Travmada Genel Yaklaşım ve Hemostatik Resusitasyon

- Dr. Behçet Al, 2017

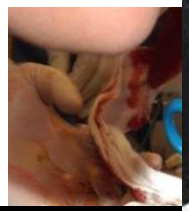

ACİL OLAN HASTALAR
İŞİ ACİL OLAN HASTALAR

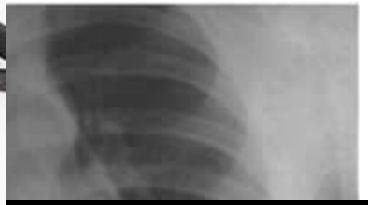
The Golden Hour

The time following a traumatic injury when prompt medical treatment has the highest likelihood to prevent death

The Hour is

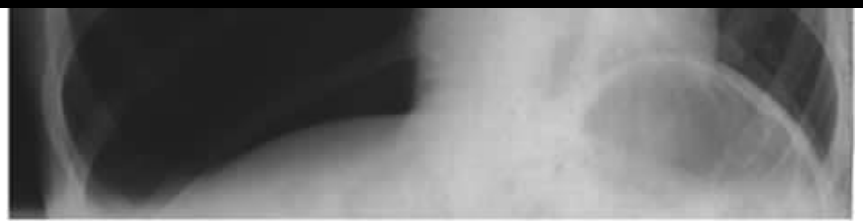
Kanar durumlara



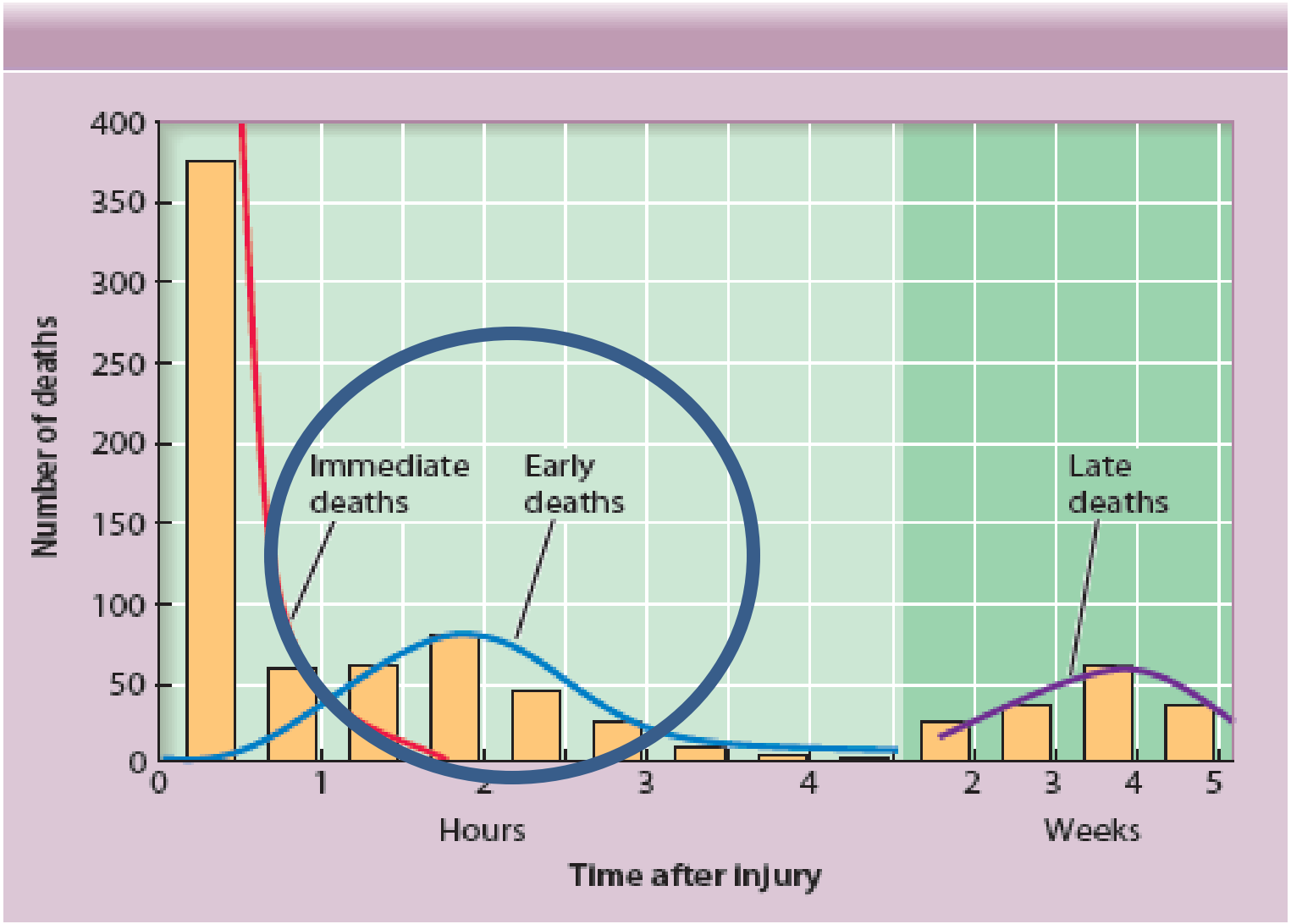


Use your Common Senses

30 second



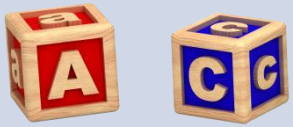
Travmada Mortalite Dağılımı



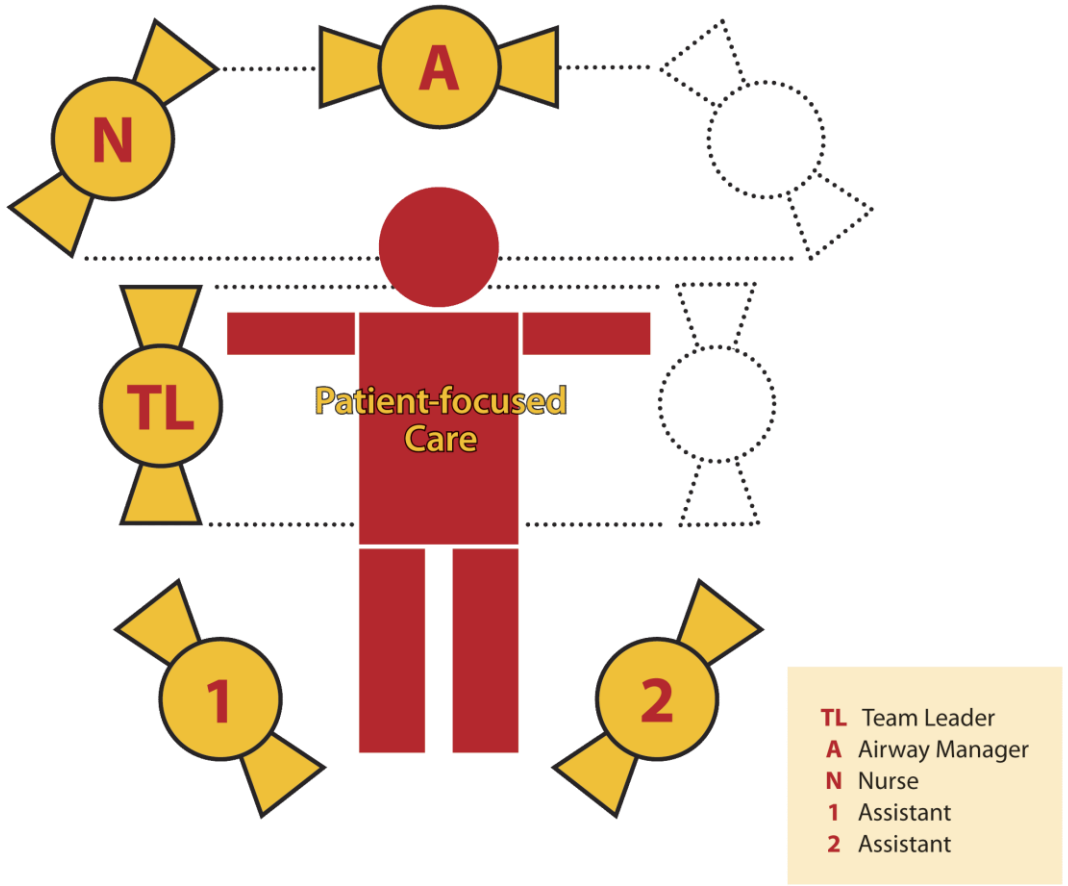
Hedef/ Travma Bakımının Presnsipleri
Takım İlkeleri

!!)

