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Lao PDR Integrated Emergency Response Training 2025

Chiang Khong Crown Prince Hospital, Chiang Rai Province, Thailand.
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Update in EMS Mass Casualty Incident: Tactical Organization and Specific Care

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With the support of the French Embassy in Lao

Specific situations

- Conventional situation + multiple victims

- Mass shooting
- Explosion
- Major fire

→ Saturation of Healthcare system

- Non Conventional situation +/- multiple victims

- CBRN event
- Dirty bomb / Terrorist attack

→ Incapacitation of Healthcare system



CONVENTIONAL SITUATIONS



Weapon and firearm injuries

- Weapons (excl. firearms) $\neq$ firearms $\Leftrightarrow$ pathophysiological mechanism
- 2 distinct traumas :
 - Penetrating traumas:
 - Cutting
 - Crushing
 - Stretching
 - Blunt traumas:
 - Bursting
 - Breaking anatomical structures

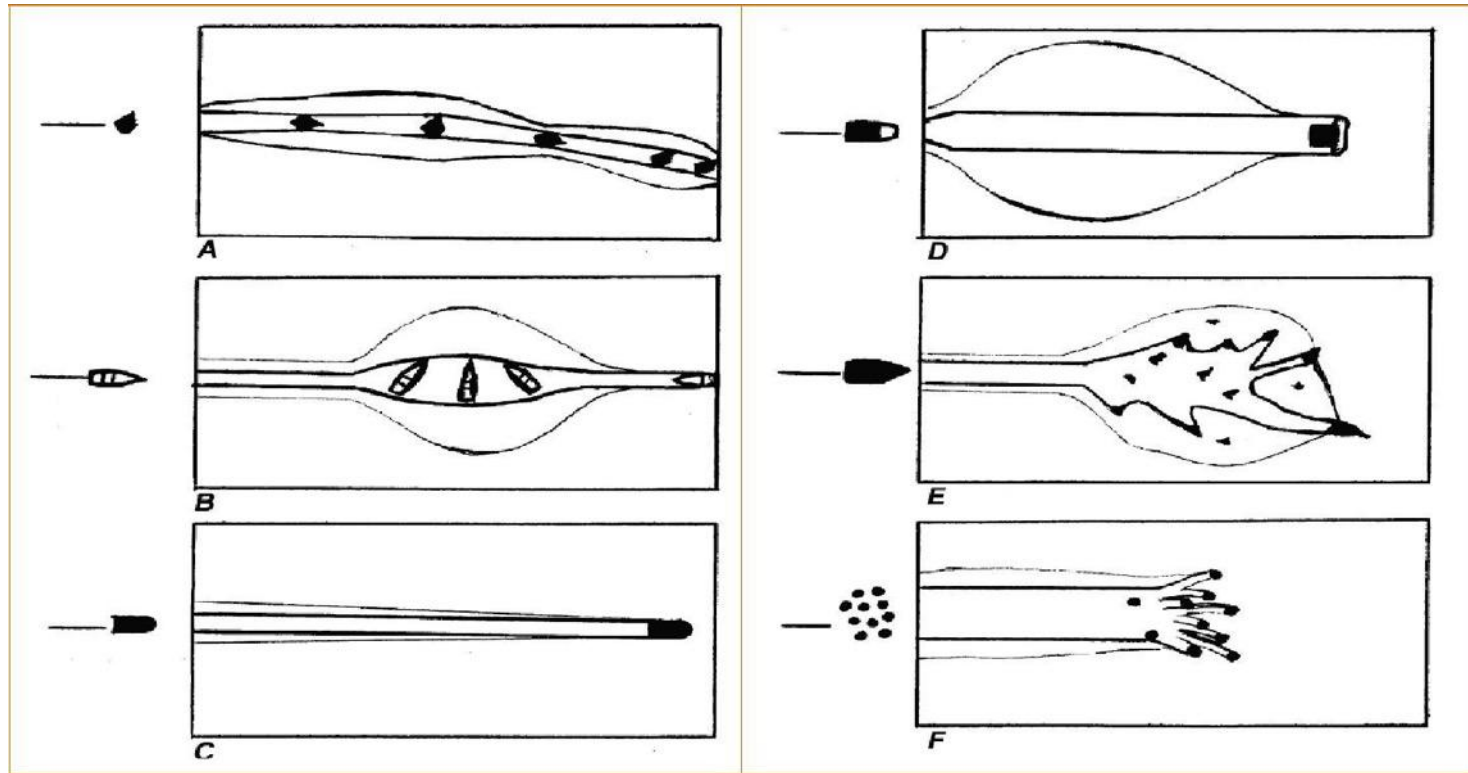


Firearm injury

- Severity of firearms injuries depend on:
 - Types of bullets and cartridges
 - Types of firearms
 - Characteristics of affected tissues



