

Physical Exam

-Gather information about problem

-Ask patient if conscious, bystanders if necessary

-Identify signs and symptoms

-Signs are physical problems that you can see (blood, swelling)

-Symptoms are problems that the patient tells you about (pain, nausea)

-Look and palpate for signs of injury using the mnemonic **DOTS**:

Deformity, **O**pen wounds, **T**enderness, **S**welling. Palpating is done by pressing firmly on the patient's body. If your palpations are too weak, you may miss something in your physical exam. If you think you feel a deformity, compare it to the other side of the patient's body to be certain.

Start at back of patient's neck. Move over back of head to front of head. Examine pupils for PERL (Pupils Equal and Reactive to Light). Look in mouth, nose, and ears for blood and cerebrospinal fluid. Look at neck for tracheal deviation. Look at neck for medical alert necklace. Palpate patient's shoulders. Use back of hand to palpate sternum. Use both hands to feel bottom of ribcage for equal chest rise. Palpate each of the abdominal quadrants (upper left, upper right, lower left, lower right). Palpate patient's back. Push down and upward on the pelvis. Note if groin is remarkable or not. Palpate down one leg, looking for a medical alert tag on the ankle. Check PMS (Pulse, Motor, Sensory) at foot. Palpate down the other leg, checking for tags and PMS. Palpate arms from shoulder to hand, checking for medical alert tags and PMS at hands.

-Only 1 person may palpate the patient at any time. This allows you to pinpoint when pain results from palpation and therefore where an injury is located

-On a child, start from the feet and work your way up to the head. It makes children uncomfortable to begin immediately at the head.

-A physical exam should take 2-3 minutes

Medical Alert Tags

Medical Alert tags can be necklaces, bracelets, anklets, or in other forms. They usually tell a patient's name, medical condition(s), and medications. This is what they may look like:



Sample History

Signs and Symptoms

-Questions that can be used to understand the patient's level of pain include:

On a scale of 1-10, where 10 is unbearable, how is the pain?

Where is the pain, and does it radiate from one spot?

What does it feel like (burning, sharp, throbbing, aching)?

When did the pain start?

-A sign is something objective that you can observe (blood, swelling)

-A symptom is something the patient tells you (nausea, pain)

Allergies

-Common allergies are shellfish, peanuts, penicillin, bees, pollen

Medications

-Includes prescription and over-the-counter drugs

-If you don't know what the medication is for, ASK

Pertinent past history

-Problems and treatments relating to current condition or otherwise important

-If patient has chest pains, it is important to know that he had a triple bypass but not that he broke his wrist 3 years ago

Last oral intake

-Includes food, drink, and drugs

-Try to get time of last intake and of last meal

Events leading up to injury or illness

-Generally the first question you ask the patient

-Always ask the patient what happened even if you have detailed information from dispatch or bystanders; patient can probably tell you more about what happened (for example: why he fell or how he got a pen stuck in his leg)

Measuring Blood Pressure

Systolic

-Reflects pressure in arteries when heart is working/contracting

Diastolic

-Reflects pressure in arteries when heart is resting/refilling

Blood pressure is reported as Systolic/Diastolic

Average adult blood pressure is 120/80

-This is read as “120 over 80”

Methods of measuring blood pressure

-Auscultation: use blood pressure cuff and stethoscope to listen for heartbeat; obtain both systolic and diastolic numbers

-Palpation: use blood pressure cuff and fingers to feel for heartbeat; obtain only systolic number (report as systolic/palp); use palpation only when scene is noisy or you are otherwise unable to obtain BP by auscultation

Don't check blood pressure on an arm that is injured.

If you can't get a reading, deflate the cuff and wait 30 seconds before trying again.

Make sure patient's arm is kept still while measuring blood pressure.

Major Functions of Blood

Protect against disease

Maintain constant body temperature

Transport oxygen, nutrients, and wastes

Conditions Necessary to Maintain Adequate Blood Flow

Heart must be working well/be healthy

Adequate amount of blood must be circulating in body

Blood vessels must be intact and able to adjust to blood flow

Blood Vessels

-Arteries carry blood away from the heart. Here, blood appears red while in the body. When there is arterial bleeding, it spurts out bright red.

-Capillaries connect arteries and veins, transfer oxygen and nutrients to the cells, and are very small. When there is capillary bleeding, it oozes out dark red and clots easily.

-Veins carry waste products from cells to the heart, which pumps waste to the kidneys and lungs. Here, blood appears blue in the body. Veins are damaged more often than arteries because they are closer to the skin's surface. When there is venous bleeding, it flows at a steady rate and appears dark red/maroon.

