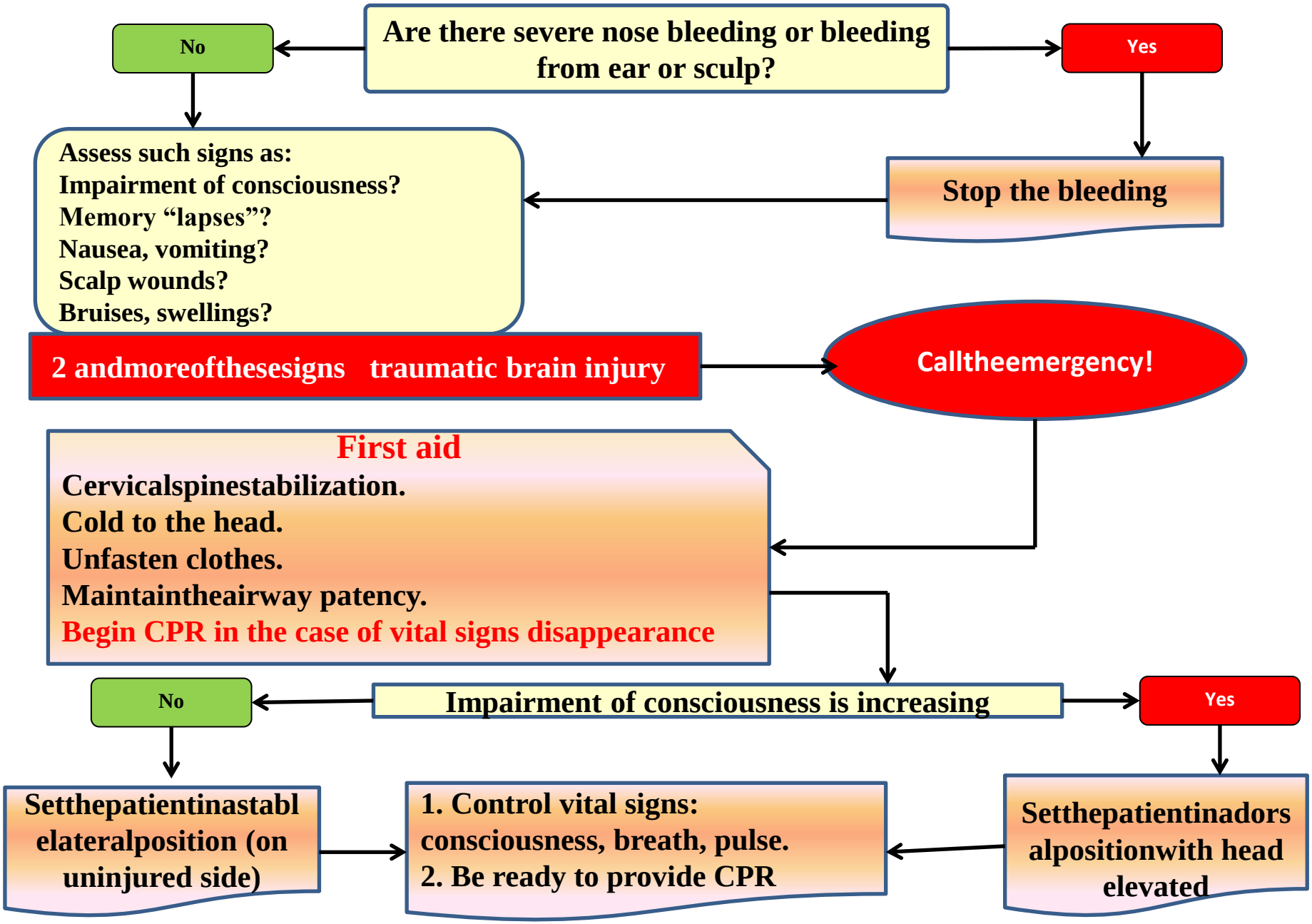
Topic 1.12 part 2.
"Firstaidinthecaseofexplosion, building failure, earthquake”

Traumatic brain injury



Calltheemergencyimmediately ifyoufindoutthesesigns:

- **Severe bleeding;**
- **Bleedingfromnoseorear;**
- **Severeheadache;**
- **Absence of breathing;**
- **Impairment of consciousness or unconsciousness;**
- **Disturbance in the balance;**
- **Weaknessinarmsorlegs, inabilityofmovement;**
- **Convulsions;**
- **Repeated vomiting;**
- **Bad verbal communication.**

Itisnecessarytocalltheemergencyinthecaseofopencraniocerebraltrauma.