asyonu

	Takım İlkeleri
	Airway with c-spine protection
	Breathing/ ventilation/ oxygenation; Life- threatening chest injury
	Circulation: Stop the bleeding!
	Disability (Intracranial mass lesion)
	Expose/ Environment/ body temp

“TAKIM ÇALIŞMALI



HERKES BERABER DAHA FAZLASINI BAŞARIR

Resuscitate before you intubate

- Eşzamanlı primer bakı ve vital fonksiyonların resusitasyonu

Rapid

Sequence

Intubation

Resuscitation

Sequence

Intubation

Levitan R.ACEP Now 2016

Airway

C-Spine Injury

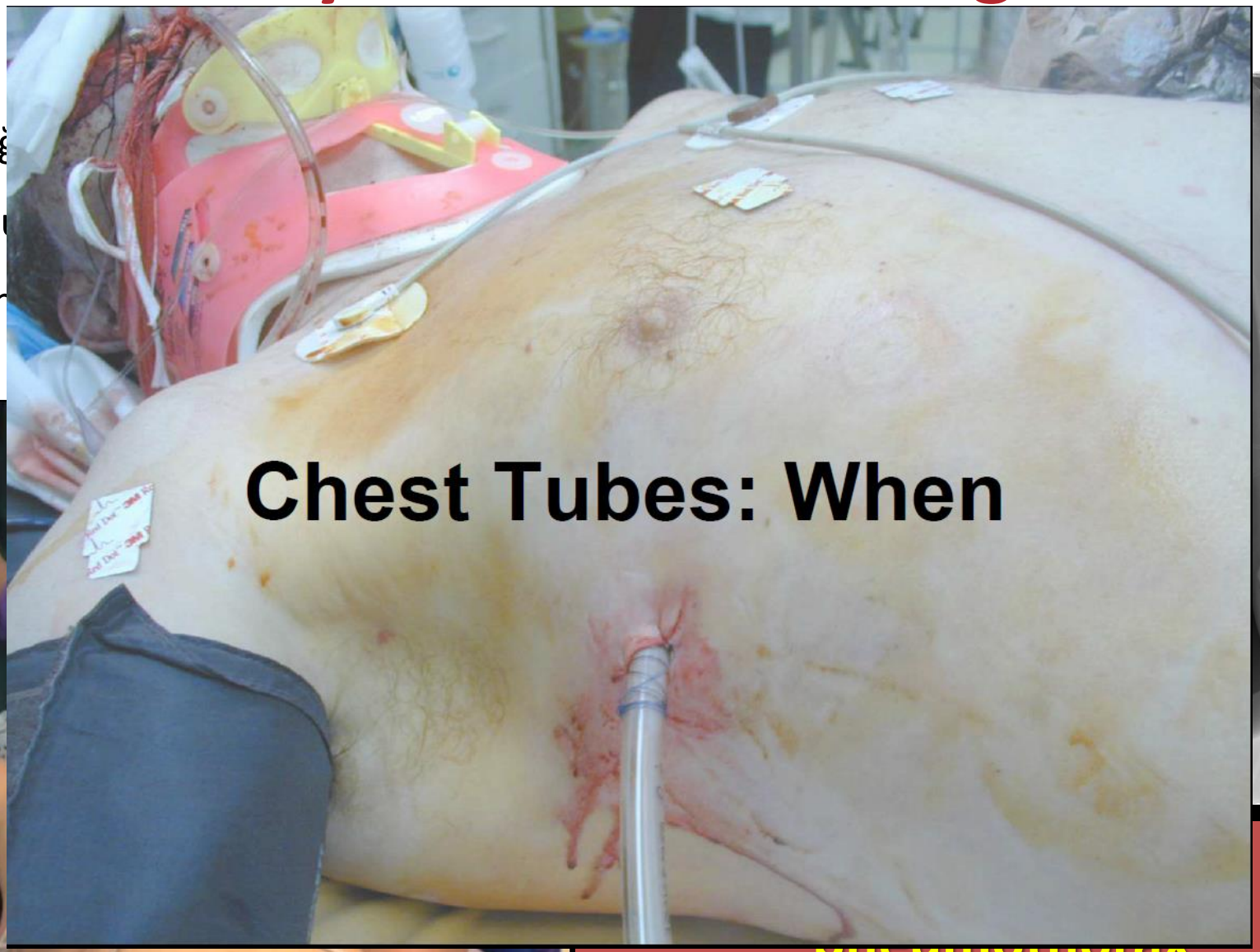
- Hava yolunu aç (Snoring,Gurgling, Stridor)
- Göğüs duvar hareketlerini takip et
- Maxillofacial trauma/ laryngeal injury

- Kesin hava yolu (ETE)
- Hızlıca yeniden değerlendirme


Respiratory

Resusitasyon: Solunumu değerlendir

- Göğ
- Solu
- Rer



pneumothorax

Five Common Airway Error

Not appreciating the physiologic difficult air

Not utilizing positive pressure ventilation

Removing a perfectly good airway

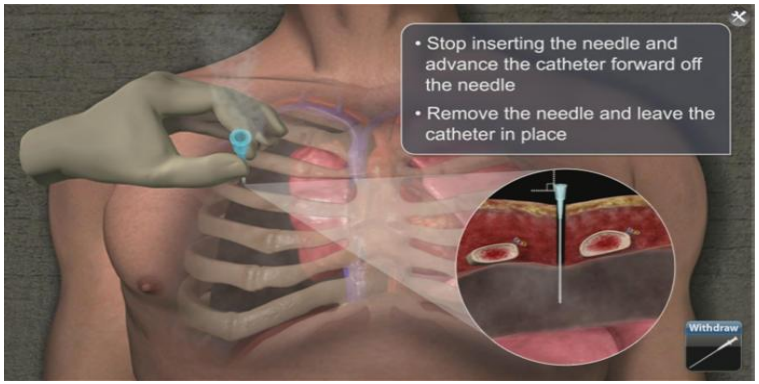
Inadequate $ETCO_2$ management

Inserting VL too deep

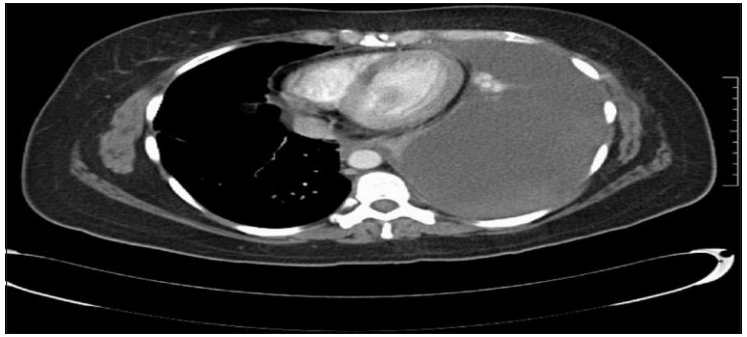
Resusitasyon: Solunumu Değerlendir

Oksijen ver, gerekirse ventile et

Tension pneumothorax: Needle decompression



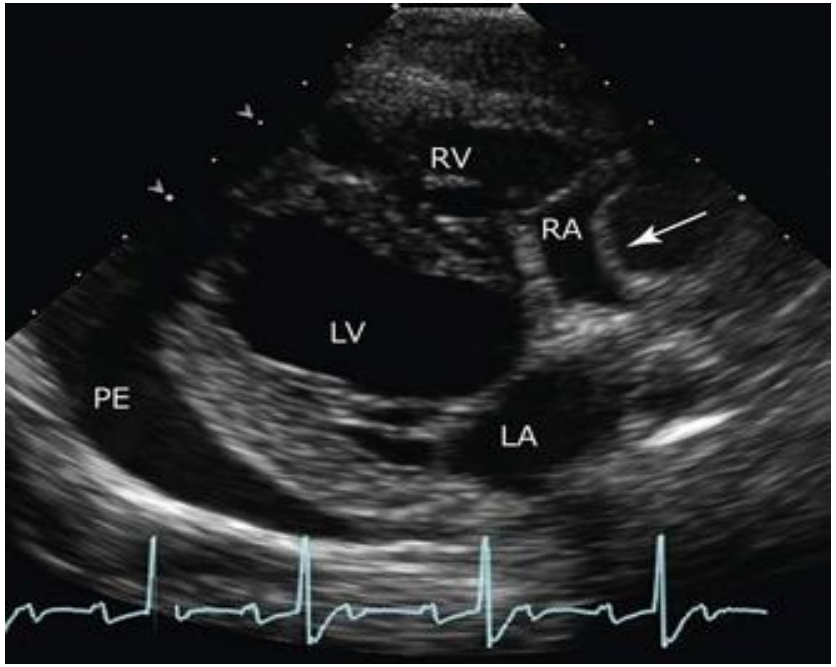
Volume resuscitation and tube thoracostomy

