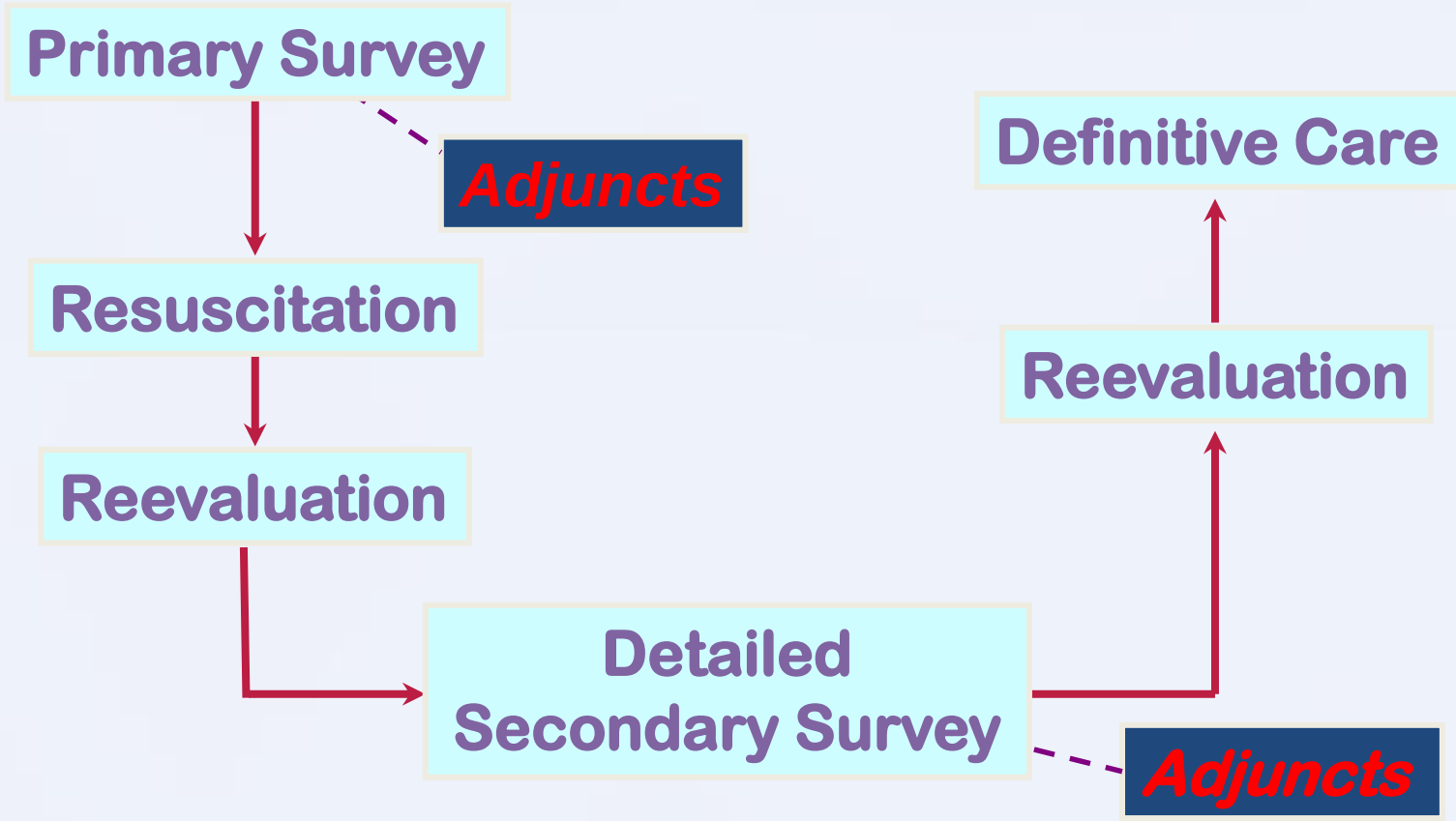
# On-scene Trauma care

# Primary survey A-B-C-D-E

แตกต่างจาก ATLS อย่างไร

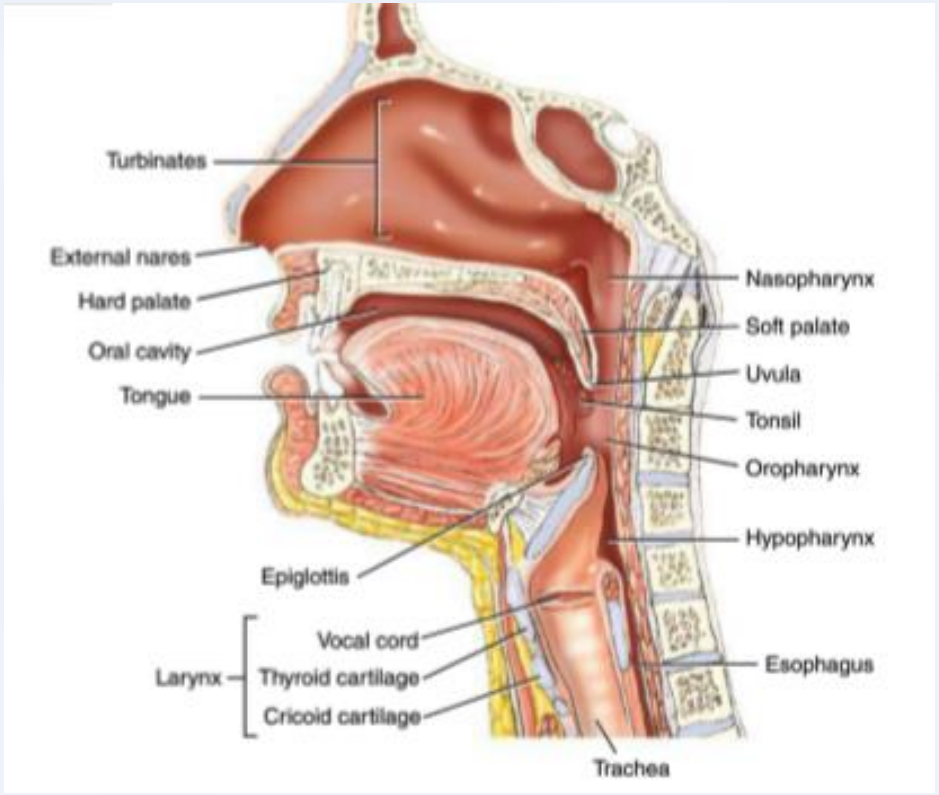
“SAVE and RUN ”

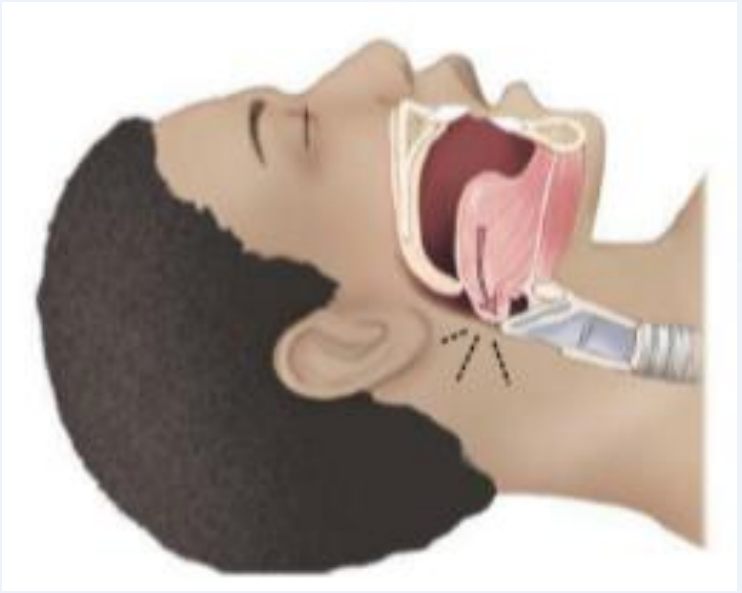
# Concepts of Initial Assessment



# Airway-keep it open/Cervical spine immobilization

- **Tongue**
- **Secretion**
- **Blood**



# Airway

- Maintain airway with suction, manual maneuvers and airway adjunct
  - Sniffing position > best protect airway in non trauma patient
  - Placing target 2-3 cm in thickening under torso
- Inline cervical spine immobilization


