
16. INJURIES TO THE ABDOMEN AND GENITOURINARY TRACT

16-1. A FULL BELLY MAKETH A HAPPY HEART

1. For each of the following organs, indicate whether it lies in
- the abdominal cavity
 - the pelvic cavity
 - the retroperitoneal space
 - none of the above
- | | |
|------------------------|--------------------|
| ___ liver | ___ ureters |
| ___ rectum | ___ duodenum |
| ___ stomach | ___ ovaries |
| ___ bladder | ___ aorta |
| ___ kidney | ___ jejunum |
| ___ uterus | ___ gallbladder |
| ___ spleen | ___ adrenal glands |
| ___ pancreas | ___ ileum |
| ___ inferior vena cava | ___ testes |
| ___ colon | |
2. Which of the organs listed above lie completely or partially beneath the ribs and thus are liable to be injured when the overlying ribs are fractured?
- _____

3. Which of the organs listed above is most likely to be injured in association with a pelvic fracture?
- _____
4. Which of the organs listed above are solid organs?
- _____

16-2. JOURNEYS OF A JELLY DOUGHNUT

Imagine you are a raspberry jelly doughnut in the process of being eaten. Listed below are the structures you will traverse as you pass through the digestive tract. Arrange them in the order in which you will travel through them.

- | | | | |
|------------|--------------|---------|----------|
| a. jejunum | f. duodenum | 1. ____ | 6. ____ |
| b. pharynx | g. esophagus | 2. ____ | 7. ____ |
| c. anus | h. rectum | 3. ____ | 8. ____ |
| d. stomach | i. ileum | 4. ____ | 9. ____ |
| e. mouth | j. colon | 5. ____ | 10. ____ |

16-3. SECRETS FROM SAN SALVADOR

Continuing his journeys through Central America, Morris Q. has just made a very important discovery, which he radios in the usual code.

1. Second portion of the small intestine 43 14 9 44 38 10 36
2. First priority in treating abdominal injuries 47 22 45 49 30 12
3. Fluid concentrated and stored in the gallbladder 13 7 25 4
4. Intestine 33 35 17 26 15
5. Wavelike movement of the intestines that propels its contents forward 24 20 11 28 5 18 39 51 48 41 29
6. Shortness of breath 34 46 27 23 8 50 32
7. To cool 2 19 37 52 40
8. Prefix meaning not 42 16 21
9. Word used in comparisons 6 3 1 31


























Message: 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 26 27 28 29
30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 //

16-4. REPORT FROM RIO

Morris Q., always on the alert for secret intelligence about emergency care, sends back this reminder from the carnival in Rio. To decode MQM's message, fill in the words defined below, and read the message vertically in the circled letters.

Definitions

1. Glands that sit on top of the kidneys
2. Major artery of the abdomen
3. Organ that produces insulin and digestive enzymes
4. Severe, cramping pain associated with obstruction of a hollow organ
5. Organ in which initial acid digestion of food takes place
6. Distal end of the large intestine
7. Layer of tissue that lines the abdominal cavity
8. Blood in the urine
9. Gland that surrounds the male urethra
10. Organ that produces clotting factors and bile
11. Tube linking the upper digestive tract to the stomach
12. Organ that filters wastes from the blood and produces urine
13. Delicate tissue that carries blood vessels and nerves to and from the abdominal organs
14. Wormlike tube that extends out of the cecum
15. Hollow organ that concentrates and stores bile
16. Third portion of the small intestine
17. Tubes that carry urine from the kidney to the bladder
18. First portion of the small intestine
19. Large intestine
20. Organ that stores urine
21. Second portion of the small intestine
22. Passage through which urine travels from the bladder out of the body
23. Sac surrounding the testes
24. Female reproductive organ in the midline of the pelvic cavity
25. Delicate solid organ that clears the blood of old red cells and produces new ones

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.  _____

16-5. PLAY IT AGAIN, SAM

1. Bowel sounds are produced when gas and liquids are propelled through the intestines by successive muscular contractions called
 - a. peritonitis
 - b. peristalsis
 - c. periosteum
 - d. peripatesis
 - e. pericomo
2. Absence of bowel sounds in a person with abdominal trauma suggests
 - a. intestinal obstruction with colic
 - b. bleeding from the mesentery
 - c. a ruptured bladder
 - d. injury to the intestines
 - e. gastroenteritis

16-6. IT ONLY HURTS TO LAUGH

1. Match each of the following signs and symptoms of injury with the injury with which it is most likely to be associated.

- a. seat belt marks across the abdomen
- b. pain in the left shoulder
- c. board-like abdomen
- d. penetrating wound in the RUQ
- e. tenderness over the ninth and tenth right ribs posteriorly
- f. unstable pelvis

____ lacerated liver
 ____ ruptured pancreas

____ ruptured or sheared small intestine
 ____ contused or ruptured kidney
 ____ ruptured spleen
 ____ ruptured bladder

2. A person with irritation of the peritoneum will
- a. lie very still, usually with his legs drawn up
 - b. thrash about trying to find a position of comfort
 - c. sit up clutching his abdomen
 - d. complain of pain that waxes and wanes in intensity
 - e. have pain radiating down the left arm

16-7. THE TRUTH ABOUT THE ABDOMEN

Indicate which of the following statements regarding abdominal injuries are true and which are false.

1. Hollow abdominal organs are injured only when there is a penetrating wound of the abdomen.

TRUE FALSE

2. An object impaled in the abdomen should be stabilized in place with a bulky dressing.

TRUE FALSE

3. A loop of bowel seen protruding from an abdominal laceration should be gently pushed back into the abdominal cavity.

TRUE FALSE

4. The MAST garment should be avoided when shock is due to injury to internal abdominal organs.

TRUE FALSE

5. A patient with abdominal injury is likely to vomit.

TRUE FALSE

6. A patient with severe abdominal injury should be transported to the hospital without delay.

TRUE FALSE

16-8. ROLLING ALONG

1. A 38-year-old farmer was injured when the brakes on his tractor released, and it rolled into him, striking him on the right side of the back. When you arrive, he is conscious and alert, complaining of pain in his side. On physical examination, his pulse is 110 and regular, BP 130/84, and respirations 20 and unlabored. The head, neck, and chest are within normal limits. There is a bruise over the right flank and marked tenderness to palpation over the first two lumbar vertebrae. There is no evidence of injury to the extremities, and sensation and movement are intact. While in your care, the patient has to void, and he passes 200 ml of bloody urine.