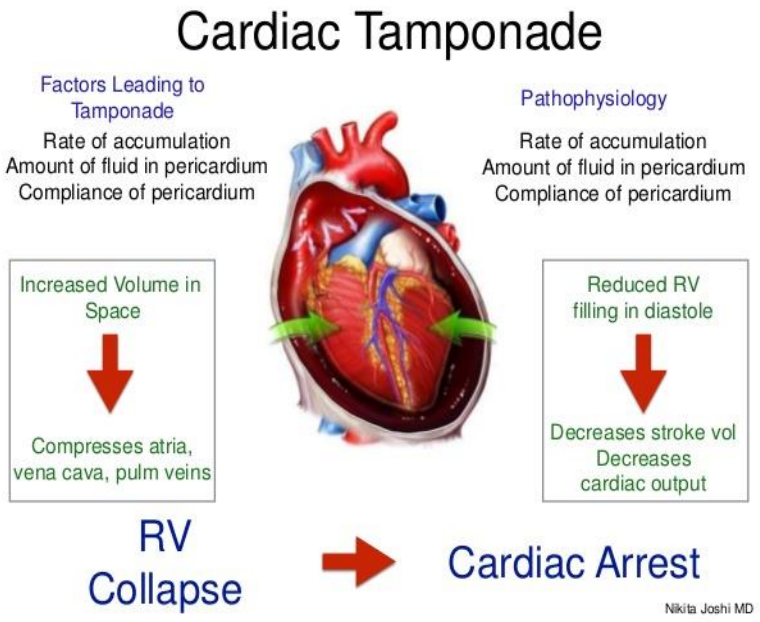


Open pneumothorax: Occlusive dressing

Reassess frequently

Pericardiocentesis and direct operative repair

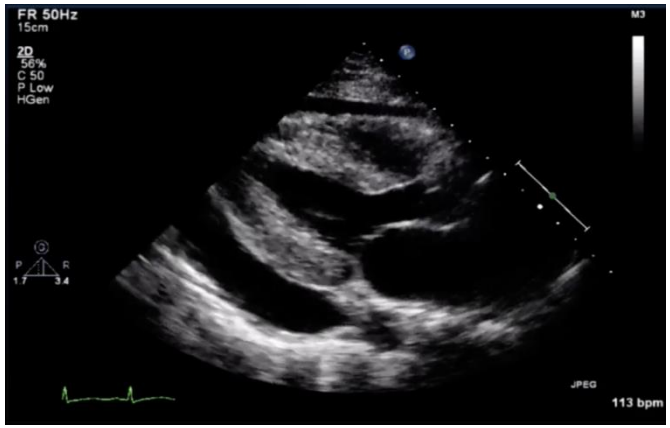




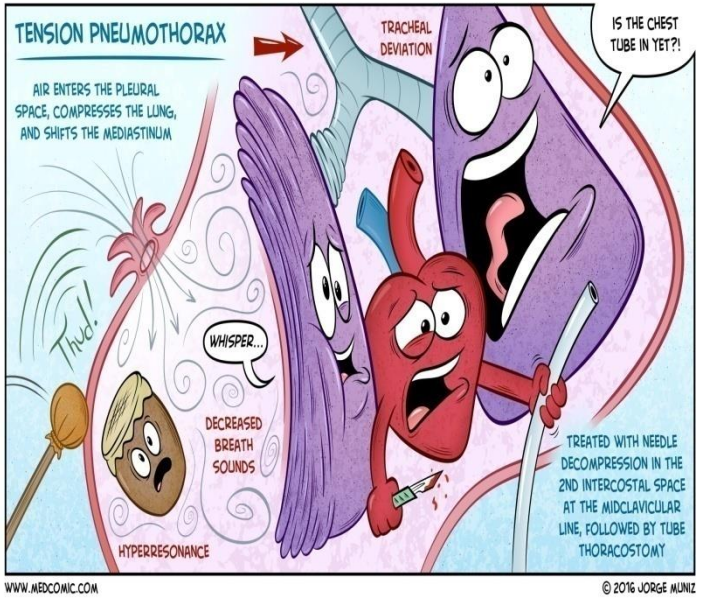
Primer Bakı: Dolaşım

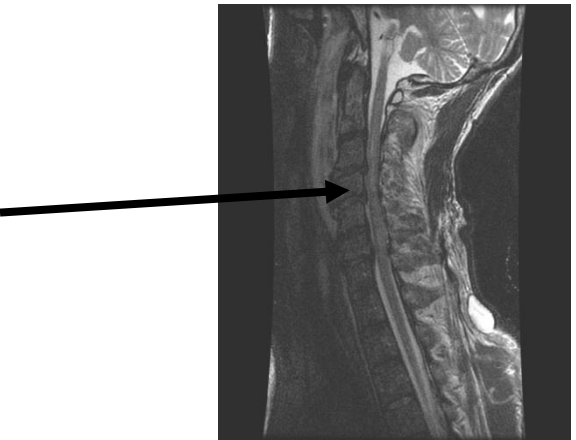
- *Non hemorrhagic shock

*Cardiac tamponade



*Tension pneumothorax





*Neurogenic

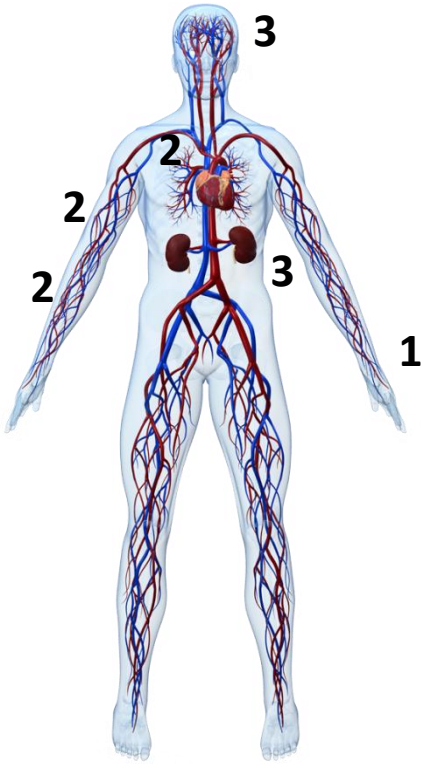
*Septic (late)

Primer bakı: Dolaşım

- Organ perfüzyonunu değerlendir
  - Şuur düzeyi
  - Cilt rengi
  - Nabız kalitesi

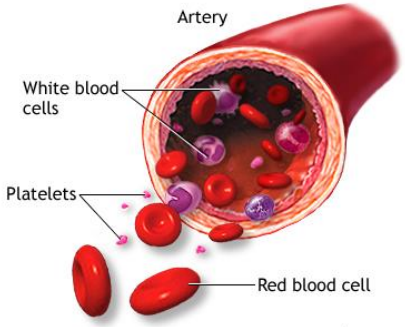
Assess Organ Perfusion

1. Tachycardia
2. Vasoconstriction
2. ↓ Cardiac output
2. Narrow pulse pressure
3. ↓ MAP
3. ↓ Blood flow



Resusitasyon: Dolaşım

Kanama?

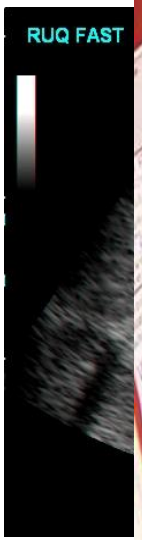


- Direk bası
- Operasyon
- Arteri klempleme

Onu mutlaka bul!