# Jaw thrust/Chin lift/Cervical spine immobilization


# OPA-oropharyngeal airway/NPA-nasopharyngeal airway



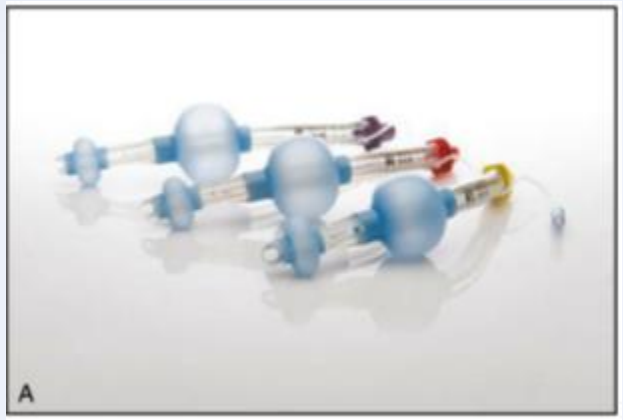
1 The first provider brings the patient's head and neck into a neutral in-line position and maintains stabilization while opening the patient's airway with a trauma jaw thrust maneuver. The second provider selects and measures for a properly sized OPA. The distance from the corner of the patient's mouth to the earlobe is a good estimate for proper size.

2 The patient's airway is opened with the chin lift maneuver. The OPA is turned so that the distal tip is pointing toward the top of the patient's head (flanged end pointing toward patient's head) and tilted toward the mouth opening.

3 The OPA is inserted into the patient's mouth and rotated to fit the contours of the patient's anatomy.

4 The OPA is rotated until the inside curve is resting against the tongue and holding it out of the posterior pharynx. The flanges of the OPA should be resting against the outside surface of the patient's teeth.

# Supra-glottic airway device





Laryngotracheal tube


LMA

## Methods of Airway Management

Manual
- Hands only

Simple
- Oropharyngeal airway
- Nasopharyngeal airway

Complex
- Endo-tracheal intubation
- Supraglottic airway
- Pharmacologicaly assisted/rapid-sequence intubation
- Percutaneous airway
- Surgical airway

# Breathing-oxygenation and ventilation

- ดู
- คลำ
- เคาะ
- ฟัง
- วัด **oxygen pulse saturation**

| Ventilatory Rate | Management |
|---|---|
| Abnormally fast > 30 | • Assisted Ventilation<br>• $FiO_2 \geq 0.85$ |
| Fast 20–30 | • Administration of ≥85% Oxygen<br>• $FiO_2 \geq 0.85$ |
| Normal 10–20 | • Observation<br>• Consider Supplemental Oxygen |
| Slow < 10 | • Assisted or Total Ventilation with ≥85% Oxygen<br>• $FiO_2 \geq 0.85$ |
| Apneic | • Total Ventilation with ≥85% Oxygen<br>• $FiO_2 \geq 0.85$ |

# Oxygenation keep pulse saturation ≥ 95%

- What is $FiO_2$ ≥ 0.85

= Oxygen mask with reservoir bag > 11-15 LPM

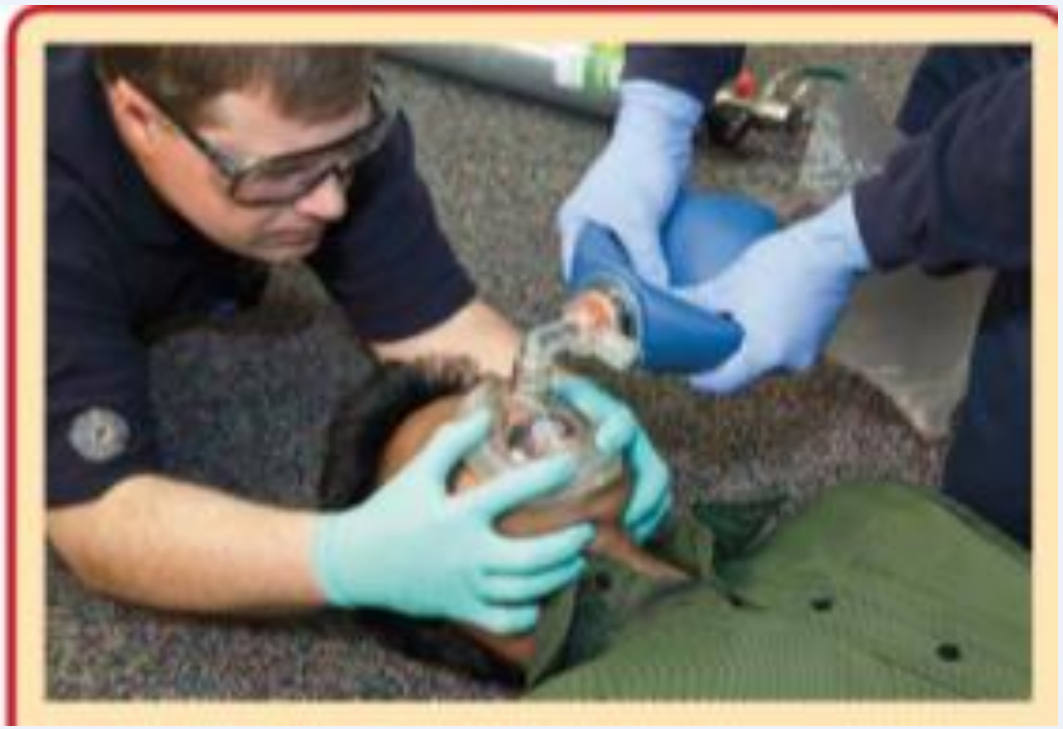
**Figure 8-34 Oxygen Tank Size and Duration**