Shock/Hypoperfusion

Any serious injury or illness prevents the circulatory system from adequately circulating oxygen-rich blood to all parts of the body. The body rapidly deteriorates sometimes in less than an hour. What happens is:

1. Blood vessels dilate, and blood volume drops, preventing the heart from functioning well.
2. The heart beats faster (100-200 bpm) to fill vessels with blood. Since there is insufficient blood volume, victim's pulse will feel weak.
3. Since the heart is working faster, it needs more oxygen, so the breathing rate is increased.
4. To provide adequate oxygen to the vital organs (heart, brain, lungs, liver), the blood vessels in the arms, legs, and skin contract. The result is cool, pale, ashen or cyanotic skin.
5. In response to stress, the body sweats, resulting in moist skin
6. Since the arms and legs are without oxygen, cells start dying. To save these cells, blood is returned to the arms and legs.
7. Vital organs are left without adequate blood and oxygen. In the brain, this results in deterioration of level of consciousness.
8. Pulse soon becomes irregular and may disappear entirely. Blood pressure and breathing fall.
9. Without intervention, the body's attempts to compensate for blood loss eventually results in death.

****Shock cannot be treated by first aid alone. ALWAYS call ALS if you suspect shock.**

Types of Shock

- Anaphylactic: life-threatening allergic reaction to a substance; can occur from insect stings or from foods and drugs
- Cardiogenic: failure of the heart to effectively pump blood to all parts of the body; occurs with heart attack or cardiac arrest
- Hemorrhagic: severe bleeding or loss of blood plasma; occurs with internal or external wounds or burns
- Metabolic: loss of body fluid; occurs after severe diarrhea or vomiting or a heat illness
- Neurogenic: failure of nervous system to control size of blood vessels, causing them to dilate; occurs with brain or nerve injuries
- Psychogenic: a factor, such as emotional stress, causes blood to pool in the body in areas away from the brain, resulting in fainting
- Respiratory: failure of the lungs to transfer sufficient oxygen into the bloodstream; occurs with respiratory distress or arrest
- Septic: Poisons caused by severe infections cause blood vessels to dilate

***You don't need to know these specific types of shock; it's just FYI.

Main Signs of Shock

Rapid/weak pulse

*First sign of shock

Restlessness/irritability

Rapid breathing

Pale, ashen, cyanotic, cool, moist skin

Excessive thirst

Nausea, vomiting

Loss of consciousness

Treatment of Shock

Call ALS. Shock cannot be treated by first responder skills alone.

Give oxygen

Elevate legs 12 inches above the ground.

**NEVER elevate the legs of a head/neck/back injury patient. Even if he/she is on a backboard, don't elevate the whole backboard.

**If patient has painful, swollen deformities at the hip or leg, do not elevate legs.

Keep patient warm with a blanket

Wounds

Closed wounds occur beneath the surface of the skin.

- Internal bleeding occurs (bruise, contusion)

- For all contusions apply direct pressure and elevation to stop bleeding, then apply an ice pack (put gauze between ice and skin)

- If bruise is larger than the size of the patient's fist, call ALS and treat for shock

Open wounds are injuries that break the skin.

- Abrasion: skin is rubbed or scraped away

- Laceration: skin is cut with smooth or jagged edges

- Avulsion: skin (and possibly soft tissue) is partially or completely removed

- Puncture: object makes hole in skin (object is "embedded" if still in skin)

Sign of infection: area around wound appears red and swollen

General Care for External Bleeding

1. Direct pressure (with gauze dressing)
 2. Elevation above the heart
 3. Pressure bandage
 - *If bleeding doesn't stop, apply another pressure bandage. If it doesn't stop then, apply a third pressure bandage. If it still doesn't stop, use a pressure point.
 4. Pressure point
 - *Call ALS if you have to use a pressure point because once you start holding a pressure point you can't let go.
 - *Pressure points significantly slow the blood flow through the brachial (arm) or femoral (leg) artery
- *Never use a tourniquet to completely stop blood flow.

Bandages to Control Bleeding

****Always tie bandage ON the wound so the knot adds extra pressure.**

Laceration or abrasion: gauze dressing, roller gauze

Embedded object: dressing, build “log cabin” 2/3 the height of the object for support, roller gauze (might need to tie on opposite side of wound)

*Don't pull object out because it might increase bleeding. Exception is when it's blocking the airway (example: pencil in a cheek).