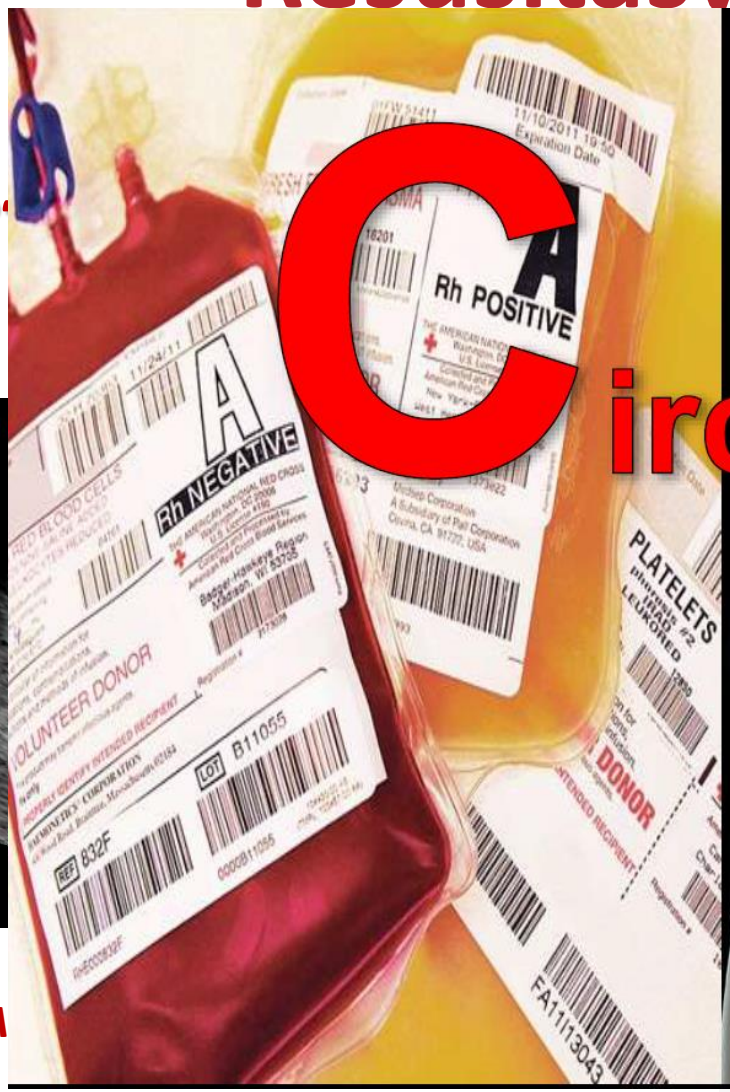
Resusitasyon: Dolasım

FAS



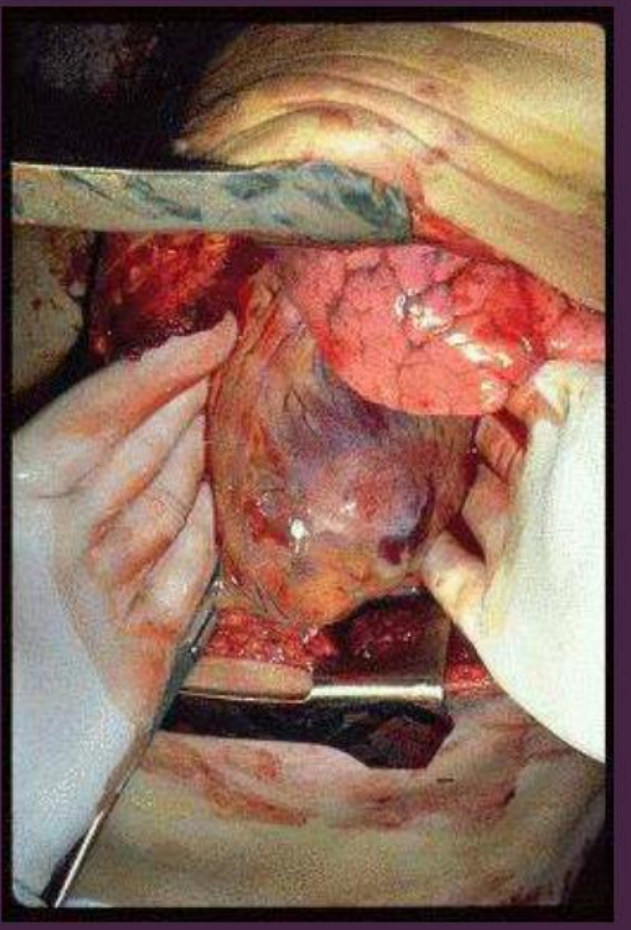
Focused **A**

Circulation



How to, thoracotomy

8. Evacuate any blood from the left side of the chest
- Identify the pericardium
- Open the pericardial sac
- Evaluate for cardiac injury



INTRAOSSEUS ACCESS IN TRAUMA

GEOFF HAYDEN MD

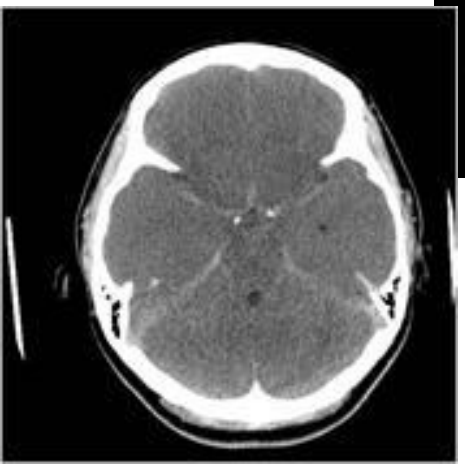
+/- | procedure | meds/labs

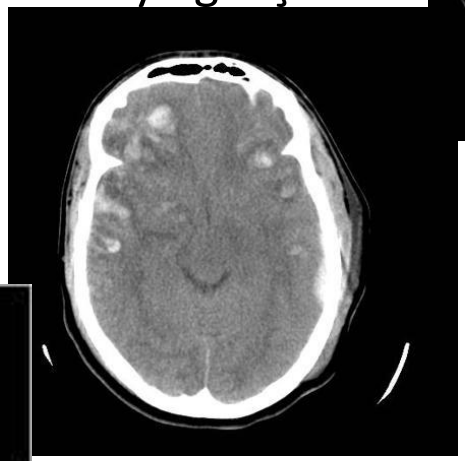
√ [and many others]