| Flow Rate (L/min) | Tank Size and Duration (in Hours) | | | | |
|---|---|---|---|---|---|
| | D | E | M | G | H/K |
| 2 | 2.5 | 4.4 | 24.7 | 38.2 | 49.7 |
| 5 | 1 | 1.8 | 9.9 | 15.3 | 19.9 |
| 10 | 0.5 | 0.9 | 4.9 | 7.6 | 9.9 |
| 15 | 0.3 | 0.6 | 3.3 | 5.1 | 6.6 |

*Note:* This table shows the approximate duration in hours of various sizes of oxygen tanks and flow rates. The numbers are based on the assumption that the oxygen tank is completely full at 2,100 pounds per square inch.

# Assist ventilation

- Bag-valve mask ventilation ;Oxygen flow 15 LPM ; 10-12 tpm



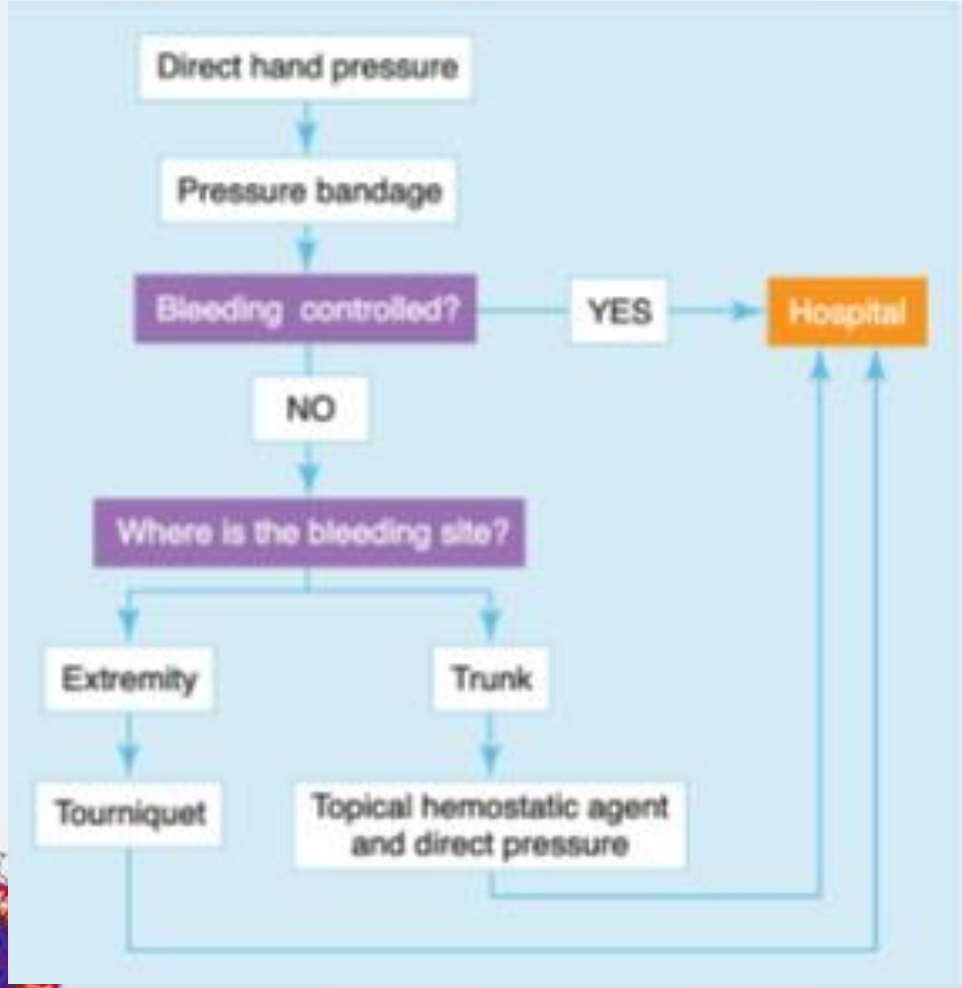
# Die from chest part

- Tension pneumothorax
- Cardiac tamponade
- Massive hemothorax >> ????
- Open chest wound
- Sucking chest wound

# Circulation- stop bleeding

- Looking for external massive hemorrhage and press it
- Search for Internal hemorrhage(Chest/Abdomen/pelvic)

# Technique to stop bleeding





**Wide > 1.5 inch**

# Circulation- perfusion ?

- PulseCheck for pulse radial (80-90 mmHg)> femoral(70-80 mmHg) > carotid(60-70 mmHg) or capillary refill < 2 sec