Toassesstheseverityofbraininjuryandthedepthofcoma use Glasgow coma scale.

Glasgow coma scaleconsistsfrom 3 tests, estimatedthereaction of eyes opening (E), verbal response (V) andmotor response (M).

E, Eyeresponse

Spontaneous — 4 points
Tosound — 3 points
To pressureor to pain— 2 points
None — 1 point

Criterion	Rating	Score
Openbeforestimulus	Spontaneous	4
After spoken or shouted request	To sound	3
Afterfingertipstimulus	To pressure	2
No opening at any time, no interfering factor	None	1

V, Verbal response

Orientated — 5 points
Confused — 4 points
Unrelatedsinglewords— 3 points
Unrelatedsinglesounds— 2 points
None — 1 point

Criterion	Rating	Score
Correctly gives name, place and date	Orientated	5
Not orientated but communication coherently	Confused	4
Intelligiblesinglewords	Words	3
Onlymoans / groans	Sounds	2
No audible response, no interfering factor	None	1

M, Motorresponse

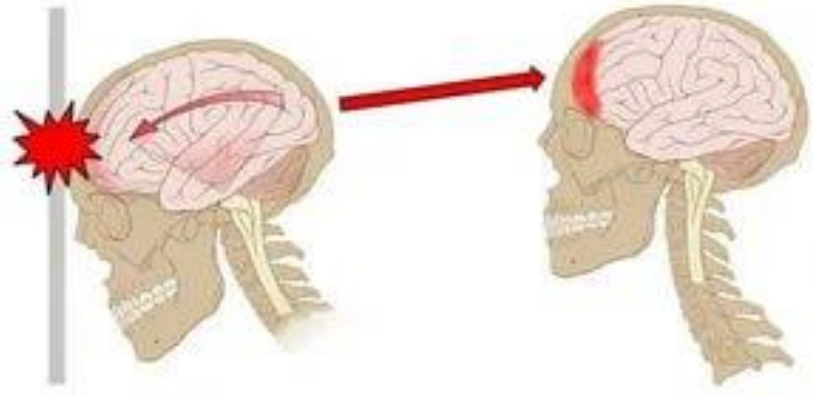
Obeycommands — 6 points
Purposeful movement as response on pain stimulation— 5 points
Normal flexion as response on pain stimulation — 4 points
Abnormal flexion as response on pain stimulation— 3 points
Pathologic extension as response on pain stimulation— 2 points
None — 1 point

Criterion	Rating	Score
Obey 2-part request	Obeyscommands	6
Brings hand above clavicle to stimulus on head neck	Localising	5
Bends arm at elbow rapidly but features not predominantly abnormal	Normalflexion	4
Bends arm at elbow, features clearly predominantly abnormal	Abnormalflexion	3
Extendsarmatelbow	Extension	2
No movement in arms / legs, no interfering factor	None	1

Generally, brain injury is classified as:
Severe, GCS < 8–9
Moderate, GCS 8 or 9–12
Minor, GCS ≥ 13.

Summary (Total Coma Score)

- **15 points— fully consciousness.**
- **14-13 points—moderate stun.**
- **12—11 points— severe stun.**
- **10—8 points—sopor.**
- **7-6 points— moderate coma.**
- **5-4 points— severe coma.**
- **3 points— severe comaorcerebral death.**



The scale can be applied without modification to children over 5 years old.
In younger children and infants, an assessment of a verbal response as "orientated" and motor response as "obeys commands" is usually not possible. A 'Pediatric Glasgow Coma Scale' was therefore described in Adelaide in which responses were modified as below.