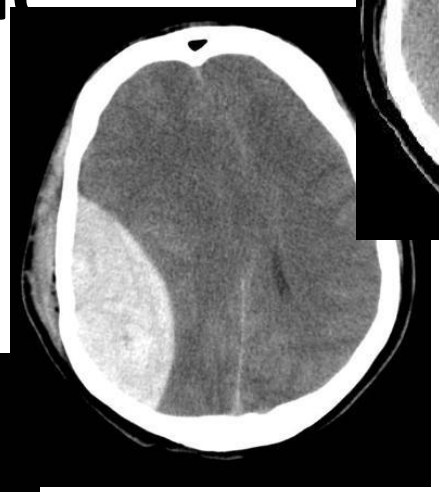
Primer Bakı: Disability

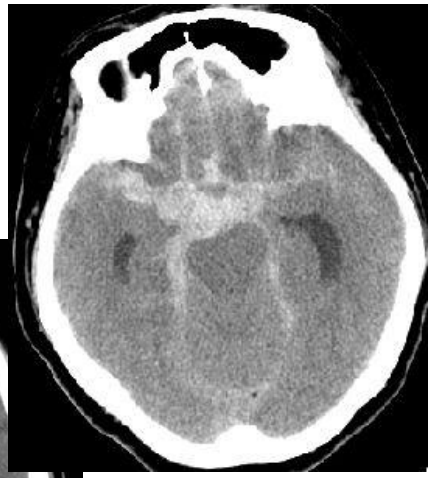
Basal nörolojik değerlendirme

- Pupiller cevap
- GKS
- Nörolojik olarak kötüye gidiş









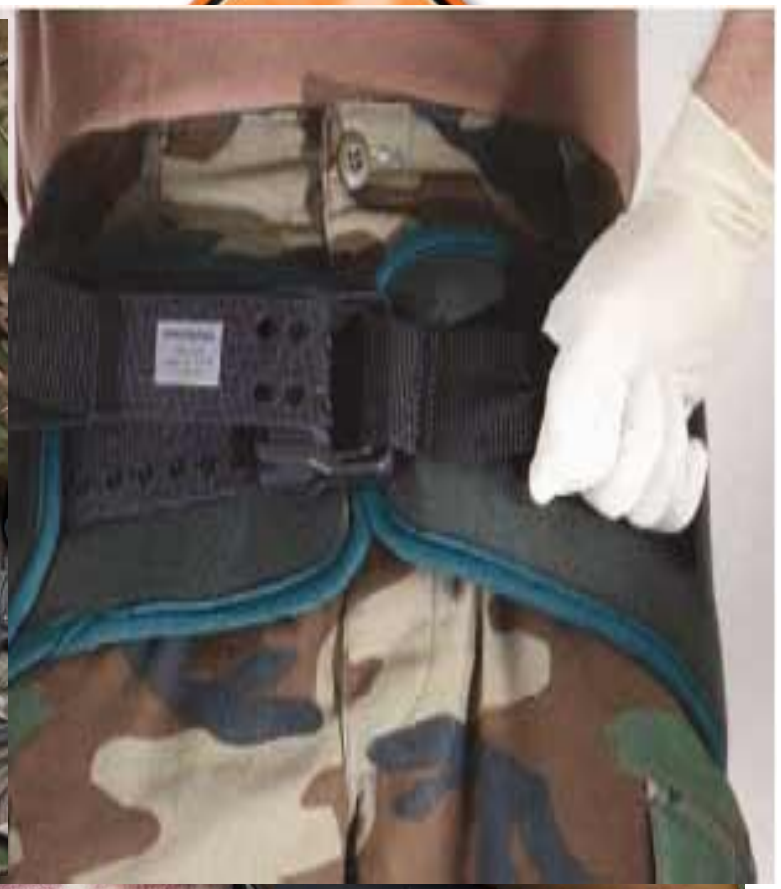
disability

Primer Bakı: Exposure

- Tüm
- Görü
- Boyn

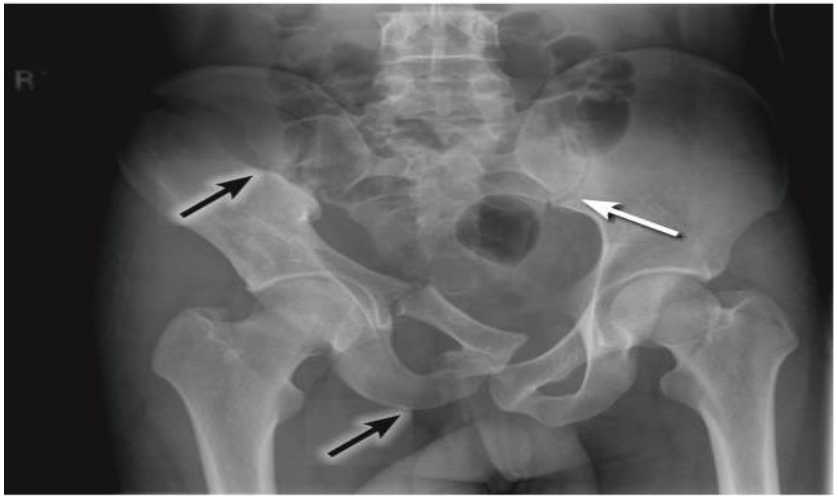
İlaveler: Uriner Katater

- Kan?

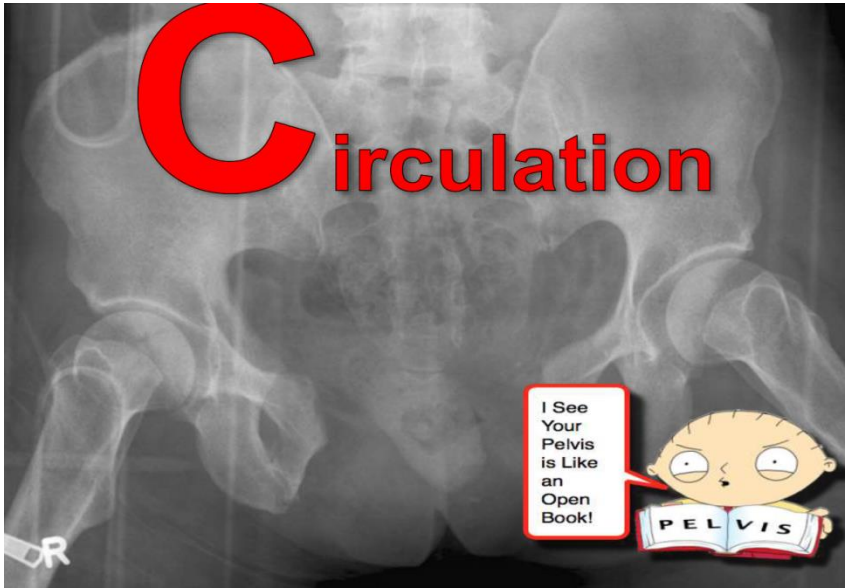


Pelvic Fracture

- Palpasyonda ağrı
- Symphysiste genişleme
- Bacak uzunluğunda farklılık
- Instabilite
- Pelvic x-rays



- Majör hemoraji kaynağı
- Volume resusitasyonu
- External fixator
- Angiography / embolization



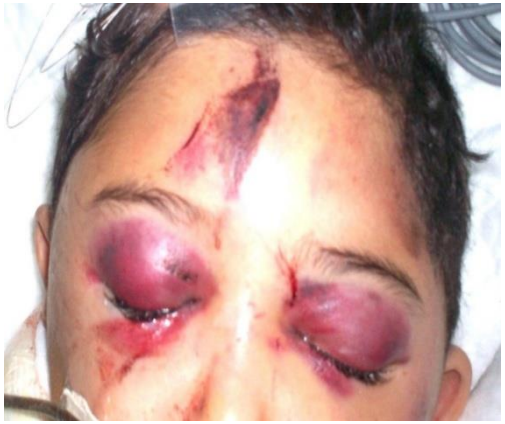
Missed fractures

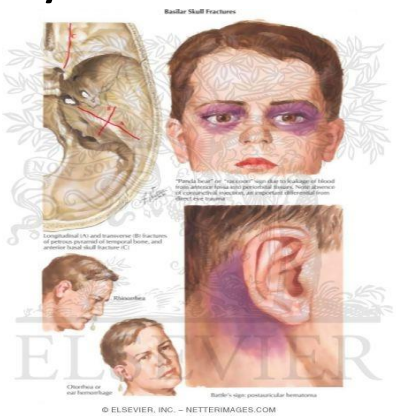
Sekonder Bakı

- ABCDEs'yi yeniden değerlendir
- Head-to-toe fizik muayene
- Tam nörolojik muayene
- Özel tanı testler
- Anamnez

Sekonder Bakı: KAFA

- Tam nörolojik muayene
- GCS değerlendirmesi
- Göz ve kulak mauyenesi
- Bony crepitus / instability
- Palpable deformity





- CSF rhinorrhea / otorrhea
- Periorbital ecchymosis
- Mid-face instability
- Hemotympanum

- Potential airway obstruction
- Cribriform plate fracture
- Frequently missed injury

Sekonder Bakı

Perineum

- Contusions, hematomas,
- lacerations, urethral blood

Rectum

Sphincter tone,
High-riding prostate,
Pelvic fracture
Rectal wall integrity, blood

Vagina

Blood

Lacerations

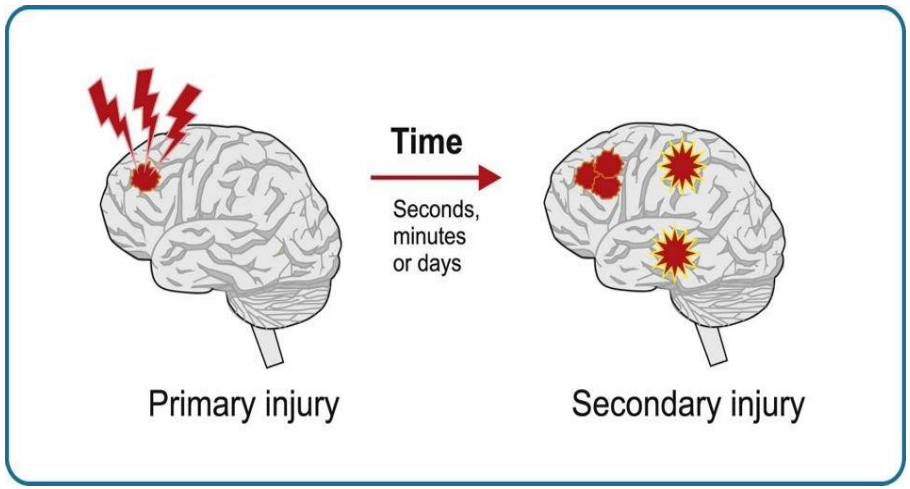
Gebelere iki kat dikkat

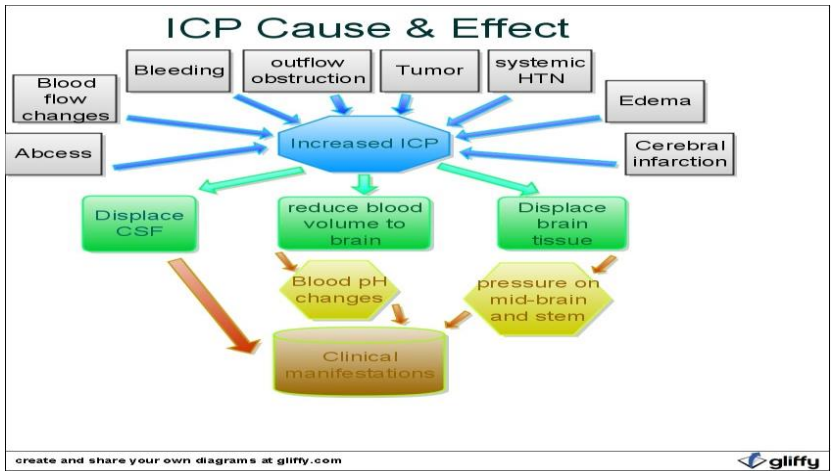
- Görüntülemeleri ertelemeyin, geciktirmeyin
- Bebek değerlendirmesini anne bakımı ile eş zamanlı yapın