Which of the following statements about this patient is NOT true?

- a. He has probably suffered injury to his right kidney.
- b. He should be immobilized on a long backboard.
- c. He has probably suffered injury to his bladder.
- d. He is at risk to develop shock.
- e. He must be evaluated in the hospital.

2. As the tractor continued rolling down the hill, it ran over a 15-year-old girl who was sunning herself in the meadow. You find her conscious but very restless and in severe pain. She complains also of extreme thirst and repeatedly asks you for water. Her pulse is 120, BP 90/60, and respirations 26 and shallow. The head, neck, and chest show no sign of injury. There is a tire mark over the lower abdomen, and the abdomen is rigid to palpation. The pelvis is unstable. The extremities show no sign of injury.

Which of the following statements about this patient is NOT true?

- a. She should be assumed to have suffered injury to her bladder.
- b. She should be treated with the MAST garment.
- c. She should be immobilized on a long backboard.
- d. She should be given water or juice to drink.
- e. She should be given oxygen.

16-9. PRIVATE PARTS

1. Don John calls for an ambulance on account of a painful injury he suffered under circumstances he refuses to divulge. His chief complaint is, "My thing is broken," and on physical examination, you find that his penis is severely angulated. The field treatment for this problem is to
 - a. immobilize the penis with a rigid splint
 - b. immobilize the penis with an air splint
 - c. apply hot compresses to the penis and transport the patient to the hospital
 - d. apply cold compresses to the penis and transport the patient to the hospital
 - e. advise the patient to avoid sexual intercourse and rest at home for several days
2. Sam Soprano was working near a piece of industrial machinery when the front of his trousers got caught in the machine. Before the machine could be shut off, part of the skin from his scrotum was avulsed. You find Sam pale and in extreme pain, with blood oozing from the denuded scrotum. A flap of skin is hanging from the teeth of the machinery. Which of the following is NOT part of the management of this situation?
 - a. Apply dry, sterile dressings to the scrotum.
 - b. Cut the avulsed skin free from the machinery, and preserve it in a sterile dressing moistened with sterile saline.
 - c. Apply cold compresses over the dressing on the scrotum.
 - d. Try to calm and reassure the patient.
 - e. Transport the patient to the hospital in the supine position.

17. FRACTURES, DISLOCATIONS, AND SPRAINS

17-1. MAKE NO BONES ABOUT IT

The grid below contains the names of 25 bones. If you find all 25, you get an A+; a score of 20, and you are doing pretty well; 15 or less, and you had better go back and review.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C | S | C | A | P | U | L | A | S | K | U | L | L |
| H | L | R | S | E | L | L | A | P | O | C | U | S |
| I | L | A | T | L | A | S | N | H | R | A | N | I |
| P | U | N | V | V | I | E | S | A | C | R | U | M |
| H | S | I | L | I | U | M | F | L | A | P | P | A |
| O | U | U | I | S | C | H | I | A | L | A | A | N |
| F | E | M | U | R | A | L | L | N | C | L | T | U |
| I | T | U | E | S | P | L | E | X | A | L | E | B |
| B | S | T | E | R | N | U | M | B | N | I | L | R |
| U | R | A | D | I | U | S | B | E | E | N | L | I |
| L | A | I | L | S | P | S | O | I | U | G | A | U |
| A | T | I | B | I | A | T | A | R | S | A | L | M |

The real experts can go on to the grid below, which contains 13 terms relating to bones and joints.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| O | A | C | R | O | M | I | O | N | H | S |
| L | U | N | O | N | O | C | L | A | I | M |
| E | G | L | E | N | O | I | D | I | N | A |
| C | H | S | A | D | D | L | E | N | G | L |
| R | N | S | H | E | L | Y | P | E | E | L |
| A | C | E | T | A | B | U | L | U | M | E |
| N | A | N | C | Y | F | A | C | E | R | O |
| O | S | O | C | K | E | T | L | O | I | L |
| N | E | N | O | S | T | U | R | L | E | U |
| T | R | O | C | H | A | N | T | E | R | S |

17-2. DEM BONES

Fill in the correct medical term for each of the bones described below.

- | | |
|-------------------|-------------------|
| 1. Shin bone | ___ _ B ___ _ |
| 2. Thigh bone | ___ _ ___ R ___ _ |
| 3. Backbone | ___ _ I ___ _ |
| 4. Breastbone | ___ T ___ _ |
| 5. Kneecap | ___ T ___ _ |
| 6. Shoulder blade | ___ _ ___ L ___ _ |
| 7. Ankle bone | ___ _ ___ E ___ _ |
| 8. Hip socket | ___ _ ___ B ___ _ |
| 9. Tail bone | ___ O ___ _ |
| 10. Funny bone | ___ N ___ _ |
| 11. Collar bone | ___ _ ___ E ___ _ |
| 12. Heel bone | ___ _ ___ S ___ _ |

17-3. WHAT'S A NICE BONE LIKE THAT DOING IN A JOINT LIKE THIS?

Every joint is made up of two or more bone ends. For each of the joints indicated, list which bones below are components of the joint. In answering the question, you may use each bone on the list once, more than once, or not at all.

- | | | | |
|-------------|--------------|------------|------------------|
| a. carpals | g. ischium | l. scapula | Joints |
| b. clavicle | h. phalanges | m. sternum | Shoulder ___ _ |
| c. femur | i. pubis | n. tarsals | Elbow ___ _ |
| d. fibula | j. radius | o. tibia | Wrist ___ _ |
| e. humerus | k. sacrum | p. ulna | Sacroiliac ___ _ |
| f. ilium | | | Hip ___ _ |
| | | | Knee ___ _ |
| | | | Ankle ___ _ |























17-4. BONE AGE

Here is one for the mathematics buffs.

