



L'approccio ai pazienti dopo un
Attacco terroristico
Carpi 29Maggio 2019

Il Trattamento delle Ustioni in Emergenza

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REGIONE
LAZIO



SISTEMA SANITARIO REGIONALE

ASL ROMA 2

ex ASL Roma C



ex



Burns and Anesthesia Trainings

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SPECIAL REPORT **FREE PREVIEW**

Are We Prepared for Nuclear Terrorism?

Robert P. Gale, M.D., Ph.D., and James O. Armitage, M.D.



A variety of scenarios could lead to the widespread exposure of human populations to nuclear radiation. Medical responses to such disasters are difficult to coordinate, and our methods of assessing exposure after the fact are imprecise.

March 29, 2018

N Engl J Med 2018; 378:1246-1254

DOI: 10.1056/NEJMsri1714289

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E.B.A.

- The **E**uropean **B**urn **A**ssociation is a non profit making organisation for the benefit of the public , to promote burn prevention, to study the prevention of burn injury and all other aspect of burn treatment.

EBA Guideline

First edition Hague 2011

Second edition Wien 2013

Third edition Hannover 2015

Fourth edition Barcelona 2017

New EBA Guideline

The Next Edition will be published in **2019** at the
18th European Burns Association Congress

In Helsinki/Finland from 4 to 7 September 2019.

BURN

- A Burn is a complex trauma needing multidisciplinary and continuous therapy.
- Burns occurs through intensive heat contact to the body, which destroys and/or damages human skin (thermal burns).

BURNS

- In addition to thermal burns, there are electric, chemical, radiation and inhalation burns.
- Frostbite also comes under this category.

TRIAGE

BIANCO: NON critico; pazienti non urgenti

VERDE: Poco critico, assenza di rischi evolutivi, prestazioni differibili

GIALLO: Mediamente critico; presenza di rischio evolutivo, possibile pericolo di vita.

ROSSO: molto critico, pericolo di vita, priorità massima, EMERGENZA paziente in pericolo di vita con almeno una funzione vitale compromessa

(Fonte: WWW.Salute.gov.it)

TRIAGE

NERO: Paz deceduto o prossimo al decesso.