Terminal Ballistic and lesion



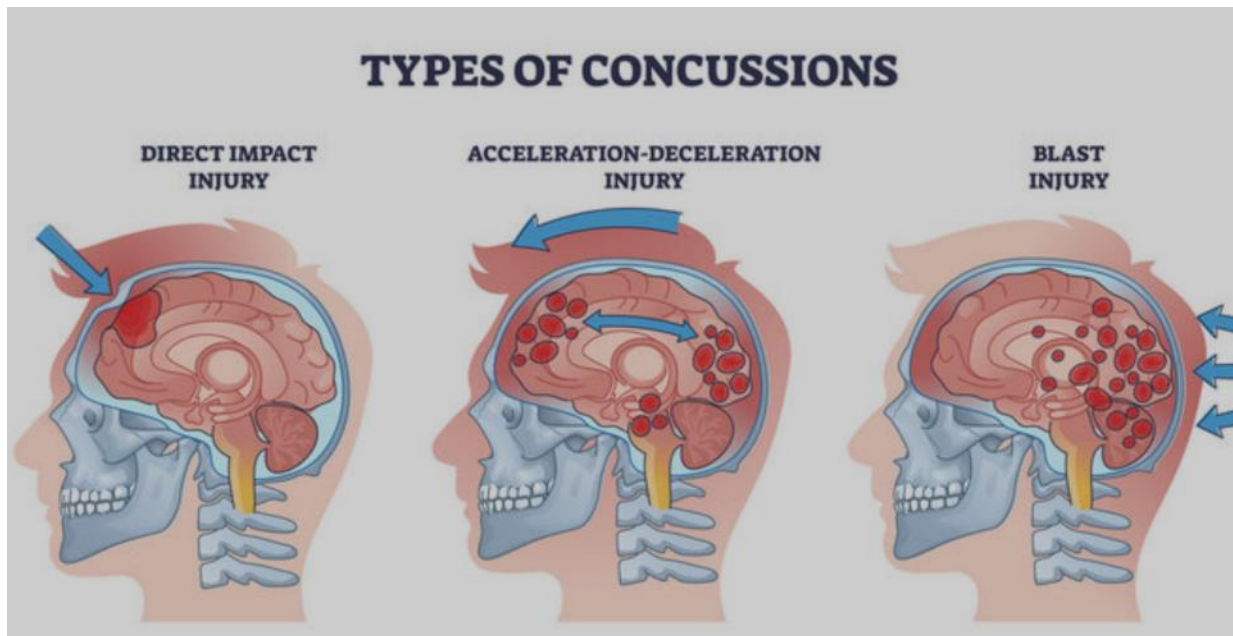
Permanent cavity ⇔ CRUSH cavity : cutting/crushing

Temporary cavity ⇔ STRETCH cavity : stretching (necrosis)



Blunt trauma

- 3 types of lesion:
 - Injuries caused by direct shock
 - Injuries caused by acceleration/deceleration
 - Injuries caused by blast effect



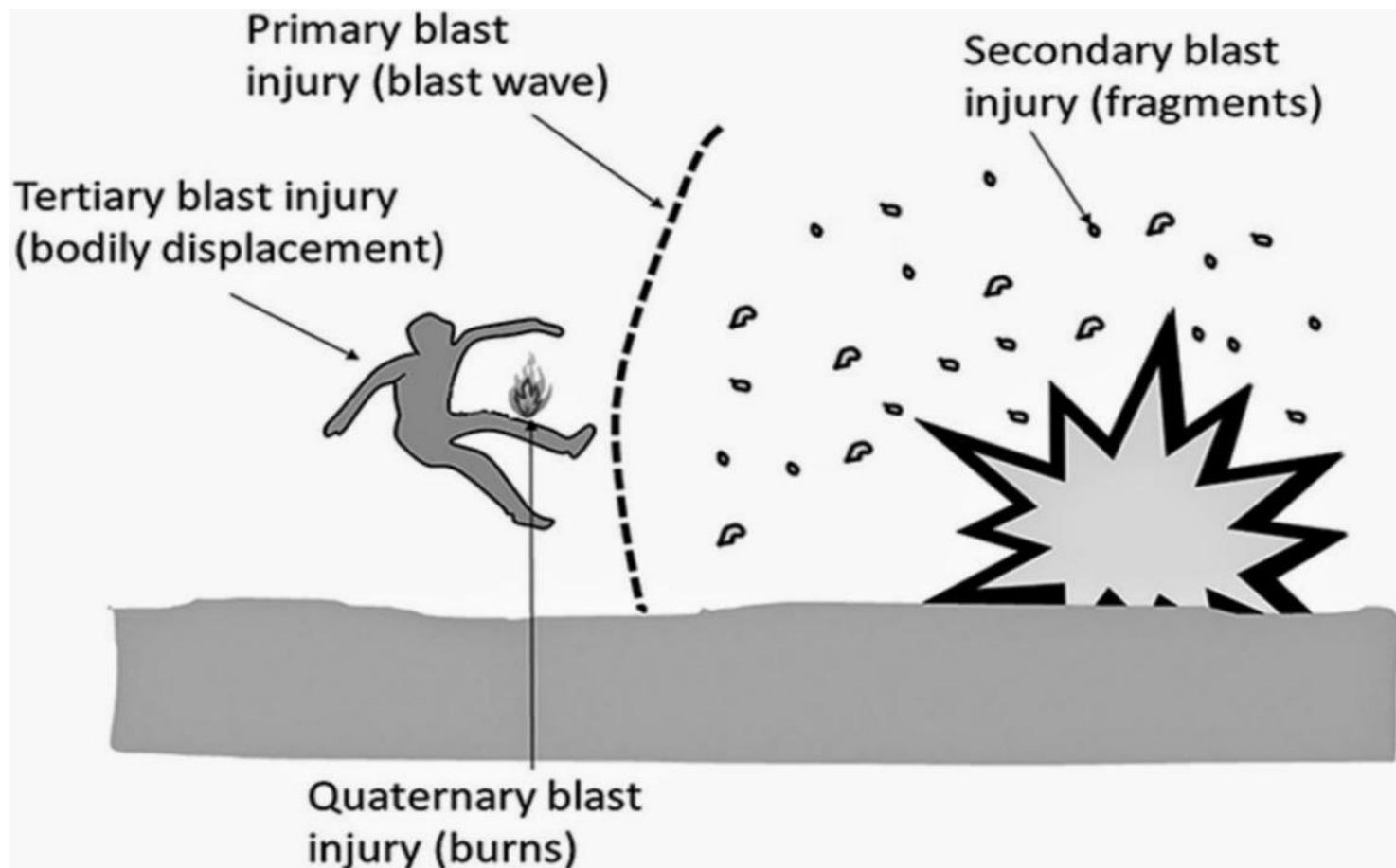
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EXPLOSION



