. His tongue falls back in his throat and blocks his airway

43. Under which of the following circumstances may a non-physician discontinue CPR?

a. When the rescuer thinks the patient will not survive
b. When the rescuer suspects that the victim may suffer permanent brain damage
c. When the rescuer is exhausted and unable to continue
d. When an ~~ambulance attendant~~ EMT states that the victim is dead

44. If a person is having a heart attack, he will always be having trouble breathing.

a. True
b. False

45. Where on the adult chest would you place the heel of your hand in order to perform chest compression?

a. Two or three fingers above the lower end of the sternum
b. On the upper third of the sternum
c. Where the sternum and collarbone meet
d. On the middle of the sternum
e. On the xiphoid process

46. With mouth-to-mouth breathing, the airway may be blocked by:

a. Tongue
b. Foreign body in mouth
c. Foreign body in throat
d. Foreign body in nose
e. Loose false teeth

47. The concept of CPR suggests that the traditional legal definition of death (absence of breathing and circulation) may not be applicable in all cases.

a. True
b. False

MIDTERM

1. The acetabular fossa (socket part of the hip joint) is made up of the union of three bones which together form the innominate bone. These are:

   A. sacrum, pubis, and ilium
   B. pubis, ilium, and femur
   C. ilium, ischium, and pubis
   D. sacrum, ilium, and pubis

2. Which part of the femur is most susceptible to breakage in older people?

   A. Head
   B. Neck
   C. Shaft
   D. Articular cartilage

3. Muscle attaches to bone by:

   A. tendons
   B. nerves
   C. cartilage
   D. peritoneum

4. The upper jaw is called the:

   A. cranium
   B. maxilla
   C. mandible
   D. innominate bone

5. The lower jaw is called the:

   A. cranium
   B. maxilla
   C. mandible
   D. innominate bone

6. Ribs attach to the _____ vertebrae.

   A. cervical
   B. lumbar
   C. thoracic
   D. sacral

7. The part of the spine that forms part of the pelvic girdle (bony pelvis) is called the:

   A. cervical spine
   B. lumbar spine
   C. thoracic spine
   D. sacral spine

8. The part of the spine involved in a broken neck is called the:

   A. cervical spine
   B. lumbar spine
   C. thoracic spine
   D. sacral spine

The collarbone is called the:

A. metacarpal
B. fibula
C. radius
D. clavicle

10. The dura mater, pia mater, and arachnoid are parts of the meninges, which serve as:

A. layers of large blood vessels
B. layers of the coverings of the chest cavity
C. layers of the protective coverings of the brain and spinal cord
D. layers of the coverings of the heart

11. Motor nerves end in:

A. skin
B. muscle
C. joints
D. tendons

12. How many valves are in the heart?

A. Two
B. Four
C. Six
D. Eight

13. The lung is covered by a smooth glistening membrane called the:

A. alveoli
B. bronchi
C. pericardium
D. pleura

14. One palpates the carotid pulse in the:

A. groin
B. chest
C. neck
D. wrist

15. Which pair of pulses are from the same extremity?

A. Precordial and femoral
B. Brachial and radial
C. Brachial and femoral
D. Carotid and femoral

16. A cut through the cheek may injure the:

A. adrenal glands
B. salivary glands
C. lacrimal glands
D. prostate glands

17. What are the three types of muscle?

A. Voluntary, involuntary and sympathetic
B. Voluntary, involuntary, and autonomic
C. Voluntary, involuntary, and skeletal
D. Voluntary, involuntary, and cardiac

18. The autonomic nervous system consists of the:

A. central and peripheral nervous systems
B. sympathetic and parasympathetic nervous systems
C. motor and sensory nervous systems
D. brain and spinal cord

19. Which chamber of the heart pumps oxygenated blood to the aorta (main artery to the rest of the body)?

A. Left atrium
B. Left ventricle
C. Right atrium
D. Right ventricle

20. The colon is ~~part of~~ the:

A. stomach
B. small intestine
C. large intestine
D. rectum

21. Bile is stored in the:

A. duodenum
B. pancreas
C. gallbladder
D. spleen

22. _____ makes bile and blood components, bleeds severely if lacerated, and can be lacerated if CPR is improperly performed.

A. Pancreas
B. Liver
C. Duodenum
D. Kidneys

23. The _____ makes insulin and digestive juices. Injury to this organ causes spillage of digestive enzymes into the abdominal cavity. This organ may be injured by steering wheel impact.

A. pancreas
B. liver
C. duodenum
D. kidneys

24. The function of the _____ is to purify the blood of waste products. Injury to this organ results in blood in the urine.

A. pancreas
B. liver
C. duodenum
D. kidneys

25. Most "stomach" ulcers actually involve the _____.

A. pancreas
B. liver
C. duodenum
D. kidneys

26. The abdominal cavity is lined by a smooth glistening layer called the _____. Spillage of the intestinal contents, bile, or digestive juices causes intense inflammation of this layer.

A. pleura
B. pericardium
C. peritoneum
D. meninges

27. If a patient's blood pressure is 120/80, the 80 indicates the:

A. systolic pressure
B. diastolic pressure
C. infusion pressure
D. pulse pressure

28. The systolic pressure is reached (on the dial of the BP cuff) when you hear the following change while listening through the stethoscope:

A. the first sounds of the pulse appear
B. the sounds of the pulse change in quality
C. the rate at which you hear the sounds suddenly doubles
D. the sounds of the pulse disappear

29. A bluish color of the skin, seen in cardiac arrest, ~~indicates~~ is:

A. cyanosis
B. ecchymosis
C. erythema
D. constriction

30. Initial examination and selection of patients and the determination of how to handle them is called:

A. basic life support
B. priority care
C. triage
D. victim classification

31. When the diameter of a structure increases, it is called:

A. aspiration
B. constriction
C. dilation
D. injection

32. When the diameter of a structure decreases, it is called:

A. aspiration
B. constriction
C. dilation
D. injection

33. Contraction of the heart results in:

A. systolic pressure
B. diastolic pressure
C. infusion pressure
D. diffusion pressure

34. Blood pressure levels vary with age and sex. A useful rule of thumb for the normal systolic pressure in the male is _____ to a level of 140-150 mm Hg.

A. 120 plus age of patient
B. 100 plus age of patient
C. 80 plus age of patient

35. Normal diastolic pressures in a male are:

A. 50-70 mm Hg
B. 65-80 mm Hg
C. 85-100 mm Hg

36. Constricted pupils may indicate:

A. drug addiction
B. disease that affects the central nervous system
C. cardiac arrest

37. Unequal size of the pupils is SOMETIMES seen in connection with: (two answers)

A. drug addiction
B. cardiac arrest
C. head injury
D. stroke

38. The air that we inhale (breathe in) contains approximately (in addition to trace amounts of other gases, including carbon dioxide):

A. 25% nitrogen and 75% oxygen
B. 30% oxygen and 70% nitrogen
C. 20% oxygen and 80% nitrogen
D. 30% CO_2 and 70% oxygen

39. The air we exhale (breathe out) contains about:

A. 22-25% oxygen (O_2) and 15-18% carbon dioxide (CO_2)
B. 15-18% O_2 and 2-5% CO_2
C. 22-25% O_2 and 2-5% CO_2
D. 14-15% O_2 and 10-12% CO_2

40. The oral (oropharyngeal) airway will:

A. act as a substitute for careful positioning of the patient's head and jaw.
B. frequently open the airway when other maneuvers fail.
C. not be tolerated by a fully conscious patient and may cause retching and vomiting in a semi-conscious patient.

41. Which airway maneuver can be done instantly while you determine if a patient is breathing and if he has a pulse?

A. Tilting the head backward
B. Jaw lift maneuver
C. Turning the patient on his side with his head to the side

42. Which airway maneuver is the most suitable for the patient with a suspected neck injury?

A. Tilting the head backward
B. Jaw lift maneuver
C. Turning the patient on his side with his head to the side

43. Which airway maneuver is the safest if the patient vomits?

A. Tilting the head backward
B. Jaw lift maneuver
C. Turning the patient on his side with his head to the side

44. What is the most common cause of death in the unconscious victim?

A. Shock
B. Pneumonia
C. Airway obstruction
D. Choking on vomit

45. The control center for breathing is located in:

A. the frontal lobe
B. the medulla
C. the spinal cord
D. the diaphragm

46. How many breaths per minute does one deliver to an infant during artificial ventilation?

A. 12
B. 15
C. 20
D. 60

47. How many breaths per minute does one deliver to an adult during artificial ventilation?

A. 12
B. 15
C. 20
D. 60

48. When inflating the victim's lungs (by mouth-to-mouth), you exhale into the victim's mouth until:

A. you feel resistance
B. you see the victim's chest rise
C. you have exhaled completely (you and the victim are adults)
D. you hear bubbling sounds from air moving into the stomach

49. In mouth-to-nose ventilation, the rescuer must open the victim's mouth to allow him to exhale because:

A. the soft palate acts as a valve preventing exhalation.
B. the tongue falls back against the airway.
C. the nose is a narrower air passage than the mouth.
D. it allows air to escape from the stomach safely.

50. With each expiration by the victim (during mouth-to-mouth ventilation), the rescuer should:

A. check the victim's pupils
B. press on the victim's stomach
C. let go of the victim's nose
D. watch the victim's chest fall

51. Which of the following is not a good reason to choose mouth-to-nose ventilation over mouth-to-mouth?

A. The patient has a severe injury to the mouth region.
B. The patient has vomitus in his mouth.
C. An air-tight seal cannot be obtained for mouth-to-mouth ventilation.
D. The patient has severe swelling of his tongue.

52. The correct order of structures through which air passes from the nose into the lungs is:

A. pharynx, bronchi, trachea
B. pharynx, trachea, bronchi
C. trachea, pharynx, bronchi

53. The _____ is a leaf-shaped valve that normally prevents food or liquids from entering the lungs.

A. epiglottis
B. esophagus
C. pharynx
D. trachea

54. The _____ is the "throat"; both food and air normally pass through it.

A. epiglottis
B. esophagus
C. pharynx
D. trachea

55. The _____ is the tube carrying food from the throat to the stomach.

A. epiglottis
B. esophagus
C. pharynx
D. trachea

56. If a neck breather (laryngectomee) victim's chest doesn't rise from the rescuer's first breath, it may be necessary to:

A. plug the stoma while performing mouth-to-mouth ventilation
B. extend the victim's neck further
C. hold the victim's mouth and nose shut
D. remove the metal or plastic tube from the neck opening

57. If the victim's stomach bulges during mouth-to-mouth ventilation, the rescuer should:

A. press on the victim's stomach each time the victim exhales
B. turn the victim on his side, press on the victim's stomach, then reposition victim and continue mouth-to-mouth ventilation
C. have an assistant hold a hand against the victim's stomach
D. switch to back pressure-arm lift artificial ventilation

58. The primary indication for initiating cardiac compression is:

A. respiratory arrest
B. dilated pupils
C. state of unconsiousness
D. absence of palpable pulse

59. In order for CPR to be effective, the amount of pressure that must be exerted on an adult's sternum is:

A. 80-120 lbs
B. 40-70 lbs
C. 150-180 lbs
D. 130-145 lbs

60. Why is it dangerous to leave an unconsious person lying on his back with a pillow under his head?

A. It may be difficult to get air into his lungs.
B. It may be difficult for blood to get to his brain.
C. It may be difficult to tell when he regains consiousness.

61. Major irreversable changes occur in the human brain approximately _____ after cessation of respiration and functional circulation.

A. 30-60 seconds
B. 2-4 minutes
C. 4-6 minutes
D. 6-10 minutes

62. The first step in the management of the unconscious patient is to:

A. ventilate his lungs
B. check pulse
C. establish an adequate airway
D. start external cardiac compression

63. In providing basic life support to the unconscious victim, ~~quick~~ first for:

A. pulse
B. dilated pupils
C. respiration

64. The most readily available, easiest, and surest method of emergency artificial ventilation is by:

A. mouth-to-mouth ventilation
B. mechanical resuscitator
C. endotracheal intubation
D. bag and mask

65. What is the most common cause of airway obstruction in the unconscious person?

A. blood
B. tongue
C. food
D. dentures

66. In closed chest cardiac compression, the heel of the bottom hand is centered:

A. at the midline at the 4th intercostal space
B. on the lower half of the sternum, excluding the last inch to inch and one-half closest to the xiphoid
C. at the left sternal border at the 5th intercostal space
D. on the right lower ribs without damaging the liver

67. In initiating resuscitative measures, the initial ventilatory effort should be _____ quick breaths.

A. 4
B. 2
C. 8
D. 6

68. In well performed CPR, the blood flow to the brain is at best what proportion of normal flow?

A. 15%
B. 1/3
C. 1/2
D. 60%

69. An adult victim is considered pulseless if the _____ arterial pulse cannot be felt.

A. radial or brachial
B. precordial (over heart) or radial
C. carotid or femoral

CPR must not be interrupted for longer than _____except while performing endotracheal intubation or transporting a patient down stairs, in which case _____ is permitted.

A. 5 seconds; 15 seconds
B. 10 seconds; 20 seconds
C. 30 seconds; 60 seconds
D. 60 seconds; 90 seconds

71. Hyperextension of the neck should not be used as a means of establishing an open airway in which unconscious victim?

A. Patient with known cerebrovascular disease (hardening of arteries of brain)
B. Obese (fat) victim with short neck
C. Automobile or diving accident victim with severe lacerations of forehead
D. Victim with obvious blood in mouth

72. What is the ratio of compressons to ventilation in one-man CPR?

A. 15:2
B. 5:1
C. 3:1
D. 1:1

73. What is the ratio of compressions to ventilations in two-man CPR?

A. 15:2
B. 5:1
C. 3:1
D. 1:1

74. External compression of an infant's chest is accomplished by what part of the rescuer's hand during artificial circulation?

A. Heel of one hand
B. Two fingers
C. Palm of two hands
D. Heel of both hands

75. In the event the use of a precordial thump is indicated, the blow should be delivered over the mid-portion of the sternum from a height of:

A. 8-12 inches
B. 12-24 inches
C. 24-36 inches

76. Pressure cycled mechanical resuscitators (Emerson resuscitator) should not be used with closed-chest cardiac compression because:

A. an airtight seal of the mask is difficult to obtain
B. excessive ventilatory pressure may damage the lungs
C. premature cycling results in inadequate ventilation during CPR

77. The reason for a rate of 80 compressions per minute during one-man CPR is to:

A. compress the heart 80 times every minute
B. achieve approximately 60 compressions while giving 8 breaths per minute
C. achieve approximately 70 compressions while giving 10 breaths per minute

78. During CPR, when pupils that were dilated start to constrict, it is evidence that:

A. the eyes are receiving oxygenated blood
B. the brain is receiving oxygenated blood
C. the heart has resumed normal beating
D. asytole has changed to ventricular fibrillation

79. Unless chest expansion occurs, there has not been adequate filling of the victim's lungs. TRUE FALSE

80. CPR is safe and effective only when the victim's back is resting on a soft mattress. TRUE FALSE

81. In initiating resuscitative measures, the initial ventilatory effort should be four quick breaths, followed immediately by 2 more should artificial circulation be indicated. TRUE FALSE

82. The precordial thump should be used on children only in the context of a witnessed arrest. TRUE FALSE

83. If the rescuer sees that his efforts are not reviving the victim, he should discontinue CPR. TRUE FALSE

84. To perform artificial ventilation on a child, the rescuer must pinch the nose and breathe only in the mouth. TRUE FALSE

85. In mouth-to-nose ventilation, the victim's mouth should remain closed during exhalation. TRUE FALSE

86. The neck of ~~a small child~~ an infant should not be fully hyperextended during artificial ventilation. TRUE FALSE

87. _____ is a quivering motion of the heart without any effective blood flow.

A. Cardiovascular collapse
B. Ventricular fibrillation
C. Pulmonary arrest
D. Asystole

88. _____ means there is a weak heartbeat, but no perceptible pulse or blood pressure.

A. Cardiovascular collapse
B. Ventricular fibrillation
C. Pulmonary arrest
D. Asystole

89. _____ is equivalent to ventricular standstill, where there is no heartbeat at all.

A. Cardiovascular collapse
B. Ventricular fibrillation
C. Pulmonary arrest
D. Asystole

90. _____ means the patient has stopped breathing.

A. Cardiovascular collapse
B. Ventricular fibrillation
C. Pulmonary arrest
D. Asystole

91. _____ can be caused by a bee sting.

A. Respiratory shock
B. Psychogenic shock
C. Anaphylactic shock
D. Cardiogenic shock

92. The blood vessels of an average adult contain _____ of blood.

A. 4 pints
B. 4 quarts
C. 6 quarts
D. 10 quarts

93. Loss of more than ____ of blood in an adult is serious.

A. 1/2 pint
B. 1 pint
C. 1 quart

94. Loss of _____ of blood in a child is serious.

A. 1/2 pint
B. 1 pint
C. 1 quart
D. 4 pints

95. Bright red blood coming in spurts is an indication of:

A. arterial bleeding
B. venous bleeding
C. capillary bleeding

96. A person with a fractured shaft of the femur rarely sustains significant blood loss and has little external evidence of bleeding. TRUE FALSE

97. I.V. administration of blood is called:

A. infusion
B. transfusion
C. infiltration
D. perfusion

98. I.V. administration of non-blood fluids is called:

A. infusion
B. transfusion
C. infiltration
D. perfusion

99. During I.V. administration, fluid may accumulate in the tissue around the vein. This is called:

A. infusion
B. transfusion
C. infiltration
D. perfusion

Which of the following signs of shock is often the EMT's first warning that shock is developing?

A. Falling blood pressure
B. Rapid "thready" (weak) pulse
C. Cold and clammy skin
D. Restlessness and anxiety

101. Which of these is not a sign of circulatory shock?

A. Shallow, labored, rapid, possibly gasping or irregular respirations
B. Inability to remember climbing out of wrecked automobile
C. Eyes become dull or lusterless, with dilated pupils
D. Marked thirst

102. _____ is a severe allergic reaction.

A. Respiratory shock
B. Psychogenic shock
C. Anaphylactic shock
D. Septic shock

103. Severe infection can cause:

A. respiratory shock
B. psychogenic shock
C. anaphylactic shock
D. septic shock

104. Fainting is:

A. respiratory shock
B. psychogenic shock
C. anaphylactic shock
D. septic shock

105. _____ can be avoided or stopped by injection of epinephrine (Adrenalin).

A. Respiratory shock
B. Psychogenic shock
C. Anaphylactic shock
D. Cardiogenic shock

106. _____ is a temporary, self-cured form of shock.

A. Respiratory shock
B. Psychogenic shock
C. Anaphylactic shock
D. Neurogenic shock

107. _____ starts with adequate circulation, but insufficient oxygen in the blood.

A. Respiratory shock
B. Psychogenic shock
C. Anaphylactic shock
D. Cardiogenic shock

108. A patient with _____ does not require more fluid or elevation of his legs, and may be transported in a sitting position.