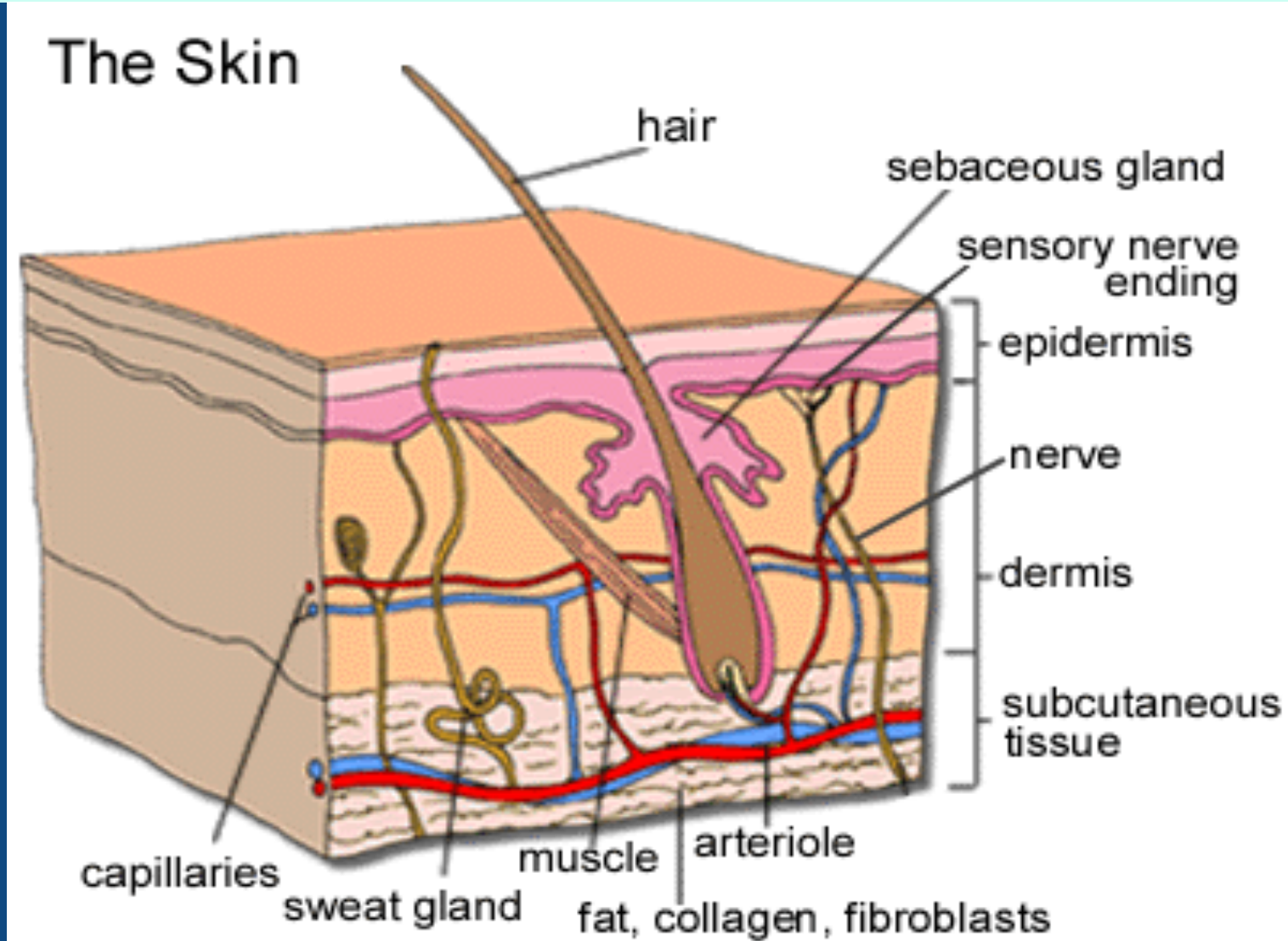
ARANCIONE: Paziente contaminato NBC

(Fonte: WWW.Salute.gov.it)

Burn treatment

- First aid
- Prehospital care
- Transportation to an appropriate medical facility.
 - Management of the emergency period (resuscitation).
- Renewal of damaged and destroyed skin in acute periods.

The Skin



T.B.S.A

Vs

B.S.A.