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Treatment

- **Golden-hour**
- **Damage control**
 - CAT (Combat Application Tourniquet)
 - Hemostatic dressing (Kaolin+)
 - Compressive dressing
- **xABCDE approach:**
 - Xtreme Bleeding
 - Airway
 - Breathing
 - Circulation
 - Disability
 - Exposure

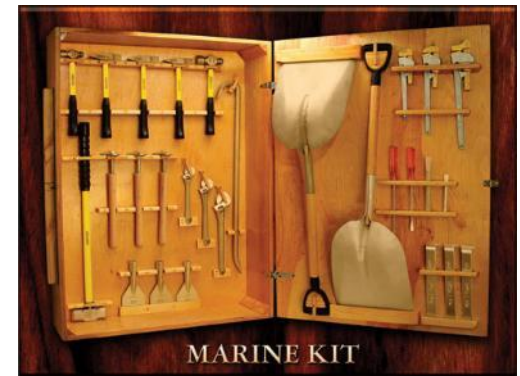


Golden hour



- The golden hour : the critical time period after a traumatic injury->prompt treatment prevents death.
- This term now refers to the principle of rapid intervention in trauma cases.
- Patients' chances of survival are greatest if they receive care within a short period of time after a severe injury.

Damage Control

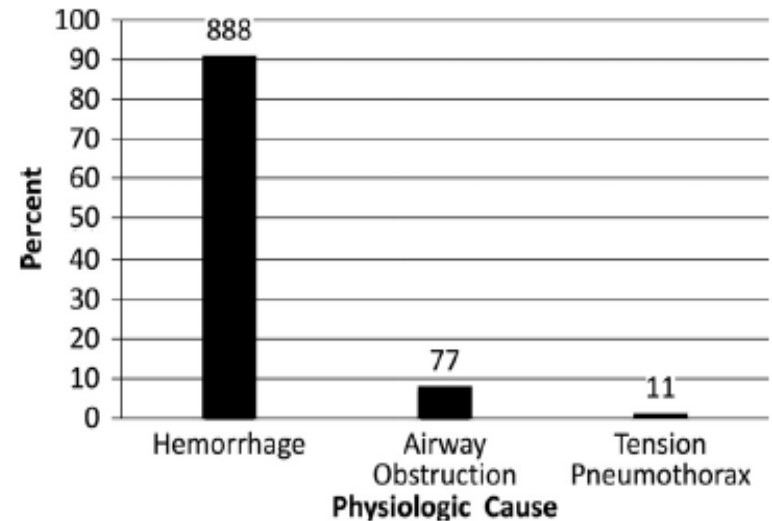


Mortality and trauma

~ 50% of early mortality in trauma is linked to hemorrhage

Hemorrhage: 83 to 87% of preventable deaths

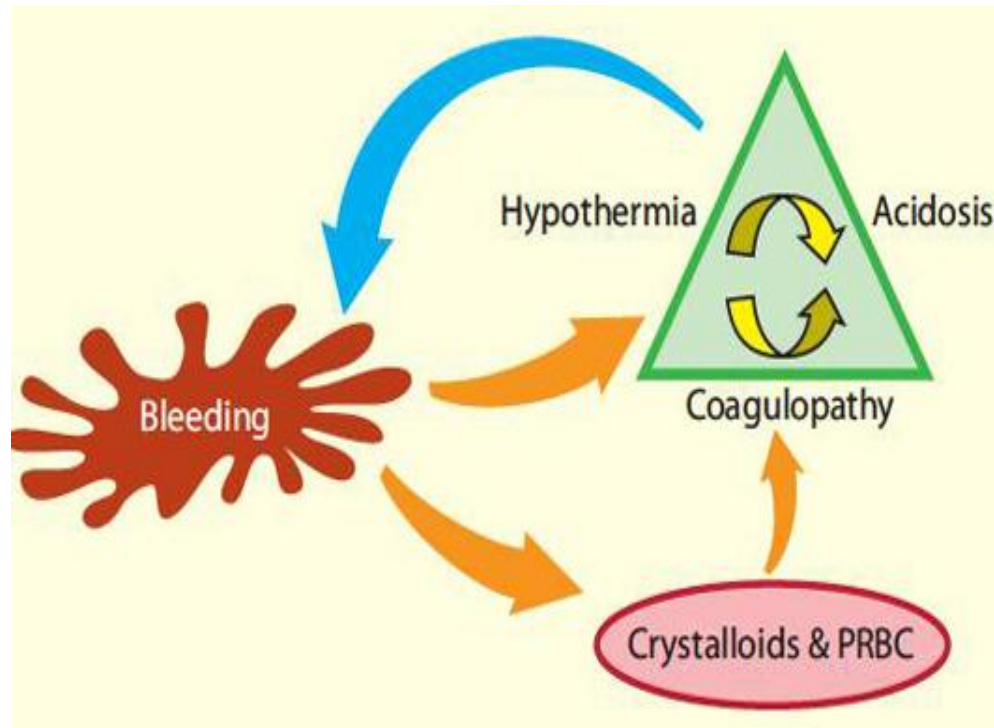