- Skin : Temperature/color/Moitsure
- Capillary refill time < 2 sec : not mean a thing if Peripheral vascular disease,Vasodilator drug, Cold environment

การประเมินการไหลเวียนโลหิต

ต้องนำทุกการประเมินมาประมวลร่วมกัน

# Shock presentation

- Level of conscious : anxiety,combative,drowsiness
- Tachycardia, decreased systolic and pulse pressure (heart and cardiovascular system)
- Rapid, shallow breathing (respiratory system)
- Cold, pale, clammy, diaphoretic or even cyanotic skin with decreased capillary refill time (skin and extremities)

# Fluid therapy

- IV flulid VS blood
- Balance resuscitation
- No IV opening before transporting

**Disability-**the patient's level of consciousness (LOC) and the potential for hypoxia

WHY LOC ?

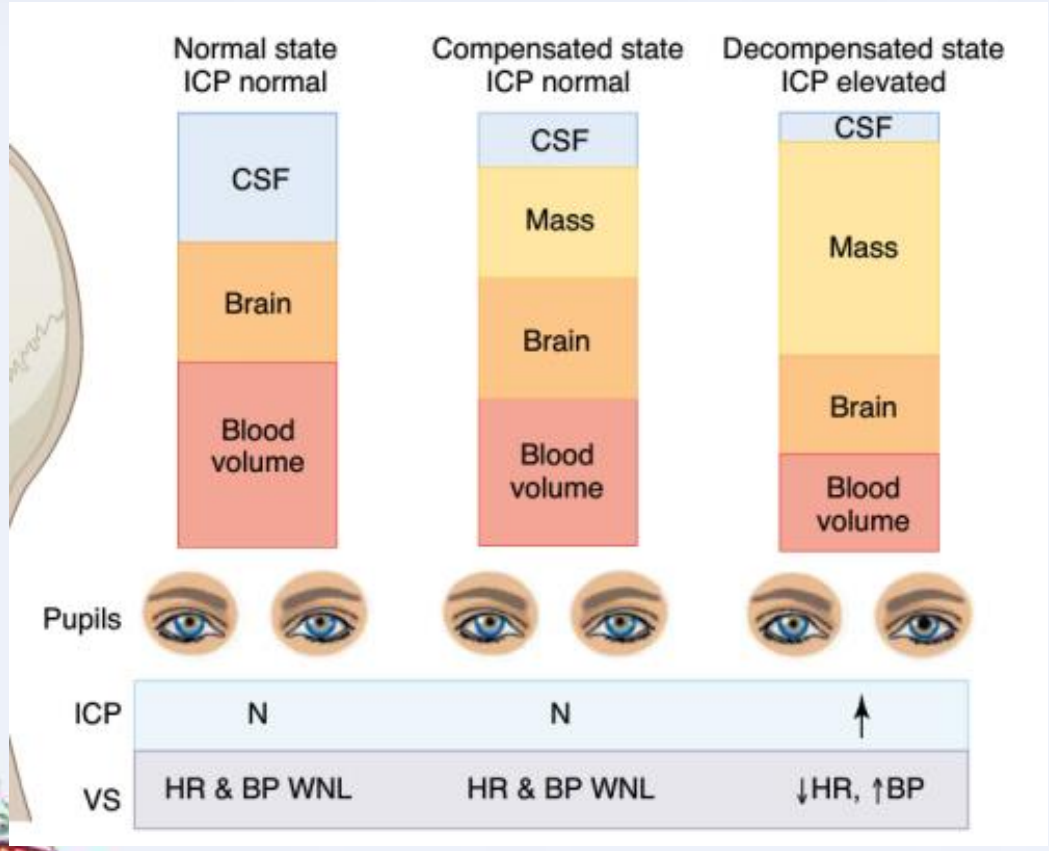
1. Decreased cerebral oxygenation (caused by hypoxia! hypoperfusion)
2. Central nervous system (CNS) injury
3. Drug or alcohol overdose
4. Metabolic derangement (diabetes, seizure, cardiac arrest)