Total

Burned

Surface

Area

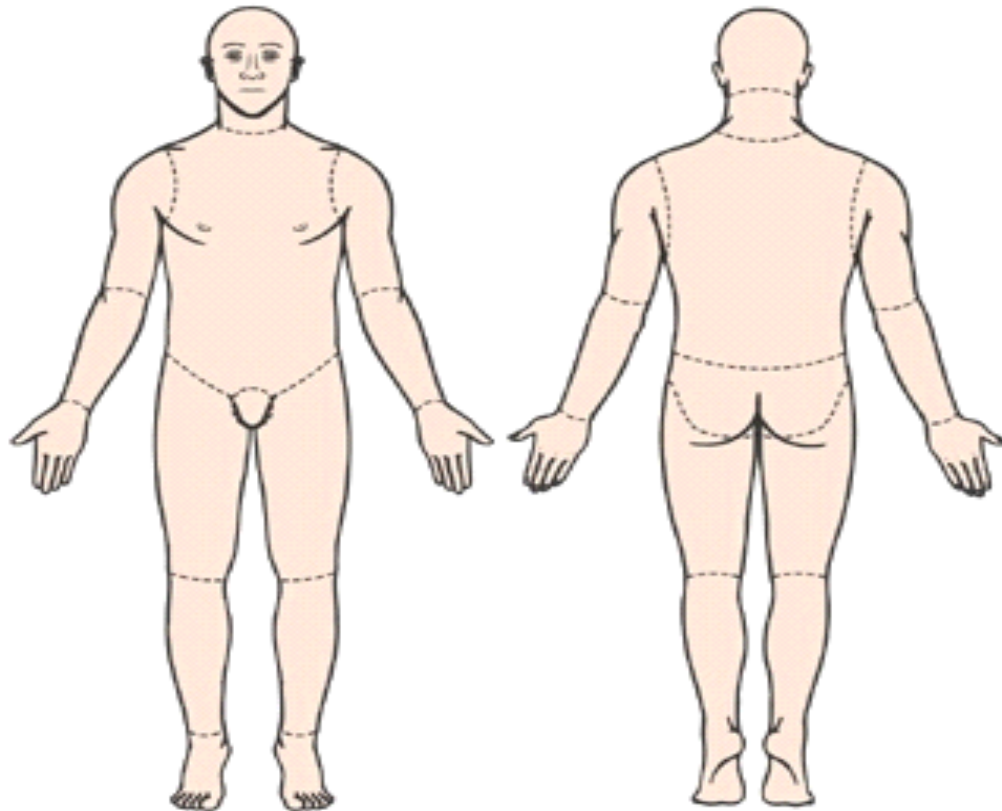
Body

Surface

Area

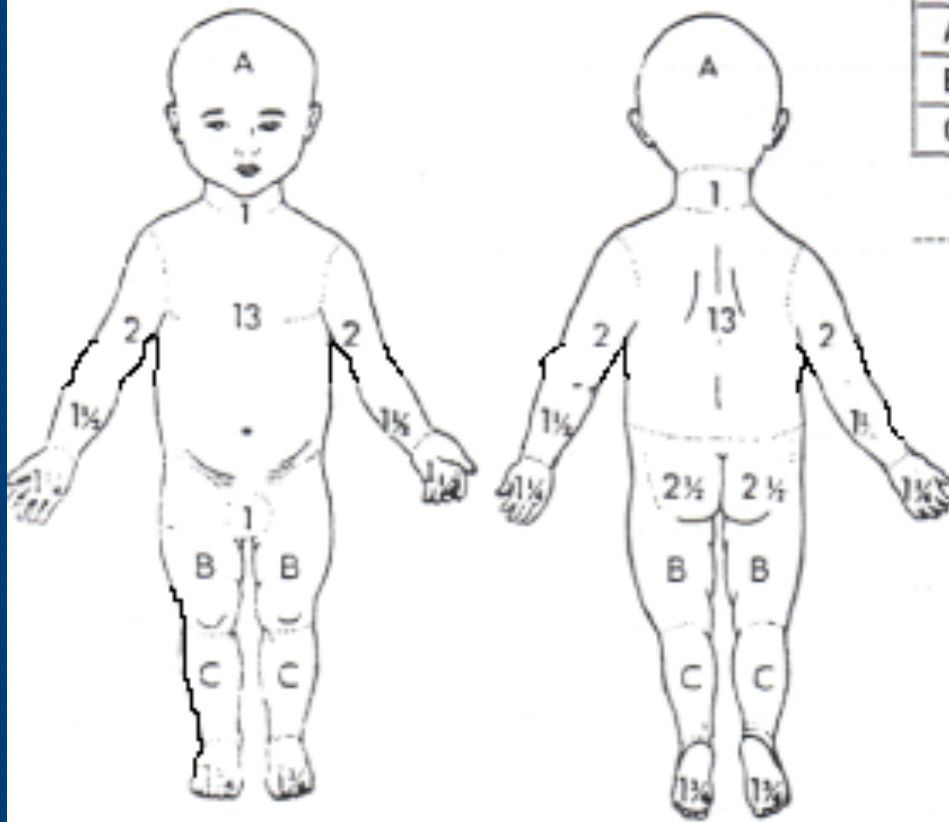
Lund-Browder Chart

Head	7
Neck	2
Ant. trunk	13
Post. trunk	13
R. buttock	2½
L. buttock	2½
Genitalia	1
R.U. arm	4
L.U. arm	4
R.L. arm	3
L.L. arm	3
R. hand	2½
L. hand	2½
R. thigh	9½
L. thigh	9½
R. leg	7
L. leg	7
R. foot	3½
L. foot	3½
<hr/>	
TOTAL	100%