Efforts must focus on bleeding control



Eastridge et al. Death on the battlefield (2001-2011) J Trauma 2012

The death triad

- Bleeding => hemorrhagic shock => vicious cycle



Damage Control Resuscitation « Ground Zero »

Early consideration of the death triad
in 4 points :

1. Control of external bleeding
2. Control of hypothermia
3. *(Infusion / Vasopressor amines)*
4. *(Use of anti-fibrinolytic agents)*



1. Control of external bleeding

Early external haemostasis



Combat Application Tourniquet

Hemostatic dressings (packing)

Compressive dressings

Specific sites:

- scalp
- pelvis
- non compressible zone



2. Control of hypothermia



Major Fire

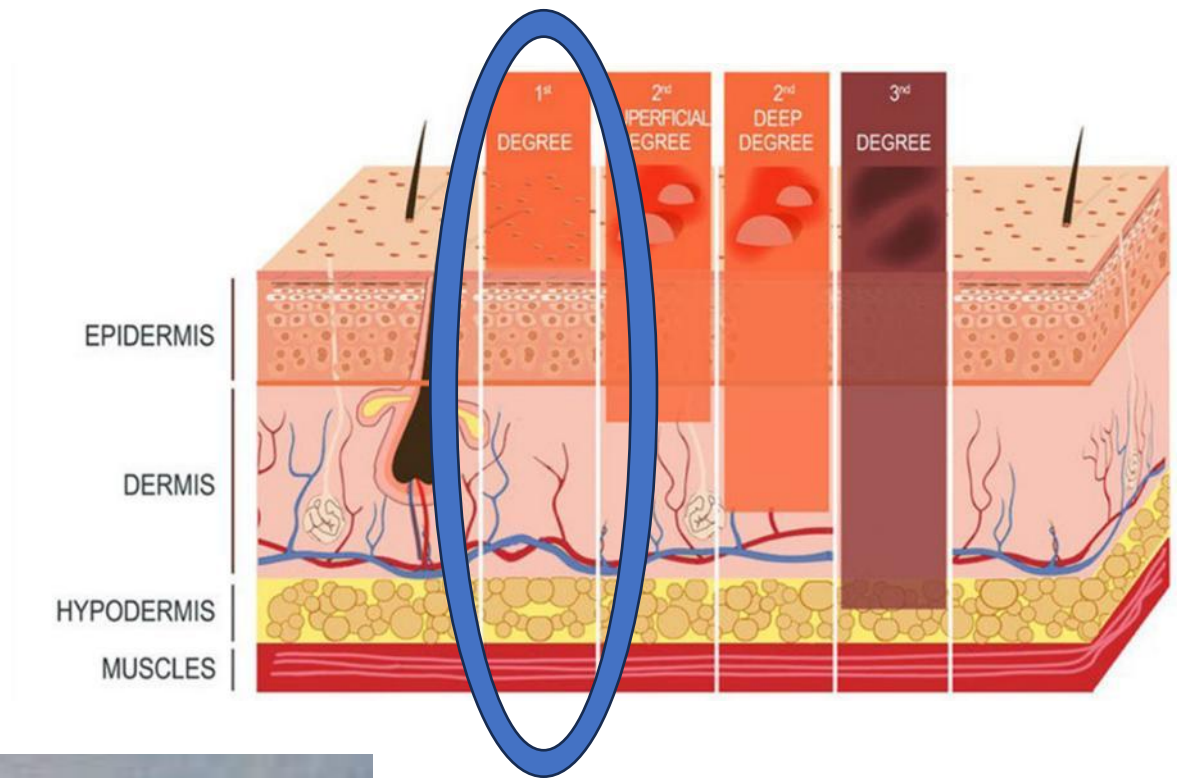


- Two main types of lesion :
 - Burn
 - Inhalation of asphyxiants like Carbon Monoxide (CO) or Cyanide (CN)
- Possibility of a large number of victims
- Need for EMS to begin pre-hospital care