A. respiratory shock
B. paychogenic shock
C. anaphylactic shock
D. Cardiogenic shock

109. The head of the humerus usually dislocates in a _____ direction.

A. lateral (away from the middle)
B. inferior (downward)
C. anterior (forward) or posterior (backward)
D. superior (upward)

110. A typical shoulder dislocation causes the patient to hold his arm away from the body. It should be handled by:

A. gently bringing the arm down to side and strapping to body
B. bringing forearm across chest and using a sling and swathe
C. applying traction at 45° angle away from body
D. supporting the arm in its position and transporting the patient in a sitting position

111. Elderly persons with hip fractures may feel little pain and actually walk immediately after a hip fracture. TRUE FALSE

112. In a sprained or fractured ankle, the shoe should be left on and the laces should be cut. TRUE FALSE

113. When bone ends at a joint are displaced from their normal position, the injury is a:

A. comminuted fracture
B. sprain
C. strain
D. dislocation

114. Ankle sprains are usually caused by:

A. twisting the ankle inward
B. twisting the ankle outward
C. excessive downward extension of the ankle ("plantar flexion")
D. excessive upward flexion of the ankle ("dorsiflexion")

115. Discoloration of skin by blood often happens near a fracture site and is called:

A. contusion
B. ecchymosis
C. hematoma
D. crepitus

116. A partial tear of a ligament is called a:

A. comminuted fracture
B. sprain
C. strain
D. dislocation

117. A fracture occurring from repeated stresses on a bone (for example, injury to foot bones during a long march), is called a:

A. comminuted fracture
B. pathologic fracture
C. fatigue fracture
D. impacted fracture

~~118. The EMT should _____ fractures of the spine, shoulder, elbow, wrist, or knee.~~

OMIT

~~A. never attempt to straighten~~
~~B. never use traction on~~
~~C. always use traction on~~
~~D. carefully pad with soft dressings~~

119. Air splints are best inflated by a pump. TRUE FALSE

120. The EMT should not attempt to straighten the angle of a dislocated joint. TRUE FALSE

121. The nerves and blood vessels to the hand are less susceptible to injury in elbow fractures than in forearm fractures. TRUE FALSE

122. A snug dressing should be placed over an elbow fracture to help reduce swelling. TRUE FALSE

123. The hand should usually be splinted with fingers completely extended. TRUE FALSE

124. Which organs can commonly be lacerated or ruptured by fractured ribs or blunt injuries?

A. Liver and spleen
B. Stomach and duodenum
C. Large bowel and small bowel
D. Bladder and urethra

125. Which organs can commonly be lacerated or ruptured by fractures of the pelvis?

A. Liver and spleen
B. Stomach and duodenum
C. Large bowel and small bowel
D. Bladder and urethra

126. Laceration of hollow abdominal organs tends to cause:

A. Massive bleeding
B. Traumatic asphyxia
C. Spillage of irritating substances into abdominal cavity and intense inflammatory reaction
D. Subcutaneous emphysema

127. Evisceration means:

A. rupture or laceration of a hollow organ
B. presence of abdominal organs outside the abdominal cavity
C. rupture of solid abdominal organs by improperly worn seat belt
D. chest injury with severe shock

A fracture of the spine always involves damage to:

A. bones and ligaments
B. bones and ligaments and spinal cord
C. spinal cord and spinal nerve roots and ligaments
D. bones and ligaments and spinal nerve roots

129. As a result of an automobile accident, an unconscious victim is found lying face down on the road with his neck flexed. Secretions are draining freely from his mouth and his airway is unobstructed. You should:

A. apply straight line traction to head and apply neck collar. After this, roll patient as a unit onto a backboard with the patient on his back.

B. apply straight line traction to head and apply neck collar. Then roll patient as a unit onto backboard with the patient on his side, with a support under the head.

C. transfer patient to backboard in the same position he is found in, without changing the position of his neck.

D. straighten his neck with upward traction of the head with the face still to the side. Then transfer the patient to a backboard as a unit with patient remaining on his stomach.

130. The following are four types of skull fractures:

A. linear, depressed, brain exposed, penetration
B. linear, starburst, depressed, penetration
C. linear, depressed, starburst, brain exposed
D. linear, hairline, depressed, starburst

131. Brain tissue is damaged by:

A. bruising, pressure, concussion
B. lacerations, pressure, concussion
C. bruising, pressure, contusion
D. bruising, pressure, lacerations

132. A clear fluid coming from the nose or an ear of an accident victim suggests:

A. brain damage
B. brain contusion
C. epidural hematoma
D. skull fracture

133. In heat burns to the eyelids, the eyes may be covered by:

A. vaseline
B. close fitting dry sterile pressure dressing
C. loose dry sterile dressing
D. moist sterile dressing

134. Light burns to the eyes are treated by:

A. flushing eyes 5-10 minutes with saline or water
B. covering both eyes with loose fitting dressing
C. taping both eyes gently shut with clear tape
D. covering both eyes with inverted paper cups

135. The EMT may invert the upper eyelid to remove a foreign body. TRUE FALSE

136. The EMT may use a cotton tipped applicator against the cornea to remove a foreign body. TRUE FALSE

137. Penetrating injuries to the eyeball itself should be treated by:

A. continuous irrigation of the eye with sterile saline during transport
B. gentle hand pressure or pressure dressing, followed by transporting patient quietly on back
C. Taping lids closed with clear tape, and then transporting patient quietly on his back.
D. Immobilizing eye movement by loose dressings over both eyes, and then transporting patient quietly on his back.

138. Fluid for irrigating eyes must be sterile. TRUE FALSE

139. Lacerated eyelids may be treated by the EMT with gently direct pressure if the EMT is certain there is no foreign body in the eye. TRUE FALSE

140. Chemical burns of the eye by strong alkali should be flushed with water or saline (salt water) for at least:

A. 3-5 minutes
B. 5-10 minutes
C. 20 minutes
D. 60 minutes

141. The part of the eye that regulates the amount of light entering the eye is called the:

A. conjunctiva
B. cornea
C. sclera
D. iris

142. The _____ is a tough white tissue forming much of the outside of the eyeball.

A. conjunctiva
B. cornea
C. sclera
D. iris

143. The _____is the transparent front portion of the eye.

A. conjunctiva
B. cornea
C. sclera
D. iris

144. The _____ is the viscous fluid that maintains the shape of the eyeball.

A. retina
B. vitreous (= vitreous humor)
C. aqueous (= aqueous humor)
D. lacrimal humor

145. The _____ produce a lubricating substance to keep eye tissues from drying out.

A. lacrimal glands
B. pituitary glands
C. salivary glands
D. endocrine glands

146. Foreign bodies in the eye are most commonly found:

A. on the cornea or under the iris
B. under the upper lid or on the cornea
C. under the conjunctiva or on the sclera
D. under the lower lid or on the sclera

147. In a laceration of one eyeball, both eyes should be covered because:

A. light in the uninjured eye can damage the injured eye
B. the open eyelids put pressure on the lacerated eye
C. the injured eye will dry if the eyelids are open
D. movement of the uninvolved eye causes movement of the injured eye, which can increase the damage

148. Eyes of unconscious persons should be kept closed because:

A. the eyeballs will expand if the lids remain open
B. the corneas will dry out and scar if the eyes remain open
C. the constant light will damage the eyes of an unconscious patient
D. dirt and dust are more likely to cause damage to the eyes of the unconscious patient

149. A patient who sustains a crushing "caved in" chest injury accompanied by bloodshot eyes and cyanosis of the skin of the head, neck, and shoulders may have:

A. hemothorax
B. subcutaneous emphysema
C. traumatic asphyxia
D. pericardial tamponade

150. Injury where the lung is collapsed by blood in the pleural cavity is called:

A. hemothorax
B. subcutaneous emphysema
C. traumatic asphyxia
D. pericardial tamponade

151. _____ occurs following a stab wound to the heart. The signs of this condition are very soft and faint heart tones, a weak pulse, and a blood pressure in which the systolic and diastolic pressures come closer and closer together.

A. hemothorax
B. subcutaneous emphysema
C. traumatic asphyxia
D. pericardial tamponade

152. The presence of air in tissues under the skin, which is often caused by a laceration of the lung by a fractured rib is called:

A. spontaneous pneumothorax
B. tension pneumothorax
C. hemothorax
D. subcutaneous emphysema

153. A sucking chest wound where the wound has formed a one-way valve allowing air to enter the pleural cavity (collapsing the lung), and not allowing the air to escape is called:

A. spontaneous pneumothorax
B. tension pneumothorax
C. hemothorax
D. subcutaneous emphysema

154. A form of pneumothorax that can occur without any injury whatsoever is called:

A. spontaneous pneumothorax
B. tension pneumothorax
C. hemothorax
D. subcutaneous emphysema

155. A sucking chest results in pneumothorax but does not impair heart function.
TRUE FALSE

156. A flail chest is caused by:

A. multiple rib fractures
B. puncture of pericardium
C. puncture of both lungs
D. puncture of one lung

157. Paradoxical respiration can be caused by a:

A. sucking chest wound or back (spinal cord) injury
B. flail chest or neck (spinal cord) injury
C. pneumothorax or pericardial tamponade
D. flail chest or traumatic asphyxia

158. Chest pain that increases on deep breathing or coughing suggests:

A. rib fractures
B. hemothorax
C. traumatic asphyxia
D. pericardial tamponade

159. Injury to upper parts of the abdomen, ESP. GALL BLADDER or presence of blood or inflammation in the upper parts of the abdomen, can cause pain in the:

A. groin
B. mid chest
C. shoulder
D. mouth and throat

160. A cut vein in the neck can cause particular problems if the head and neck are elevated, because:

A. massive bleeding usually occurs
B. negative pressure in the veins can suck air into the circulation
C. blood can get into the respiratory passages
D. a blood clot may put pressure on the cervical spine

161. The bony rings of each vertebra form a continous protective tube for the spinal cord which is called the:

A. spinal column
B. spinal nerve root
C. spinal canal
D. spinal cord

162. Ecchymosis (blood under the skin) in the lower and upper lids ("black eyes") in an accident victim suggests:

A. brain damage
B. facial bone fracture
C. skull fracture
D. patient would rather fight than switch

163. Concussion means:

A. an unconscious state due to a seizure after injury
B. an injury that may cause unconsciousness, but involves no structural damage to the brain
C. a bruising injury to brain
D. permanent damage to the brain due to compression of the brain in a closed space

164. Burns are automatically considered critical if they are accompanied by respiratory tract injury or fractures, or if the burned area includes the:

A. genitals, face, or ears
B. face, hands, or feet
C. genitals, face, or hands
D. genitals, hands, or feet

165. Using the "rule of nines," a burn of the entire left leg of an adult is a:

A. nine percent burn
B. fifteen percent burn
C. eighteen percent burn
D. twenty-seven percent burn

166. The area involved by a third degree burn is extremely painful to touch. TRUE FALSE

167. An acid chemical burn is worse than an alkali chemical burn. TRUE FALSE

168. ~~Chemical burns caused by _____ should be rinsed off~~ by alcohol ~~first, if possible, then~~ rinsed with water.

A. ~~sodium hydroxide~~
B. ~~nitric acid~~
C. ~~trichloroacetic acid~~
D. ~~carbolic acid (phenol)~~

OMIT

169. An alkali eye burn should be treated with a twenty minute flush with a dilute solution of vinegar. TRUE FALSE

170. If absolutely necessary, a frostbitten foot can be walked on, but only after it is thoroughly thawed and warm. TRUE FALSE

171. The conventional treatment for a frostbitten limb is:

A. application of dry, radiant heat, with massage once color returns to the limb
B. rewarming the limb in water bath (60° and 70° F) then dry warmth
C. rapid rewarming in water bath (100° and 105°)
D. gradual rewarming in water baths of increasing temperatures

172. In hypothermia (general body cooling) the stage of apathy, sleepiness, and listlessness is soon followed by a stage of:

A. shock
B. unconsciousness
C. convulsions
D. death

173. Trench foot is a thermal injury due to:

A. prolonged exposure of feet to wet and cold (but not freezing) conditions
B. a fungal infection that increases susceptibility of the foot to cold injury
C. unnoticed freezing of toes while waring tight footwear
D. alternate warming and cooling of wet feet

174. A poisoning (by mouth) victim should not be made to vomit if he has ingested: TWO ANSWERS

A. petroleum products
B. aspirin
C. opiates
D. phenol

175. ~~In surface poisoning with acids, the involved area should be washed with large quantities of~~ _____, ~~if possible.~~ OMIT

(A) soapsuds
(B) milk
C. dilute vinegar or lemon juice
D. any form of alcohol (gin, rubbing alcohol) followed by water

176. ~~In surface poisoning with alkalis, the involved area should be washed with large~~ quantities of _____, ~~if possible.~~ OMIT

A. soapsuds
B. milk
(C) dilute vinegar or lemon juice
D. amy form of alcohol (gin, rubbing alcohol) followed by water

177. The first rule in treating the victim of inhaled poisons is to get him to fresh air or give him oxygen. TRUE FALSE

178. The EMT should administer syrup of ipecac only on orders of a physician. TRUE FALSE

179. In treating a poisonous PIT VIPER snakebite of an extremity, constricting bands should be placed above and below the puncture sites. TRUE FALSE

180. Cutting and sucking at the site of a poisonous snakebite should not be attempted if more than half an hour has elapsed since the snakebite. TRUE FALSE

181. Fainting is temporary unconsciousness due to:

A. reduced oxygen content of blood
B. reduced blood supply to the brain
C. reduced sugar (glucose) content of blood
D. reduced carbon dioxide (CO_2) content of blood

182. Most people with petit mal seizures are unconscious during their convulsions and may remain unconscious for five to ten minutes after the seizure ceases. TRUE FALSE

183. If a patient turns blue (cyanotic) during a grand mal seizure, the EMT should:

A. assume the pulse is absent and start CPR immediately
B. wait until violent jerking movements end, and then begin CPR during relaxation period
C. protect the patient's tongue and head, and await for the relaxation period when breathing usually returns
D. restrain the patient and attempt artificial ventilation when the relaxation period begins

184. Pain from a heart attack (myocardial infarction) is due to:

A. bleeding from the vessels on the outer surface of the heart
B. ischemia of heart muscle
C. swelling around the heart muscle
D. congestion of the lungs

185. The best position for a patient suffering from a heart attack or heart failure is usually:

A. lying face down or on his side
B. supine (lying face up)
C. sitting
D. standing

186. During heart failure, expecially when the left ventricle fails, the following occurs:

A. a portion of heart muscle dies
B. fluid seeps into the air sacs of the lungs
C. a partial occlusion of a blood vessel to the heart causes pain
D. lack of blood flow to the brain causes unconsciousness

187. Angina pectoris is distinguished from a heart attack because it:

A. is usually relieved by rest and lasts less than five minutes
B. never includes pain in the left arm
C. does not include shortness of breath
D. does not include nausea and vomiting

188. The EMT should always give a heart patient oxygen. TRUE FALSE

189. The term "acute abdomen" indicates the presence of:

A. hemorrhage into the abdominal cavity
B. peritonitis, or inflammation of the lining of the abdominal cavity
C. irritation of the diaphragm
D. hematoma or abscess of back wall of abdomen

190. Shock is uncommon in patients with acute abdomen. TRUE FALSE

191. Disease of organs behind the abdominal cavity can result in all of the signs of disease of organs inside the abdominal cavity. TRUE FALSE

192. Asthma is caused by:

A. loss of elasticity of the lungs
B. spasm of bronchi
C. inflammation of the bronchi
D. collapse of the lung by air in the pleural cavity

193. Droplet infection from a diseased person means spreading of an infectious disease by:

A. the spray from a cough or sneeze
B. urine
C. sweat
D. fecal (bowel movement) contamination of hands

203. Which condition is caused by an overdose of insulin, or a normal dose of insulin and a failure to eat enough?

A. Apoplexy
B. Diabetic coma
C. Insulin shock (hypoglycemia)
D. Angina pectoris

204. Which condition is likely to be associated with a sweet or fruity (acetone) odor on the breath and rapid deep breathing?

A. Apoplexy
B. Diabetic coma
C. Insulin shock (hypoglycemia)
D. Angina pectoris

205. Since deeply unconscious patients cannot swallow, why is the EMT directed to put sugar in an unconscious diabetic's mouth?

A. It is a sufficient emergency to allow the risk of foreign material entering the respiratory passages, and patient may still be able to swallow some
B. If enough sugar solution is poured into the mouth, some will reach the stomach
C. Glucose (sugar) is absorbed through the lining of the mouth
D. Glucose (sugar) is absorbed through the lungs

206. "Toxemia of pregnancy," a condition that can cause convulsions in a pregnant woman, is also called:

A. abortion
B. eclampsia
C. epilepsy
D. prolapse

207. Which of these may be a sign that delivery is imminent?

A. The patient has to urinate frequently
B. The patient feels like she has to strain or move bowels
C. A gush of amnionic fluid comes from the vagina
D. Labor pains come more often than every five minutes

208. The length of labor for the mother giving birth to her first baby is usually longer than for the mother who has previously given birth. TRUE FALSE

209. What should the EMT do when there is crowning?

A. Let the mother go to the toilet
B. Have the mother cross her ankles and squeeze tightly
C. Push on the baby's head
D. Prepare for emergency childbirth

210. A "cephalic" delivery means that:

A. the baby's head is the presenting part
B. the baby is delivered through the vagina (rather than Caesarian section)
C. the perineum has torn spontaneously, rather than being surgically cut
D. the umbilical cord is initially wrapped around the baby's neck

211. If there are coils of umbilical cord looped around the baby's neck (as the head delivers) that cannot be slipped loose, the EMT should:

A. continue delivery procedure, allowing cord to stretch
B. notify hospital and transport at full speed
C. clamp cord twice, cut between clamps, and unwrap cord ends
D. pull firmly on head, delivering baby and placenta simultaneously, if necessary

212. The mother's normal blood loss after delivery includes approximately:

A. 2-3 ounces of blood when placenta delivers, then 2-3 soaked pads
B. 2-3 ounces of blood when placenta delivers, then 3-5 soaked pads
C. a half pint of blood when placenta delivers, then 3-5 soaked pads
D. a quart of blood when placenta delivers, then 3-5 soaked pads

213. If the mother hemorrhages after delivering the baby, the EMT should give oxygen, treat for shock, and:

A. hold mother's legs tightly together
B. pack vagina with sterile dressings
C. press uterus toward vagina
D. massage lower abdomen and uterus

214. The period of time from which the cervix is fully dilated until the baby is born is called the:

A. first stage of labor
B. second stage of labor
C. third stage of labor
D. effacement

215. The afterbirth is called:

A. perineum
B. bloody show
C. presenting part
D. placenta

216. The mucus and blood that come out of the vagina when labor begins is called the:

A. perineum
B. placenta
C. bloody show
D. amnionic sac

217. The lowermost part of the uterus is called the _____. It is a tubelike opening that must dilate during labor to allow the baby to enter the vagina.

A. cervix
B. vagina
C. perineum
D. womb

218, The skin area between the vagina and the anus is the:

A. perineum
B. presenting part
C. placenta
D. cervix

219. When the baby is close to birth, contractions of the muscles of the uterus (uterine contractions) occur about _____ _____ apart.

A. 15-30 seconds
B. 2-3 minutes
C. 15-20 minutes
D. 20-30 minutes

220. In a breech delivery, the presenting part is the:

A. umbilical cord
B. baby's head
C. baby's shoulder
D. baby's buttocks

221. When the presenting part bulges out of the vaginal opening, _____ is occuring.

A. prolapse of the umbilical cord
B. the third stage of labor
C. crowning
D. bloody show

222. The EMT should prepare for emergency childbirth if it is the mother's first delivery and if:

A. there is crowning
B. labor pains are coming every 2-3 minutes
C. there is a gush of amnionic fluid from the vagina
D. bloody show appears

223. The EMT should prepare for emergency childbirth if the mother has been pregnant before, and if the EMT sees crowning, or if:

A. the mother says she has to move her bowels
B. labor pains are coming every 2-3 minutes
C. there is a gush of amnionic fluid from the vagina
D. the bloody show appears

224. There are only two cases for the EMT to put his hand in the mother's vagina. One such case is when:

A. a shoulder delivers first
B. there is a prolapsed cord
C. there are twins
D. there is a massive tear in the perineum

225. Normal children who develop temperatures of 104-105^{o} may suffer:

A. a cyanotic spell
B. a pulmonary arrest
C. a seizure (epileptic type)
D. hyperventilation syndrome

234. A near-drowning victim should have his lungs emptied of water prior to artificial ventilation if it can be done in less than three seconds. TRUE FALSE

235. Grappling irons should be used as a last resort to recover a possible drowning victim who is still believed to be alive. TRUE FALSE

236. In a near-drowning accident, CPR should be started immediately, without waiting for removal of victim from water. TRUE FALSE

237. The bends (caisson disease) are caused by _____ when the diver ascends.

A. air rupturing the lungs
B. air forcing its way into blood vessels
C. nitrogen coming out of solution in the bloodstream
D. air in the intestines expanding under reduced pressure

238. Some protection against cold weather is afforded by _____ on a cold weather search.

A. smoking cigarettes
B. not washing one's face or shaving
C. drinking alcohol
D. washing face with soap and water

239. Extrication may be divided into the five stages of: gaining access to the patient, giving lifesaving emergency care, _____, preparation for removal, and removal.

