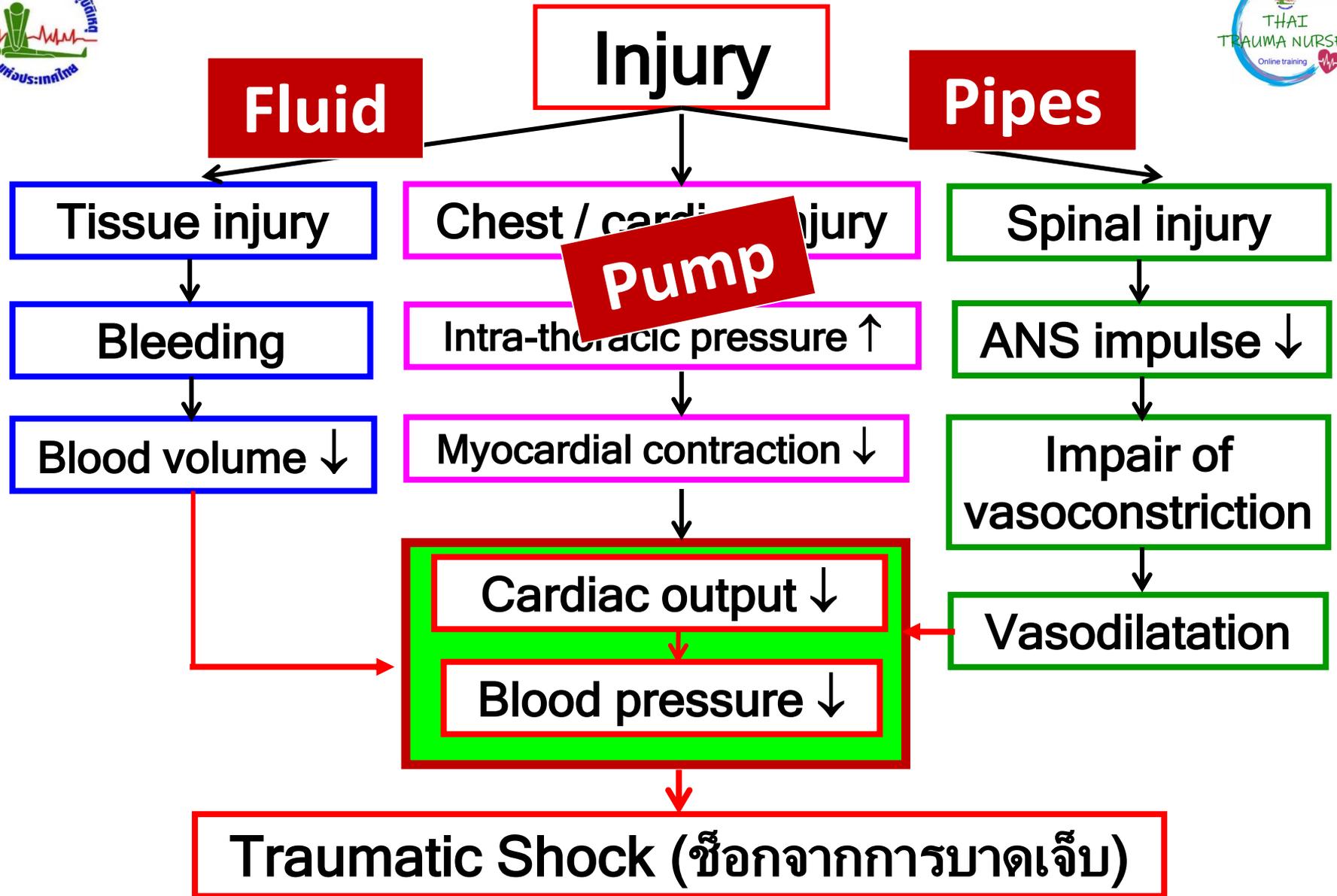




Trauma care after resuscitation

ผศ.ดร.กรองไต่ อุณหสูต EdD (Higher Education)
Post Doctoral Fellowship in Trauma

ผศ.ดร.กรองไต่ อุณหสูต | 24 ธันวาคม 2565



Acidosis

The Lethal Triangle

Tissue injury

The Lethal Triangle

Hypothermia

Coagulopathy

Tissue Oxygenation Cascades

Physiologic	Parameter	Assessment & Monitoring
Ventilation	PaCO ₂ ETCO ₂	RR, WOB, Lung sounds, CXR
Diffusion	PaO ₂ -FiO ₂ (P:F) ratio	PaO ₂ , SpO ₂ , SaO ₂
Hgb	CaO ₂ (O ₂ content)	Hgb level
CO	DO ₂ (O ₂ delivery)	CO (HR x SV), SBP, PR, Distal perfusion
Tissue O ₂ Utilization	VO ₂ (O ₂ consumption)	SvO ₂ , Serum lactate, Arterial pH, Base deficit

O₂ content (CaO₂) is sufficiency?

$$\text{O}_2 \text{ content} = \text{SpO}_2 \times \text{Hgb} \times 1.36^*$$

$$\text{Normal CaO}_2 = 20 \text{ ml O}_2 / 100 \text{ ml blood}$$

Ex. Normal Pt. SpO₂ 0.99, Hgb 15

$$\text{CaO}_2 = 0.99 \times 15 \times 1.36^* = \underline{20.1}$$

Injured Pt. SpO₂ 0.99, Hgb 9

$$\text{CaO}_2 = 0.99 \times 9 \times 1.36^* = \underline{12.1}$$



O₂ Delivery (DaO₂) is adequate?

$$\text{DaO}_2 = \text{SpO}_2 \times \text{Hgb} \times 1.36^* \times \text{CO} \times 10$$

$$\text{Normal DaO}_2 = 1,000 \text{ ml O}_2 / \text{min}$$

Ex. Normal Pt. SpO₂ 0.98, Hgb 15, CO 5

$$\text{DaO}_2 = 0.98 \times 15 \times 1.36^* \times 5 \times 10 = \underline{1,000}$$

Trauma Pt. SpO₂ 0.98, Hgb 8, CO 3

$$\text{DaO}_2 = 0.98 \times 8 \times 1.36^* \times 3 \times 10 = \underline{320}$$

Tissue Oxygen (VO_2) is adequate?

$$VO_2 = (SpO_2 - SvO_2) \times Hgb \times 1.36^* \times CO \times 10$$

$$\text{Normal } VO_2 = 180-200 \text{ ml / min}$$

Ex. **Normal Pt.** SpO_2 0.98, SvO_2 0.75 Hgb 15, CO 5