Burns

1st degree



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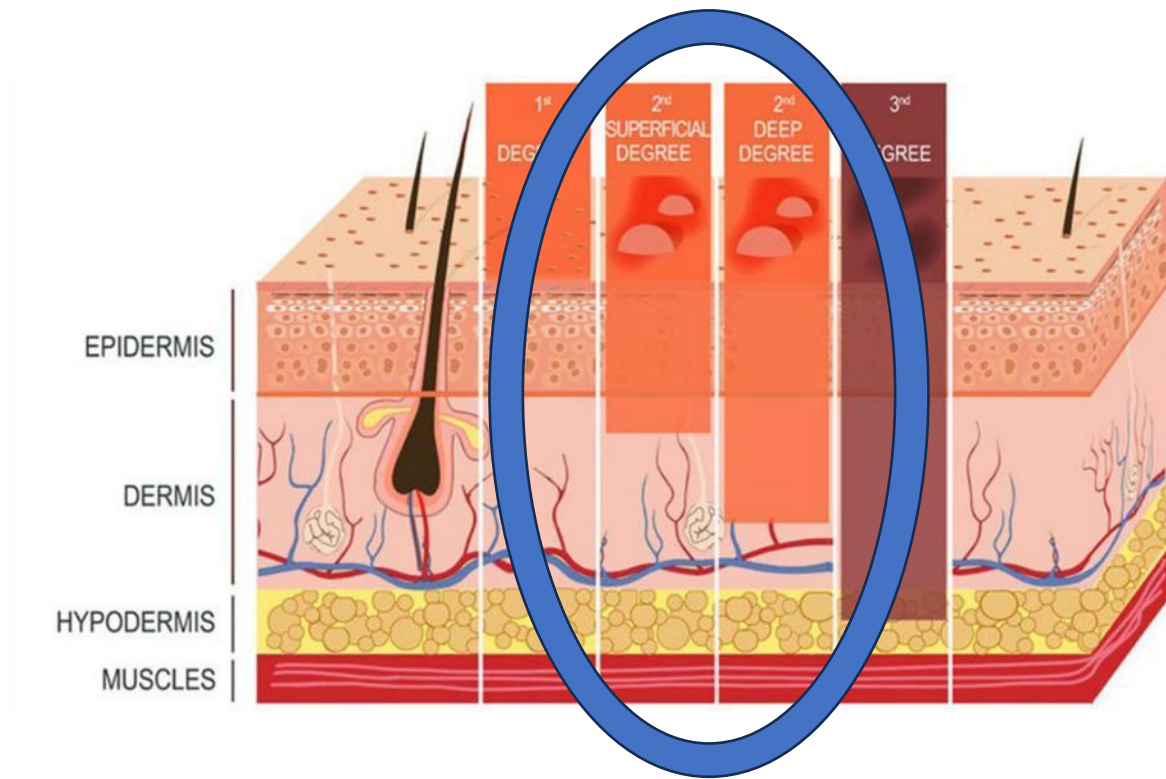
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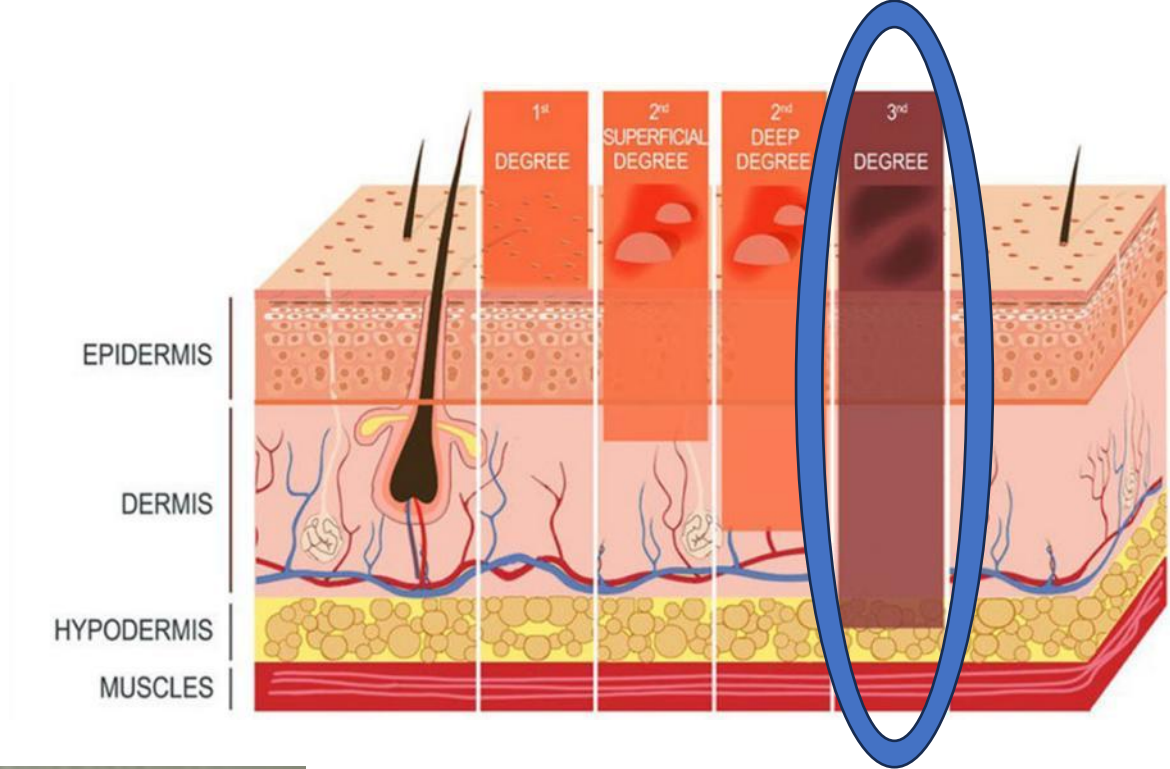
Burns