**The prehospital care provider can infer that a confused , belligerent , combative, or uncooperative patient is hypoxic until proved otherwise**

# Glasglow Coma Scale

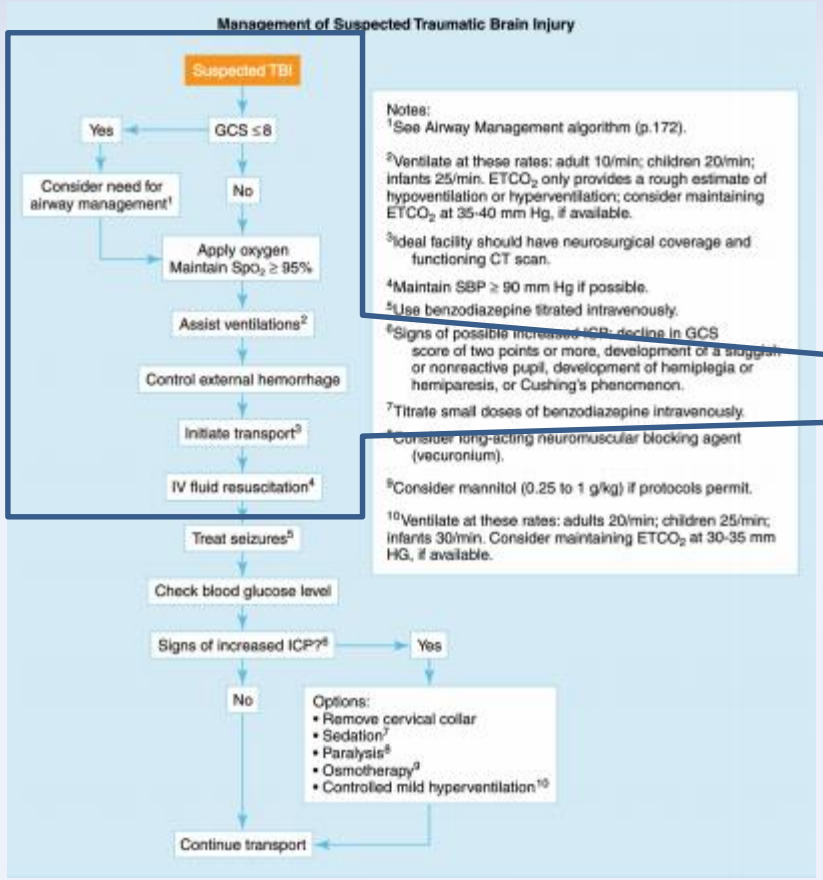
| Eye Opening | Points |
|---|---|
| Spontaneous eye opening | 4 |
| Eye opening on command | 3 |
| Eye opening to painful stimulus | 2 |
| No eye opening | 1 |
| **Best Verbal Response** | |
| Answers appropriately (oriented) | 5 |
| Gives confused answers | 4 |
| Inappropriate response | 3 |
| Makes unintelligible noises | 2 |
| Makes no verbal response | 1 |
| **Best Motor Response** | |
| Follows command | 6 |
| Localizes painful stimuli | 5 |
| Withdrawal to pain | 4 |
| Responds with abnormal flexion to painful stimuli (decorticate) | 3 |
| Responds with abnormal extension to pain (decerebrate) | 2 |
| Gives no motor response | 1 |
| Total | |