$$VO_2 = (0.98 - 0.75) \times 1.36^* \times 15 \times 5 \times 10 = \underline{235}$$

Trauma Pt. SpO_2 0.98, SvO_2 0.40, Hgb 6, CO 3

$$DaO_2 = (0.98 - 0.40) \times 1.36^* \times 6 \times 3 \times 10 = \underline{142}$$

Tissue Oxygenation is adequate?

Too Little O₂

O₂ sat ↓

Hb level ↓

CO ↓

O₂ demand is too high

Fever

Healing

Activities

Capillary occlusion

Hypovolemia

Clotting

The cells can't use O₂

Cellular metabolic

Cell death

Trauma Resuscitation Quality

Effective team coordination

Adequate leadership

Life threatening injuries

**Trauma team leader
experience on
resuscitation**

**Injury severity on
resuscitation
investigation**



Trauma Resuscitation Quality

Effective team coordination

Adequate leadership

Life threatening injuries

Trauma team leader experience on resuscitation

Injury severity on resuscitation investigation

Speed of preformed tasks & Decision-making during resuscitation

Supervises & coordinates the team members' activities



What is Trauma Care System?



Approached to the acutely injured patient

Provides personnel, facilities & equipment for optimal care on emergency basis

Available 24-hours a day



Scribe Nurse (Scribe)

- Keeping accurate records
- Completely documents resuscitation report
- Assuring all standard tests or other labs as ordered
- Assisting in direct patient care in times
- Assisting with preparation for transport from resuscitation room
- Assist in noise and crowd control

“COVID-19

has greatly impacted our lives & the healthcare system”

Scene  facing with highly infectious patients.

Hospital  diagnostic & therapeutic of emergency resuscitation

From concept to practice