E, Eyeresponse

- **Spontaneous – 4 points**
- **To sound— 3 points**
- **To pain stimulation — 2 points**
- **None — 1 point**

V, Verbal response

- **Talksorcoos, smiles, monitorstheobject – 5 points**
- **Irritablecries – 4 points**
- **Criesinresponsetopain – 3points**
- **Moansinresponsetopain – 2 points**
- **None – 1 point**

M, Motorresponse

- **Moves spontaneously/purposefully — 6 points**
- **Withdrawstotouch, localizes pain— 5 points**
- **Withdrawstopain — 4 points**
- **Flexiontopain— 3 points**
- **Extensiontopain — 2 points**
- **None — 1 point**

Interpretationofresultsisthesameasforadults.

Firstaidfortraumaticbraininjury

1. Bleeding control in the case of open wound:
a) inthecaseofmildbleeding – coverthewound with dressing;
b) inthecaseofseverebleeding – carryoutfingerpressing of arterybefore bandaging.

2. Cervicalspinestabilization.

3. Place cold on the head.

4. Unfastenclothes.

5. Urgethepatienttocurbvomitingorcoughifitispossible (becauseoftheriskofincreasingofintracranialpressure).

6. Controlvitalfunctions.

7. Transportpositionifthepatientisconscious – dorsalpositionorrescuestablelateralpositionwithheadelevated.

8. Transportpositioninthecaseofimpairedconsciousness – stablelateralpositiononuninjured sidewith headelevated.

9. BereadytobeginCPRinthecaseof pulse or breathing absence.

Peculiaritiesofbraininjuryofchildren and infants:

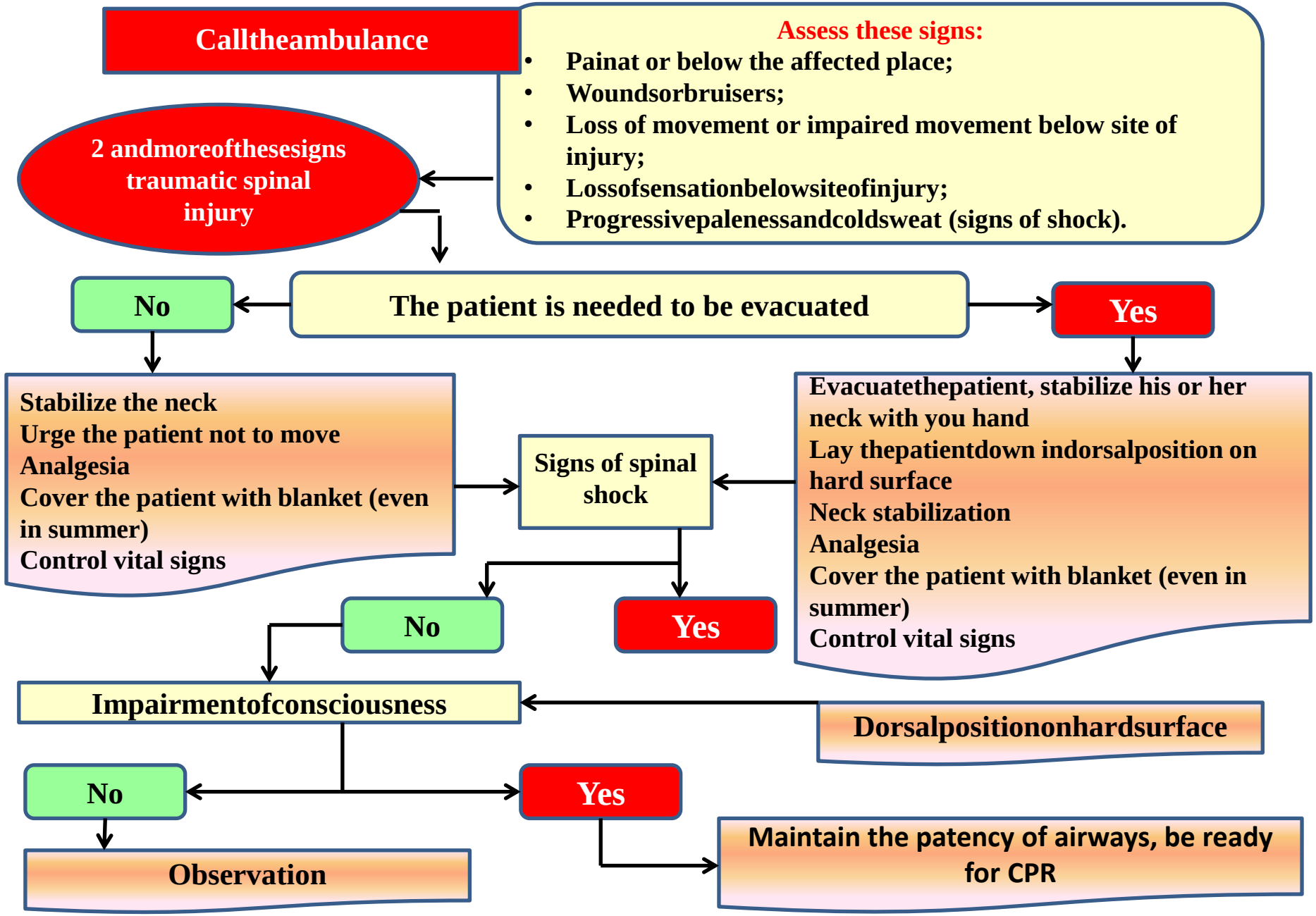
1. **In the case of cerebral concussion, loss of consciousness is very short, sometimes it is difficult to define or fix it.**
2. **Childissluggish, whiny.**
3. **Headacheismildormoderate**