Avulsion: dressing and roller gauze; wrap avulsed body part in dressings, put in plastic bag and put on ice

Ear bleeding: dressing and triangular bandage wrapped around the head horizontally and vertically (tied off on ear)

Eye bleeding: dressing and roller gauze to BOTH eyes

Shoulder bleeding: dressing and roller gauze (wrap on injured shoulder and under opposite arm in “figure 8”)

Head bleeding: Place unfolded triangular bandage on head with longest side touching forehead, tie ends behind head under hard part of skull, pull loose end behind head to adjust pressure

Tooth avulsion: Gauze for mouth; put tooth in milk

Type of Burns

Thermal (fire, stove)

Electrical (lightning)

*look for entry AND exit site

Chemical

Radiation (sunburn)

Severity of Burns

Superficial: skin is red, swollen, peeling

Partial-thickness: skin is red with blisters, painful, can be white and charred

Full-thickness: skin is black, charred with blisters, many nerve endings have been burnt

**Critical burns: cause breathing difficulty; cover more than one body part; on the head, neck, hands, feet, genitals; any partial- or full-thickness burn on children or the elderly; burns from chemicals, explosions, or electricity

Rule of Nines

Determines what % of body is burned

Head 9%

Front trunk 18%

Back trunk 18%

Left arm 9%

Right arm 9%

Groin 1%

Left leg 18%

Right leg 18%

Difference for children/infants: head is 18%, legs are 13.5% each

Care for Burns

Cool burned area with cool water (10-15 minutes)

Cover burned area with dry, loose dressings

If fingers or toes are burned, wrap the fingers or toes individually with gauze then wrap hand or foot with roller gauze.

DON'T put butter, ointment, or anything other than water on the burn (oil in products traps heat, further burning the skin)

DON'T remove clothing if it is already burned into the skin, but remove clothing if it is loose

Minimize shock by keeping victim from getting chilled or overheated

If patient has a chemical burn in the eyes, flush the eyes with water until ALS arrives.

Signs and Symptoms of Musculoskeletal Injuries

Pain

Swelling

Deformity

Discoloration

Bone protruding from wound

Inability to use affected part

Grating bones

Snapping or popping sound

Care for Muscle and Bone Injuries

Apply cold to reduce pain and swelling

Support area above and below injury

Splint body part as it was found

Cover open wounds with a sterile dressing

Do not reposition protruding bones

Connective Tissue

Joint: 2 bones meet

Ligament: attaches bone to bone

-A sprain is hyperextension of a ligament

Tendon: attaches muscle to bone

-A strain is hyperextension of a tendon

Splinting

****Always tie on the board (not on the patient's limb). Check PMS before and after splinting.**

Upper arm: Place 1 short board along upper arm and use 2 triangular bandages to tie board to arm around the injury. Swath arm to body using 1 triangular bandage. (*Straight elbow injury is also bandaged this way.)

Bent elbow: Place 1 short board against arm in "A-frame," tie board to arm around injured elbow using 2 triangular bandages. Swath arm to body using 1 triangular bandage.

Forearm: Place 1 short board under forearm, put roller gauze in patient's hand, and tie 2 triangular bandages—one at wrist, one just below elbow—to secure board to arm. Sling and swath arm to body using 1 triangular bandage each.

Clavicle: Sling patient's arm (attached to the injured shoulder) using 1 triangular bandage.

Finger: Use roller gauze to splint injured finger to a Popsicle stick or another finger that is not injured.

Rib: Place blanket in between injured side of body and that side's arm. Use 2 triangular bandages to secure arm and blanket to body.

Bent leg: Put 2 long boards against leg in "A frame." Tie board together under the knee using a triangular bandage. Tie board to leg above and below the knee using triangular bandages.

Ankle: Fold SAM splint or blanket around both sides of ankle and foot. Tie with 3 triangular bandages: 1 above ankle, one across the foot, and one from heel to part of foot opposite the heel.

Hare Traction Splint Directions

Responder 1: Palpate leg from top of femur to ankle. DO NOT pull traction if a tibia/fibula fracture is indicated. Place hands on patient's leg, above and below the injury site, using most of your body weight, and say, "Manual stabilization applied."

Responder 2: Measure traction splint against good leg, from iliac crest to ankle. Place the 4 straps in proper areas (1 above injury, 1 below injury, 1 below knee, 1 above ankle). Put kickstand up to elevate splint. Slide splint along bad leg. Take off patient's shoe, check for PMS, and tie an ankle hitch using a cravat. Make sure the knot is tight and the loose ends of the cravat are tucked in. Put one hand under the ankle and the other on the top of the foot and pull leg away from patient's body, saying, "Manual traction applied." At this point, responder 1 can let go.

Responder 1: Slide traction splint under bad leg, and attach groin strap. Let pin loose, allowing you to attach hook onto ankle hitch and crank the leg away from body to take over traction from partner. When you cannot crank anymore, say, "Mechanical traction applied." At this point, responder 2 can let go. Fasten the 4 straps along the leg from top to bottom. Check PMS.