2nd degree



Burns

3rd degree



NON-CONVENTIONAL SITUATIONS

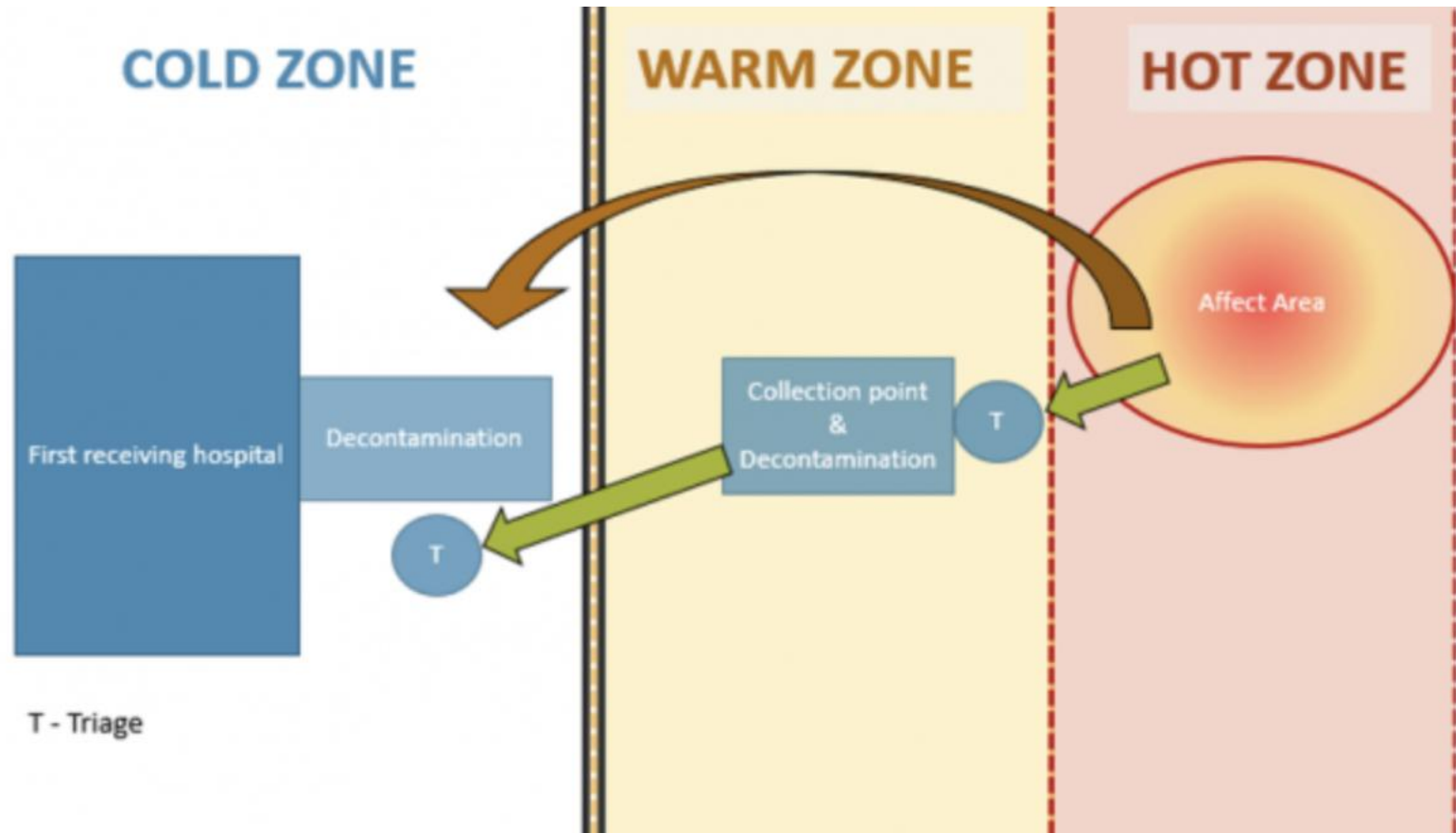


CBRN event

- The chemical and the nuclear hazards can be accidental or intentional in origin
- These events need specific adaptations :
 - Zoning adapted to medical care in the contaminated area
 - Use suits of protection
 - Decontamination process with:
 - Undressing
 - Absorbent material
 - Showers
 - Administration of antidotes