A. splinting of fractures
B. disentanglement
C. immobilization of patient
D. taking vital signs

240. In a disaster with multiple trapped victims, the first victims to be extricated are:

A. lightly pinned casualties
B. difficult but rapidly performed extrications
C. very difficult and lengthy extrications
D. dead bodies

241. Breathing is performed by the muscles of the chest wall and the:

A. abdominal muscles
B. bronchial smooth muscle
C. diaphragm
D. rib muscles

242. Dilation and constriction of blood vessels of the body is controlled by the:

A. spinal cord
B. sensory nerves
C. autonomic nervous system
D. breathing center

243. The "adam's apple" is the front portion of the :

A. pharynx
B. larynx
C. trachea
D. epiglottis

244. The "voice box," containing the vocal cords is the:

A. pharynx
B. larynx
C. trachea
D. epiglottis

245. Tenderness in the right upper quadrant without injury is usually caused by disease of the:

A. stomach
B. large intestine
C. small intestine
D. gallbladder

246. The xiphoid cartilage overlies the _____ and can lacerate this organ if CPR is improperly performed.

A. stomach
B. liver
C. spleen
D. gallbladder

247. The word "triage" comes from a French word meaning:

A. emergency
B. hospital
C. wound
D. choice

248. A patient who is unconscious from a drug overdose is particularly likely to vomit if an oral (oropharyngeal) airway is inserted. TRUE FALSE

249. It is better for a patient in shock to be slightly cool than to be toasty warm. TRUE FALSE

250. After a severe hemorrhage, the best way to supply more blood to the heart (if transfusion is unavailable) is to:

A. splint fractures
B. keep patient warm
C. give sips of water, preferably with salt added
D. elevate legs

251. Seat belts should be worn so that they ride:

A. just below the umbilicus
B. across the lower abdomen
C. below the iliac crest of the hip bone
D. tightly against the thigh

252. X-rays are a form of:

A. alpha rays
B. beta rays
C. gamma rays
D. delta rays

253. The proper treatment for the bends is:

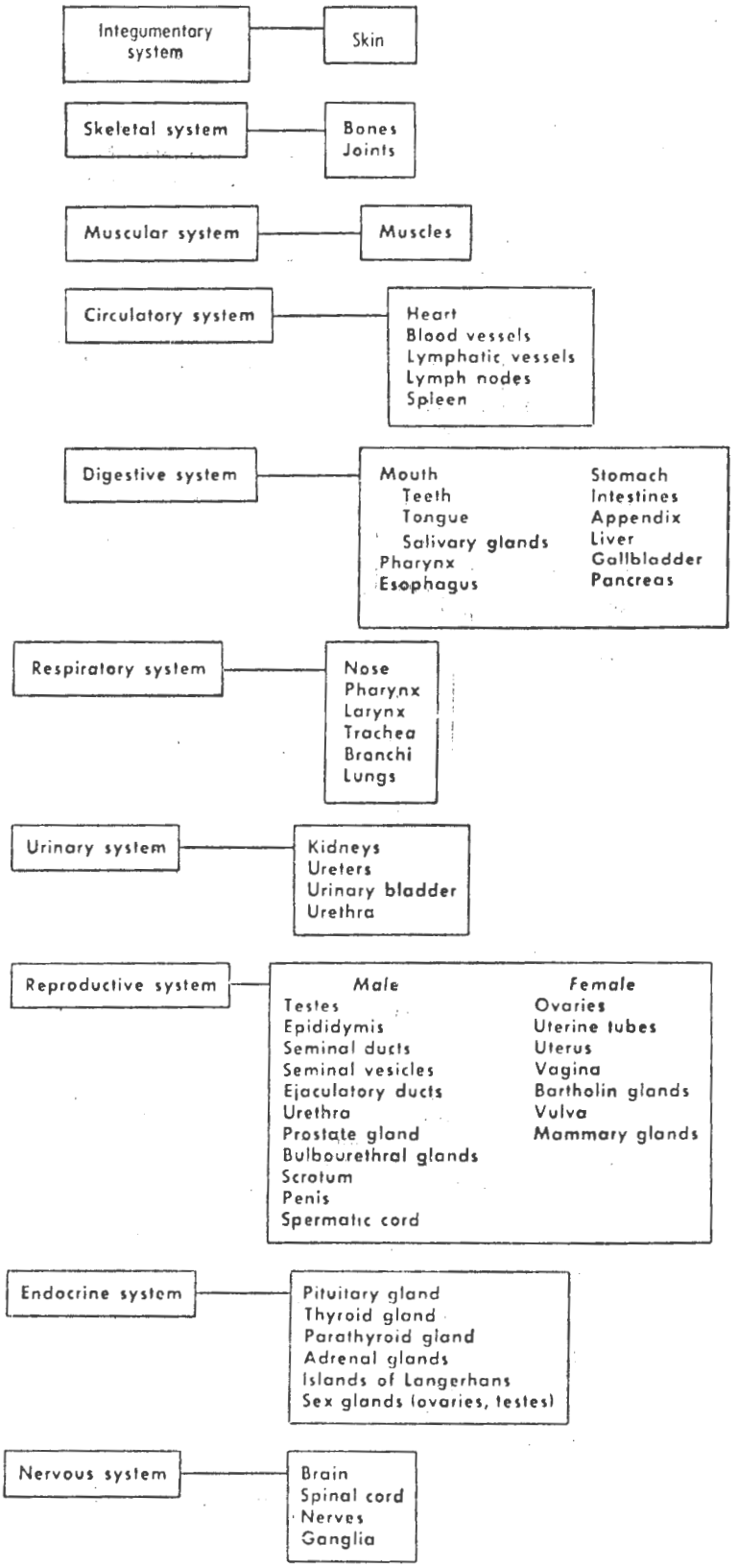
A. CPR
B. transfusion
C. bed rest in shock position for a week
D. recompression

254. Peritonitis is always associated with a loss of _____into the abdomen.

A. blood
B. intestinal contents
C. body fluids
D. white blood cells

255. An aneurism is:

A. an episode of bleeding into the brain
B. a swelling of a blood vessel
C. a hole in a hollow abdominal organ
D. a rupture of a solid abdominal organ



The ten body systems and the organs that make up each system

Name	*Number*	*Description*
Thorax		
True ribs	14	Upper seven pairs; attached to sternum by way of *costal cartilages*
False ribs	10	Lower five pairs; lowest two pairs do not attach to sternum, therefore, called *floating ribs;* next three pairs attach to sternum by way of costal cartilage of seventh ribs
Sternum	1	Breast bone; shaped like a dagger; piece of cartilage at lower end of bone called *xiphoid process*
Upper extremities		
Clavicle	2	Collar bones; only joints between shoulder girdle and axial skeleton are those between each clavicle and sternum
Scapula	2	Shoulder bones; scapula plus clavicle forms shoulder girdle; *acromion process*—tip of shoulder that forms joint with clavicle; *glenoid cavity*—arm socket
Humerus	2	Upper arm bone
Radius	2	Bone on thumb side of lower arm
Ulna	2	Bone on little finger side of lower arm; *olecranon process*—projection of ulna known as the elbow or "funny bone"
Carpal bones	16	Irregular bones at upper end of hand; anatomical wrist
Metacarpals	10	Form framework of palm of hand
Phalanges	28	Finger bones; three in each finger, two in each thumb
Lower extremities		
Pelvic bones	2	Hip bones; *ilium*—upper, flaring part of pelvic bone; *ischium*—lower, back part; *pubic bone*—lower, front part; acetabulum—hip socket; *symphysis pubis*—joint in midline between two pubic bones; pelvic inlet—opening into *true pelvis,* or pelvic cavity; if pelvic inlet is misshapen or too small, infant skull cannot enter true pelvis for natural birth
Femur	2	Thigh or upper leg bones; *head of femur*—ball-shaped upper end of bone; fits into acetabulum
Patella	2	Kneecap
Tibia	2	Shin bone; *medial malleolus*—rounded projection at lower end of tibia commonly called inner ankle bone
Fibula	2	Long slender bone of lateral side of lower leg; *lateral malleolus*—rounded projection at lower end of fibula commonly called outer ankle bone
Tarsal bones	14	Form heel and back part of foot; anatomical ankle
Metatarsals	10	Form part of foot to which toes attach; tarsal and metatarsal bones so arranged that they form three arches in foot: *the inner longitudinal arch* and the *outer longitudinal arch,* both of which extend from front to back of foot, and transverse or *metatarsal arch* that extends across foot
Phalanges	28	Toe bones; three in each toe, except great toes, where there are two
Total	206	

Bones of the skeleton (Continued)

Part moved	*Flexors*	*Extensors*	*Abductors*	*Adductors*
Upper arm	Pectoralis major	Latissimus dorsi	Deltoid	Pectoralis major and latissimus dorsi contracting together
Lower arm	Biceps brachii	Triceps brachii	None	None
Thigh	Iliopsoas	Gluteus maximus	Gluteus medius and minimus	Adductor group
Lower leg	Hamstrings	Quadriceps femoris group	None	None
Foot	Tibialis anterior	Gastrocnemius soleus		
Trunk	Iliopsoas and rectus femoris	Erector spinae (sacrospinalis)		

Muscles grouped according to their function

Muscle	*Function*	*Insertion*	*Origin*
Pectoralis major	Flexes *upper arm* Helps adduct *upper arm*	Humerus	Sternum Clavicle Upper rib cartilages
Latissimus dorsi	Extends *upper arm* Helps adduct *upper arm*	Humerus	Vertebrae Ilium
Deltoid	Abducts *upper arm*	Humerus	Clavicle Scapula
Biceps brachii	Flexes *lower arm*	Radius	Scapula
Triceps brachii	Extends *lower arm*	Ulna	Scapula Humerus
Iliopsoas	Flexes *trunk*	Ilium Vertebrae	Femur
Iliopsoas	Flexes *thigh*	Femur	Ilium Vertebrae
Gluteus maximus	Extends *thigh*	Femur	Ilium Sacrum Coccyx
Gluteus medius	Abducts *thigh*	Femur	Ilium
Gluteus minimus	Abducts *thigh*	Femur	Ilium
Adductors	Adduct *thigh*	Femur	Pubic bone
Hamstring group	Flexes *lower leg* Helps extend *thigh*	Tibia Fibula	Ischium Femur
Quadriceps femoris group, including rectus femoris	Extends *lower leg* Helps *flex thigh*	Tibia	Ilium Femur

The functions, origins, and insertions of muscle

Structure	*Parasympathetic control*	*Sympathetic control*
Heart muscle	Slower heartbeat	Faster heartbeat
Most blood vessels	None	Constricted
Blood vessels in skeletal muscles	None	Dilated
Digestive tract	Increased peristalsis and increased secretion	Decreased peristalsis; decreased secretion
Adrenal glands	Decreased epinephrine secretion	Increased epinephrine secretion
Sweat glands	None	Increased sweat secretion

The functions of the autonomic nervous system

*Cranial nerve**	*Conducts impulses*	*Functions*
I. Olfactory	From nose to brain	Sense of smell
II. Optic	From eye to brain	Vision
III. Oculomotor	From brain to eye muscles	Eye movements
IV. Trochlear	From brain to external eye muscles	Eye movements
V. Trigeminal (or trifacial)	From skin and mucous membrane of head and from teeth to brain; also from brain to chewing muscles	Sensations of face, scalp, and teeth; chewing movements
VI. Abducens	From brain to external eye muscles	Turning eyes outward
VII. Facial	From taste buds of tongue to brain From brain to face muscles	Sense of taste; contraction of muscles of facial expression
VIII. Auditory (or acoustic)	From ear to brain	Hearing Sense of balance
IX. Glossopharyngeal	From throat and taste buds of tongue to brain; also from brain to throat muscles and salivary glands	Sensations of throat; taste; swallowing movements; secretion of saliva
X. Vagus	From throat, larynx, and organs in thoracic and abdominal cavities to brain; also from brain to muscles of throat and to organs in thoracic and abdominal cavities	Sensations of throat, larynx, etc.; swallowing, peristalsis, heart contractions, etc.
XI. Spinal accessory	From brain to certain shoulder and neck muscles	Shoulder movements; turning movements of head
XII. Hypoglossal	From brain to muscles of tongue	Tongue movements

*The first letters of the words of the following sentence are the first letters of the names of cranial nerves: "On Old Olympus' Tiny Tops A Finn and German Viewed Some Hops." Many generations of students have used this or a similar sentence to help them remember the names of cranial nerves.

The cranial nerves and their functions

EMT COURSE
HANDOUT #2
VITAL SIGNS AND LEGAL MATTERS

Summary

Steps in taking blood pressure

1 – Snug application of compression cuff.
2 – Palpation of radial artery as compression cuff is inflated.
3 – Palpation of radial artery as cuff is deflated at 2 to 3 mm. Hg per heartbeat.
4 – Careful placement of stethoscope bell.
5 – Inflation of compression cuff above systolic pressure.
6 – Deflation of the cuff at a rate of 2 to 3 mm. Hg per heartbeat to determine systolic and diastolic blood pressure.

"Regardless of the mechanism responsible for the production of the Korotkoff sounds and the pros and cons for employing the beginning of Phase 4 or of Phase 5 to measure diastolic pressure, the auscultatory method for obtaining arterial blood pressure is the clinical method **par excellence.** *The wise, careful, and thoughtful physician will not make serious clinical errors in diagnosis and treatment if he uses the auscultatory method properly."*

SOURCES OF ERROR

"Errors that can be avoided in the clinical measurement of arterial blood pressure are committed not only by undergraduate students, but also by physicians. So much of the technique for the measurement of blood pressure has been taken for granted that few physicians have given much thought to the many problems concerned with sphygmomanometry . . . The arterial pressure is fickle, and the ill-informed and unprepared physician is readily confused and his patient erroneously treated . . . Therefore, to make the reading as accurate as possible, it is important to eliminate all sources of avoidable error. The indirect method will then compare favorably with the direct method of measurement."

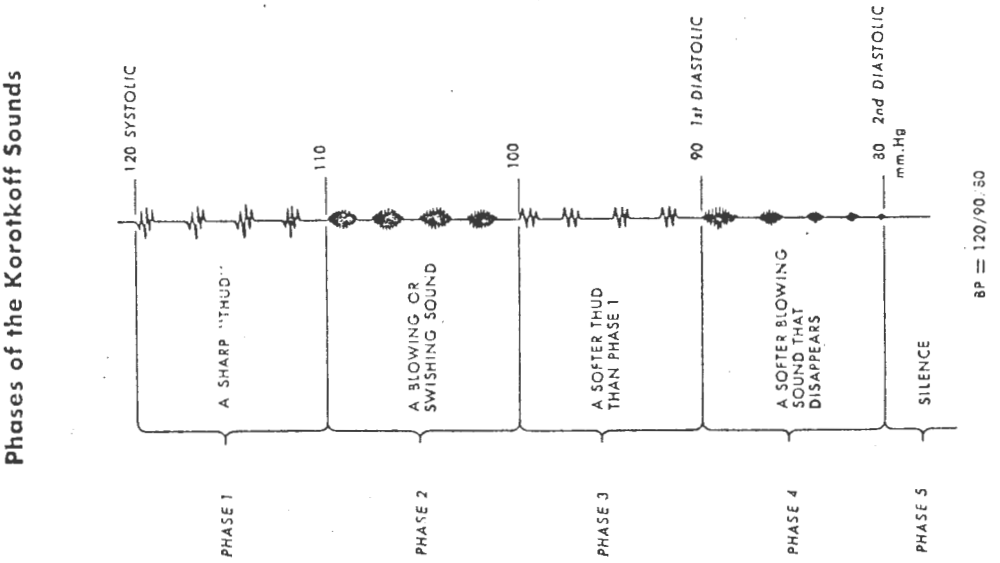
In general, errors in blood pressure measurement are due to the following:

A — Faulty Technique

1 — Improper positioning of the extremity. Whether the patient is sitting, standing, or supine the position of the artery in which the blood pressure is measured must be at the level of the heart. However, it is not necessary that the sphygmomanometer be at the level of the heart.

2 — Improper deflation of the compression cuff. The pressure in the cuff should be lowered at about 2 mm. Hg per heartbeat. At rates slower than this venous congestion will develop and the diastolic reading will be erroneously high. If the cuff is deflated too quickly, the column of mercury may fall 5 or 10 mm. Hg between successive Korotkoff sounds, resulting in erroneously low readings.

3 — Recording the first blood pressure. Spasm of the artery upon initial com-



pression and the anxiety and apprehension of the patient can cause the first blood pressure reading to be erroneously high. After the cuff has been applied, the physician should talk quietly to the patient for a few minutes in an effort to make him relax before the blood pressure is recorded. Several measurements should be made at each examination; generally, the third value recorded is the most basal.

2/10

4 — Failure to have the mercury column vertical. It is not necessary that the mercury column be at heart level, but the mercury column must be vertical. This applies especially when measuring the blood pressure of a patient in bed since the bed often does not provide a level surface.

5 — Auscultatory gap. In some patients the Korotkoff sounds disappear as the pressure is lowered and reappear well above the diastolic pressure. This interval of silence is known as the "auscultatory gap." Erroneously low systolic readings can be avoided by first recording the blood pressure by the palpatory method.

6 — Improper application of the cuff. If the rubber bladder bulges beyond its covering, the pressure will have to be excessively high to compress the arm effectively. If the cuff is applied too loosely, central ballooning of the rubber bladder will reduce the effective width, thus creating a narrow cuff. Both bulging and ballooning result in excessively high readings.

"The importance of a smooth and even application of the compression cuff cannot be overemphasized. The physician should develop the habit of always applying the cuff properly. Hurried and careless application will result in inaccurate blood pressure determinations. In many ways it would be better not to record the blood pressure at all than to allow an improperly recorded blood pressure to influence clinical judgment or to be entered as part of a patient's record. The insurance and legal implications of erroneously high blood pressure values are well known."

B — Defective Apparatus

A defective air release valve or porous rubber tubing connections make it difficult to control the inflation and deflation of the cuff. The mercury and vertical glass tube should always be clean. If an aneroid manometer is used, its accuracy must be checked regularly against a mercury manometer. The needle should indicate zero when the cuff is fully deflated. However, an accurate zero reading is not a guarantee that the aneroid manometer is accurate throughout the entire pressure range.

§ 54-276.9. Persons rendering emergency care exempt from liability. — (a) Any person who, in good faith, renders emergency care or assistance, without compensation, to any injured person at the scene of an accident, fire, or any life-threatening emergency, or en route therefrom to any hospital, medical clinic or doctor's office, shall not be liable for any civil damages for acts or omissions resulting from the rendering of such care or assistance.

(b) Any emergency medical care attendant or technician possessing a valid certificate issued by authority of the State Board of Health who in good faith renders emergency care or assistance, without compensation, to any injured or ill person, whether at the scene of an accident, fire or any other place, or while transporting such injured or ill person to, from or between any hospital, medical facility, medical clinic, doctor's office or other similar or related medical facility, shall not be liable for any civil damages for acts or omissions resulting from the rendering of such emergency care, treatment or assistance.

(c) Any person having attended and successfully completed a course in cardiopulmonary resuscitation, which has been approved by the Board of Health, who in good faith and without compensation renders or administers emergency cardiopulmonary resuscitation, cardiac defibrillation or other emergency life-sustaining or resuscitative treatments or procedures which have been approved by the State Board of Health to any sick or injured person, whether at the scene of a fire, an accident or any other place, or while transporting such person to or from any hospital, clinic, doctor's office or other medical facility, shall be deemed qualified to administer such emergency treatments and procedures; and such individual shall not be liable for acts or omissions resulting from the rendering of such emergency resuscitative treatments or procedures.

(d) Nothing contained in this section shall be construed to provide immunity from liability arising out of the operation of a motor vehicle.

(e) For the purposes of this section, the term "compensation" shall not be construed to include the salaries of police, fire or other public officials or emergency service personnel who render such emergency assistance. (1962, c. 449; 1964, c. 568; 1968, c. 796; 1972, c. 578; 1975, c. 508; 1977, c. 441.)

The Committee shall choose its own chairman and shall meet at the call of the chairman or the State Health Commissioner.

§ 32-310.3 (a) The Board shall adopt regulations specifying sanitation standards for ambulances. Regulations so adopted shall also require that the interior of the ambulance and the equipment within the ambulance be sanitary and maintained in good working order at all times.

(b) Every ambulance shall be equipped with the medical supplies and equipment specified by the Minimal Equipment List for Ambulances as adopted by the Committee on Trauma of the American College of Surgeons and in effect on the effective date of this chapter; provided, however, the State Board of Health, with the approval of the Advisory Committee on Emergency Medical Services, may require additional equipment or supplies to be aboard ambulances or may delete items of medical equipment or supplies from the required Minimal Equipment List adopted herein by reference.

(c) The Board shall cause to be inspected medical equipment and supplies required of ambulances when it deems such inspection is necessary and shall have maintained a record thereof. Upon a determination, based upon an inspection, that required medical supplies or equipment fail to meet the requirements of this chapter or regulations adopted pursuant hereto, the permit for the ambulance concerned shall be suspended until such requirements are met.

Class I and Class II Vehicle Equipment

a. Each Class I vehicle shall be provided with the following items of equipment or their equivalent:

1. Hinged half-ring lower extremity splint with webbing ankle hitch.

2. Two or more padded board splints, 4-1/2 feet by 3 inches, and two more similar splints 3 feet by 3 inches, of a material comparable to four-ply wood, for cooptation splinting of fracture of leg or thigh.