NB!

Itisprohibitedtodointhecaseofbrain injury:

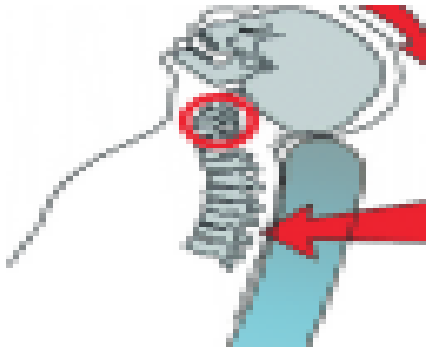
- **To setthepatientintothesitting position;**
- **To lift or move the patient;**
- **Toleavethepatientwithout observation;**
- **Toexcludegoingtothehospital**

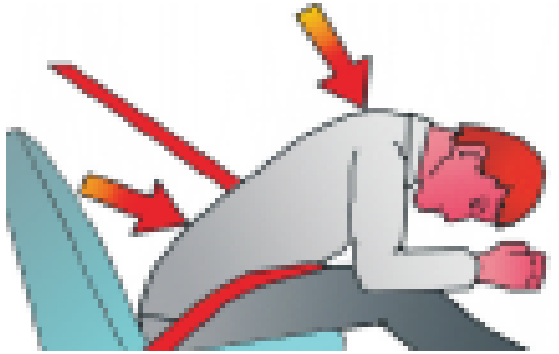
Spinal injuries



The more common injuries occur when the area of the spine or neck is bent or compressed, as in the following:falls, motor vehicle accidents (automobiles, motorcycles, and being struck as a pedestrian), sports injuries, diving accidents, trampoline accidents.

Traumasofspinalneckmayoccurinthecaseofhardbrakingwiththe header on the windscreen, in the case of sharp flexion or extension of the neck





Accordingtothenatureoftrauma, there are different kinds of spinal trauma:

1. **Compression;**
2. **Flexion-distraction(with spinal rupture in horizontal plane);**
3. **Rotary trauma.**

Inthecaseofspinalcervicaltrauma, thevictimcomplainson:

1. Occipitalpainwhileheadrotation;
2. Restriction of head and neck movements;
3. Painwhileinjuredcervicalvertebrapalpation;
4. Tension of the neck muscles.

Inthecaseoftraumaoflumbar-thoracicspine, thevictimcomplainson:

1. Severepainattheaffectedvertebraimmediatelyaftertrauma;
2. Painisincreasinginsittingpositionanddecreasing in dorsal position;
3. Visibledeformation, visiblewound;
4. Processofinjuredvertebraispainful, it maybulge;
5. Muscles around the injury are tensioned;
6. Abdominalpain andretentionofurine are possible.

Inthecaseofspinal cord injury:

1. Spinalshockoccursimmediatelyaftertrauma: sharpand severedecreasing of blood pressure;
2. Lossofmotorfunctionbelowsiteof injury;
3. Lossofsensorybelowsiteofinjury;
4. Retentionofurine;
5. Impairmentofthermoregulation, and as a result - undercooling (even in summer).