Zoning in case of CBRN event



Personal Protective Equipment (PPE) for CBRN

- Protective suits

CLD



C3P

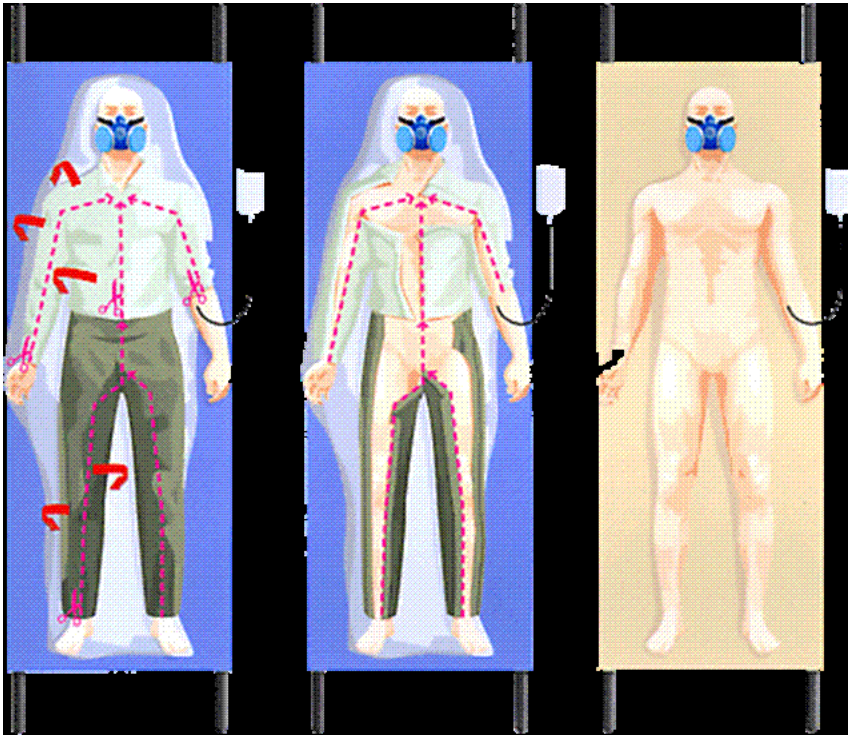


TYCHEM[®]



The dry decontamination

- Undress/Absorbent material



The wet decontamination

- Mobile unit of decontamination (inflatable tent)



The wet decontamination

- Mobile unit of decontamination (truck)



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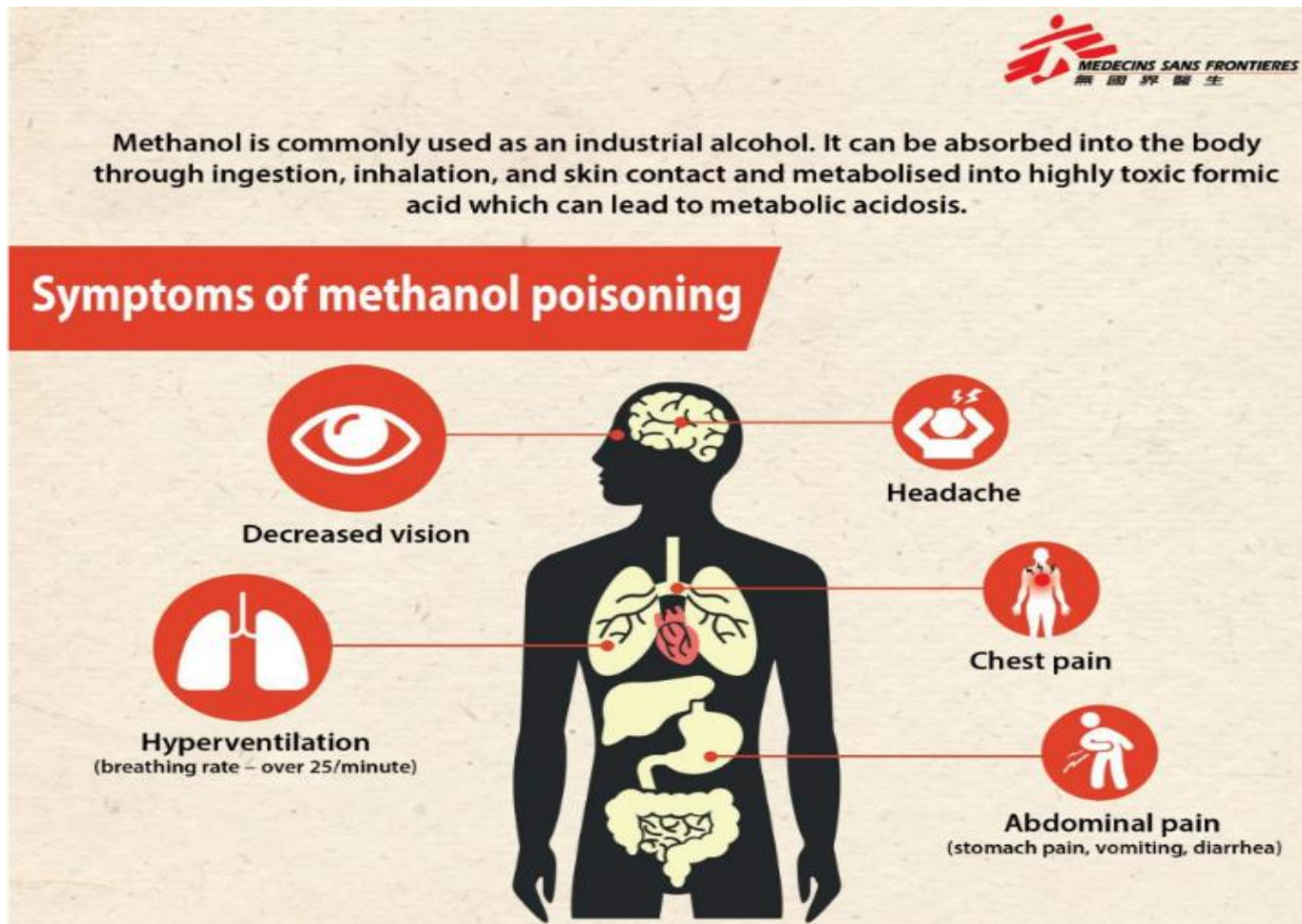
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A chemical event in a bar