Sekoner Bakı: CNS

- Hızlı yeniden değerlendirme
- Sekonder beyin hasarını önle
- İhtiyaç varsa görüntüle
- Erken konsültasyon

- Incomplete immobilization
- Subtle ↑ in ICP with manipulation
- Rapid deterioration





Missed Injuries

Değişikliklerden şüphelenin

*KB

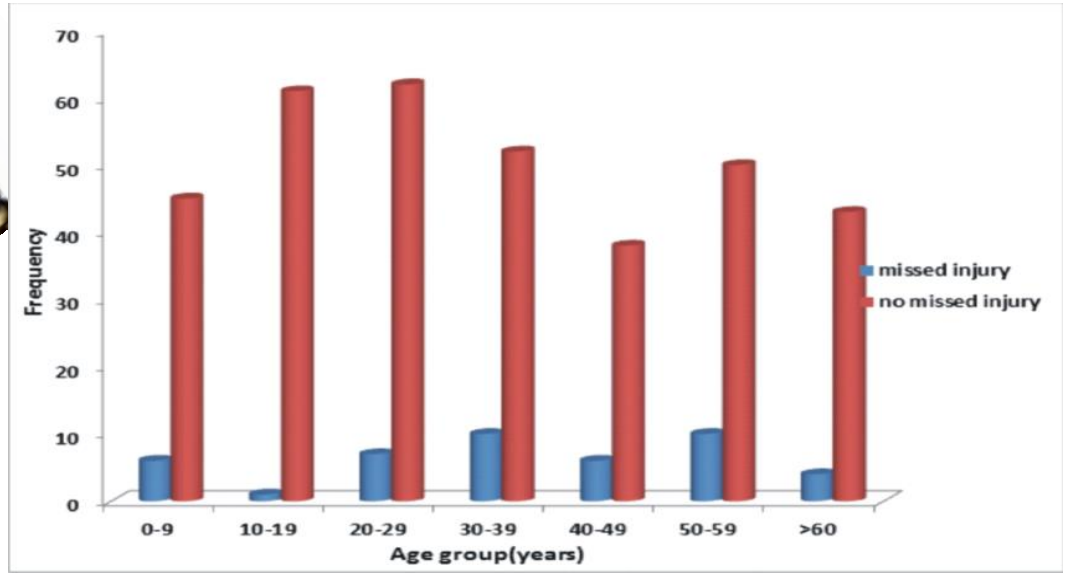
*Nabız,

*Cilt rengi

*Solunum sayısı

*Ritim

*O2



secured the airway

NOW WHAT?

Post-Intubation Sedation

- **TRAVMA HASTASI NE İSTER?**

- Hastanın ağrısını ve anksiyetesini rahatlat
- IV Uygulama yapın
- Sedasyonlarda hastayı monitorize edin

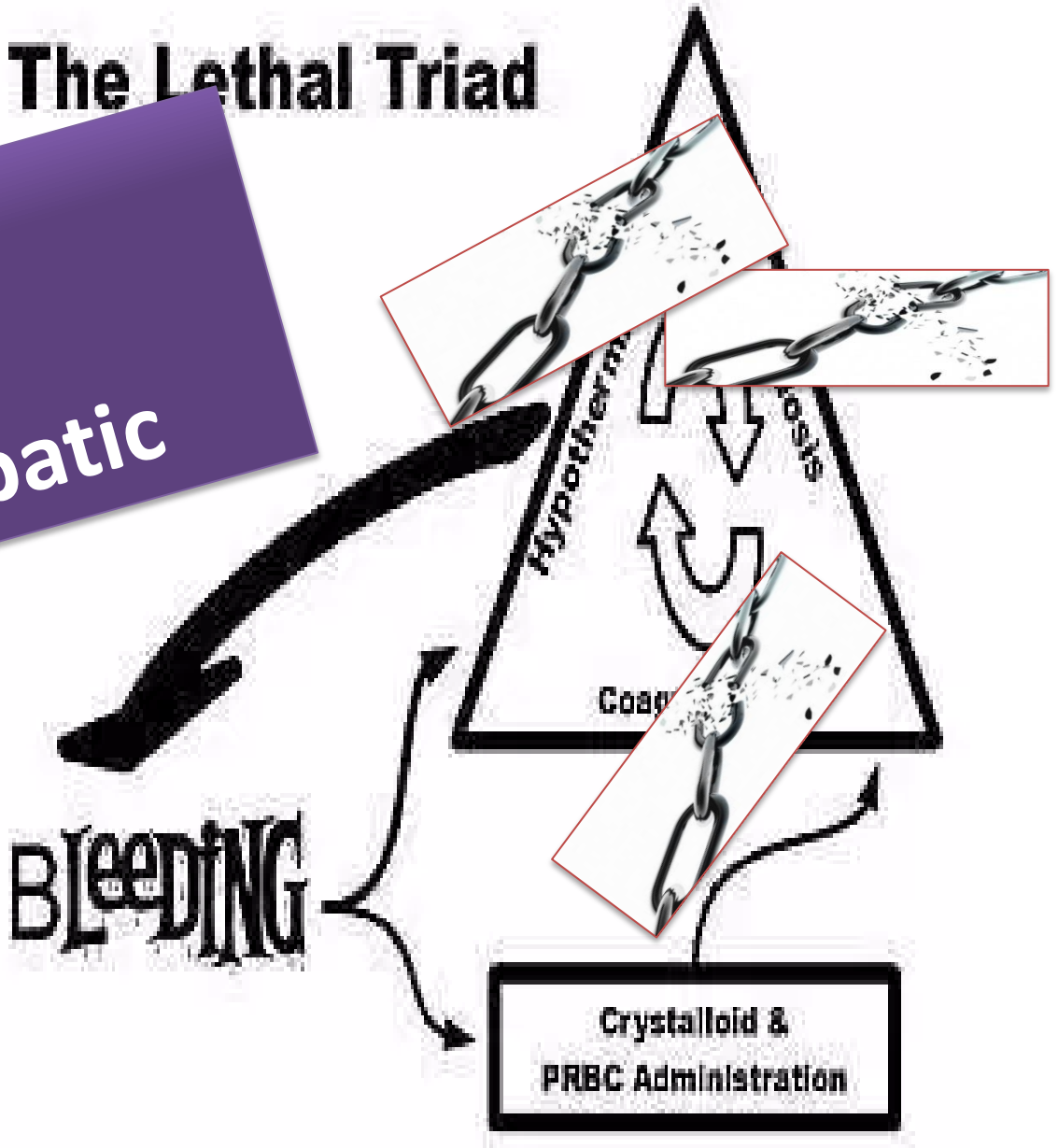

ANXIETY
AGITATION
Fear
Noises
Medications
Frequent Turns
Surgical Stress
Constant Alarms
Sleep Deprivation
Inconsiderate Providers
Loss of Circadian Cycle
Bright Lights
Loss of Self-control
Memory Loss
Invasive Devices
Confusion
Pain
Fevers

My Goals

1. Guard patient's safety and welfare
2. Provide adequate analgesia, anxiolysis, sedation, amnesia
3. Control behavior as needed

Hemostatik Resusitasyon

25% coagulopatic



Kan Basıncı

- Normal düzeye (120/80) çıkarmayın
- MAP 65 mm Hg hedef mi?
- Hedef KB en az
  - Pıhtılaşmayı bozmayacak
  - Yeterli perfuzyonu sağlayacak bir nabız basıncı
  - Permissive hypotension TBI'de kontrendike (MAP 80)

Kan ürünleri

- **1. Packed red blood cells:** Bir ünite (220 ml) PRBC'i %3 artırır.
- **2. Fresh frozen plasma:** Protein ve pıhtılaşma faktörlerini içerir.
- **3. Platelets:** Bir üninte PLT'i 10.000 artırır.
- **4. Cryoprecipitate**: Factor VIII, Factor V and fibrinogen içerir
- **5. PCC: (Protein Complex Concentrate)** Factor VII konsantresi; warfarine bağlı kanamalarda kullanılır.
- **6. Feiba:** Activted factor VIII and VII that may be useful for reversal of dagibatran.

- **7. Transexemic acid (TXA)**
- Ilk bir saatte etkili (hastane öncesi önerilir),
  - 3. saatten sonra kullanımı zararlı
  - Kan componentleri ile beraber verilirse daha etkili
- 1g IV yükleme dozu (10 dk) d
  - Infüzyon dozu takip eden 8 saatte 1g.