- | | |
|--|--------------|
| 1. Take the number of ribs. | ___ |
| 2. Multiply by the number of carpal bones in one hand. | × ___ |
| 3. Multiply by the number of tarsal bones in one foot. | × ___ |
| 4. Multiply by the number of bones in the forearm. | × ___ |
| 5. Multiply by the number of cervical vertebrae. | × ___ |
| 6. Divide by the number of lumbar vertebrae. | ÷ ___ |
| 7. Add 0.4. | + <u>0.4</u> |
| 8. Subtract the number of phalangeal bones in one hand. | - ___ |
| 9. Add half the number of bones in the human body. | + ___ |
| 10. Subtract the number of phalangeal bones in one foot. | - ___ |
| 11. Subtract the number of thoracic vertebrae. | - ___ |

Total = Year of the Normandy Invasion = _____

Traveling incognito through White Russia, MQM has made a startling discovery and has dispatched a message in code. To learn what Morris has discovered, fill in the words defined below and read Morris's message vertically in the circled letters.

-
1.  — — — — —
2. — —  — — — — —
3. —  — — — — —
4.  — — — — —
5.  — — — — —
6.  — — — — —
7. — —  — — — — —
8. —  — — — — —
9.  — — — — —
10.  — — — — —
11. —  — — — — —
12. —  — — — — —
13.  — — — — —
14. — — —  — — — — —
15. —  — — — — —
16. —  — — — — —
17. —  — — — — —
18.  — — — — —
19. —  — — — — —
20. — —  — — — — —
21.  — — — — —
22. —  — — — — —

Definitions

1. Longest bone in the body
2. Wrist bones
3. Knee cap
4. Collar bone
5. Bone running down the front of the lower leg
6. Smaller bone of the forearm
7. Type of muscle that can initiate its own contractions
8. Fibrous tissue that attaches muscle to bone
9. Bone that you compress in CPR
10. Knob of the ankle
11. Joint between the spine and the pelvis
12. Type of joint that permits motion
13. Heel bone
14. Fibrous band that connects bone to bone
15. Bone of the anterior pelvis
16. Bony bump felt in the buttocks
17. Rounded part of the femur that fits into the hip socket
18. Shoulder blade
19. Bones of the fingers or toes
20. Type of muscle found in the stomach, gut, and bladder
21. Lowest segment of the vertebral column
22. Type of muscle that attaches to bone and permits body movement

17-6. PHYSICS 101

Sometimes a knowledge of the forces involved in producing an injury is helpful in predicting the type of injury sustained. Match the injuries listed below with the mechanisms likely to have produced each.

- a. dislocated clavicle
- b. anterior shoulder dislocation
- c. posterior shoulder dislocation
- d. fracture of the fifth metacarpal
- e. fracture of the distal phalanx, index finger
- f. posterior hip dislocation
- g. hip fracture
- h. sprained knee
- i. fractured calcaneus
- j. fractured metatarsal

- _____ victim was in a fight and struck his opponent forcefully on the sternum with his right fist
- _____ skiing injury—victim turned, but his ski did not
- _____ football injury—victim was struck on the point of the shoulder by the helmet of a defensive lineman throwing a block
- _____ patient injured during a seizure
- _____ patient experienced pain after a 20-mile hike
- _____ elderly woman fell getting up from the commode
- _____ victim fell backward onto an outstretched hand
- _____ victim slammed hand in car door
- _____ auto accident—victim thrown forward, striking knee on dashboard
- _____ victim jumped from second story of burning building, landing on his feet

17-7. THE TRAUMA TWINS

Some injuries tend to occur together, and the presence of one alerts the EMT to search for the other. Match the conditions listed below with the injury or complication likely to be associated with each.

- a. fractured navicular
- b. fractured humerus
- c. fractured pelvis
- d. posterior dislocation of the hip
- e. dislocated knee
- f. fractured patella
- g. fractured calcaneus

- _____ wrist drop
- _____ compression fracture of the lumbar spine
- _____ dislocated hip
- _____ shock
- _____ fractured elbow
- _____ foot drop
- _____ cold, pulseless foot

17-8. MISTER, YOUR TIBIA IS SHOWING

1. A fracture in which bone ends protrude through a wound is called
 - a. a simple fracture
 - b. a comminuted fracture
 - c. a greenstick fracture
 - d. a compound fracture
 - e. an impacted fracture
2. This type of fracture is a more serious injury than a closed fracture because of the additional danger of
 - a. a tourniquet effect on the extremity
 - b. infection of the bone
 - c. damage to nerves
 - d. Volkmann's ischemic contractures
 - e. foot drop

3. When bone fragments are seen protruding from a wound, the EMT should
 - a. cover the wound with a moist, sterile dressing, and splint the extremity
 - b. apply a tourniquet proximal to the wound, and splint the extremity
 - c. gently push the bone ends back beneath the skin before splinting
 - d. irrigate the wound with sterile saline and cover it with a universal dressing before splinting
 - e. apply traction to the extremity until the bone is pulled back into place, and then splint

17-9. HIDDEN SIGNS OF INJURY

The grid below contains 15 signs and symptoms of musculoskeletal injury. How many can you list without looking at the grid? How many can you find in the grid?

A S P L E C C H Y M O S I S V
 D T O O K A R I D E R T O W I
 N E U S E S R E D N E S S E S
 U N F S T O P O P C O R N L I
 M D R O G U A R D I N G A L B
 B E E F R A I D A R T O S I L
 N R S U E M N A M I B U R N E
 E N U S B L I M P A N T S G B
 S E V E F E L T A S N A P H O
 S S E L F U N N Y M O T I O N
 T S H O R T E N I N G N O M E

17-10. FIRST THINGS FIRST

A 53-year-old man was struck by a pickup truck and thrown about ten feet down the street. You find him lying unconscious on the road in a pool of blood. There is an obvious angulation of the right femur, and the right trouser leg is soaked with blood. Arrange the following steps of management in the correct sequence.