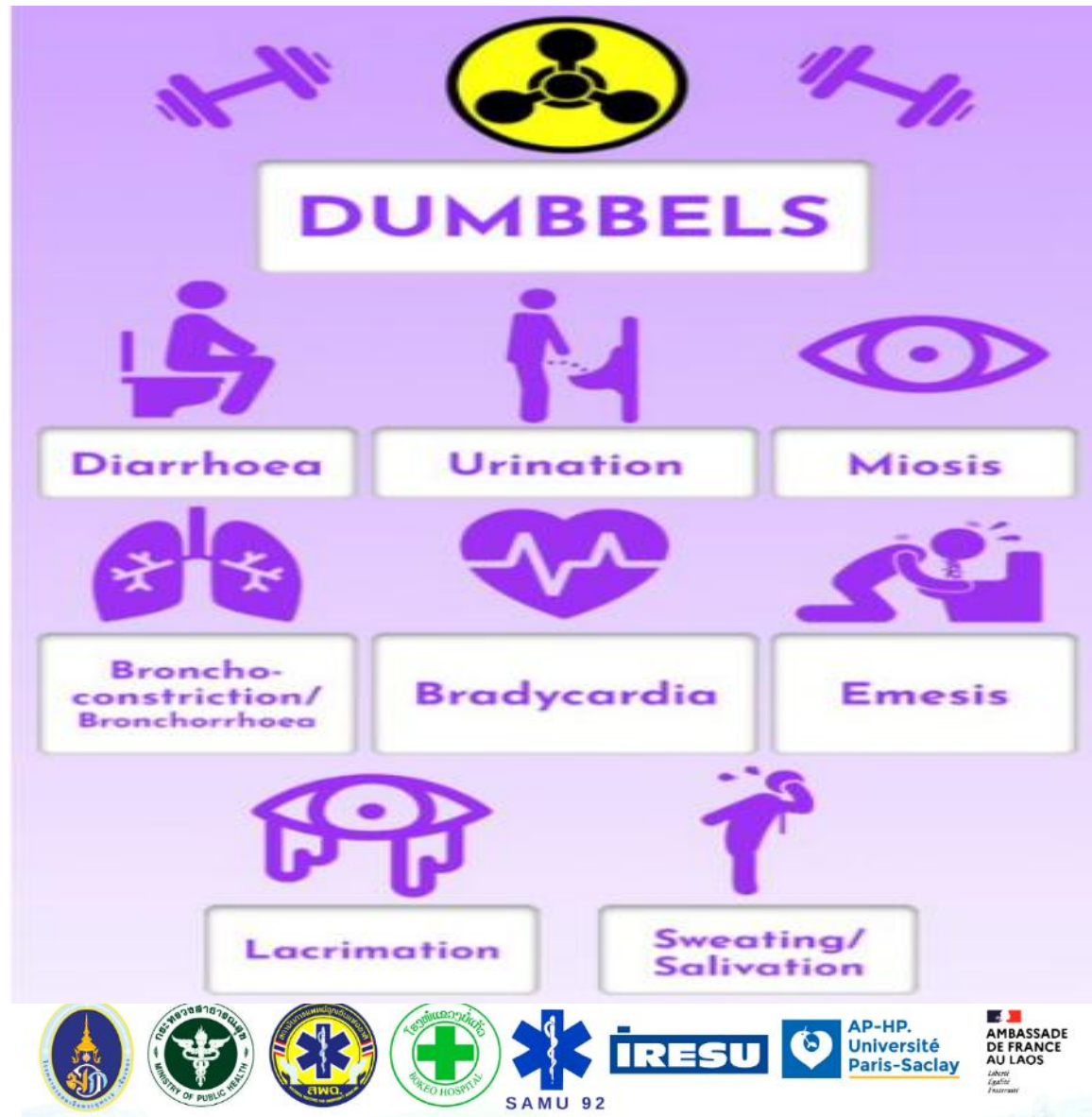
Methanol



Non-terrorist chemical event in the fields



Organophosphates/Nerve Agents



FIRST AID KIT PROPOSITION



FIRST AID KIT

- Disposable gloves
- Surgical or FFP2 protective masks
- Thermometer
- Scissors, tweezers, safety pin
- Sterile compresses
- Roll of adhesive tape
- Stretch bandages
- Fabric triangle for sling
- Pre-cut adhesive bandages
- Transparent adhesive bandages
- Emergency blanket
- Antiseptic such as chlorhexidine
- Saline solution
- Makeshift tourniquet or tourniquet (fabric and piece of wood)
- Hemostatic bandage
- Compression bandage
- Glucose or sugar
- Hydroalcoholic solution
- Garbage bag



Example of a first aid kit