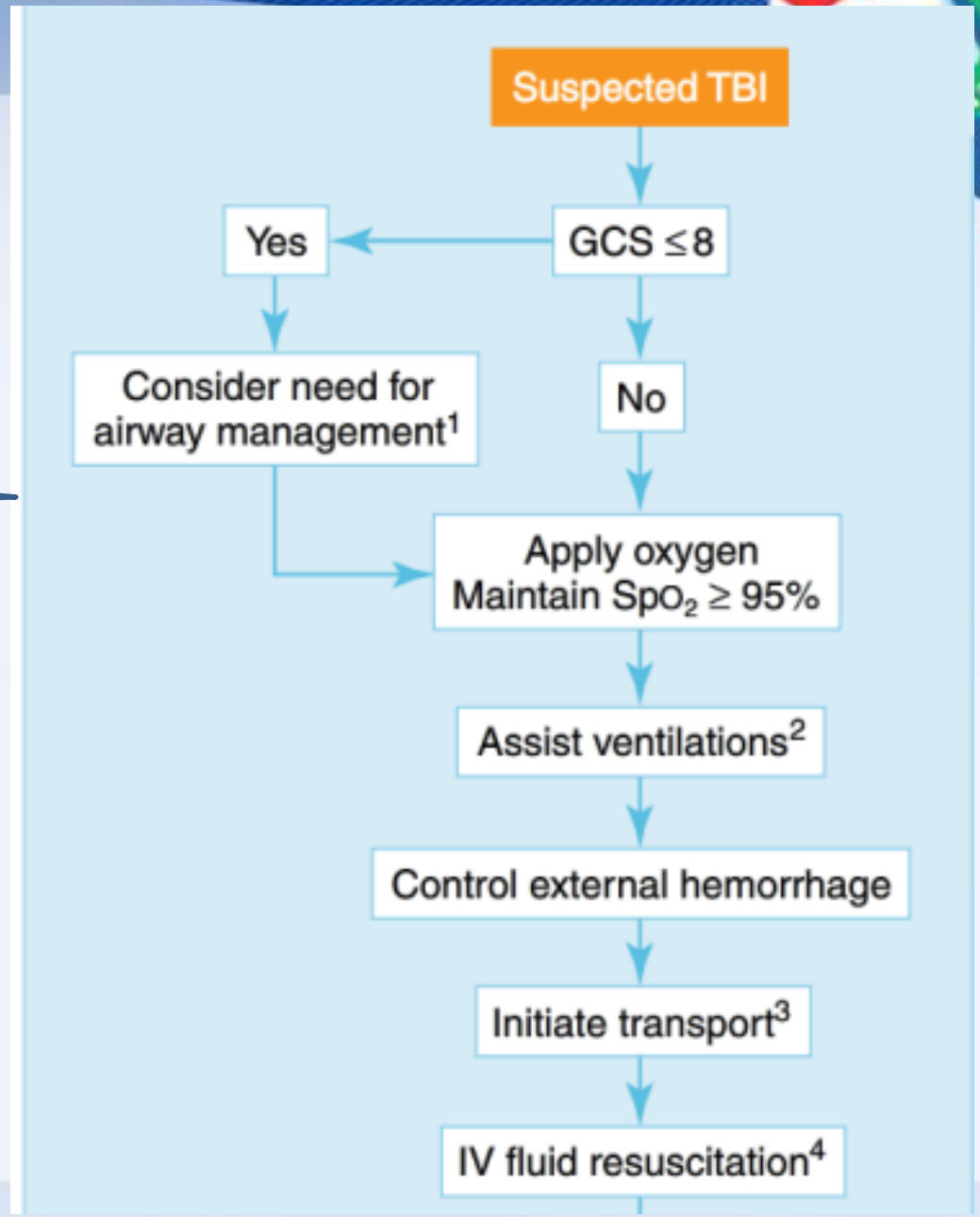
# Sign of increase ICP and herniation




- dilation or sluggishness of the ipsilateral pupil
- decorticate posturing, decerebrate posturing
- *Cheyne-Stokes ventilations*
- Cushing's phenomenon