Massive Transfusion

- 1:1:1 vs 1:1:2 vs higher ratios
- FFP:platelets:RBC

Biochemical resuscitation

- Bu değerler kritik eşiği gösterir :
  - Temperature <35
  - pH <7.2
  - Base excess >-6
  - lactate >4mmol/L
  - Ionized calcium <1.1mmol/L
  - Platelet count <50 x 10/L
  - PT > 1.5 X normal
  - INR >.1.5 X normal
  - Fibrinogen level <1.0g
  - APTT <1.0g/L

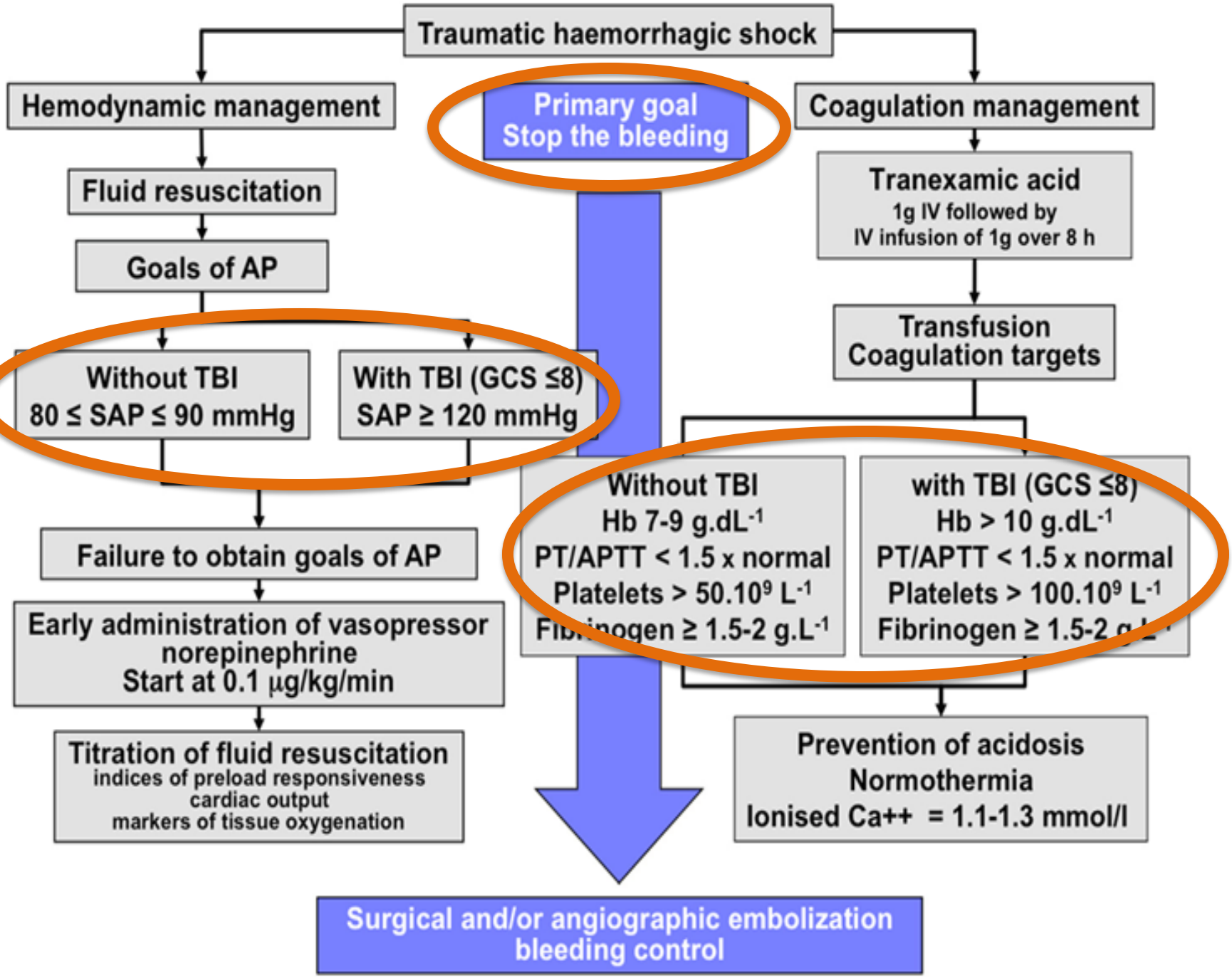
Hemostatic Resuscitation ne zaman tamamlanır?