3. Two or more padded 15 inch by 3 inch wood splints for fracture of forearm.

4. Two back boards, one long and one short, with accessories or equivalent. An orthopaedic type stretcher is equivalent to a long back board.

5. Adequate oxygen and masks of assorted sizes.

6. Hand operated bag-mask resuscitation unit with adult, child and infant size masks, a unit which can be attached to oxygen supply being preferred. Recommended to be used only by qualified emergency medical services attendants.

7. Simple suction apparatus with catheter.

8. Mouth-to-mouth, two-way resuscitation airways for adults and children.

9. Oropharyngeal airways (infant, child, and adult sizes).

10. Mouth gags made of three tongue blades taped together and padded.

11. Universal dressing, approximately 10 inches by 36 inches, packed folded to 10 inches by 9 inches.

12. Sterile gauze pads.

13. One, 2 and 3-inch adhesive tape on cylinders.

14. Six-inch by 5 yard soft roller-type bandages.

15. Triangular bandages.

16. Safety pins, large size.

17. Shears for bandages.

18. Several pillows.

19. Two sandbags about 3 inches in width, 3 inches in thickness, and 12 inches in length.

20. Four cloth hand towels.

21. One folding stretcher is recommended.

22. Two or more blankets.

23. "No Smoking" sign posted in patient compartment of the vehicle. Smoking shall not be permitted while the vehicle is in service.

24. A separate "O.B. Kit" is required with items recommended by a local physicion or advisor.

25. First aid kit portable with odequate supplies (Section 5, item 5).

26. Or other item or items may be required by the Board on approval of the Advisory Committee. (32-310.3 (b)).

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§32-310.4 (a) On and after July one, nineteen hundred seventy-two, every ombulance, except those specifically excluded from the operation of this chapter, when operated on an ombulance mission in this State shall be occupied by at least two persons, one of whom possesses a valid emergency medical care attendant's certificate issued by authority of the Board, and such individual must accompany the patient or victim in the patient or victim compartment of the ombulance. Provided, the Board may adopt regulations which exempt specific categories of ombulance service where it is felt that such exemption would not be detrimental to the health or welfare of the transported patient or victim.

(b) The Board shall adopt regulations setting forth the qualifications required for certification of such attendants. Such regulations shall be effective when approved by the Advisory Committee on Emergency Medical Services.

(c) Persons desiring certification as emergency medical care attendants shall apply to the Board using forms prescribed by the Board. Upon receipt of such application the Board shall cause the applicant to be examined and if it is determined that the applicant meets the requirements of its regulations duly adopted pursuant to this chapter, it shall issue a certificate to the applicant. Emergency medical care attendants' certificates so issued shall be valid for a period not to exceed two years and may be renewed after reexamination if the holder meets the requirements set forth in the regulations of the Board. Any certificate so issued may be suspended at any time it is determined that the holder no longer meets the qualifications prescribed for such attendants.

(d) The Board may authorize the issuance of temporary certificates with or without examination when it finds that such will be in the public interest. Temporary certificates shall be valid for a period not exceeding ninety days.

Article 6 Continued

Police cars, ambulances, etc. In Virginia the drivers of police cars, ambulances, and other State, county, and city-owned vehicles are subject to all traffic regulations unless a specific exception is made. Virginia Transit Co. v. Tidd, 194 Va. 418, 73 S. E. 2d 405 (1952); Manhattan For Hire Car Corp. v. O'Connell, 194 Va. 398, 73 S. E. 2d 410 (1952) For statute providing exceptions for certain emergency vehicles, see § 46.1-226.

Article 7

§ 46.1-176. Duty of driver to stop, etc., in event of accident; duty of occupant; reports additional to other accident reports required by title. (a) The driver of any vehicle involved in an accident in which a person is killed or injured or in which an attended vehicle or other attended property is damaged shall immediately stop as close to the scene of the accident as possible without obstructing traffic and report forthwith to the police authority; and in addition, to the person struck and injured if such person appears to be capable of understanding and retaining the information, or to the driver or some other occupant of the vehicle collided with or to the custodian of other damaged property, his name, address, operator's or chauffeur's license number and the registration number of his vehicle. The driver shall also render reasonable assistance to any person injured in such accident, including the carrying of such injured person to a physician, surgeon or hospital for medical treatment if it is apparent that such treatment is necessary or is requested by the injured person.

(b) If the driver fails to stop and make the report required by paragraph (a) of this section, any person in the vehicle with the driver at the time of the accident who has knowledge of the accident shall report within twenty-four hours from the time of the accident to the Superintendent or, if the accident occurs in a city or town, to the chief of police of such city or town, his name, address and such other information within his knowledge as the driver must report pursuant to paragraph (a) of this section.

(c) The driver of any vehicle involved in an accident in which no person is killed or injured but in which an unattended vehicle or other unattended property is damaged shall make a reasonable effort to find the owner or custodian of such property and shall report to the owner or custodian the information which the driver must report pursuant to paragraph (a) of this section if such owner or custodian is found. If the owner or custodian of such damaged vehicle or property cannot be found, the driver shall leave a note in a conspicuous place at the scene of the accident and shall report the accident in writing within twenty-four hours to the Superintendent or, if the accident occurs in a city or town, to the chief of police of such city or town. Such note and written report shall contain the information which the driver must report pursuant to paragraph (a) of this section and such written report shall state in addition the date, time and place of the accident and the driver's estimate of the property damage.

Article 10

§ 46.1-190. Same; specific instances. A person shall be guilty of reckless driving who shall:

(f) Fail to stop, when approaching from any direction, a school bus, whether publicly or privately owned, which is stopped on any highway or school driveway for the purpose of taking on or discharging children, and to remain stopped until all children are clear of the highway or school driveway and the bus is put in motion, except the driver of a vehicle upon a dual highway, when the roadways are separated by a physical barrier or barriers or

§ 46.1-199. Exceptions to speed limitations; when exemptions applicable; prosecution for recklessness; civil liability. (a) The speed limitations set forth in this chapter shall not apply to vehicles when operated with due regard for safety under the direction of the police in the chase or apprehension of violations of the law, or of persons charged with or suspected of any such violations, or in testing the accuracy of speedometers on police vehicles, or in testing the accuracy of the radio microwave or other electrical devices specified in § 46.1-198 nor to fire department vehicles when traveling in response to a fire alarm or pulmotor call, nor to ambulances when traveling in emergencies outside the corporate limits of cities and towns.

(b) These exemptions, hereinbefore granted to such a moving vehicle, shall apply only when the operator of such vehicle displays a flashing, blinking or alternating red light and sounds a siren, bell, exhaust whistle, or air horn designed to give automatically intermittent signals, as may be reasonably necessary, and, only when there is in force and effect for such vehicle standard automobile liability insurance covering injury or death to any one person in the sum of at least one hundred thousand dollars in any one accident, and subject to the limit for one person, to a limit of three hundred thousand dollars because of bodily injury to or death of two or more persons in any one accident, and to a limit of ten thousand dollars because of injury to or destruction of property of others in any one accident. Such exemptions shall not, however, protect the operator of any such vehicle from criminal prosecution for conduct constituting reckless disregard of the safety of persons and property. Nothing in this section shall be construed to release the operator of any such vehicle from civil liability for failure to use reasonable care in such operation.

Article 12

§ 46.1-225. Approach of police or fire-fighting vehicles, rescue vehicles or ambulances, violations as failure to yield right-of-way. (a) Upon the approach of any vehicle listed in paragraph (a) § 46.1-226 giving audible signal by siren, exhaust whistle, or air horn designed to give automatically intermittent signals, the driver of every other vehicles shall immediately drive the same to a position as near as possible and parallel to the right hand edge or curb, clear of any intersection of highways, and shall stop and remain in such position unless otherwise directed by a police or traffic officer until such vehicle shall have passed. This provision shall not operate to relieve the driver of any such vehicle from the duty to drive with due regard for the safety of all persons using the highway, nor shall it protect the driver of any such vehicle from the consequences of an arbitrary exercise of such right-of-way.

(b) Violation of this section shall constitute failure to yield the right-of-way. (Code 1950, § 46-241; 1958, c.541; 1960, c.570; 1966, cc.613,699; 1968, c.89.)

(a) The operator of (1) any police vehicle operated by or under the direction of a police officer in the chase or apprehension of violators of the law or persons charged with or suspected of any such violation, (2) any vehicle used for the purpose of fighting fire, including publicly owned State forest warden vehicles not to exceed two hundred in number, when traveling in response to a fire alarm or emergency call, (3) Any vehicle owned by a political subdivision of the Commonwealth for rescue purposes when traveling in response to a fire alarm or an emergency call , or (4) any ambulance or rescue or life-saving vehicle designed or utilized for the principle purposes of supplying resuscitation or emergency relief where human life is endangered, whether such vehicle is publicly owned or operated by a nonprofit corporation or association, when such vehicle is being used in the performance of public services, and when such vehicle is operated under emergency conditions, may, without subjecting himself to criminal prosecution:

(1) Proceed past red signal, light, stop sign or device indicating moving traffic shall stop if the speed and movement of the vehicle is reduced and controlled so that it can pass a signal, light or device with due regard to the safety of persons and property.

(2) Park or stand notwithstanding the provisions of this chapter.

(3) Disregard regulations governing a direction of movement of vehicles turning in specified directions so long as the operator does not endanger life or property.

(4) Pass or overtake, with due regard to the safety of persons and property, another vehicle at any intersection.

(b) These exemptions, hereinbefore granted to such a moving vehicle, shall apply only when the operator of such vehicle displays a flashing, blinking or alternating red light and sounds a siren, exhaust whistle, or air horn designed to give automatically intermittent signals, as may be reasonably necessary, and, only when there is in force and effect for such vehicle standard automobile liability insurance covering injury or death to any persons in the sum of at least one hundred thousand dollars because of bodily injury to or destruction of property of others in any one accident. Such exemptions shall not, however, protect the operator of any such vehicle from criminal prosecution for conduct constituting reckless disregard of the safety of persons and property. Nothing in this section shall be construed to release the operator of any such vehicle from civil liability for failure to use reasonable care in such operation.

Article 18A

§ 54-276.10. Physicians and others rendering medical aid to report gunshot wounds; duty of sheriff or chief of police.—Any physician or other person who renders any medical aid or treatment to any person for a wound which such physician or other person knows or has reason to believe is a wound inflicted by a firearm shall as soon as practicable report such fact, including the wounded person's name and address, if such is known, to the sheriff or chief of police of the county or city in which such treatment is rendered; provided, that if such medical aid or treatment is rendered in a hospital or similar institution, such physician or other person rendering such medical aid or treatment shall immediately notify the person in charge of such hospital or similar institution, who shall make such report forthwith.

The following opinions in reference to laws affecting Rescue Squads were given by: Mr. Thomas D. Jordan, B.A., LL.G.: Member of the Virginia Bar; Administrative Assistant, Office of Chief Medical Examiner, Commonwealth of Virginia; Associate Professor of Legal Medicine, School of Medicine, and Assistant Professor of Hospital Law, School of Hospital Administration, Health Sciences of Virginia Commonwealth University, Richmond.

Article 19

The volunteer who serves with a rescue squad has the same legal obligations, duties, and responsibilities as an ambulance operator or a member of an emergency crew who performs his services of mercy for pay. He must exercise reasonable care in driving as well as in rendering first aid.

Article 20

Legal Status of One Rendering First Aid

The question of the legal status of an individual rendering first aid is an important one. There must be a genuine emergency. First Aid must of necessity be of a temporary nature. Give as much aid as the circumstances require and transport the injured with the least practical delay to the most appropriate medical facility. When one renders first aid or gives medical assistance in the case of a genuine emergency in the absence of a qualified practitioner, the law in Virginia does not consider that person to be practicing the healing arts. The Qualified practitioner is held to a higher degree of skill and care than the layman who would render mere first aid, because, as the words imply, it is that aid which is rendered first before the arrival of a qualified practitioner. Though the practitioner may render no more assistance than might be rendered by the person furnishing first aid, the practitioner does not render first aid, because he is furnishing medical services and may not render less care or exercise a lesser degree of skill than that for which he is professionally trained and licensed to render. This statement, therefore, cloaks the rescue worker in legal armor which would protect him in most situations and give him liberty to function effectively in cases of an emergency without feeling too restricted as to what aid he might legally give.

Article 21

Consent to Treatment

Upon arrival at the scene where the services of the rescue squad has been requested, it is discovered that no emergency exists, then nothing should be done. If, in fact, there is an emergency, but the injured refuses to accept assistance, nothing should be done. Unless the person in need of immediate medical treatment is a child, a mentally-ill patient, or unconscious, he must give his consent to any treatment rendered. Unauthorized assistance is assault and battery.

Article 22

Liability for Harm

The rescue squad worker is held to exercise that degree of care and skill that other rescue squad workers would exercise under the same circumstances. If first aid is not rendered in an acceptable reasonable manner, the rescue squad worker may be liable for the resultant harm. If he fails to use reasonable care in driving the emergency vehicle and causes an accident, he may be liable not only for the damages to the other vehicle and persons injured therein, but also for any additional harm to his passenger caused by the accident or the delay encountered by the accident.

Article 23

Medicle Examiner Cases

The physician-medical examiner must investigate and file a report with the local Attorney

Article 23 Continued

for the Commonwealth through the Chief Medical Examiner any death within the following classifications:

1. By violence, that is, accident, suicide, or homicide.
2. Suddenly when in apparent health.
3. When unattended by a physician (or osteopath).
4. When in prison (or jail).
5. By unusual, suspicious, or unnatural means, and
6. When the body is to be cremated.

The medical examiner upon notification of a death meeting one of these classifications, takes charge of the body, makes his investigation, and submits a report of the investigation, and submits a report of the investigation as required. A report of investigation is not required where viewing of the remains is solely for the purpose of authorizing cremation.

Visit to Scene

When the medical examiner is notified of a death within his jurisdiction, he takes charge of the body; but it is not obligatory on the medical examiner under the Virginia statute to go to the scene under any circumstances. To take charge of the body means that the body becomes subject to his sole direction. He may go the scene or order its removal.

Pronouncing Death

Since the statute requires that the medical examiner be notified only upon the death of theperson, it becomes obvious that the medical examiner cannot be used for the purpose of pronouncing people dead. His jurisdiction arises only after there is no question that the patient is deceased.

In Virginia there is no statutory requirement for a physician to pronounce a patient dead though this is the recommended procedure wherever feasible. The physician last in attendance or one designated by him has only the duty to sign a death certificate. If a rescue squadsman at the place of death is satisfied that the patient is dead and he is unable to locate the attending physician, the body can be removed to a mortuary of the decedent's family's choice to await locating the medical attendant. If the family objects to the removal of the body, don't remove it; and let them locate the physician or contact the funeral home of choice.

D. O. A.'s

Upon arrival of the rescue squadsman at the scene of death and finds the patient is unquestionably dead, he should ascertain as to whether the decedent was under medical attention and if he was being treated for some disease. If he was, then the physician should be notified. In the event that the physician cannot be located, the body ought to be moved either to a mortuary or to a funeral home and kept there until such time as the attending physician can be located. If it is a medical examiner's case, of course, it is mandatory to call the medical examiner.

Removal of Dead by Rescue Squad

To use an emergency vehicle for purposes of transporting dead bodies may be considered improper utilization of such vehicle and its personnel trained in rescue functions. This is entirely a matter of local policy. Wherever the emergency crews do not remove D. O. A.'s arrangements could be made with local funeral directors to accept this duty.

Procedure for Medical Examiner Case

Notification: If there is any evidence of foul play, it is necessary for the squadsman to promptly notify the medical examiner. In the event that the medical examiner on call cannot be reached, then the next medical examiner on call should be notified. In localities where the medical examiner for the city or county cannot be reached, it is permissible to call the medical examiner for any adjacent city or county. If the local medical examiner is not available and a diligent search is made for other medical examiners and none being found, then the proper procedure is to phone the Chief Medical Examiner's office, depending in which area the case is, and permission may be obtained for the designation of a licensed physician other than the medical examiner to act in a particular case. The phone number for the Chief Medical Examiner's Office is:

Central Office:	Richmond	770-3174
Tidewater Division:	Norfolk	625-1306
Western Division:	Roanoke	345-1031, Ext. 260

Removal: At the scene of an auto accident where one or more occupants of the auto or a pedestrian is killed, the remains may be covered and the medical examiner notified. The medical examiner in most cases will order the removal of the accident victims without coming to the scene. As a matter of local policy, the medical examiner may give a blanket authorization for the police to have accident victims removed. Otherwise, the police have no authority to order the removal of the remains under any circumstances.

Problem 1: You respond to a call from a woman—her husband may be having a heart attack. When you arrive, you find the man in no distress, with normal vital signs and he has no complaints. He is calm, but annoyed at his wife. He refuses to let you take him to the hospital. What do you do?

- Is he rational? Yes. Therefore his desires must be respected.
- Is he in immediate need of emergency care? No. But he may be in need of a diagnostic assessment.

The thing to do is explain the importance of going to the hospital to rule out acute MI. If he still refuses, write on your trip report something like: *EMTs John Smith and Mary Jones have explained to me the importance of going to the hospital for an examination to find out if I have had a heart attack. I refuse such treatment and transportation.* Have the patient sign. If he won't, make a note that he refused to sign and get a witness (perhaps the wife). It would also be a good idea to inform a physician of the situation via radio.

Problem 2: At an auto accident you find a man with alcohol on his breath suffering from a fractured left arm and abdominal pain. His BP is 90/40, pulse 140. He is yelling at you to leave him alone and go away—he does not want to go to any hospital. The police tell you to either load him up or get yourselves out. The man's wife meekly asks you to get him to a doctor. Can you treat and transport against the patient's will?

- Is he rational? Probably not. He may be drunk, may be dazed by the accident (concussion cannot be ruled out), and may be in decompensated shock—meaning his brain may not be fully functional.
- Is he in immediate need of emergency care? Yes.
- Is there more risk in treatment, or going without? Decompensated shock and abdominal pain could mean bad internal bleeding. You don't know what else could be wrong since drinking masks many diseases. He may die if he is not treated immediately.
- You could have the police arrest the man and place him under "protective custody" and treat and transport under orders from the police.
- You could call a physician, describe what you've got and follow his orders.
- What legal protection would the EMT have if he treats and transports?
- Remember the Golden Rule. Your job is to make the best medical care decision for the patient, not a legal decision for yourself.
- The wife has consented to treatment in a case where the patient may be mentally incompetent.
- Implied consent gives you the privilege to treat. If the patient is later declared to have been mentally competent, you erred on the side of life. That is what you are trained to do.

Table I: Classification of shock

- Hypovolemia
  Inadequate quantity of *fluid* to be delivered to vital organs
- Cardiogenic
  Inadequacy of the *pump* to make that fluid delivery
- Peripheral pooling
  Volume becomes *unavailable* for circulation; an effective hypovolemia
- Cellular defect
  Cells are not *using* the nutrients delivered to them for metabolism

Table II: Classification of shock

Type	Problem	Example
Hypovolemia	Blood Loss	Bleeding ulcer; aneurysm; trauma
	Plasma Loss	Burn; peritonitis
	Water Loss	Heat stroke

Table III: Classification of shock

Type	Problem	Example
Cardiogenic	Poor myocardial function	Myocardial infarct; ventricular aneurysm
	Poor myocardial coordination	Arrhythmia
	Poor diastolic filling	Pericardial tamponade
	Myocardial ischemia	Late hypovolemia
	Neural or endocrine blockage decreasing cardiac reserve	Epidural, general anesthesia; drugs

Table IV: Classification of shock

Type	Problem	Example
Peripheral pooling	Vasomotor loss of tone	Syncope
	Paralysis of resistance vessels	Spinal anesthesia
	Dilatation of capacitance reservoirs	Endotoxemia

Table V: Classification of shock

Type	Problem	Example
Cellular defect	Failure of cellular (cytochrome) respiration	Cyanide poisoning
	Interference in metabolism	Septic shock
	Inadequate substrate	
	• Hypoglycemia	Insulin shock
	• Hypoxemia	CO poisoning
	Insufficient endocrine transfer enzymes	Diabetic ketoacidosis

EMT COURSE
HANDOUT #3

CARRIES, COMMUNICATIONS, COMA SCALE, ANATOMY, PRIMARY AND SECONDARY SURVEYS

BACK CARRY

(1)

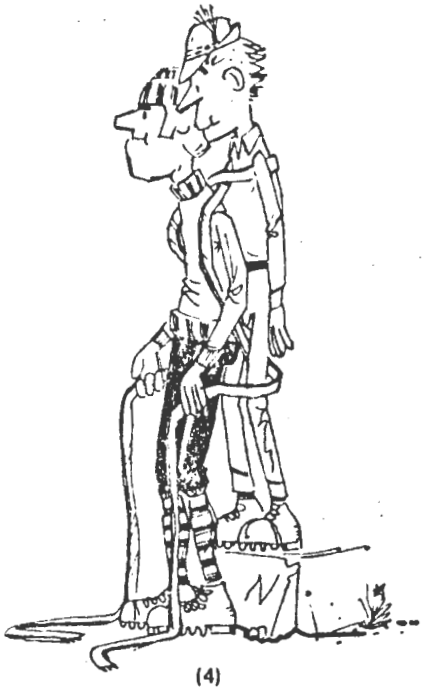
PASS ONE INCH NYLON TAPE OR TWO INCH WEBBING ACROSS THE BACK OF THE VICTIM UNDER HIS ARMS . . .