Sager Traction Splint directions

Responder 1: Palpate leg from top of femur to ankle. DO NOT pull traction if a tibia/fibula fracture is indicated. Place hands on patient's leg, above and below the injury site, using most of your body weight, and say, "Manual stabilization applied."

Responder 2: Check PMS. Measure splint against uninjured leg. Put traction splint along inside of injured leg, with padded bar at the top (looks like the top of a crutch) bent toward that leg and positioned against the pelvis in the groin. Apply the strap above the injury on the thigh. Apply the padded ankle hitch attached to Sager device. Ask patient's weight. Pull traction to 10% of that weight, then say, "Mechanical traction applied."
Responder 1 can let go of manual stabilization.

Either responder can now apply the elastic straps above the knee (over the injury) and below the knee. The Sager traction splint comes with two short straps and one long one; you only need to use the short straps. The long strap is for traction splinting 2 legs, which requires another ankle hitch, so you're not responsible for that. Finally, recheck PMS.

When to Suspect a Head, Neck or Back Injury

A fall greater than the patient's height

A motor vehicle collision, especially if driver or passengers were not wearing safety belts or if a person was thrown from a motor vehicle

An injury in which a victim's helmet is broken

A person found unconscious for unknown reasons

An injury that penetrates the head or trunk

Signs and Symptoms of Serious Head, Neck and Back Injuries

Change in level of consciousness

Severe pain/pressure in head, neck or back

Tingling or loss of sensation or movement in extremities

Unusual lumps or depressions in head or spine

Blood or cerebrospinal fluid in ears or nose

Profuse external bleeding from head, neck or back

Seizures

Impaired breathing or vision

Nausea/vomiting

Persistent headache

Loss of balance

Bruising of head around eyes and back of head

When Not to Use In-line Stabilization

When victim's head is severely angled

When victim complains of pain, pressure, or muscle spasms on initial head movement

When rescuer feels resistance when attempting to move head

Backboarding

For head, neck, back injury patients it is important to constantly maintain an open airway, so keep that in mind while backboarding.

Inline stabilization: Place hands on the sides of patient's head, without covering ears, and move head into a line with the body unless you feel resistance. Keep holding inline until the patient is fully secured by the backboard. A bystander may hold inline unless you are rolling the patient, putting on a collar, or putting on head blocks.

Cervical collar: Measure collar using fingers from shoulder to chin OR from chin to bottom of ear. From this measurement, determine proper collar size for patient, comparing to only the plastic part of the collar (not including the foam part). Put on collar as soon as possible. You still need to hold in-line to prevent the head from moving side-to-side.

Backboarding: Roll patient onto board with one responder at the head calling the direction and timing, one responder at the torso, and one responder OR a bystander at the legs. Straighten patient if necessary, following the responder at the head. Strap patient onto board, chest first (in case they vomit and you need to roll them immediately), then hips and legs. Squeeze head blocks and slide them against patient's head. Strap head blocks to the board, allowing the person holding inline to stop. Secure patient's hands and feet.

****Backboarding is "all or nothing" (you don't just put a collar on someone then let them walk away)**

****A responder needs to be at the head to initially apply in-line stabilization, while a cervical collar is being put on, while the patient is being rolled and shifted on the backboard, and while the head blocks and head straps are being put on. A bystander may be at the head once the head is in-line; this will give you time to perform a physical exam, treat injuries, and apply body straps.**

Signs and Symptoms of Chest Injury

Difficulty breathing

Severe pain

Obvious deformity

Discoloration of skin

Coughing up blood

Care for Serious Chest Injury

Call ALS

Position patient to aid breathing

If ribs are broken, splint accordingly

Treat for shock

If there is a sucking chest wound, use an occlusive dressing (square piece of plastic, tape 3 sides but leave one corner open)

Care for Serious Abdominal Injury

Open wound

Call ALS

Don't put pressure on protruding organs or try to put them back inside

Position patient on back

Remove clothing around wound

Cover wound loosely with moist, clean dressing

Cover dressing with plastic wrap

Cover with folded towel to maintain warmth

Treat for shock

Closed wound

Call ALS

Position patient on back

Bend knees slightly

Treat for shock

Care for Serious Pelvic Injury

Call ALS

Minimize movement

Control bleeding

Treat for shock

Care for Open Wound to Genitalia

Call ALS

Control bleeding

General info about treating patients: don't diagnose, just treat the signs and symptoms that you can.

The process of getting the victim ready for transport to a medical facility is called packaging.