- | | |
|---|----------|
| a. Apply a traction splint to the right leg. | 1. ____ |
| b. Administer oxygen. | 2. ____ |
| c. Transport the patient to the hospital. | 3. ____ |
| d. Check whether the patient is breathing. (He is.) | 4. ____ |
| e. Apply manual pressure with a universal dressing to the wound on the leg. | 5. ____ |
| f. Determine whether there is a pulse. (There is.) | 6. ____ |
| g. Apply and inflate the Military Anti-Shock Trousers. | 7. ____ |
| h. Immobilize the patient on a long backboard. | 8. ____ |
| i. Open the airway. | 9. ____ |
| j. Complete the head-to-toe survey. | 10. ____ |
| k. Hold the right leg in manual traction. | 11. ____ |
| l. Cut away the right trouser leg. | 12. ____ |

17-13. LISTENING POST IN LVOV

Morris Q. Morris is radioing in from a safe house in the Ukraine, with a crucial piece of intelligence he has just discovered. Decode his message and find out what MQM has learned.

1. Knee cap $\frac{32}{13} \frac{22}{3} \frac{40}{17} \frac{37}{37}$
2. Where to find the ischium and ilium $\frac{15}{8} \frac{33}{28} \frac{10}{38}$
3. Possible consequence of a fractured femur $\frac{18}{7} \frac{26}{1} \frac{5}{5}$
4. Pain or difficulty in urination $\frac{36}{25} \frac{11}{16} \frac{24}{41} \frac{30}{30}$
5. Lose consciousness suddenly; pass out $\frac{21}{20} \frac{34}{42} \frac{12}{12}$
6. Bloodsucking worm $\frac{14}{29} \frac{35}{4} \frac{2}{2}$
7. Young dog $\frac{39}{27} \frac{31}{31}$
8. Score in football $\frac{6}{9}$
9. What to put your golf ball on $\frac{43}{23} \frac{19}{19}$

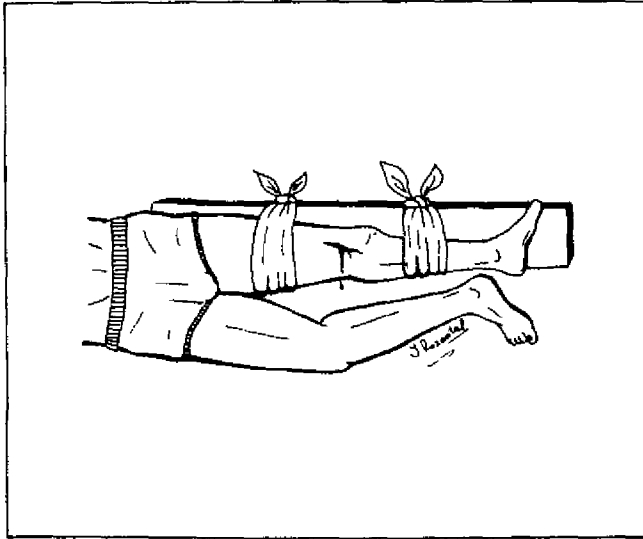
Message: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
30 31 32 33 34 35 36 37 38 39 40 41 42 43 //

17-14. TOUGH BREAKS

1. A high school football player was knocked backward by an enthusiastic blocker and fell back onto his outstretched right hand. You find him in considerable pain. His right arm is abducted and externally rotated, and he is holding it with his other hand. The radial pulse is palpable. The patient can wiggle his fingers and can feel you touching his hand. The best splint for this injury is
 - a. a long arm air splint
 - b. a short arm padded board splint and sling
 - c. a traction splint
 - d. a sling and swath, with a pillow between the arm and chest
 - e. a figure-of-eight bandage encompassing both shoulders
2. A 14-year-old boy fell out of a tree and landed with his left upper arm against a rock. His left arm is severely angulated midway between his shoulder and elbow. There is no evidence of injury elsewhere in the body. The radial pulse is palpable. The patient cannot straighten or dorsiflex his wrist. He is showing signs of
 - a. damage to the radial artery
 - b. damage to the ulnar artery
 - c. damage to the radial nerve
 - d. damage to the ulnar nerve
 - e. Volkmann's ischemic contracture
3. The best means of immobilizing this injury is with
 - a. an air splint and sling
 - b. a simple sling
 - c. a pillow splint
 - d. a vacuum splint
 - e. a padded board splint

17-15. WHAT'S WRONG WITH THIS PICTURE?

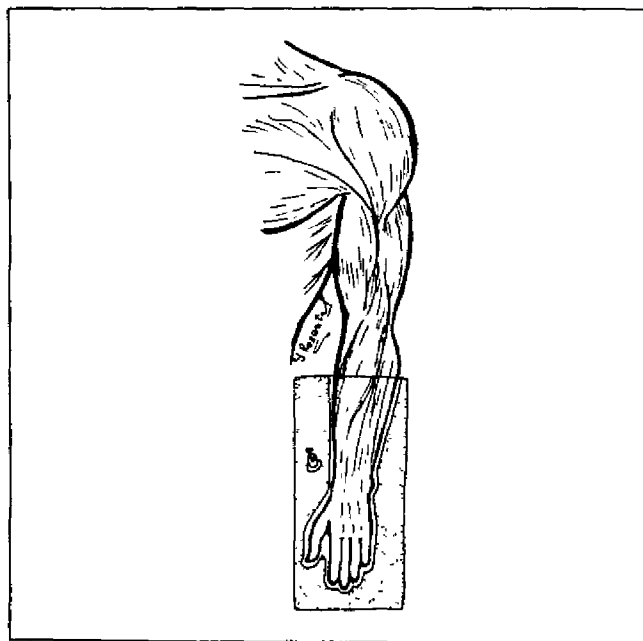
The following drawings show various errors in splinting. Below the drawings, note the errors they illustrate.