Firstaid

Stabilizetheneckwithyourhands.Don’tusecervicalcollar!AccordingtothelatestrecommendationsofAmericanHeartAssociation, AHA and European ResuscitationCouncil, ERC(2015) the most appropriate method of spinal stabilization before emergency arriving is hand stabilization or even verbal instructions.

Inthecaseofunconsciousnesswithdefinablepulseandbreathing – maintainthepatencyofairways, control vital functions and be readytobeginCPR.

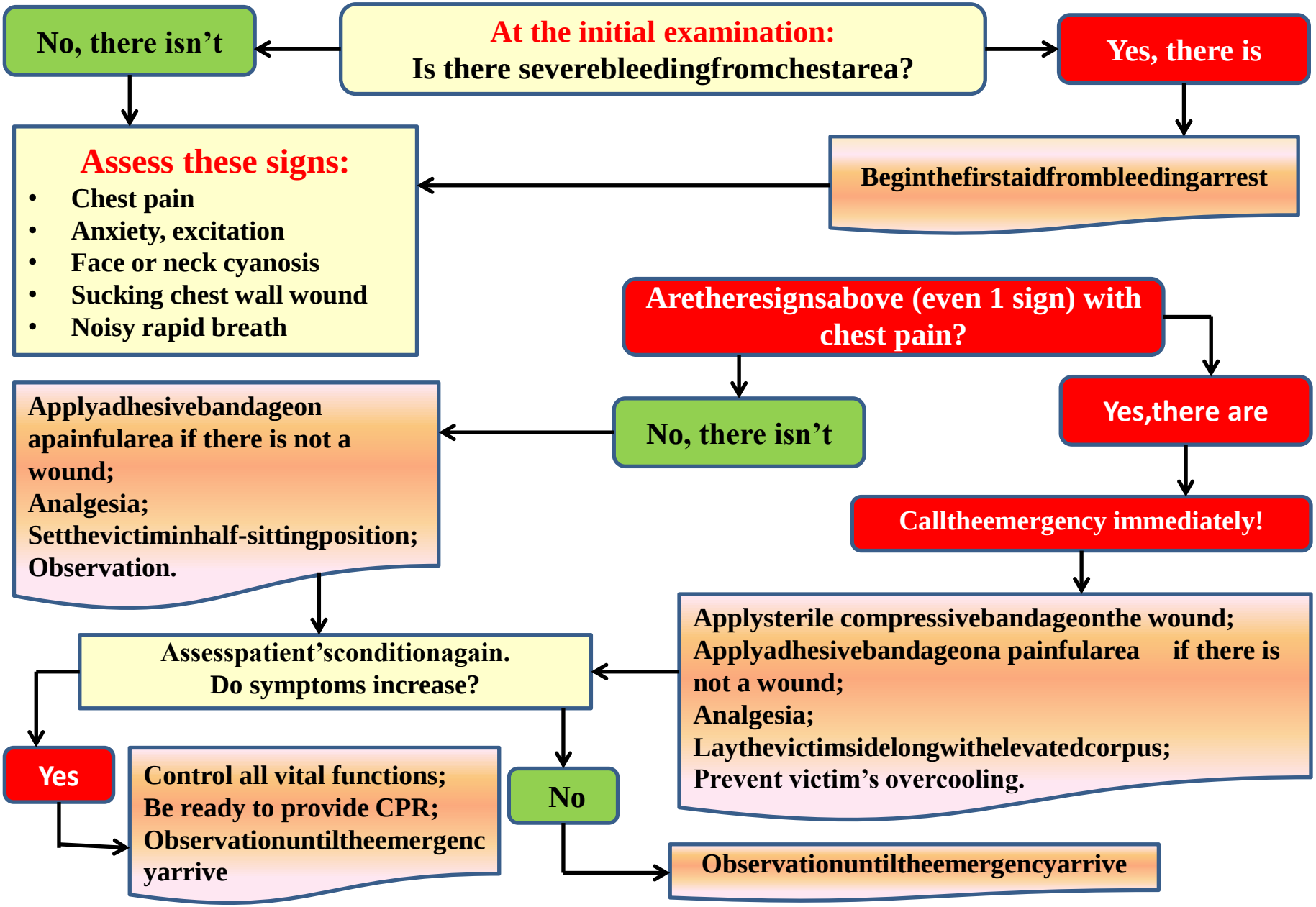
Try not to displace the patient, but if you need to evacuate the patient use 4 or 5 helpers, displace him carefully, avoid changing his position.