# On-scene Trauma care



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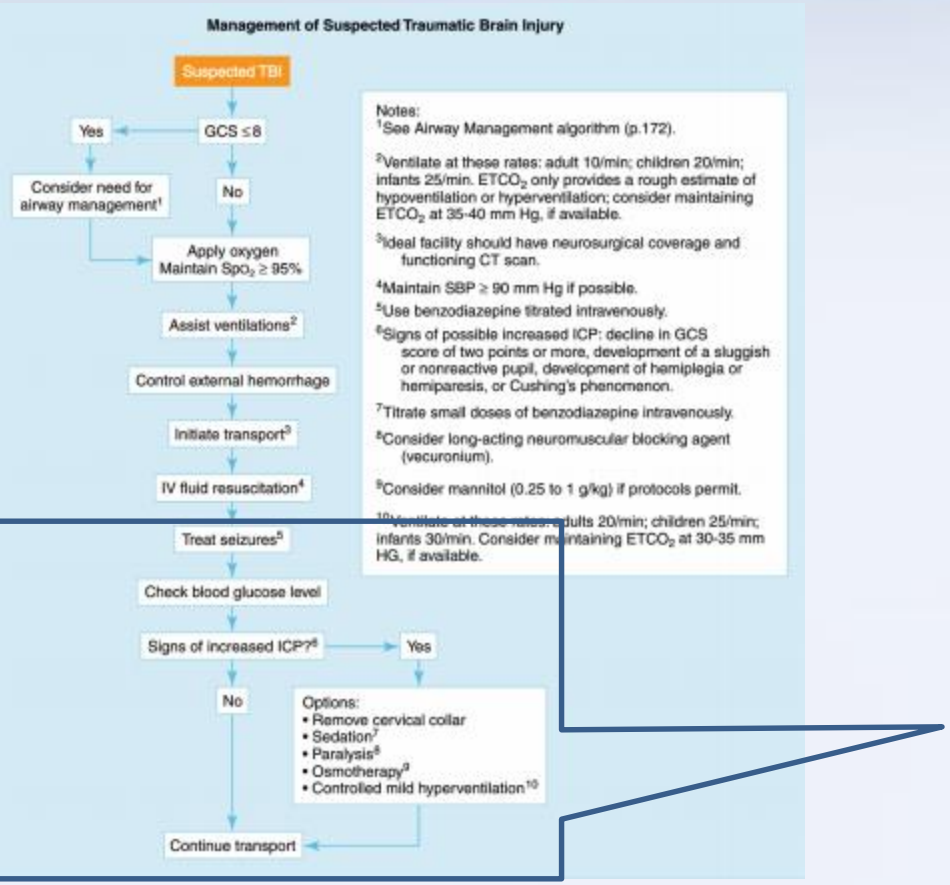


Treat seizures[5]

Check blood glucose level

Signs of increased ICP?[6] → Yes

No

Options:
- Remove cervical collar
- Sedation[7]
- Paralysis[8]
- Osmotherapy[9]
- Controlled mild hyperventilation[10]

Continue transport

[10]Ventilate at these rates: ad
infants 30/min. Consider ma
HG, if available.

Notes:

[1]See Airway Management algorithm (p.172).

[2]Ventilate at these rates: adult 10/min; children 20/min; infants 25/min. $ETCO_2$ only provides a rough estimate of hypoventilation or hyperventilation; consider maintaining $ETCO_2$ at 35-40 mm Hg, if available.

[3]Ideal facility should have neurosurgical coverage and functioning CT scan.

[4]Maintain SBP ≥ 90 mm Hg if possible.

[5]Use benzodiazepine titrated intravenously.

[6]Signs of possible increased ICP: decline in GCS score of two points or more, development of a sluggish or nonreactive pupil, development of hemiplegia or hemiparesis, or Cushing's phenomenon.

[7]Titrate small doses of benzodiazepine intravenously.

[8]Consider long-acting neuromuscular blocking agent (vecuronium).

[9]Consider mannitol (0.25 to 1 g/kg) if protocols permit.

[10]Ventilate at these rates: adults 20/min; children 25/min; infants 30/min. Consider maintaining $ETCO_2$ at 30-35 mm HG, if available.

# Expose and environmental

- Complete expose if necessary
- Keep warm prevent hypothermia

# Adjunct to primary survey

- Peripheral pulse oxygen saturation
- ECG monitoring
- Blood pressure measurement
- $EtCo_2$

# Any questions?


ขอบคุณและสวัสดี
KHONKAEN