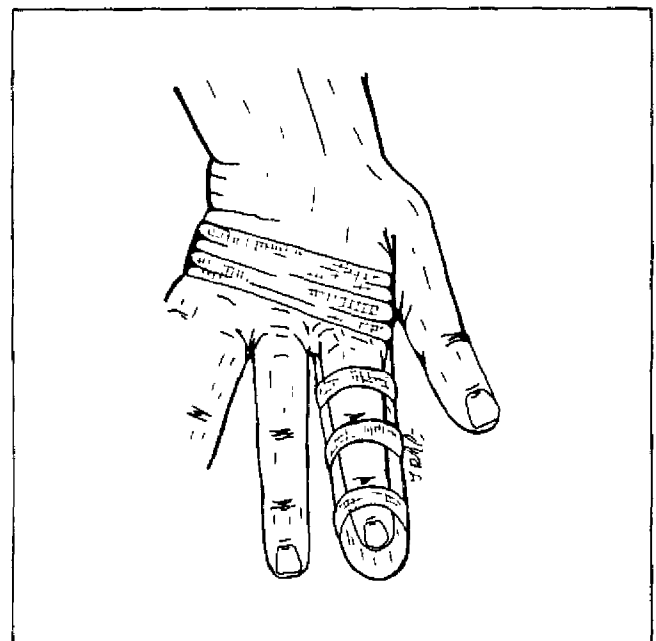
A



B



C



D

17-16. PICK A SPLINT, ANY SPLINT

From the list below select the most suitable means of immobilization for each of the following cases. You may choose one or more items from the list for each case, and items may be used for more than one case.

- | | |
|------------------------|--------------|
| a. air splint | e. sling |
| b. padded board splint | f. swath |
| c. traction splint | g. backboard |
| d. pillow splint | h. MAST |

- ____ 16-year-old boy rammed on the anterior shoulder during football practice. He is holding his right arm flexed across his chest, and his head is cocked to the right side. There is tenderness over the midclavicle.
- ____ 53-year-old man fell onto his outstretched right hand. He is supporting his right wrist with his left hand. There is an obvious deformity just proximal to the right wrist, with swelling and ecchymosis.
- ____ 40-year-old man, knocked down by a scaffolding that fell from a construction site. He is pale, and his skin is clammy. There are ecchymoses over his right pelvis, and the pelvis is unstable. There is no sign of injury elsewhere.
- ____ 14-year-old boy, fell onto his outstretched left hand. His left elbow is severely angulated and swollen.
- ____ 32-year-old man, jumped from the roof of his house and landed on his feet. He complains of pain in his right heel, and there is ecchymosis on the sole of the right foot, beneath the heel.
- ____ 76-year-old woman, fell off her chair and could not get up. She complains of pain in the right thigh. Her right leg is externally rotated and appears shorter than the left leg.
- ____ 29-year-old woman, injured in a head-on collision. She is pale, and her skin is cold and clammy. Her thigh is deformed and angulated.

18. TRIAGE

18-1. TRANSMISSION FROM TARTU

Morris Q. is hiding out in a peasant's hut somewhere in Estonia, from which location he manages to radio the following message.

1. Process of sorting casualties 4 30 26 20 51 10
2. Blood in the pleural cavity 17 28 8 24 1 35 46 48 13 37
3. First priority in treating the trauma victim 29 12 47 5 40 36
4. Potential source of airway obstruction if these are avulsed 23 44 31 21 49
5. Collection of blood under the skin 2 52 9 39 14 6 45 32
6. Device to stabilize an injured extremity 22 34 25 38 41 16
7. Part of the body superior to the neck 43 19 50 11
8. To put off, delay until later 42 15 27 3 18
9. Form of the verb to be 7 33

Message: 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 26 27 28 29 30 31
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52

18-2. A MATTER OF PRIORITIES

1. You are called to the scene of a vehicular accident in which a motorcycle was sideswiped by a car and careened off the road, dragging its driver beneath it for about 30 yards before coming to a halt. The driver is conscious and in extreme distress. His clothes are torn, and he has multiple abrasions and lacerations of the extremities. Both arms appear broken. His skin is cold, blue, and clammy. Pulse is 140 and weak; BP is 70/0; respirations are 40 and labored. The neck veins are distended. The trachea is deviated to the left. Breath sounds are not audible on the right side of the chest. You should
 - a. administer oxygen, apply the MAST, and transport to the hospital
 - b. administer oxygen, dress all open wounds, splint the two fractured arms, immobilize the patient on a backboard, and transport
 - c. administer oxygen, place the patient on a backboard, and move at once to the hospital
 - d. administer oxygen, start an intravenous infusion, splint the fractures, and move at once to the hospital
 - e. dress the wounds, splint the fractures, and move at once to the hospital
2. A construction worker is pinned beneath a steel girder when part of the bridge on which he is working collapses. You arrive with a surgeon from the hospital to find the worker lying on a steel cross beam with his left leg trapped beneath the fallen girder. The engineer at the site tells you that the bridge is unstable and may collapse entirely within about 20 minutes. Under the circumstances, the most appropriate action to take is
 - a. call in a team with a crane to lift the fallen girder off the patient's leg, and wait on the ground for the crane to arrive
 - b. call in a crane, but meanwhile start an IV infusion on the patient
 - c. call in a crane, start an IV infusion, and administer oxygen to the patient
 - d. try to cut through the girder with power tools from the ambulance
 - e. amputate the patient's left leg and get him down from the bridge as fast as possible

18-3. ONE MAN DISASTER

You are called to the scene of an accident where a car has plunged off an overpass and landed upside down on the highway 20 feet below. The driver was thrown from the vehicle and is unconscious on the ground. He is bleeding from open wounds of the neck and left leg. Both his left forearm and left thigh are severely angulated. There is an obvious sucking chest wound. The abdominal viscera are protruding from a jagged laceration in the belly.

1. Arrange the following steps of management in the correct order.
 - a. Cover the abdominal wound with moistened universal dressings.
 - b. Administer oxygen.
 - c. Put an occlusive dressing over the neck wound.
 - d. Open the airway.
 - e. Splint the left arm (air splint).
 - f. Apply and inflate the Military Anti-Shock Trousers (leg sections only).
 - g. Determine whether the patient has a pulse. (He does.)
 - h. Put the left leg in a traction splint.
 - i. Seal the chest wound with an occlusive dressing.
 - j. Determine whether the patient is breathing. (He is.)
 - k. Control bleeding from the left thigh with manual pressure.