(2)

CROSSING IT IN FRONT OF HIS CHEST . . .

(3)

THEN WITH THE VICTIM AND RESCUER TOGETHER, PASS THE WEBBING OVER THE SHOULDERS OF THE RESCUER . . .



(4)

EN AROUND THE VICTIM'S LEGS ABOVE THE KNEES . . .

(5)

WITH THE WEBBING TIED IN A SQUARE KNOT ACROSS THE STOMACH OF THE RESCUER WITH THE ENDS TIED OFF.

CLIMBING ROPE
20 INCH DIAMETER
COIL

10-1 Unable to Copy—Change Location
10-2 Signal Good
10-3 Stop Transmitting
10-4 Acknowledgement
10-5 Relay
10-6 Busy—Stand by Unless Urgent
10-7 Out of Service (Location Phone No.)
10-8 In Service
10-9 Repeat
10-10 Fight
10-11 Dog Case
10-12 Stand By (Stop)
10-13 Weather and Road Report
10-14 Report of Prowler
10-15 Civil Disturbance
10-16 Domestic Trouble
10-17 Meet Complainant
10-18 Complete Assignment Quickly
10-19 Return To _____
10-20 Location
10-21 Call _____ by Phone
10-22 Disregard
10-23 Arrived at Scene
10-24 Assignment Completed
10-25 Report in Person to (Meet) _____
10-26 Detaining Subject, expedite
10-27 Opp. Lic. Information
19-28 Registration Information
10-29 Check for Wanted
10-30 Illegal Use of Radio
10-31 Crime in Progress
10-32 Man with Gun
10-33 EMERGENCY
10-34 Riot

10-35 Major Crime Alert
10-36 Correct Time
10-37 Investigate Suspicious Vehicle
10-38 Stopping Suspicious Vehicle (Give Station Complete Description Before Stopping)
10-39 Urgent—Use Light and Siren
10-40 Silent Run—No Light or Siren
10-41 Beginning Tour of Duty
10-42 Ending Tour of Duty
10-43 Information
10-44 Request Permission to Leave Patrol
10-45 Animal Carcass in _____ Lane at _____
10-46 Assist Motorist
10-47 Emergency Road Repairs Needed
10-48 Traffic Standard Needs Repairs
10-49 Traffic Light Out
10-50 Accident _____ F, PI
10-51 Wrecker Needed
10-52 Ambulance Needed
10-53 Road Blocked
10-54 Livestock on Highway
10-55 Intoxicated Driver
10-56 Intoxicated Pedestrian
10-57 Hit and Run
10-58 Direct Traffic
10-59 Convoy or Escort
10-60 Squad in Vicinity
10-61 Personnel in Area
10-62 Reply to Message
10-63 Prepare to Make Written Copy
10-64 Message for Local Delivery
10-65 Net Message Assignment
10-66 Message Cancellation
10-67 Clear to Read Net Message

10-68 Dispatch Information
10-69 Message Received
10-70 Fire Alarm
10-71 Advise Nature of Fire (Size, Type, Contents)
10-72 Report Progress on Fire
10-73 Smoke Report
10-74 Negative
10-75 In Contact With
10-76 Enroute
10-77 Estimated Time of Arrival
10-78 Need Assistance
10-79 Notify Coroner
10-80 Stolen Vehicle
10-81 Reports
10-82 Reserve Lodging
10-83 Gas
10-84 If Meeting _____ Advise ETA
Delay Due to _____
10-86 Eat
10-87 Pick up Checks for Distribution
10-88 Advise Phone Number _____
10-89 Personal Relief
10-90 Bank Alarm
10-90A Armed Robbery
10-90B Purse Snatch
10-91 Unnecessary use of Radio
10-92
10-93 Blockade
10-94 Drag Racing
10-95 Open Door
10-96 Mental Subject
10-97 Close Door
10-98 Prison or Jail Break

CODE-10 Subject to Call
CODE-12 Cardiac Arrest
CODE-20 Unit Unfit for Service
CODE-25 Return to Station
CODE-28 Police Officer Needed
CODE-30 MCCU Needed
CODE 44 Proceed With Caution
CODE-45 Call Pending
CODE-46 Station Unmanned
CODE-51 Aircraft Accident

CODE-52 Drowning/Boat Accident
CODE-53 Knifing
CODE-54 Shooting
CODE-55 Electrocution
CODE-61 D.O.A.
CODE-80 Heart
CODE-82 Breathing Difficulty
CODE-83 Stoppage of Breathing
CODE-84 Bleeding
CODE-85 Poisoning

CODE-86 Burns
CODE-87 Fracture
CODE-88 Compound Fracture
CODE-89 Head Injury
CODE-90 OB
CODE-91 Birth Imminent
CODE-92 Baby Delivered
CODE-93 Miscarriage
CODE-94 Seizure
CODE-95 Sick

CODE-96 Intoxicated
CODE-97 Diabetic
CODE-100 OK to ask Questions
Base—KXA-255
Mobile—KT-6619
Bio Phone—KT-2583
Emerg. Base—KXA-256
TYPE-A—Routine Transportation
TYPE-B—Moderate Pain
TYPE-C—Serious

OTHER CALL SIGNS WILL BE STANDARD 10-SIGNALS

Glasgow Coma Scale

	Rescuer's Test	Victim's Response	Assigned Score
Eye	Spontaneous	Opens eyes on own	4
	Speech	Opens eyes when asked to in a loud voice	3
	Pain	Opens eyes when pinched	2
	Pain	Does not open eyes	1
Best Motor Response	Commands	Follows simple commands	6
	Pain	Pulls rescuer's hand away when is pinched	5
	Pain	Pulls a part of body away when rescuer pinches victim	4
	Pain	Flexes body inappropriately to pain	3
	Pain	Body Becomes rigid in an extended position when rescuer pinches victim	2
	Pain	Has no motor response to pinch	1
Verbal Response (Talking)	Speech	Carrys on a conversation correctly and tells rescuer where he is, who he is, and the month and year	5
	Speech	Seems confused or disoriented	4
	Speech	Talks so rescuer can understand victim but makes no sense	3
	Speech	Makes sounds that rescuer can't understand	2
	Speech	Makes no noise	1

The highest level of response to each command is recorded and the Three catagories are totaled.

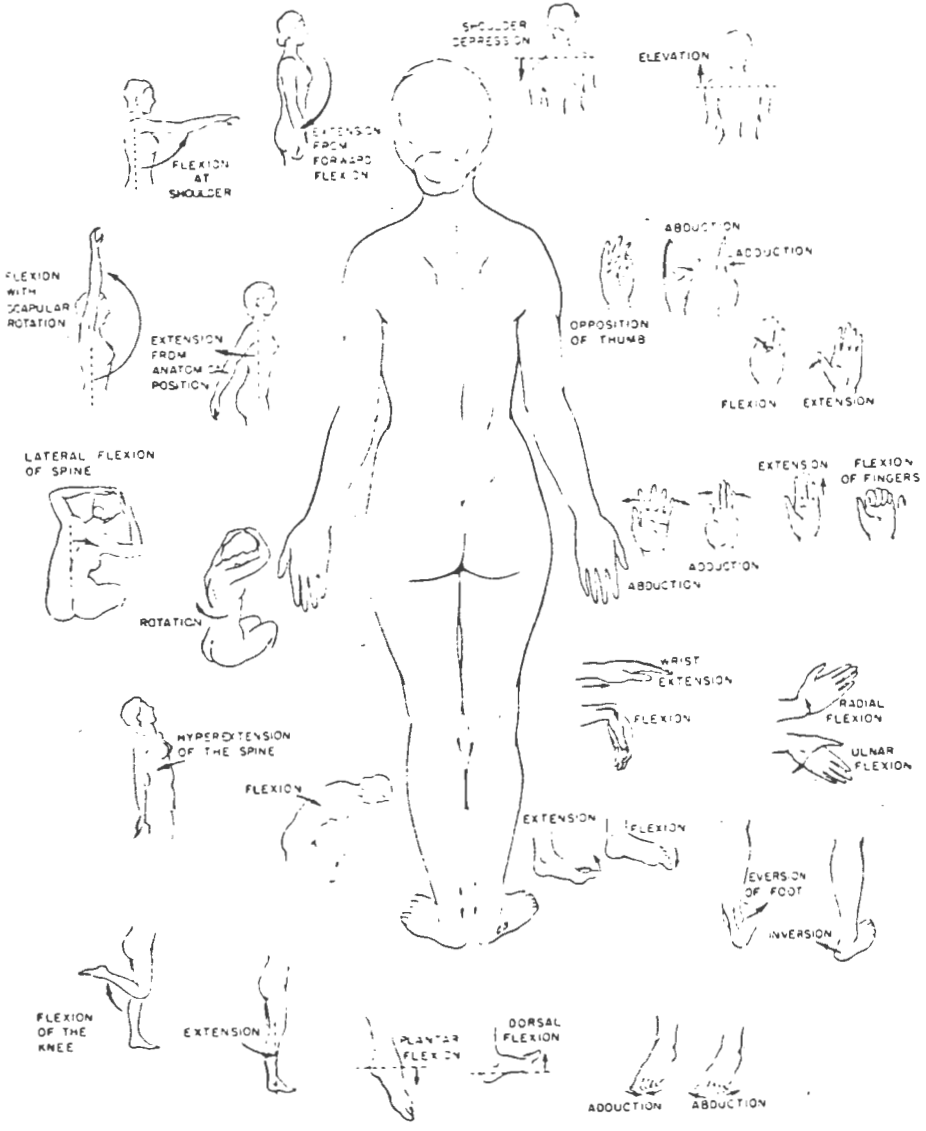


Figure 9-2b.

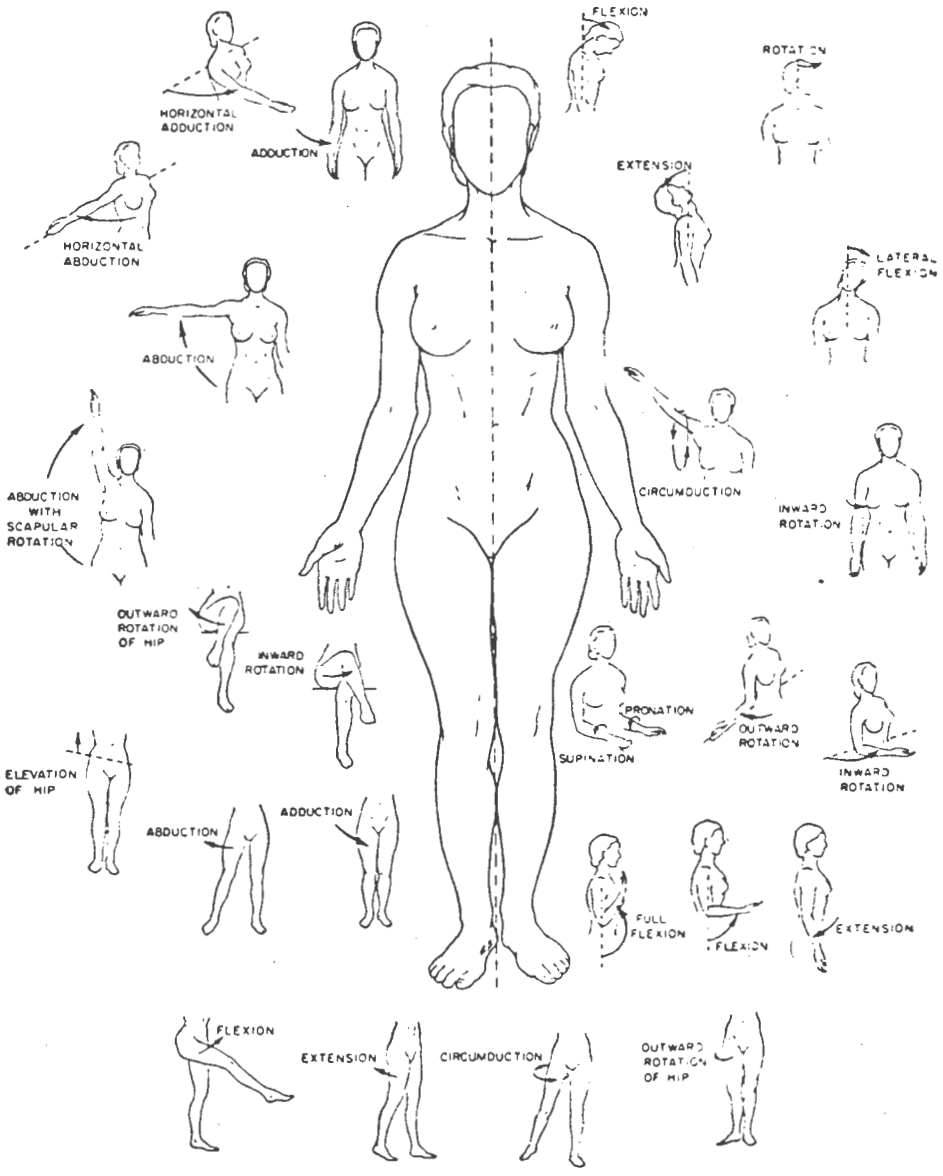


Figure 9-2. Anatomical definitions important in evaluating the musculo skeletal system. (Reproduced with permission from *Trauma*. Copyright 1959 by Matthew Bender and Co., Inc.)

APPALACHIAN SEARCH AND RESCUE CONFERENCE RADIO SOP CRIB SHEET

For Internal ASRC Use Only

IDENTIFICATION Always identify when calling, answering, or signing, giving your callsign last: BASE, THIS IS TEAM DELTA... ...TEAM DELTA CLEAR. The station which called first should sign first. BASE will announce the time and the license callsign on each half hour while the net is in operation. In convoys, LEADER will announce the license callsign at least every 30 minutes. When no COMCTR is operating, or no mobile station has been designated LEADER, and always on CB, individual stations must use the license callsign at the beginning and end of each communication.

CALLSIGNS License Callsigns -- VHF FM: KU6516 -- CB: KIUØ954

Tactical callsigns are issued by the CO or DO on a functional basis. The COMCTR is BASE; the lead vehicle in a convoy is LEADER; the DO is DISPATCH preceded by a Group name: BLUERIDGE DISPATCH. Each field team uses its letter designator: TEAM ALFA, TEAM BRAVO, etc. A team specifically tasked as a relay will sign RELAY rather than TEAM: RELAY CHARLIE, RELAY DELTA, etc. Each team member signs with his function title followed by his team designator: LEADER ALFA, RESCUE ALFA, MEDIC ALFA, RADIO ALFA, DRIVER ALFA. Each subteam (or incidental radio operator) signs its parent letter designator plus a number: CHARLIE ONE, etc. Other intra-team callsigns are also by function: LEFT WING, BRAKE, etc. Staff sign by title: MISSION COORDINATOR, etc.

ITU PHONETIC ALPHABET AND NUMERAL PRONUNCIATION

ALFA	JULIET	SIERRA	1	WUN	Numbers are spoken digit by digit except for multiples of 100 or 1000.
BRAVO	KILO	TANGO	2	TOO	
CHARLIE	LIMA	UNIFORM	3	TREE	
DELTA	MIKE	VICTOR	4	FOW-ER	
ECHO	NOVEMBER	WHISKEY	5	FI-YEV	16 ONE, SIX
FOXTROT	OSCAR	X-RAY	6	SIX	20 TWO, ZERO
GOLF	PAPA	YANKEE	7	SE-VEN	1800 ONE, EIGHT, HUNDRED
HOTEL	QUEBEC	ZULU	8	ATE	35000 THREE, FIVE, THOUSAND
INDIA	ROMEO		9	NINER	0093 ZERO, ZERO, NINER, THREE
			Ø	ZE-RO (not OH)	3664 THREE, SIX, SIX, FOUR

SOME COMMONLY USED PROWORDS AND STANDARD PHRASES

THIS IS.....Precedes identification.

OVER.....It is your turn to transmit; I am listening.

GO AHEAD.....I am ready to receive your message.

ROGER.....I have satisfactorily received your message. Does not mean yes.

AFFIRMATIVE.....Yes.

NEGATIVE.....No.

STAND BY.....Wait a moment (other stations keep out).

CLEAR.....I have no more traffic, but I will be listening.

OUT.....I am turning off my radio.

SAY AGAIN.....Repeat your previous transmission.

SAY AGAIN.....I will repeat what I just said (or last transmission).

SAY AGAIN ____....Repeat the indicated specific information.

CORRECTION.....I have made an error; what follows is correct.

PREPARE TO COPY..Write this down. (Wait for GO AHEAD before sending message).

READ BACK.....For verification, read the message I just sent you.

I READ BACK.....I am reading back your message for verification.

THAT IS CORRECT..I verify that you have received or relayed my message correctly.

SPELL.....Spell out your message with phonetics.

SPELL ____.....Spell phonetically the indicate specific information.

I SPELL.....A phonetic spelling follows.

FIGURE(S).....Numerals and letters follow which do not spell words.

STATUS ONE.....Victim found; alive and well.

STATUS TWO.....Victim found; alive, needs evac

STATUS THREE.....Victim found; dead.

ASRC radio equipment is to be used only during missions and bona fide training operations. All other use is unauthorized. Adjustment and testing (except for brief readiness tests) may be carried out only by FCC licensed technicians authorized by the ASRC Communications Committee.

BASIC LIFE SUPPORT

A AIRWAY

Problem	Solution
Tongue obstruction.....	Hyperextend neck* Jaw lift* Triple airway manuver* Position Modified jaw thrust [oropharyngeal airway] *not to be used when cervical spine injury is suspected.
Foreign body obstruction.....	Back blows (4) Abdominal thrusts (4) Finger probe (long Kelley clamps or MacGill forceps) (high tracheostomy=cricothyroidotomy)
Danger of aspiration.....	Position [suction] (esophageal obturator airway) (endotracheal intubation)
Anatomic obstruction.....	(high tracheostomy)

B BREATHING

Problem	Solution
Apneic patient.....	Artificial respiration: --mouth-to-mouth --mouth-to-nose --mouth-to-mouth and nose --mouth-to-stoma --chest pressure-arm lift --mouth-to-mask --bag-mask --demand valve --respirator
Collapsed lung/pendelluft	
sucking chest wound.....	Seal
pneumo-/hemo- thorax.....	(decompression with chest tube and flutter valve or water seal drainage) Position with collapsed lung down
Flail chest.....	Stabilize Administer positive-pressure artificial respiration
Anoxia	
near drowning suffocation ..... CO poisoning	"Flush out" CO or CO_2 with high O_2 concentration.

C CIRCULATION

No effective heartbeat:	
-ribcage rebounds.....	External cardiac compression
-ribcage can't rebound....	(thoracotomy and internal cardiac compression)

(circulation contd.)

Severe external bleeding.....P E S T:
direct Pressure
Elevation
pressure on the Supplying artery
Tourniquet
also:
--pinching bleeding vessels directly
--gauze packing
--reflection of galea

Internal bleeding....."MAST" trousers

Traumatic hypovolemic shock.....Position
Oral fluids*
Oxygen
Keep from chilling
(IV therapy)

SECONDARY SURVEY

VITAL SIGNS
- GENERAL APPEARANCE
- -alertness (especially note if state of consciousness is deteriorating
- -orientation to time, person, place or has deteriorated)
- -degree of distress
- PULSE
- RESPIRATION
- BLOOD PRESSURE
- -systolic/diastolic
- -systolic by palpation

SUBJECTIVE EXAM
- Name
- Approx. age
- Sex
- Primary complaint
- Rescue situation
- Background of problem
- Medical history
- Medications
- Allergies

OBJECTIVE EXAM
- Scalp and skull
- Pupils and eyes
- Eyelids/fingernails
- Ears
- Mouth
- Neck: stoma, Medic Alert, tracheal deviation, cervical spine
- Chest: expansion (flail)
  - rib fractures
  - auscultate
- Abdomen: wounds
  - tenderness
  - masses
  - gaurding
- Lower spine
- Pelvis
- Legs
- Arms
- Back

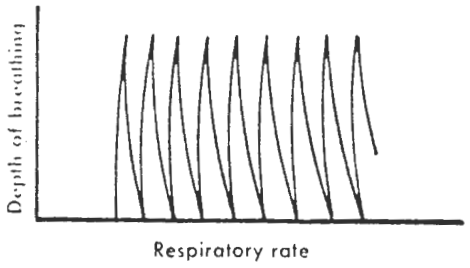


Fig. 1-1. Hyperventilation syndrome.