Theappropriateposition – dorsalpositionorventral decubitus on hard surface. Ifyouneedtorollthepatientindorsalpositionfromventral – presstightlya shield to his back and roll him carefully with the shield.

Controlallvitalfunctions (breathing, pulse, consciousness) permanently.

Coverthepatientwithblanketeveninsummertoavoid overcooling

Chest injury

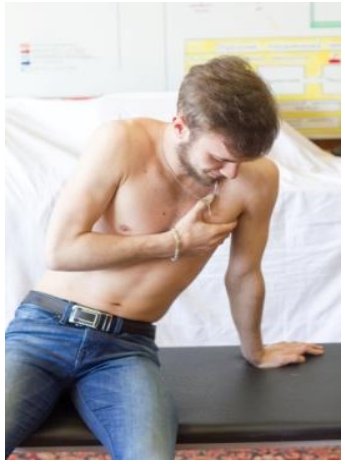


Trauma patients often present with a known traumatic mechanism such as a car collision, fall, gunshot or stab wound. In rare cases, a patient may present in a state of significant altered mental status and be unable to provide any significant history.

Main symptoms of chest injury:

- **visible lesions of chest wall;**
- **pale skin, cyanosis of lips, nose, ears, finger tips;**
- **chestpain, painfulbreathing;**
- **asymmetryofrespiratorymovements (injuredpartfallsbehindhealthone);**

In the case of open pneumothorax lung subsides on the side of pneumothorax



Patient's condition is severe: rapid and weak pulse, sucking air from the wound, crepitation around the wound, forced half-sitting position with straighten arm support.(pic.7)

Tension pneumothorax occurs in the case of lung trauma with bone fractures but without skin lesion. Air is forced into the pleural space without any means of escape, eventually completely collapsing the affected lung. The mediastinum is pushed to the opposite side, decreasing venous return and compressing the opposite lung. Subcutaneous emphysema spreads from face to groin and causes puffiness.

Valvular pneumothorax occurs when one-way valve is formed by an area of damaged tissue, and the amount of air in the space between chest wall and lungs increases. This is the most dangerous kind of pneumothorax that can cause pleuropulmonary shock and mediastinal displacement.

You should determine air presence in pleural space before the treatment. Suspect air presence if you see shortness of breath, cyanosis of nasolabial triangle, ears, finger tips etc. In severe cases you may watch bulged cervical veins, rapid and superficial breath.

In the case of pneumothorax injured half of wall chest falls behind the health one while breathing.

If you suspect pneumothorax call the emergency immediately. If you see open pneumothorax turn it into closed pneumothorax by occlusive bandage application on the chest wound.

You may make it from buckram or polyethylene film. The most effective variant is a valvular bandage that allows blood to drop from the wound but prevent air to get into the wound.

Provide comfortable position for patient's breathing with elevated corpus, use makeshift means for it. Doitcarefullytopreventfurthersufferinga ndpain.

Firstaidformildrespiratoryfailure

1. **Calltheemergency;**
2. **Find the most painful place and apply imbricate adhesive plaster (if there are no wounds);**
3. **Set the victim to the comfortable position for breathing;**
4. **Applysterilebandageonthewound;**
5. **Control all vital functions: pulse, breathing, consciousness.**

Firstaidforsevererespiratoryfailure

1. **Calm down the patient, be in contact with him or her constantly;**
2. **Find the most painful place and apply imbricate adhesive plaster (if there are no wounds);**
3. **Lay the victim on the side of pneumothorax with lifted corpus (pic. 10);**
4. **If the patient is unconscious set him or her into recovery position (lateral stable position) on the injured side with lifted corpus;**
5. **Artificial lung ventilation if there is such a need;**
6. **Apply sterile bandage on the wound;**
7. **Prevent patient's overcooling;**
8. **Control all vital functions: pulse, breathing, consciousness.**
9. **Be ready to start CPR;**

NB!

Do not remove foreign body from the chest wound;
Do not bandage chest wounds too tightly

Thank you for attention