- l. Immobilize the patient on a long backboard.
- m. Clear the mouth of secretions and insert an oropharyngeal airway.

| | | |
|----------|----------|-----------|
| 1. _____ | 6. _____ | 10. _____ |
| 2. _____ | 7. _____ | 11. _____ |
| 3. _____ | 8. _____ | 12. _____ |
| 4. _____ | 9. _____ | 13. _____ |
| 5. _____ | | |

2. The method that should be used to open this patient's airway is
 - a. triple airway maneuver
 - b. head tilt-neck lift
 - c. neck lift alone, without head tilt
 - d. head tilt-chin lift
 - e. jaw thrust
3. About five minutes after you have carried out all the steps listed in Part 1, the patient's condition begins to deteriorate. His blood pressure falls, his pulse grows weaker, and you notice that his neck veins appear distended. You should
 - a. rush him to the hospital as fast as possible
 - b. open the occlusive dressing covering the hole in his chest
 - c. place a 14-gauge intracath into his chest
 - d. open the occlusive dressing sealing the neck wound
 - e. fasten and inflate the abdominal section of the MAST

18-4. REPORT FROM RIGA

Radioing in from Latvia, MQM has a vital piece of intelligence to communicate. Decode his message and see what he has learned.

1. Major vein of the body $\overline{36} \quad \overline{7} \quad \overline{26} \quad \overline{15} \quad \overline{22} \quad \overline{2} \quad \overline{30} \quad \overline{34}$
2. Large organ in the RUQ $\overline{10} \quad \overline{43} \quad \overline{4} \quad \overline{28} \quad \overline{20}$
3. Very slow flow $\overline{14} \quad \overline{32} \quad \overline{11} \quad \overline{27} \quad \overline{16} \quad \overline{35} \quad \overline{25}$
4. Opposite of on $\overline{40} \quad \overline{12} \quad \overline{9}$
5. Where to find the fibula $\overline{42} \quad \overline{23} \quad \overline{38}$
6. Referring to the foot $\overline{19} \quad \overline{31} \quad \overline{24} \quad \overline{5} \quad \overline{3}$
7. Wives for ganders $\overline{6} \quad \overline{21} \quad \overline{39} \quad \overline{1} \quad \overline{13}$
8. Person in charge $\overline{45} \quad \overline{29} \quad \overline{18} \quad \overline{33}$
9. Opposite of friend $\overline{41} \quad \overline{8} \quad \overline{17}$
10. Married to Pa $\overline{44} \quad \overline{37}$

Message: 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 26 27 28
29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

18-5. A TIME TO TARRY AND A TIME TO HURRY

Some conditions cannot be stabilized in the field by a basic life support team and require immediate transport to the hospital. Beside each of the following descriptions of trauma victims, indicate whether

- a. the patient should be fully stabilized before transport
- b. the patient should be rushed to the hospital with life support en route

1. ——— Vehicular accident victim. Face and chest are purple; eyes are bloodshot and bulging out; lips and tongue are blue and swollen. Neck veins are markedly distended. Chest is caved in. Pulse is barely palpable, and the blood pressure is unobtainable.
2. ——— Pedestrian struck by automobile. There is an obvious compound fracture of the left femur. Pulse is 120 and regular; BP is 110/70, and respirations are 28.
3. ——— Victim fell from a ladder, lying conscious on his back complaining of tingling sensations in both legs. Pulse is 70, BP is 80/40, and respirations are 30 and shallow. There is no evidence of head injury. The chest is stable. The abdomen is soft. There is no deformity of the extremities

4. ——— Vehicular accident victim, thrown forward against the steering wheel. Patient is in considerable distress. Skin is cold, clammy, cyanotic. Pulse is 136 and weak; BP is 90/80; respirations are 32 and shallow. Neck veins are very distended. Trachea is midline. Breath sounds are equal bilaterally. Heart sounds are indistinct. The abdomen is soft. There is a closed fracture of the right lower leg.
5. ——— Patient stabbed twice in the right chest. He is conscious and in considerable respiratory distress. Skin is cold and clammy. Pulse is 142 and thready; BP is 70/0; respirations are 38 and labored. The neck veins are collapsed. There are two stab wounds on the right anterior chest that appear to have sealed themselves off. Breath sounds cannot be heard over the right chest.

18-6. MISTER, DON'T HANG UP

A man calls in to your dispatcher from a pay phone somewhere on the interstate highway. He says, "There has been a terrible accident. Just terrible. Bodies everywhere. . . ." An ambulance is immediately instructed to head out in the general direction of the highway, while the dispatcher seeks more information. List at least five questions the dispatcher should try to have answered while talking with the caller.

- a.
- b.
- c.
- d.
- e.

18-9. BURIED IN THE WRECKAGE

Buried in the grid below are nineteen casualties: nine with first priority injuries, five with second priority injuries, four with third priority injuries, and one obviously dead. Find the casualties, and indicate which priority each casualty should receive.

T O C O M P O U N D F R A C T U R E
R O A D I S T H E R O A M H E L E N
A S P I N E I N J U R Y E E N A N D
U P A L O V M Y U N C L R A S T O E
M A N I S E V I S C E R A T I O N C
A N D E A R A C H A S T U R O N G A
T R U S A E N E R V O I D I N G U P
I R B E R B U B R U I S E S P I C I
C A L U S U N O N L A Z Y A N N A T
A P N E R R O U S S T O E S E U R A
S U C K I N G C H E S T W O U N D T
P H C I O S E A L D E R O M M E I I
H E O R N T R D U E S B U M O M A O
Y A M C O J I F F Y W I N S T O C N
X T A C K O U C F E E L D F H E A R
I B R O K E N H U M E R U S O U R T
A W A Y E M T U M L E T O U R T R U
S C A R D I A C T A M P O N A D E R
E T H E A D I N J U R Y S T X T S L
T E D D Y B E A R L O S T A T O T E

18-10. DECISIONS, DECISIONS

You are triage officer at an accident scene where a train hit an excursion bus that was stalled on a railroad crossing. Tag the following patients according to whether they have

- a. first priority injuries
- b. second priority injuries
- c. third priority injuries

- ___ conscious man, walking about with an obvious closed fracture of his right forearm
- ___ unconscious woman, breathing spontaneously, with a bruise on her forehead and unequal pupils

- ___ cardiac arrest
- ___ conscious child with avulsed left eye
- ___ conscious teenager with burns of both hands
- ___ conscious man complaining that he cannot move his legs
- ___ conscious woman bleeding profusely from a large laceration on the right thigh
- ___ conscious woman with compound fracture of the left lower leg
- ___ unconscious woman who is not breathing
- ___ conscious man with intestines protruding from a gash in his abdomen
- ___ unconscious man with cold, clammy skin and bruises over the abdomen

18-11. TO CATCH A BUS

You are the first ambulance on the scene of an accident in which a school bus overturned into a ditch beside the road. The bus is lying on its right side. There is gasoline spilled around the rear of the bus, and there is a brush fire smoldering about 20 yards away, where the bus skidded against a stand of trees. There are about 35 children in the bus, of whom 5 appear critically injured, at least 10 have serious injuries, and another 10 have nonurgent injuries.