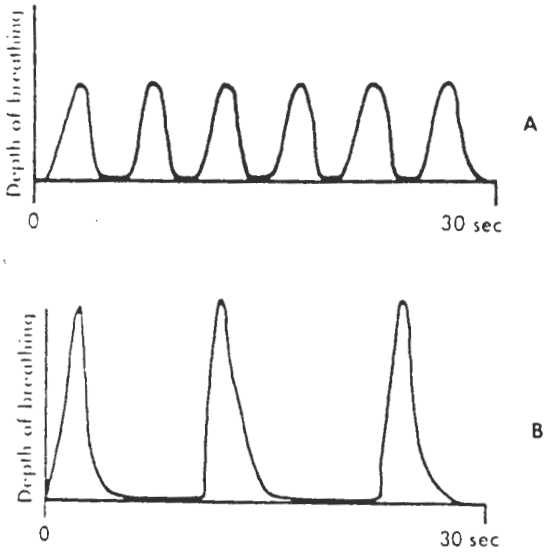


Fig. 1-2. A, Normal breathing pattern. B, Kussmaul's respiration.

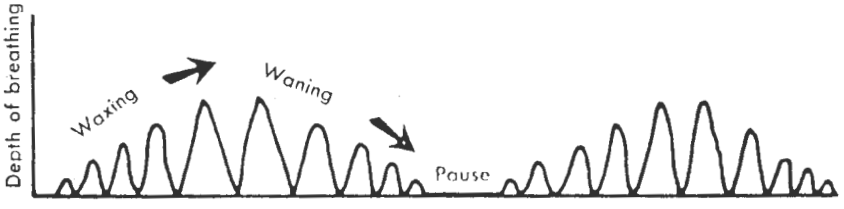


Fig. 1-3. Cheyne-Stokes respiration.

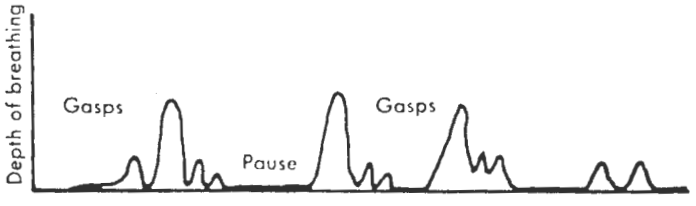


Fig. 1-4. Biot's respiration.

A Guide to Medical Terminology

By Gail Walraven

CRUCIAL TO THE SUCCESS and growth of prehospital personnel is their ability to communicate openly and clearly with fellow members of the medical team. Historically, this requires fluency in a new language, one that is an extension of ancient Greek and Latin. Called "medical terminology," this new way of communicating removes many of the barriers between the medical community and the lay world.

Fluency in medical terms and abbreviations is not a direct requirement for actual patient treatment, but is rather a requisite for the learning process. Without the ability to quickly comprehend the instructing members of the medical team, the field responder will be unable to build medical knowledge and develop patient care skills. It is therefore a high priority to devote time to the study of medical terminology in order to facilitate future learning processes.

As foreign as this new language may appear at first, it must be remembered that, like anything new, it soon becomes second-nature if taken a step at a time. The organization that follows will provide the framework for this new language. However, the vast majority of the work is rote memory, and requires many hours of homework on an individual basis. Once the building blocks are committed to memory, the vocabulary can be increased at a more gradual rate.

WORD PARTS

The basis for all medical terms is a root word. This word is usually taken directly or indirectly from either Latin or Greek and retains its foreign meaning. For example, "hydro" is a Greek word meaning "water." Therefore, it can be used as the root word for many combination words meaning or referring to water:

hydro	water
hydrophobia	fear of water
hydrotherapy	water treatments
dehydrate	removal of water

Medical terms are built by selecting a root word, then attaching other words to the beginning or end of the root word to modify the original meaning. This process utilizes word parts called prefixes and suffixes. Prefixes are placed at the beginning of a word to modify its meaning, whereas suffixes are tagged onto the end of a word for the same purpose. Each prefix and suffix has a foreign translation of its own, and it is this meaning that changes the original intention of the root word. For example, "port" means "to carry" in Latin. Note how prefixes and suffixes can modify this meaning:

port	to carry
transport	to carry across
export	to carry out of
import	to carry into
portable	can be carried

In order to facilitate enunciation of the words, a vowel is frequently placed between the root word and the prefix or suffix. When this vowel is attached, the root word is said to be in its "combining form" because it is then easier to combine with the modifiers. Medical terms are first approached by identifying the root word, then the modifiers, and then translating each for an English interpretation. It is often difficult to distinguish the root word from the modifier, so there is much to be said for actual experience using the language in a clinical setting.

The next step in learning medical terminology requires many hours of independent study. The following list (Table 1) identifies key root words essential for management of prehospital medical emergencies. Each of these words must, of necessity, be memorized to the point of fluency. It is suggested that a flash card system be utilized to expedite this tedious task.

Once the list of root words is comfortably committed to memory, the learning of prefixes and suffixes can be undertaken. Use the same flash card system to memorize the meanings of these words and the foundation will have

(Continued on page 34)

The more you break it down, the more you build it up: your storehouse of technical vocabulary.

Prefix	Root	Suffix
peri *[around]*	cardi *[heart]*	ectomy *[surgical removal of]*
endo *[inner]*	cardio *[heart]*	pathy *[disease]*

Table 1

Root Words & Combining Forms

algia	pain
algesia	sensitive to pain
arthro	joint
brachio	arm
broncho	bronchi
cardio	heart
cardi	heart
carpo	wrist
cyte	cell
cyto	cell
cervico	neck
ceph	head
cephalo	head
chole	gall, bile
costo	rib
cysto	bladder
cuti	skin
cutane	skin
derm	skin
dermat	skin
ectop	misplaced
emia	blood
entero	intestines
esthesia	sensations, feelings
fibro	fibers
gastro	stomach
glosso	tongue
glyco	sugar
hem	blood
hema	blood
hemato	blood
hemo	blood
hepa	liver
hepato	liver
hydro	water
hystero	uterus
laryngo	larynx (voice box)
lingua	tongue
lingual	tongue
myelo	spinal cord
myo	muscle
narco	numbness, stupor
necro	death
nephr	kidney
nephro	kidney
neur	nerve
neuro	nerve
noct	night
noctur	night
ocul	eye
oculo	eye
opthalmos	eye
ophthalm	eye
ortho	straight, normal
osteo	bone
oto	ear
path	disease
ped	child, or foot
pedi	child, or foot
pharyngo	throat, pharynx
phaso	speech
phasia	speech
phleb	vein
phlebo	vein
phono	voice
phonia	voice
photo	light
plasm	formation
pnea	breath, breathing
pneumo	air, lung
pod	foot
psych	the mind
pleg	paralysis
plegia	paralysis
ren	kidney
renal	kidney
rhin	nose
rhino	nose
sarco	flesh
scler	hard, hardening
scleros	hard, hardening
sepsis	germs, presence of infectious bacteria
stasis	halt, stopping, stagnation of flow
sten	narrow, constrict
steno	narrow, constrict
thermo	heat
thyro	thyroid
uro	urine, urinary organs
vaso	vessel

Prefixes

a-	without
an-	without
ab-	away from
ad-	toward
ant-	against
anti-	against
auto-	self
antero-	before, front
ante-	before, front
bi-	twice, two
bis-	twice, two
bio-	life
brady-	slow
co-	together
con-	together
de-	down from
di-	double, twice or apart from
dys-	abnormal, painful or difficult
en-	into, within
endo-	within, innermost
epi-	upon, in addition
equi-	equal
ex-	out, away from
exo-	outward
extra-	outside of, in addition to
homo-	same
hypo-	below, beneath, under
hyper-	above, increased, excessive
in-	within, inside, into
inter-	between
intra-	within
iso-	equal
leuko-	white
macro-	large
mal-	bad, poor
medi-	middle
melano-	black
micro-	small, minute
mono-	one
neo-	new
non-	not
pan-	all
per-	by, through
peri-	around
poly-	many, much
post-	after, following
pre-	before
pseudo-	false
re-	back again
retro-	backward
semi-	half
sub-	under, beneath
supra-	above
syn-	union, together
tachy-	fast
trans-	across, over
ultra-	beyond, excess
un-	not, reversal
uni-	one

Suffixes

-al	pertaining to, capable of
-cide	destructive, to kill
-cule	little, minute
-ectomy	surgical removal
-form	shaped like, having the form of
-iasis	a state, condition of
-itis	inflammation
-logist	specialist, a doctor
-megaly	enlargement
-ology	science of, study of
-osis	disease, a condition
-ostomy	to form an opening or outlet
-otomy	incision, to cut
-plasty	repair
-scopy	to examine
-pathy	abnormality
-rrhea	flow, discharge
-rhea	flow, discharge

been laid to begin interpreting medical terms through the translation of each of these word parts.

COMBINED WORDS

Once the meanings of root words, prefixes, and suffixes are solidly memorized, fluency can be developed by practicing the interpretation of medical terms that have been built by this method of combinations. Not all medical words fall into this category, but this is the place to start. The following list of words can be readily broken down into word parts, each part having a meaning of its own. Translate each of the word parts and then interpret the meaning of the entire medical term. Check for accuracy by going back over the preceding lists.

endocardium	extraorbital
hematuria	abduct
gastromegaly	antepartum
cephalgia	asepsis
intravenous	psychomotor
hyperactivity	pneumothorax
pericarditis	cytoplasm
hemostasis	cardiophonogram
phlebotomy	gastroenteritis
arteriosclerosis	intercostal
glycosuria	cephalgia
hematemesis	arthritis
hypoglossal	homogenesis
cholecystectomy	colostomy

Table 2

Abbreviation	Meaning
a̅	before
ASA	aspirin
ASHD	arteriosclerotic heart disease
b.i.d.	twice a day
BP	blood pressure
BR	bed rest
BRP	bathroom privilege
B.S.	blood sugar, bowel sounds
c̅	with
CAD	coronary artery disease
cc	cubic centimeter (equals one ml)
C.C.	chief complaint
CCU	coronary care unit
CHB	complete heart block
CHF	congestive heart failure
cm	centimeter
c/o	complains of
CO	carbon dioxide
COPD	chronic obstructive pulmonary disease
CSM	carotid sinus massage
CVA	cerebrovascular accident (stroke)
D.C.(d/c)	discontinue
DOA	dead on arrival
DOE	dyspnea on exertion
D.M.	diabetes mellitus
Dx	diagnosis
EKG, ECG	electrocardiogram
ER	emergency room
ETOH	alcohol
fl.	fluid
Fx	fracture
GI	gastrointestinal
Gm	gram
gr.	grain
gtt.	drop
h, hr.	hour
HBD	has been drinking
hs	hours of sleep
Hx	history
IC	intracardiac
ICU	intensive care unit
IM	intramuscular
IV	intravenous
L.	liter
l.a.	left arm
LOC	level of consciousness
mg, mgm	milligram
MI	myocardial infarction
MICU	mobile intensive care unit
ml	milliliter
mm	millimeter
MS	morphine sulfate
$NaHCO_3$	sodium bicarbonate
NPO	nothing by mouth
NTG	nitroglycerine
O_2	oxygen
OB	obstetrics
OD	overdose
P	pulse
p̅	after
P.E.	physical exam; pulmonary edema
PERLA	pupils are equal and reactive to light and accommodation
PND	paroxysmal nocturnal dyspnea
p.o.	by mouth
prn	whenever necessary
q̅	every
q4° (q4h)	every 4 hours
qd	every day
qod	every other day
R	respirations
RBC	red blood cell
RHD	rheumatic heart disease
R/O	rule out
Rx	take; treatment
s̅	without
ss̅	1/2
S.C., S.Q.	subcutaneous
SICU	surgical intensive care unit
S.L.	sublingual
S.O.B.	shortness of breath
stat	immediately
Sx	sign, symptom
T & C	type and cross-match
TPR	temperature, pulse and respirations
V.S.	vital signs
WBC	white blood cell
X	times
y.o.	year old
i ii iii iv	one, two, three, four, etc.
♂	male
♀	female
2°	secondary
TID, QID	3X a day, 4X a day
>	greater than (5>3)
<	less than (2<6)
≈	approximately

rhinomegaly
photophobia
nephritis
hemiplegia
dysphagia
antidiuretic
subcutaneous
neurologist
anterolateral
rhinoplasty
hemorrhage
cardiopathy
tracheotomy
insecticide

With this framework to build upon, an entire vocabulary can be developed and expanded throughout the course of your career.

ABBREVIATIONS

Through the years, the medical community has adapted this language to meet its own needs. The need for an expeditious, efficient, and distinct system of shortening the notoriously long medical words is probably more apparent in emergency medicine than in any other medical specialty. While the use of abbreviated forms of writing is clearly helpful, it can be a stumbling block to the student who is pressed for time and overcommitted with homework assignments.

As with medical terminology, medical abbreviations are most commonly derived from the original Latin or Greek word. For this reason, they frequently make little or no sense to the present-day student. Like any other task requiring rote memorization, practice is the key factor to success. Through the use of flash cards the student can practice translating the abbreviation into the full meaning, and then back into the abbreviation. It is important to emphasize both sides of this translation process, as both methods will be required in the field.

Listed in Table 2 are some of the more essential abbreviations used in field work. As your career develops, the list will grow longer, but this core provides an adequate start.

SELF-ASSESSMENT

The following paragraph is typical of the communications between the paramedic and the base hospital. Translate this report into English, and then check your work on the preceding lists.

"We are at the scene of a T.A. c̅ 3 pts. The 1st is a 48 y/o M.C. c/o a fx Ⓡ ulna & radius, s̅ other apparent injury. BP & other V.S. W.N.L. The 2nd is a 63 y/o♀ c̅ a c.c. of S.O.B. No hx of C.O.P.D., C.H.F., or M.I. Cardiovascular status stable, c̅ normal electrocardiograph.

The 3rd pt. has sacrolumbar pain, is diaphoretic, hypotensive, and tachypneic. Will stand by for further orders." □

Gail Walraven is a consulting editor on the staff of EMERGENCY and has been actively involved in EMS since 1970. She served as a paramedic instructor for five years for Los Angeles County before going to San Diego to establish a paramedic training program there. She is currently a national EMS consultant and has recently co-authored two books, Handbook of Emergency Drugs, and Manual of Advanced Prehospital Care, both published by Robert J. Brady Co.

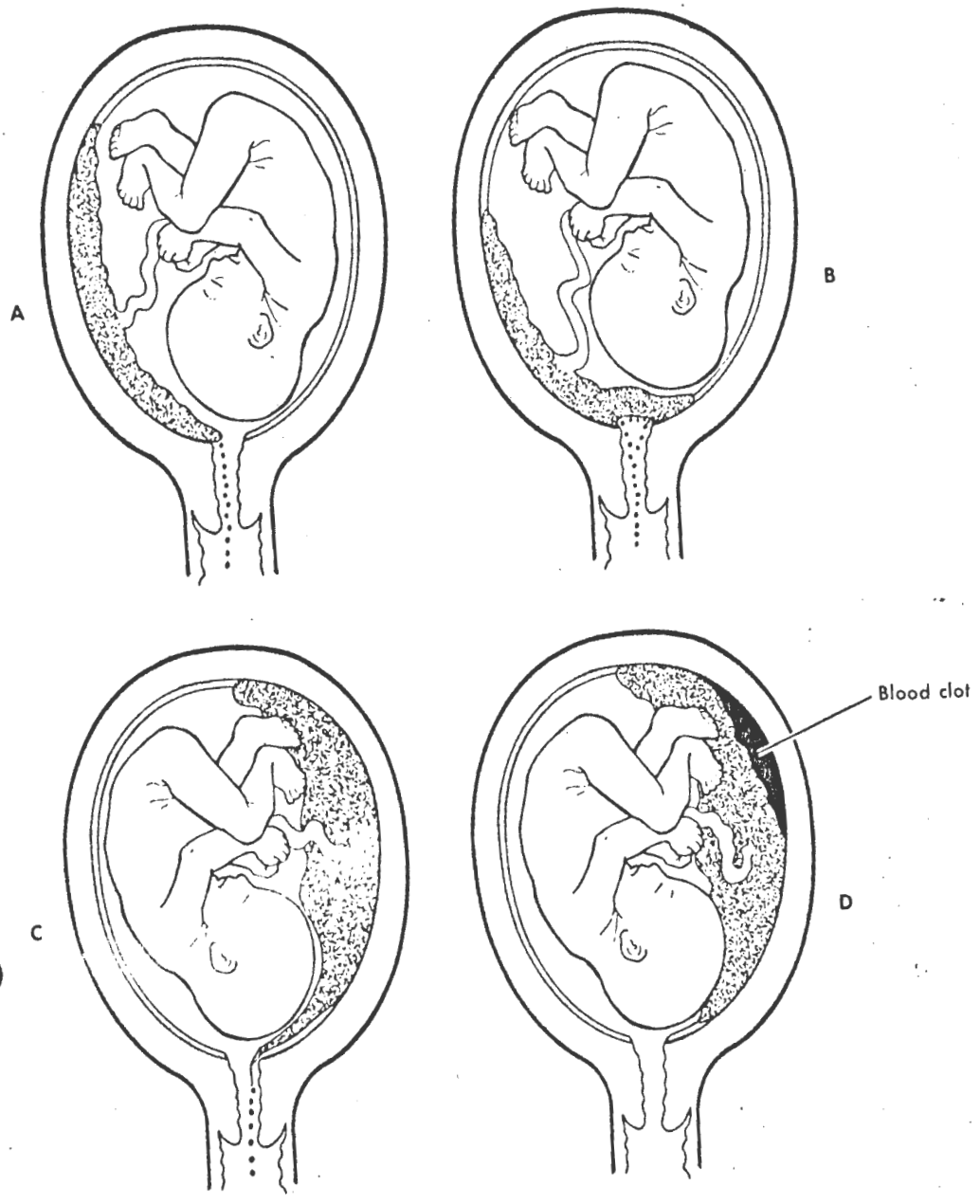


Fig. 18-1. Maternal hemorrhage. **A**, Partial placenta previa. **B**, Total placenta previa. **C**, Revealed abruptio placentae. **D**, Hidden abruptio placentae.

Table 18-1. Common causes of vaginal bleeding

Not obviously pregnant female	Pregnant female
Abortion, spontaneous, induced	Abortion, spontaneous, induced
Adenomyosis	Abruptio placentae
Adolescent menorrhagia	Cervical vein hemorrhage
Cancer, cervical, uterine	Ectopic pregnancy
Dysmenorrhagia	Labor
Leiomyoma	Placenta previa
Menopausal menses	Polyps
Normal menses	
Polyps	

Table 18-2. Data pertinent to vaginal bleeding

Mnemonic	Necessary data
W	Who called the paramedics and why?
O	Over the past 4 hours, how much blood have you lost?
M	Menstruation last occurred on what date?
A	Are you pregnant? Are you sure?
N	Now describe any other symptoms you have/have had.