Oxygen debt has been repaid,

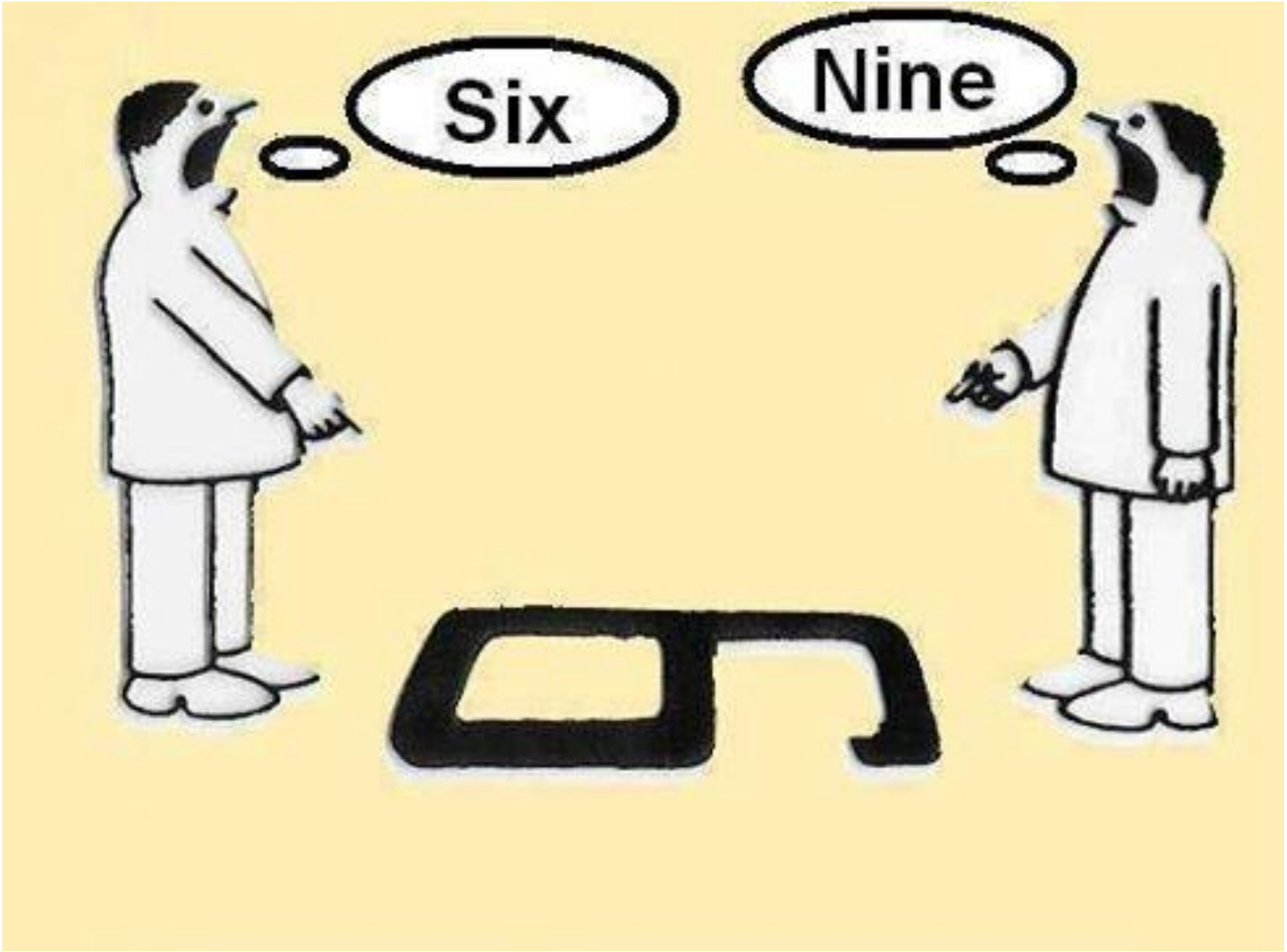
Tissue acidosis eliminated,

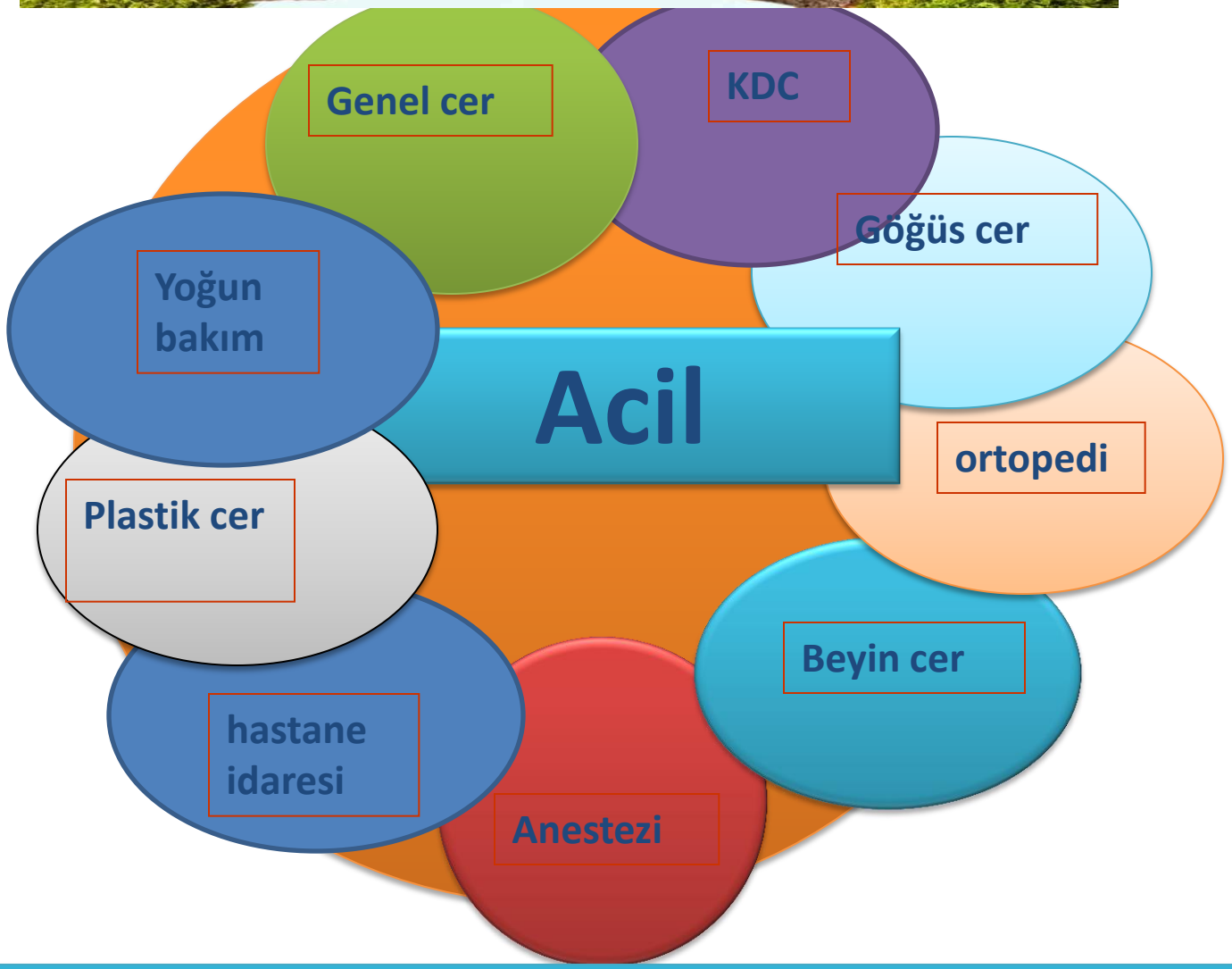
Normal aerobic metabolism restored in all tissue beds

Compensated shock

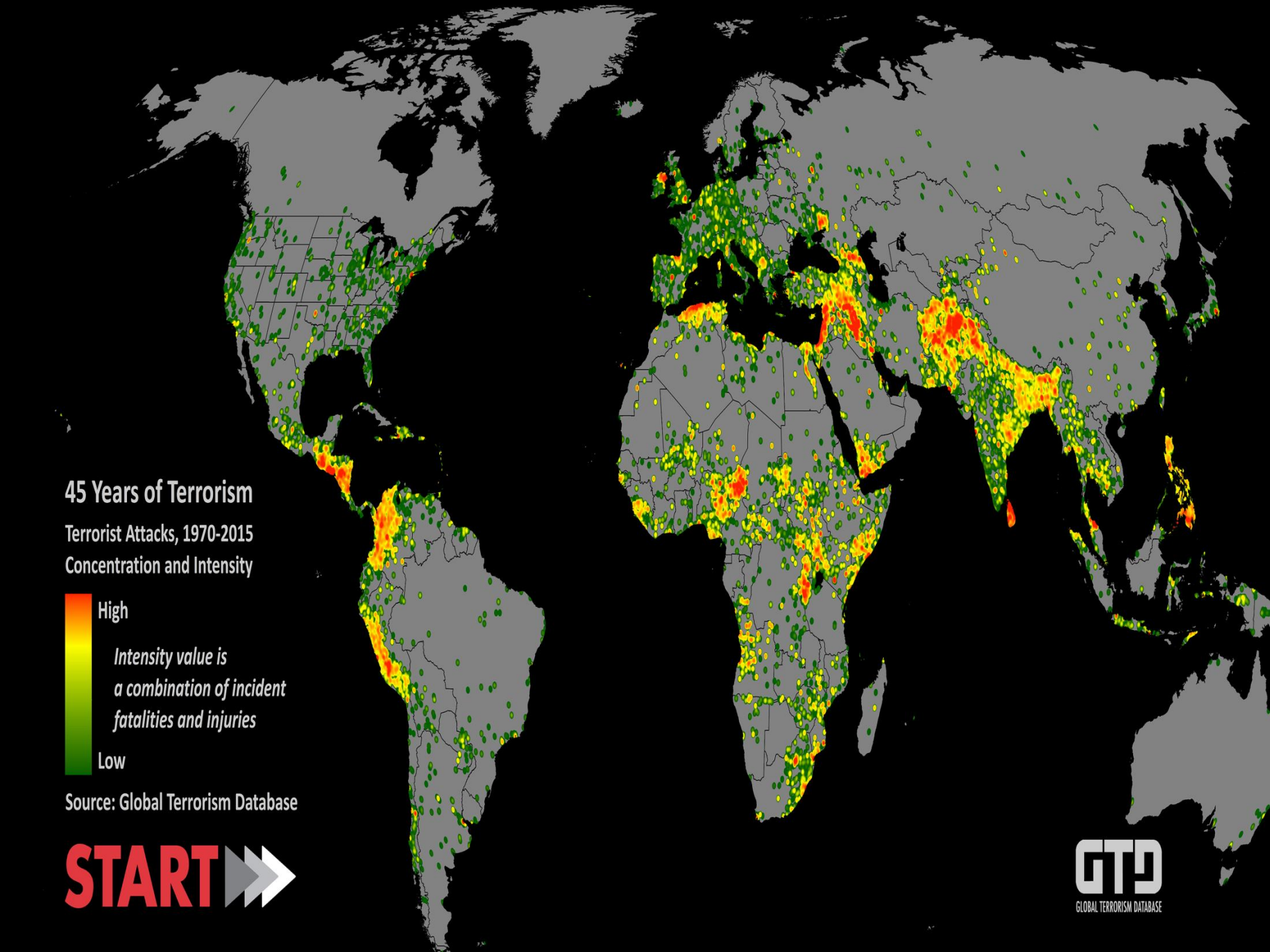

Traumatic haemorrhagic shock
Hemodynamic management
Primary goal
Stop the bleeding
Coagulation management
Fluid resuscitation
Goals of AP
Tranexamic acid
1g IV followed by
IV infusion of 1g over 8 h
Transfusion
Coagulation targets
Without TBI
80 ≤ SAP ≤ 90 mmHg
With TBI (GCS ≤8)
SAP ≥ 120 mmHg
Without TBI
Hb 7-9 g.dL-1
PT/APTT < 1.5 x normal
Platelets > 50.10⁹ L-1
Fibrinogen ≥ 1.5-2 g.L-1
with TBI (GCS ≤8)
Hb > 10 g.dL-1
PT/APTT < 1.5 x normal
Platelets > 100.10⁹ L-1
Fibrinogen ≥ 1.5-2 g.L-1
Failure to obtain goals of AP
Early administration of vasopressor
norepinephrine
Start at 0.1 µg/kg/min
Titration of fluid resuscitation
indices of preload responsiveness
cardiac output
markers of tissue oxygenation
Prevention of acidosis
Normothermia
Ionised Ca++ = 1.1-1.3 mmol/l
Surgical and/or angiographic embolization
bleeding control


LANS
TARİH /SAAT
ADI /SOYADI
YAŞ/UYRUĞU
ANNE ADI
BABA ADI
TANI /TRİAJ KODU
MÜDAHALE
SEVK YERİ


Six
Nine



ACİL HİZMETLERİ TAKIM İŞİ


45 Years of Terrorism
Terrorist Attacks, 1970-2015
Concentration and Intensity
High
Intensity value is a combination of incident fatalities and injuries
Low
Source: Global Terrorism Database
START
GTD
GLOBAL TERRORISM DATABASE