1. What additional resources should you request the dispatcher to send?
 - a.
 - b.
 - c.
 - d.
2. What is the minimum number of additional ambulances, each with a crew of two or three, that will be needed at the scene?
 - a. 5
 - b. 10
 - c. 15
 - d. 20
 - e. 30
3. The first action you should take at the scene is
 - a. set up all your equipment at a triage area
 - b. rope off the bus to keep bystanders away
 - c. start pulling children out of the wreckage to safety
 - d. climb into the bus, and carefully tag each child according to the severity of his or her injuries
 - e. take your equipment, and begin treatment of the critically injured children inside the bus

18-12. GO TO THE HEAD OF THE CLASS

You are triage officer at the site of a classroom building that suffered severe structural damage when a leaking gas main exploded in the basement. Twenty-two casualties have been removed from the building, sorted, and given initial treatment. There are five ambulances currently available at the scene for transport, and six more are en route. For each of the following casualties, indicate whether the casualty is

- a. first priority for evacuation (via ambulances already at the scene)
 - b. second priority for evacuation (via ambulances that will arrive shortly)
 - c. third priority for evacuation (via ambulances that will return to the scene from the hospital)
 - d. fourth priority for evacuation (2 to 3 to an ambulance; can wait until ambulances become available)
 - e. fifth priority for evacuation (can be transported by means other than ambulance, e.g., private car or bus)
- ___ simple fracture of the fifth metacarpal
 - ___ probable epidural hematoma
 - ___ closed fracture of the femur
 - ___ sucking chest wound
 - ___ burns over the anterior chest and both anterior thighs
 - ___ hip fracture
 - ___ spinal cord injury
 - ___ tension pneumothorax
 - ___ abrasions over both arms
 - ___ compound fracture of the left femur
 - ___ pericardial tamponade
 - ___ blunt trauma to the abdomen
 - ___ fractured clavicle
 - ___ evisceration, without shock
 - ___ fractured trachea
 - ___ simple epistaxis
 - ___ contusions of the right arm and right thigh
 - ___ cardiac arrest, with CPR still in progress
 - ___ hemorrhagic shock
 - ___ avulsed eye
 - ___ crushed hand
 - ___ Colles' fracture

18-13. INNOCENT BYSTANDERS

1. Bystanders to a mass casualty situation are likely to show a variety of reactions to the stresses of the situation. Some of these reactions are relatively temporary and easily managed, while others render the bystander incapable of behaving rationally or usefully. Described below are five bystanders at the scene of a train wreck. Which one is most likely to be able to assist the rescue team?
 - a. a 35-year-old man darting from one rescuer to another, joking with the EMTs, saying he wants to help
 - b. a 30-year-old man running from victim to victim, crying hysterically
 - c. a 38-year-old woman who appears pale, dazed, and in a cold sweat
 - d. a 25-year-old man who says he has lost all sensation in his hands and feet
 - e. a 50-year-old woman clutching her dead husband and sobbing
2. List at least three ways in which responsible bystanders can be put to use in a mass casualty situation.
 - a.
 - b.
 - c.

STOP AND REVIEW: SERIES 2

R-1. HIDDEN SIGNS OF ILLNESS

The grid below contains 10 symptoms and 15 signs of illness or injury. How many can you find? Circle the signs with solid lines and the symptoms with dotted lines.

S H E A D A C H E E S E C A K E D
T R E M U L E Y U C K B L A H S I
R O P A L L O R A N O R U P A I L
I S O T R O N I S N O U T N O Z A
D C H E S T P A I N O I R E S U T
O K R A T U B A N A U S E A L S E
R E L A T R U U N D R I I S O N D
W A S T M U R I R E A N O S W I P
T A C H Y P N E A N I G L O P S U
W E A K N E S S Y T D A M B U M P
I C R O O N I L E P O L C A L T I
T T S W E L L I N G G U T H S O L
C A C T U M I M O N U M B N E S S
H I G H T E M P E R A T U R E T E

R-2. EVERYTHING'S ENTIRELY IN ORDER

The following are statements from a medical report. Arrange them in the correct order for presentation.

- | | |
|--|---|
| a. Pulse was 120, BP 190/110, and respirations 40. | i. He takes digitalis regularly. |
| b. There was moderate ankle edema. | j. He finds it easier to breathe when sitting. |
| c. The problem woke him from sleep. | k. The abdomen was soft. |
| d. He was placed in a sitting position and given oxygen by mask. | l. He was hospitalized last year for a heart attack. |
| e. He is allergic to penicillin. | m. There were rales in both lung fields. |
| f. The skin was cold and clammy. | n. He denies chest pain. |
| g. The patient is a 53-year-old man who called for an ambulance because of difficulty breathing. | o. He was conscious, agitated, and in extreme distress. |
| h. The neck veins were not distended. | |

- | | | |
|----------|-----------|-----------|
| 1. _____ | 6. _____ | 11. _____ |
| 2. _____ | 7. _____ | 12. _____ |
| 3. _____ | 8. _____ | 13. _____ |
| 4. _____ | 9. _____ | 14. _____ |
| 5. _____ | 10. _____ | 15. _____ |

R-3. 101 WAYS TO MAINTAIN AN AIRWAY

Fill in the missing words using the definitions below.