CONDITIONS INDICATING POSSIBLE CHILD ABUSE

Malnutrition; failure to thrive; dehydration
Unclean or neglected appearance; inappropriate dress (including a dirty child with an injury dressed in clean clothes)
Quiet, "adult" behaviors; child reassuring parent; child frightened of parent/significant other
Ecchymoses over wide area; deep muscle bruising/hemorrhage; bruises of various ages
Burns by cigarettes or in inappropriate areas (palms of hands, feet, and ankles); "doughnut" or "zebra" burns
Fractures in various stages of healing or of posterior ribs; "eggshell" fractures of skull; spiral fractures of long bones
Marks from belts, whips, buckles, rings; impressions of bottles, bats, sticks
Unexplained or inappropriate injuries
Previous unexplained injuries; care provided at several facilities
Parents overreacting or underreacting to the incident

Table 17-1. Basic psychological assessment—the ABCDEFs

Desired data	Pertinent questions
Appearance	What is the patient's physical state? Undernourished? Pale? Trembling? Injured?
	Is he clean? Disheveled? Unkempt?
	Does he smell of sweat? Excrement? Alcohol? Acetone?
	Are there signs of physical illness/injury?
Body language	Does he move constantly? Not at all? In opposite ways to his expressed feelings?
	Are his movements inappropriate? Exaggerated?
Complaints	Why were paramedics called? By whom?
	Does he have specific pain? Disability? Physical symptoms?
	Are these problems new? Old? Recurrent?
	Are his complaints vague? Changing?
Distress level	How ill does he feel (on a scale of 1 to 10)?
	How long has the episode lasted?
	Has he ever felt just like this before? When? What was done about it?
Emotional state	Does he state he feels or does he appear anxious? Confused? Panicky? Out of touch with reality? Fearful? Withdrawn? Manic? Depressed? Hostile? Angry? Desperate? Violent? Apathetic? Labile? Sad? Grief stricken?
Function of intellectual faculties	Is he oriented?
	Is his memory intact for recent events?
	Does he retain information you give him?
	Is he able to briefly state information regarding current events?
	Does he ramble? Confabulate? Have delusions? Hallucinate?
	Can he speak clearly? Concisely? Coherently?
Status	What is his level of consciousness?
	Is he incapacitated?
	Is his life threatened?
	Is he in need of professional mental health care?
	Can he safely be left with significant others?
	Does he need restraining? Constant observation?

STRUCTURE OF A SUICIDE

Chronic/repeated failure to have basic needs* met at some level or Acute situational crisis	←	stress
Feelings of frustration, helplessness, anger (directed inward)	←	Stress
External stress factors: separation; death; divorce; surgery; childbirth; history of suicide in family; aloneness	←	STRESS
Failure to communicate needs, frustrations; ineffectual pleas for help	←	STRESS
Failure of coping mechanisms; feelings of rejection, hopelessness, depression, guilt	←	STRESS
Decision to commit suicide; detailed plan of action; verbal/action clues to plan	→	Apparent relief of stress
Suicidal act; may be preceded by "practice" attempt; may be accompanied by ambivalent behaviors	→ ←	Ambivalence over survival

*As defined in Maslow's *hierarchy of needs*.

INTERVENTIONS IN PSYCHOLOGICAL DISTRESS STATES

Remove the patient from the crisis situation if possible.
Ensure his safety and privacy.
Assess his behavior.
Listen to his interpretation of the situation.

Calm him down.
Advise him of your plan of care and specific procedures.
Respect him as an individual.
Enable him to participate in decisions regarding his treatment.

EMT COURSE
HOMEWORK #1

1. The normal anatomical position is:
   a. The position of rest with the palms facing forward
   b. The position of attention with the palms facing backward
   c. The position of rest with the palms facing backward
   d. The position of attention with the palms facing forward.

2. When discussing a part and making reference to the point of origin, the terms _____ meaning closest to and _____ meaning farthest from are used.

3. Two terms of location connected with the _____plane are ___ and ___.

transverse	anterior and posterior
sagittal	inferior and superior
coronal	lateral and medial

(connect the proper terms)

4. A movement away from the midline is _____.

5. A movement towards the midline is _____.

6. _____ is the opening or lengthening of an angle.

7. _____ is the closing or decreasing of an angle.

8. Connect the common terms with their medical equivalents:

brain case	brachium
upper arm	clavicle
windpipe	colon
belly button	cranium
voice box	larynx
jaw	mandible
large intestine	sternum
breastbone	thorax
chest	trachea
collar bone	umbilicus

9. When I am laying on my ___ I am in the ___position.

back	laterally recumbant
side	prone
stomach	supine

(connect the proper terms)

10. The normal breathing rate for adults is _____ to _____ times per minute;
    " " " " " children is _____to _____ times per minute.

11. The normal pulse rate for an adult at rest is between _____ and _____ beats per minute; for children between _____ and _____ times per minute.

12. Blood pressure is measured diastolic over systolic. T or F

13. Blood pressure measured by palpation is recorded systolic over diastolic. T or F

14. Rectal temperature is usually about 1^{o} higher than when measured under the tongue. T or F

15. The vital signs are: 1. _____ 2. _____
    3. _____ 4._____

16. What are the four quadrants of the abdomen, and which vital organs are found in which quadrant? List on back.

MEDICO-LEGAL RESPONSIBILITIES

1. What are the requirements in the Virginia Regulations of the Board of Health governing ambulance services which specifically pertain to the driver of the ambulance?

2. As an EMT at the scene of an accident, your primary duties and responsibilities are:

3. The law governing ambulances in the state of Virginia requires how many certified attendant(s) to be in an ambulance?

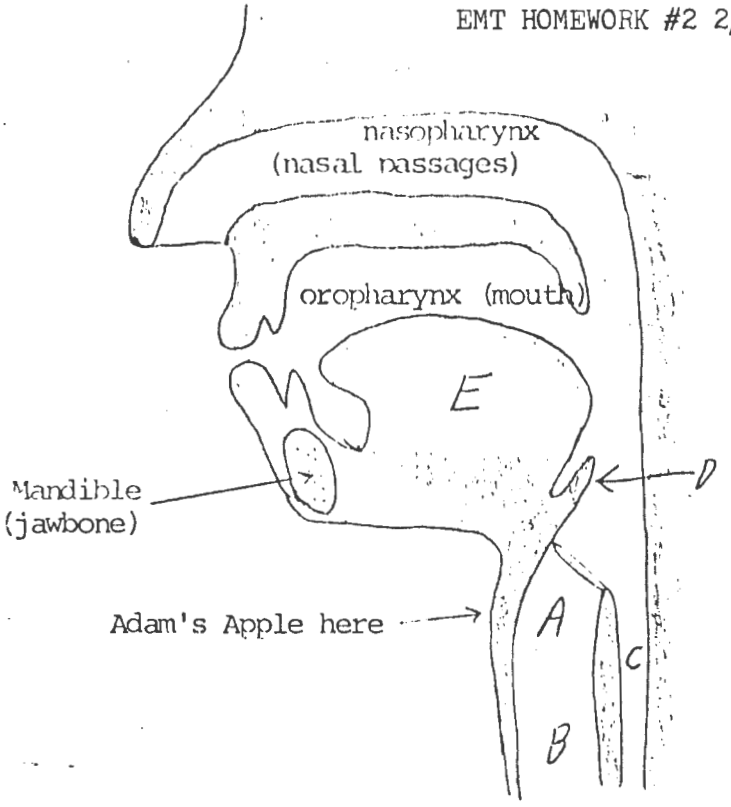
4. At the scene of an automobile accident, who would be the authorized person in charge?

5. ~~Inquiries~~ INJURIES involving animal bites: What action should the EMT take other than administering first aid to the patient?

6. In cases involving violent or unnatural deaths, the EMT should notify whom?

7. In cases of attempted suicide or murder, the EMT may transport the patient to the hospital for treatment without prior authorization from anyone. T F

8. When a drunk refuses first aid, should you attempt to administer same?



Use this list of names:

Epiglottis

Tongue

Esophagus

Larynx

Trachea

	Fill in name:	Fill in letter on diagram:
1) Muscular organ - when relaxed it may fall back and block airway.	_____	____
2) Vital protective valve - normally prevents food, vomit, or liquids from reaching lungs. May fail to function in unconscious victim.	_____	____
3) "Voice Box" - entrance to this structure may be blocked in "Cafe Coronary", therefore, victim of "Cafe Coronary" cannot utter a sound while he remains conscious.	_____	____
4) Food tube - stomach contents may rise up through this and back down the windpipe of an unconscious victim, causing "Aspiration Pneumonia"- a literal digestion of lung tissue.	_____	____
5) "Windpipe"- bottom end splits into right and left main bronchi. A doctor may insert a breathing tube directly into this structure during a resuscitation attempt.	_____	____

EMT COURSE

DUE 5 Feb. (M) HOMEWORK #3 NAME_____

ANATOMY

Joints may be characterized by their shape. Draw a line between the name of the joint and the proper description of its shape.

1. Hip
2. Shoulder
3. Metacarpal of thumb
4. Elbow
5. Knee

Saddle joint
Ball and socket joint
Hinge joint

6. The skull has two main parts:
   a._____
   b._____

Draw a line between the site of articulation and each section of the spine:

7. Cervical spine
8. Thoracic spine
9. Lumbar spine
10. Sacral spine
11. Coccygeal spine

None
Ribs
Pelvic girdle

List the number of vertabrae in each section of the spinal cord, and specify its location.

12. Lumbar_____
13. Coccygeal_____
14. Sacral_____
15. Cervical_____
16. Thoracic_____

The upper extremity is divided into three major parts. Give the name for each part, and list the bones of which it is composed.

PART	BONES
17._____	_____
18._____	_____
19._____	_____

20. The pelvic girdle is made up of three major bony parts. Two of these are bilaterally symmetric, and each of these two parts is in turn composed of three subsidiary bones.

    Major part 1:_____

    Major parts 2 & 3:_____, which are each composed of

    1._____, 2._____, and 3._____

21. The femur is divided into three areas:

    1._____, 2._____, and 3._____

The lower extremity is divided into three major parts. Give the name for each part, and list the bones of which it is composed.

	PART	BONES
22.	_____	_____
23.	_____	_____
24.	_____	_____

25. Does the fibula connect with the knee joint?

26. Muscle attaches to bone by_____.

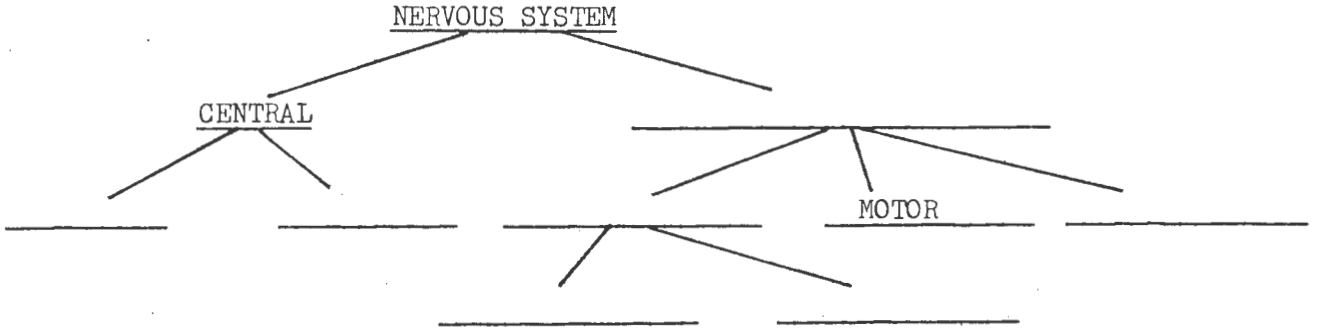
27. Tendons cross_____.

28. List the three types of muscle.

1._____, 2._____, and 3._____

29. The muscles of the intestines are classified as_____.

30. Complete the following diagram:



31. Does the sympathetic nerve trunk lie within the spinal canal?

32. Are sensory nerve endings found only in the skin?

33. Motor nerves end in_____.

34. The capillaries of the lungs are located in the walls of the _____.

35. The opening of the trachea is gaurded from food and drink by the_____.

36. During inspiration, the diaphragm moves downwards. Is it contracting or relaxing?

37. The lungs are covered by a smooth glistening membrane called the_____. The space between the two layers of it is called the_____. What does this space contain?

39. If the membranes discussed in the previous question are inflamed, what symptoms will result? What signs?

List the functions of each of the following components of blood:

40. Plasma _____

41. Red blood cells _____

42. White blood cells _____

43. Platelets _____

Draw a line between names and proper descriptions:

44. Thoracic duct	
45. Aorta	Major artery
46. Superior vena cava	Major vein
47. Inferior vena cava	Major lymph vessel
48. Mesentery	None of the above

Complete the following diagram of the heart:

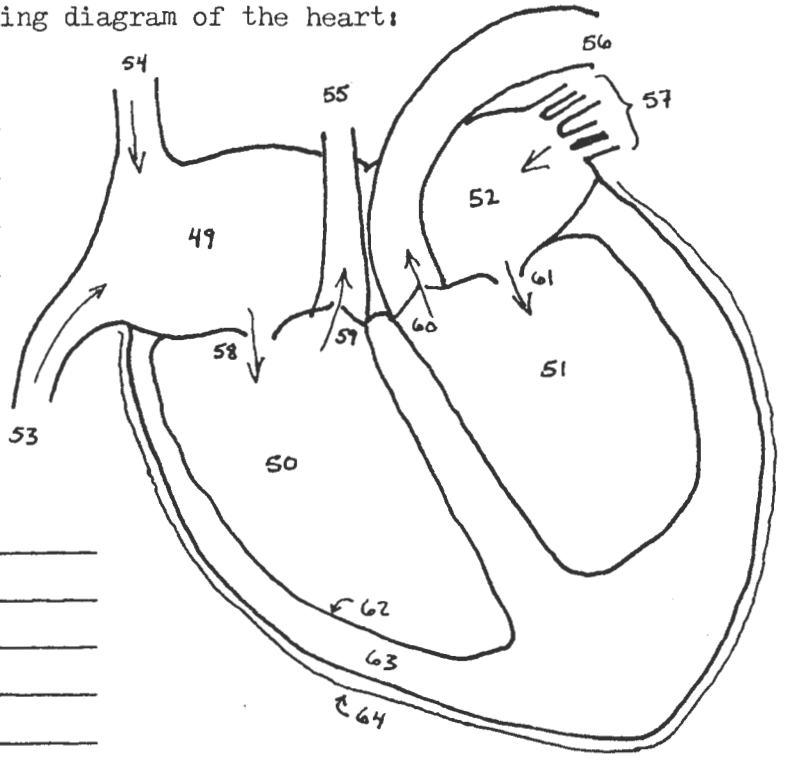
Chambers

49. _____

50. _____

51. _____

52. _____



Vessels to and from

53. _____

54. _____

55. _____

56. _____

57. _____

Valves

58. _____

59. _____

60. _____

61. _____

Layers

62. _____

63. _____

64. _____

Indicate the location of each of the following pulse points:

65. Carotid _____

66. Radial _____

67. Ulnar _____

68. Popliteal _____

68. Femoral _____

69. Posterior Tibialis _____

70. Dorsalis pedis _____

71. When counting ribs, one counts the first palpable rib as the first rib. True or false?

72. Severe blows to the left upper quadrant may injure the _____.

73. Tenderness in the upper right quadrant is usually caused by _____.

74. _____ is the most frequent cause of pain in the right lower quadrant.

75. Which of the following are chief topographic landmarks of the absomen?

a. Groin
b. Costal arches
c. Golden arches
d. Umbilicus
e. Anterior superior iliac crests
f. Pubis
g. Floating ribs
h. Manubrium of the sternum

DIAGNOSTIC SIGNS

76. It is customary in an emergency to take a pulse at the _____ artery, which is just lateral to the_____.

77. The normal resting respiratory rate for adults is _____ times per minute; that for children is about _____per minute, and infants breathe about _____ times per minute.

78. Blood pressure levels vary widely with age and sex. However, a useful rule of thumb for a normal male systolic pressure is _____ plus the age of the patient.

79. Normal male diastolic pressures are in the range from _____ to _____.

Match the folowwing skin colors and temperatures with the appropriate type of injury or disease:

80. Cool clammy skin
81. Pale ashen skin
82. Hot dry skin
83. Blue skin
84. Red skin

Trauma
Blood loss
Fever
Heat stroke
Airway obstruction
Poisoning
Carbon monoxide poisoning
Heart failure

85. Constricted pupils may indicate_____.

86. Dilated pupils may be seen in several states. Name three.

1. _____
2. _____
3. _____

87. What is often the EMT's first warning of developing shock?

DUE 19 Feb. (M) EMT COURSE NAME_____
HOMEWORK #4

1. List five functions of the skin:
   1)_____
   2)_____
   3)_____
   4)_____
   5)_____

2. The skin is composed of _____layers.

3. The body's first line of defense against bacteria is the_____.

4. The dermis is responsible for skin color. T F

5. The sweat glands are connected to the hair follicles. T F

6. Sebaceous glands connect to the skin by single isolated pores. T F

7. The air we breathe in contains about _____% O_2 and _____% CO_2.
   The air we breathe out contains about _____% O_2 and _____% CO_2.

8. Why is mouth-to-mouth ventilation (or mouth-to-nose) superior to other methods of manual artificial respiration? List at least three reasons.
   1)_____
   2)_____
   3)_____

9. What is the most common cause of (preventable) death in the unconscious victim?

10. What are three methods for maintaining an airway in a victim with a suspected spine injury without special devices?
    1)_____
    2)_____
    3)_____

11. What method for maintaining an airway (again, without special devices) would be best for a victim with spontaneous respiration, but in danger of vomiting?

12. List two reasons for using mouth-to-nose artificial respiration instead of mouth-to-mouth.
    1)_____
    2)_____

13. Why should a victim's mouth always be opened during the exhalation phase of mouth-to-nose ventilation?

14. The control center is located in the _____ of the brain.

15. Can breathing movements continue even with complete airway obstruction?

16. Many medical emergencies, including hypovolemic shock, have symptoms and signs resulting from a massive stimulation of the sympathetic nervous system. List at least five:

    1)_____

    2)_____

    3)_____

    4)_____

    5)_____

17. What is infiltration? What should you do when an IV appears to be infiltrating?

18. If you are not sure whether an IV is infiltrating or not, and you lowered the IV bottle, would you see blood rapidlyflowing back through the tubing if it was, in fact, infiltrating?

19. _____refers to the administration of blood and _____ refers to the administration of non-blood fluids.

20. A patient who has recieved a crushing blow to the entire body, and who has blood shot eyes and cyanosis of the head, neck, and shoulders, probably has:

    _____

21. When the pleural space is filled by air, the condition is known as_____ _____, and when this space is filled by ~~air~~ blood, as _____ _____.

22. _____ often follows a stab wound to the heart.

23. What are signs of the condition in 22?

    _____

    _____

24. The prescence of air under the skin is called_____.

25. When air trapped in the pleural space is at a higher pressure than atmospheric, the condition is known as _____.

26. What is "mediastinal shift" and what can be done to reduce it in a patient with a chest injury?

27. What is "pendeluft" and what does it tell you about the treatment of flail chest?

28. There are two types of paradoxical respiration. One is caused by a chst injury. Describe it.

29. Another type of paradoxical respiration is caused by cervical spine injury. describe the difference between this type and the type in 28.

30. What is the proper drug treatment for anaphylaxis?

EMT COURSE
HOMEWORK #4A: O_2 AND ADJUNCTS

1. The air we breathe in:
   _____% Nitrogen
   _____% Oxygen
   _____% Carbon Dioxide

   The air we breathe out:
   _____% Nitrogen
   _____% Oxygen
   _____% Carbon dioxide

2. Classify each of the following as High, Medium, or Low concentration, and indicate whether it is appropriate for patients with spontaneous respirations, who need artificial ventilation, or both. (S=spontaneous, A=artificial vent., B=both)

Method	% O_2	Type of patient
a. Nasal prongs		
b. 24% Ventimask		
c. Plain mask		
d. Partial rebreathing mask		
e. Non-rebreathing mask		
f. Pocket mask w/ O_2 port		
g. Bag-mask with O_2 reservoir		
h. Demand valve		

3. Why are pressure-cycled mechanical resuscitators not appropriate for CPR?

4. How should a proper-size oropharyngeal airway be selected?

5. What advantage does a nasopharyngeal airway have over the oropharyngeal airway?

6. How long of a section of a flexible suction catheter should be inserted for oropharyngeal suctioning?

7. What prevents oxygen regulators from being hooked up to bottles of other gases than oxygen?

8. Should oxygen regulators be oiled to assure proper function? Why or why not?

9. What problem may be caused by giving high-flow O_2 to certain COPD patients? How does this happen?

10. List three hazards of oxygen administration other than that described in question 9.

EMT COURSE
HOMEWORK #5: THE NERVOUS SYSTEM

1. The nervous system may be broken down into parts in two different ways, structural and functional. The two major structural divisions are the central nervous system (CNS) and the _____nervous system (_____). The CNS in turn consists of the _____ and the _____, and the other major part consists of the _____nerves and the _____ nerves.

2. Two major functional divisions of the nervous system are the voluntary nervous system and the _____ nervous system, which in turn consists of the _____ nervous system (fight or flight; nerve trunk outside but parallel to the spine) and the _____ nervous system (vagal stimulation, Valsalva maneuver).

3. A reflex arc directly connects motor and sensory nerves through the spinal cord, but does not depend on the brain. True or False?

4. The brain and spinal cord are cushioned by a clear fluid called _____ (__ __ __). This fluid is formed from blood (through the blood/brain barrier) by the choroid plexus in the ventricles of the brain. It flows through the CNS, then is reabsorbed by the blood through the arachnoid villi in the midsagittal venous sinus.