1. _ _ _ O _ _ _ _ _
2. _ _ _ _ P _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
3. _ _ _ E _ _ _ _ _ _ _ _ _ _ _ _ _ _
4. _ _ _ N _ _ _ _ _
5. _ _ _ _ T _ _ _ _ _ _ _ _
6. _ _ _ _ _ _ _ _ _ H _ _ _ _ _
7. _ _ _ _ _ _ _ _ _ E _ _ _ _ _
8. _ _ _ _ _ _ _ _ _ _ A _ _ _ _ _ _ _ _
9. _ _ _ _ _ _ _ _ _ _ _ I _ _ _ _ _
10. _ _ _ _ _ _ _ _ _ _ _ _ R _ _ _ _ _
11. _ _ _ _ _ _ _ _ _ _ _ W _ _ _ _ _ _ _ _
12. _ _ _ _ _ _ _ _ _ _ _ A _ _ _ _ _
13. _ _ _ _ _ _ _ _ _ _ _ Y _ _ _ _ _

Definitions

- | | |
|---|--|
| 1. Cafe coronary | 9. Adjunct for keeping the airway open, inserted via the nose |
| 2. Technique of opening the airway | 10. Means of opening the airway when spine injury is suspected |
| 3. Another technique of opening the airway | 11. A cause of airway obstruction, sometimes signaled by stridor |
| 4. Result of airway obstruction | 12. Bubbling noises in the chest |
| 5. Means of vacuuming out liquid foreign material from the airway | 13. Suffocation |
| 6. Another way to open the airway | |
| 7. Most common source of airway obstruction | |
| 8. Adjunct for keeping the airway open, inserted via the mouth | |

R-4. SAY CHEESE

All of the terms defined below have the letters CH somewhere in them. For example, an engine is a maCHine. Using the clues below, how many of the terms can you supply?

1. Windpipe _ _ _ CH _ _ _
2. Thorax CH _ _ _ _
3. Rapid heart rate _ _ _ CH _ _ _ _ _ _ _ _
4. Tip of the mandible CH _ _ _
5. Black and blue mark _ _ _ CH _ _ _ _ _ _ _ _
6. Pruritus _ _ _ CH _ _ _ _
7. Organ of digestion _ _ _ _ _ CH
8. What to put over an injured eye _ _ _ _ CH
9. 2.54 centimeters _ _ _ CH
10. Rattling noises heard on auscultation _ _ _ _ CH _
11. Subdivision of the windpipe _ _ _ _ CH _ _ _
12. Artery of the arm _ _ _ CH _ _ _ _
13. What to use to crack an oxygen cylinder _ _ _ _ CH
14. What to look for at the accident scene _ _ CH _ _ _ _ _ _ _ _ _ _ _ _ _ _
15. Burp _ _ _ CH
16. Cafe coronary CH _ _ _ _ _
17. Membrane beneath the dura _ _ _ _ CH _ _ _ _
18. -algia _ CH _ _
19. Bone of the pelvis _ _ _ CH _ _ _ _
20. Rapid breathing _ _ _ CH _ _ _ _ _

R-5. NEW FROM NIZHNI NOVGOROD

MQM, still traveling behind the Iron Curtain, has made an astonishing discovery, which he has transmitted in the following coded message. Decode it in the usual fashion.

1. What every patient with a chest injury should receive 44 71 22 37 14 49
2. Membrane covering the lung 60 6 27 32 28 30
3. Where to find the cervical spine 2 40 4 34
4. How the skin feels in shock 43 11 42
5. Bone overlying the heart 16 66 54 69 59 63 20
6. Most effective means of removing a foreign body partially obstructing the upper airway 23 58 7 19 39
7. Largest vein in the body 10 62 18 52 5 1 26 21
8. Noise 31 51 45 36 12
9. Inflammation of the nose 13 67 57 25 35 29 17 56
10. Tropical rainstorm with high winds 64 24 61 8 68 3 55
11. Roman numeral for 701 47 33 38 9
12. Opposite of a sinner 41 70 48 46 50
13. Drunkard 15 65 53

Message: 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 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
60 61 62 63 64 65 66 67 68 69 70 71 //

R-6. VITAL STATISTICS

For each of the following sets of vital and clinical signs, indicate whether it is most consistent with

- a. tension pneumothorax
- b. head injury
- c. hemorrhagic shock
- d. neurogenic shock

| | Pulse | BP | Respirations | Skin | Neck veins |
|---------|-------|---------|--------------|--------|------------|
| 1. ____ | 60 | 70/0 | 36 | warm | flat |
| 2. ____ | 60 | 180/110 | 10 | warm | flat |
| 3. ____ | 130 | 90/60 | 36 | clammy | distended |
| 4. ____ | 130 | 90/60 | 36 | clammy | flat |

R-9. WHAT'S IN A BELLY?

The grid below contains the names of 21 elements of the abdomen or digestive tract. How many can you find?

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | C | P | E | R | I | T | O | N | E | U | M | E |
| O | L | E | C | A | L | E | U | N | G | R | A | S |
| G | O | R | C | D | E | A | R | M | O | U | T | H |
| G | A | I | T | U | U | R | E | S | M | I | T | C |
| Y | K | S | T | O | M | A | C | H | J | Y | O | O |
| B | L | T | A | D | U | C | T | I | E | S | O | L |
| O | I | A | B | E | A | N | U | S | J | O | V | O |
| T | V | L | I | N | D | A | M | E | U | L | E | N |
| T | E | S | E | U | A | P | P | E | N | D | I | X |
| O | R | I | S | M | R | I | A | D | U | R | N | I |
| M | E | S | E | N | T | E | R | Y | M | U | S | T |
| S | T | A | M | P | A | N | C | R | E | A | S | H |

R-10. CABLE FROM THE CRIMEA

Taking a brief rest in Sevastopol, MQM is handed a message by a quadruple agent. While skeptical of the source, Morris Q. recognizes that the message contains vital information and sends it on. Decode MQM's message in the usual way.

1. Joint formed by the humerus and the ulna 41 7 5 22 32
2. Thigh bone 34 29 3 39 40
3. Bone distal to No. 2 above 18 1 21 16 25
4. Vessel that carries blood poor in oxygen 23 10 8 17
5. Astonish 36 2 20 9 13
6. Prison 14 33 6 30
7. Thorax 37 12 24 19 11
8. Colleague of MQM, involved in the Goldfinger case 28 15 26 27
9. Greek or Latin origin of part of a medical term 35 4 31 38

Message: 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 26 27 /
 //
 28 29 30 31 32 33 34 35 36 37 38 39 40 41