5. The fluid described above is not necessary for CNS function, and is easily replaced. True or false?

6. Give two reasons(other than those given above) not to stop the outflow of clear fluid from the nose or ears of the head-injured patient.

7. List, from inside to outside, the meninges.

8. What is nuchal rigidity (a stiff neck, with inability to touch the chin to the chest) often a sign of?

9. Define:
   a. anesthesia
   b. paresthesia
   c. paralysis
   d. paresis
   e. hemi-paresis
   f. ipsilateral
   g. contralateral

10. A person with full nerve function in all extremities does not have an injury to the spine. True or False?

11. A patient presents with labored diaphragmatic breathing (paradoxical respiration). Where is the spine injured?

12. An uncounscious patient has his hands over his head. Although they have been brought back down to his sides, they keep creeping or falling back to a position above his head. Should you backboard him? Why?

13. Describe the difference between the two types of epileptic seizures.

14. List several causes of convulsive seizures.

15. What commonly-known procedures are <u>not</u> appropriate for a person having a seizure?

16. What are the effects of hypoxia and hypercapnia in an alert person?

17. What effect does hypercapnia have on the blood vessels of the brain?

18. Should a patient with a CVA always be given O_2? Why or why not?

19. What is <u>aphasia</u>? Can an aphasic patient ever understand what is being said around him?

20. List several signs and symptoms of increasing intercranial pressure.

21. Except in very rare instances, regeneration of the CNS does not happen. True or False?

22. What is the difference between concussion and cerebral contusion?

23. What is the cause of neurogenic shock?

EMT COURSE
HOMEWORK #6: SPECIFIC INJURIES

1. Assume that all of the following treatments are necessary. In what order should they be given?

___splint a fractured humerus
___control arterial bleeding from the upper arm
___establish an airway
___dress and bandage protruding intestines
___treat for shock
___dress and bandage a lacerated knee

2. A victim of an auto accident is found lying on his back with a large piece of glass imbedded and going completely through his cheek. The glass should be removed

a. only if the glass or blood is preventing adequate airway maintanence.
b. because glass inhibits clotting.
c. to make dressing and bandaging easier.
d. to make hemostasis easier.

3. Why should you cover both eyes in a patient with major trauma to the eye?

4. What is an alternative to covering both eyes in a situation of major trauma to one eye, but with the patient refusing to have his good eye "blinded"?

5. What type of bandage is <u>not</u> recommended for use by EMTs by many texts? Why?

6. Give a good method of bandaging each of the following:
   a. lacerated scalp

   b. knife protruding from the abdomen

   c. lacerated lower leg

   d. crushed hand

   e. lacerated scalp

   f. abrasion of the knee

   g. burn of the foot and ankle

7. Penetrating injuries to the eyeball proper should be treated by:

8. Eye irrigation fluid must be sterile. True or False?

9. Lacerated eyelids may be treated with gentle direct pressure, except when _____or _____.

10. A victim of an automobile accident with pain and/or tenderness in the upper left abdominal quadrant most probably has injured his _____. You should be on the lookout for signs of developing _____.

11. Which two abdominal organs are most commonly lacerated by fractured ribs?

12. Which organ is commonly injured by a fractured pelvis?

13. Laceration of hollow organs tends to cause _____ _____, whereas laceration of solid organs tends to cause _____.

14. Evisceration means:

15. Chemical burns to the eye by strong alkalai should be flushed with water for _____minutes, minimum.

16. May a cotton-tipped applicator ("Q-tip") be used to remove foreign matter from the cornea? Why or why not?

17. Heat burns to the eyelids should be treated by:_____ _____.

18. Light burns to the eyes should be treated by EMTs with_____ _____

19. Which of the major organs usually referred to as ""abdominal organs" are actually outside the abdominal cavity proper? What word is used to describe their position?

20. Shock associated with fractures of the right lower ribs would lead one to suspect injury to the _____, while shock associated with fractures of the left lower ribs would lead one to suspect a ruptured _____.

21. "GI bleeding" is often a result of bleeding ulcers. Where are such ulcers most commonly found? (hint: not in the stomach)

22. A fall or blow resulting in low back and flank pain would lead one to suspect injury to the _____. What other sign might tend to confirm this suspicion? (several possible answers)

23. What is the major function of the colon? What is the result when it doesn't carry out this function? Can this condition cause shock?

24. The pancreas contains each of the two types of glands found in the body. The _____ glands of the pancreas produce the hormone _____ and other hormones, and the _____ glands produce digestive juices which are secreted into the _____.

25. _____ is produced by the liver and stored by the gall bladder. Sometimes secretions known as _____ form in the gall bladder, and may cause great pain if they become lodged in the _____. A similar type of pain is caused by secretions that form in the _____s and become lodged in the _____.

26. The roof of the mouth consists of the _____ and the _____. The lining of the mouth contains _____glands, and one of the larger of these glands is known as the _____ and is found in the cheek.

27. The stomach secretes _____ and _____ acid to break down protein.

28. The liver has many functions. It
    a. produces _____, which is stored in the _____ and serves both to aid in fat digestion and to excrete certain waste products.
    b. stores a substance known as _____ ___ or "animal starch" which provides quick energy for the body.
    c. detoxifies the blood of circulating poisons.
    d. "filters" the blood coming from the _____ before it returns to the main circulation.

29. What is the difference between the ureter and the urethra?

30. The testicles secrete _____, _____, and _____.

31. The seminal vesicles store _____.

32. The seminal duct connects the _____ and _____.

33. The male urethra serves as part of both urinary and genital systems, which is not the case with the female urethra. True or false?

34. The ovaries secrete _____ into the blood, and release immature eggs every 28 days or so. The eggs go down the _____ to the _____. If the egg is fertilized, it implants itself in the engorged lining of the _____. If not, the egg passes on out, and the lining sloughs off and follows the egg through the _____, into the _____, and out. Thus, at the end of each _____period, a discharge of blood from the vagina is normal. Cessation of these <u>menses</u> is an indication of pregnancy, in general.

35. What is meant by ectopic pregnancy? How can this happen? (hint: look at the infundibulum of the tube)

36. The eyes' shape is maintained by an irreplaceable fluid called the _____ _____.

37. The white part of the eye is known as the _____, the lining of the eyelid is the _____, and the clear front part of the eye is the _____.

38. The lacrimal glands secrete _____. The nasolacrimal ducts (also known more commonly as the _____ ducts) are found at the _____ _____of each eye.

39. The iris is a muscle. True or false?

40. Why should you apply pressure to <u>both</u> ends of a lacerated neck vein, especially if the head is elevated?

EMT COURSE
HOMEWORK #7: THE MUSCULO-SKELETAL SYSTEM

1. Give one example each of: saddle joint, ball and socket joint, fused joint.

2. What is an epiphysis?

3. Bone consists of two major parts: a fibrous matrix and deposited _____.

4. What does bone marrow do?

5. List the three major types of muscle, their strength and duration of contraction characteristics, and provide an example of each.

TYPE	CHARACTERISTICS	EXAMPLE
a.		
b.		
c.		

6. Describe the shoulder girdle in terms of its bones.

7. Describe the pelvic girdle in terms of its bones.

8. What is a major difference between the attachments of the shoulder and pelvic girdles to the spine?

9. List, in descending order, the bones of the upper extremity.

10. List, in descending order, the bones of the lower extremity.

11. What are the three major anatomic areas of the femur? Which of these is most susceptible to breakage, especially in older people?

12. Connect the bone names and appropriate phrases:

RADIUS	Elbow Joint
ULNA	Wrist Joint
INNOMINATE	Lateral Malleolus
FIBULA	Medial Malleolus
TIBIA	Sacrum, Sacro-iliac
CRANIUM	Fused sutures
TENDON	Holds Joints Together
LIGAMENTS	Attaches Muscle to Bones
CARPALS	Hand
TARSALS	Foot

13. What is the difference between "dorsiflexion" and "plantar flexion" of the ankle?

14. What is the difference between a dislocation and a sprain?

15. What is the difference between a sprain and a strain?

16. The bruising discoloration often seen near fractures is called _____.

17. A fracture resulting from bone weakness from bone disease is called a _____ fracture.

18. A fracture resulting from repeated stresses to a bone (e.g. a long forced march or hike) is called a _____ fracture.

19. As a general rule, fractures and/or dislocations around a joint (it's often hard to tell them apart in the field) should not be straightened.

20. Fractures of long bones should be gently straightened by traction when applying a splint.

21. For a joint fracture dislocation, immobilize the long bone on either side; for a long bone fracture, immobilize the joint on either side. True or False?

22. Pulse and enervation should always be checked before and after splinting. True or False?

23. Define:

    a. Greenstick fracture

    b. Impacted fracture

24. Should air splints be inflated by pump?

25. Should tight wrappings be placed over a dislocated elbow to reduce swelling? How about cold packs?

26. How should a hand injury usually be splinted?

27. Why are elbow dislocations so dangerous?

28. Why should traction be used on most femur fractures?

29. What type of dislocation may EMTs routinely reduce? Why?

EMT COURSE

HOMEWORK #8: MEDICAL EMERGENCIES

1. What is collateral circulation?

2. What is the most common cause and mechanism for cardiac arrest?

3. What are:
   -CAD?

   -arteriosclerosis?

   -atherosclerosis?

   -angina?

   -AMI?

4. List distinguishing signs and symptoms between angina and AMI.
   Angina AMI

5. List three major possible consequences of an AMI.

6. List at least five factors that indicate high risk of heart disease.

7. What does nitroglycerine do, and what are the side effects?

8. What should you check if a person with angina has taken three tablets of nitroglycerine and has had no relief?

9. What treatment should be given to a suspected MI patient, and how should he or she be transported?

10. What are the differences between right and left heart failure?
    Right heart failure Left heart failure

11. Give the signs and symptoms (in brief), underlying cause, and treatment for insulin shock and diabetic coma.
    Insulin shock Diabetic coma

EMT COURSE

HOMEWORK #9: ENVIRONMENTAL EMERGENCIES

1. What is the most common cause of death in burn victims?

2. List at least three other major problems of burn victims.

3. What treatment should be used for partial thickness burns of a small area?
   1)
   2)
   3)

4. What treatment should be used for extensive partial thickness burns, and for all full thickness burns?
   1)
   2)
   3)

5. What treatment should be employed initially for chemical burns? What difference is there in trating burns from dry (i.e. powdered) corrosives?

6. What are the three types of radiation?

7. What is nitrogen narcosis?

8. What is decompression sickness, and what is the proper treatment for it?

9. (A) What is the proper general first aid treatment for ingested poisons?
   1)
   2)
   3)

   (B) What variations are appropriate for: (and why)
   1) acids
   2) alkalais
   3)petroleum products

   (C) What information/items should be brought to the ER along with the patient?

   (D) What is the treatment for poisoning by mouth for you <u>as an EMT</u> (not first aid treatment)?

10. Why should bee stingers not be removed by tweezers?

11. What is the major problem in anaphylaxis, and what drug should be used in its treatment?

12. How dangerous is a rattlesnake bite?

13. What treatments are effective in reducing the effects of envenomated snake bites? Which are not effective?

14. When is the use of the "cut and suck" snakebite treatment method not appropriate?

15. Should snakebitten limbs be splinted, and if so, why?

16. What treatments should be used for marine animal:
    -stings?

    -puncture wounds with poisoned spines?

17. Fill in:

	Heat Cramps	Heat Exhaustion	Heatstroke
Cause			
Medical Emergency?			
Signs			
Symptoms			
Treatment			

18. What is frostbite, and what is immersion (trench-) foot?

19. Normal healthy human beings are in general not susceptible to frostbite. What then causes people to get frostbite? (several things)

20. What is the proper treatment for frostbitten feet in the backcountry? for frostbitten fingers at a ski area?

20. Provide the signs and symptoms of each stage of hypothermia:
Stage 1

Stage 2

Stage 3

21. What is the tratment for acute hypothermia?

22. What is the treatment for chronic hypothermia?

23. Why should a person with chronic hypothermia not be rewarmed outside a hospital, and why must such a patient be transported "softly"?

24. What are:
-"rewarming shock" ?

-"rewarming afterdrop" ?

-"rewarming metabolic acidosis"?

25. How should an acute hypothermic person be rewarmed using a bathtub?

26. What are the "three Ws", that is, the three clothing priorities for EMT protection against hypothermia?

27. What is "hypothermia weather", and why is it called this?

28. What areas of the body would be best used for rewarming a person using hot packs?

29. Is it useful to place a person with second or third stage hypothermia alone in a thick sleeping bag? Why or why not?

30. Should a person with hypothermia ever be completely immersed in a hot bathtub (except, of course, for the face and head)?

EMT COURSE

HOMEWORK #10: OB/GYN, PEDIATRICS, AND PSYCHIATRIC EMERGENCIES

1. Draw a rough side-view sketch showing the following:
ovaries, fallopian tubes, uterus, cervix, vagina, perineum, anus, external genitalia.

2. Describe briefly the sequence of events (perhaps just list) during a period of menses.

3. Describe briefly the process of fertilization and implantation.

4. Draw a rough sketch showing: fetus, amnion, placenta, birth canal, umbilical cord.

5. Describe briefly the three phases of labor:
I.

II.

III.

6. Give possible causes, and the appropriate treatment for, the following presentations when not connected to any obvious pregnancy:

A. vaginal bleeding

B. missed menstrual period

C. abdominal pain

7. Define:
A. toxemia of pregnancy

B. ectopic pregnancy

C. abruptio placentae

(7) D. placentae praevia

8. Can O_2 given to a mother help an unborn or partially born fetus? Can CPR on a fatally injured mother sustain an unborn infant?

9. List, in your own words, the management priorities for childbirth in the field.

10. When responding to an OB call, the EMT must make a decision as to whether to transport or to deliver at the scene. What considerations would make one decide to deliver at the scene? (The orange book lists three possible reasons).

11. Whan trying to evaluate the possibility of an imminent delivery, the EMT should look for several factors that tend to mean that delivery will occur quickly. List factors that mean:

Delivery probably imminent	Delivery probably delayed

12. Describe a normal delivery by EMTs, including: preparation of equipment and the mother, handling the infant as born, care of umbilical cord, care of placenta, care of the newborn.

13. What important things should you consider in a:
A. breech presentation?

B. prolapsed cord?

C. twins?

14. What should be done after delivery of the placenta to minimize hemorrhage?

15. Define:
A. intussception

B. croup

C. epiglottitis

D. laryngeotracheal bronchitis

E. febrile seizures

F. SIDS

16. Which of the following indicate probable shock?
-systolic BP of 40 in a child in nursery school
-systolic BP of 80 in a 11-year-old
-systolic bp of 60 in a teenager

17. A person in a state of severe anxiety needs outside assistance in the form of support and control. What should you do if

A. the anxiety is well-founded?

B. What if it is disproportionate to the injury or situation?

18. What important things should you consider in dealing with a patient

A. in a state of confusion

B. in a state of panic?

C. who is threatening violence to himself or others?

D. with an aberrant behavior pattern (e.g. psychotic)?

19. Explain the use of body language and active listening in dealing with a potentially violent patient.

20. What is the difference between a suicide attempt and a suicide gesture?

BASIC LIFE SUPPORT

A AIRWAY

Problem	Solution
Tongue obstruction.....	Hyperextend neck* Jaw lift* Triple airway manuver* Position Modified jaw thrust [oropharyngeal airway] *not to be used when cervical spine injury is suspected.
Foreign body obstruction.....	Back blows (4) Abdominal thrusts (4) Finger probe (long Kelley clamps or MacGill forceps) (high tracheostomy=cricothyroidotomy)
Danger of aspiration.....	Position [suction] (esophageal obturator airway) (endotracheal intubation)
Anatomic obstruction.....	(high tracheostomy)

B BREATHING

Problem	Solution
Apneic patient.....	Artificial respiration: --mouth-to-mouth --mouth-to-nose --mouth-to-mouth and nose --mouth-to-stoma --chest pressure-arm lift --mouth-to-mask --bag-mask --demand valve --respirator
Collapsed lung/pendelluft sucking chest wound.....	Seal
pneumo-/hemo- thorax.....	(decompression with chest tube and flutter valve or water seal drainage) Position with collapsed lung down
Flail chest.....	Stabilize Administer positive-pressure artificial respiration
Anoxia near drowning suffocation ..... CO poisoning	"Flush out" CO or CO_2 with high O_2 concentration.

C CIRCULATION

No effective heartbeat: -ribcage rebounds.....	External cardiac compression
-ribcage can't rebound....	(thoracotomy and internal cardiac compression)

(circulation contd.)

Severe external bleeding.....P E S T:
direct Pressure
Elevation
pressure on the Supplying artery
Tourniquet
also:
--pinching bleeding vessels directly
--gauze packing
--reflection of galea

Internal bleeding....."MAST" trousers

Traumatic hypovolemic shock.....Position
Oral fluids*
Oxygen
Keep from chilling
(IV therapy)

SECONDARY SURVEY

VITAL SIGNS
GENERAL APPEARANCE
-alertness (especially note if state of consciousness is deteriorating
-orientation to time, person, place or has deteriorated)
-degree of distress
PULSE
RESPIRATION
BLOOD PRESSURE
-systolic/diastolic
-systolic by palpation

SUBJECTIVE EXAM
Name
Approx. age
Sex
Primary complaint
Rescue situation
Background of problem
Medical history
Medications
Allergies

OBJECTIVE EXAM
Scalp and skull
Pupils and eyes
Eyelids/fingernails
Ears
Mouth
Neck: stoma, Medic Alert, tracheal deviation, cervical spine
Chest: expansion (flail)
rib fractures
auscultate
Abdomen: wounds
tenderness
masses
gaurding
Lower spine
Pelvis
Legs
Arms
Back

Fall 1977 BRMRG BASIC EMT COURSE ROSTER

NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	A	B	C	P/F	EMT No.
Arnold, Mark						76			X			96						75	X						86						
Calvert, Walter						79						90				83		88		X	X			90						
Chapman, Nancy						82						83				79		75						88						
Cohn, Sheldon						85						89				96		84						89						
Dubbs, Bill						94						89				79		85			X			87		X				
Halstead, Sue	X					76						84				79	X	81						79		X				
Hughes, John						85						85		X		83		75		X			X	85						
Ricciardelli, Ed	X					~~7~~ X		X				~~8~~ X		X		~~8~~ X		60		X		X	X	84		X				
Stevens, Pam						82						94				92		87		X				91		X				

Agency: the Blue Ridge Mountain Rescue Group of the Appalachian Search and Rescue Conference, Inc.
Course Coordinator: Keith Conover Place of instruction: Jordan Hall, University of Virginia.
Date of completion: 8 Dec 1977 On this roster: non-affiliated students.

Fall 1977 BRMRG BASIC EMT COURSE ROSTER

NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	A	B	C	P/F	EMT No.
Borzelleca, Paul						85						77				75		83		X				87						
Bush, Ben						76						72				79		73						80						
Bates, Scott						94						92			X	96		93					X	88						
Deane, Debbie						94						94				88		88						86						
Duboisson, Paul						85		X	X			X93				75		80				X		84						
Griffiths, John						79						90				92		75		X				87						
Hays, Chris						88						88				79		78			X	X		86						
Morrow, David						71						83				67		70				X		87						
Perlmutter, David						94						81				88		82						100						
Pottenger, Lynn			X	X		74						95				88		79						92						
Tanner, Kirk						82						X89				100		83					X	91		X				
Tetta, David						74						76				67		78	X		X		X	84						
Thomas, Betty						94					X	98				100		97		X				97						
Thomason, Don						85						87				79	X	84			X	X	X	100						
Walton, John						85						92				63		79			X	X		92						
Walton, June						79						83				X		75		X				85						

Agency: the Blue Ridge Mountain Rescue Group of the Appalachian Search and Rescue Conference, Inc.
Course Coordinator: Keith Conover Place of instruction: Jordan Hall, University of Virginia
Date of completion: 8 Dec 1977 On this roster: BRMRG members.

Fall 1977 BRMRG BASIC EMT COURSE ROSTER

NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	A	B	C	P/F	EMT No.
Deane, Brandon						97		X				95				83		87						91						796Φ

Note: Mr. Deane attended the entire EMT course rather than a refresher course, in order to renew his state EMT certification.

Agency: the Blue Ridge Mountain Rescue Group of the Appalachian Search and Rescue Conference, Inc.
Course Coordinator: Keith Conover Place of instruction: Jordan Hall, University of Virginia
Date of completion: 8 Dec 1977 On this roster: REFRESHER.