A

Lund-Browder Chart

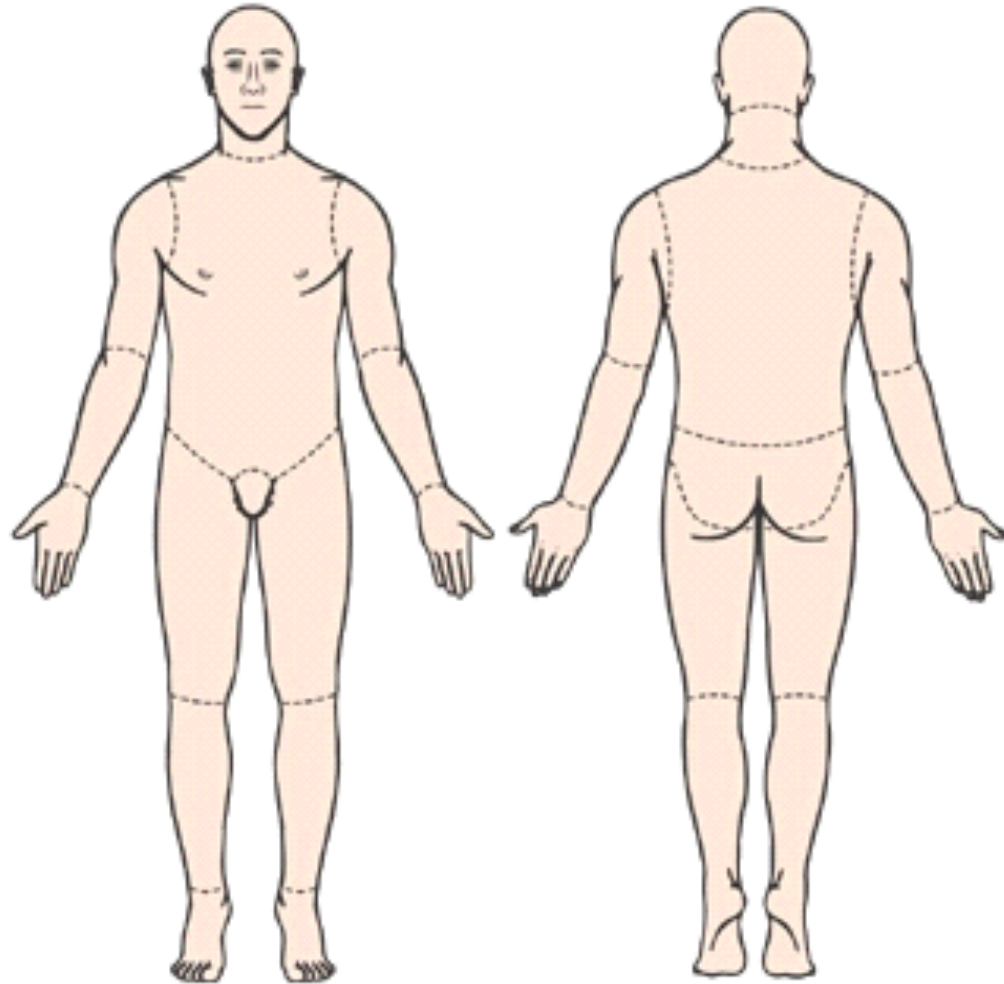


AREA	anni 0	1	5
A 1/2 della testa	9%	8%	6%
B 1/2 di una coscia	2 3/4	3%	4
C 1/2 di una gamba	2 1/2	2%	2 3/4

Percentuale delle superfici ustionate

Rule of Nines Chart

Head & neck	9%
Arms	9%
Ant. trunk	18%
Post. trunk	18%
Legs	18%
Perineum	1%
	<hr/>
TOTAL	100%



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Extent of Burn

The palm of the hand of the patient
(without fingers)
is 1% of B.S.A.

Transfer criteria in burn center

- 5% of TBSA in children under 2 years of age.
- 10% of TBSA in children 3---10 years of age.
- 15% of TBSA in children 10---15 years of age.
- 20% of TBSA in adults of age.
- 10% of TBSA in senior over 65 years of age

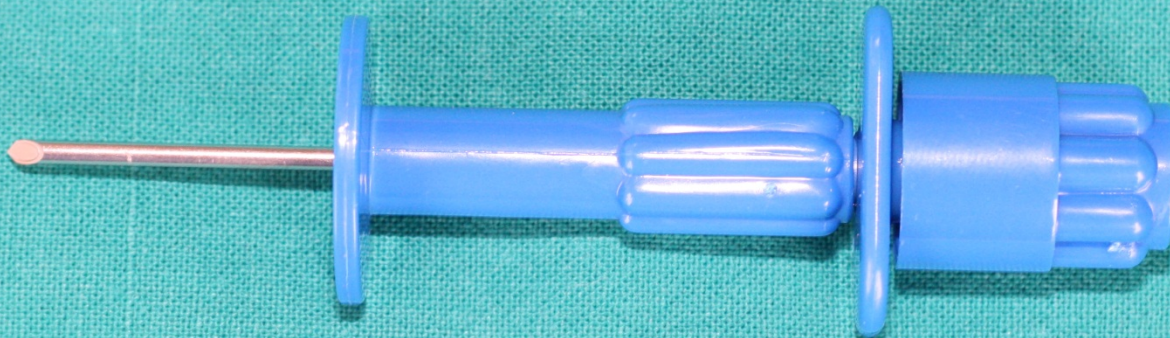
Transfer also

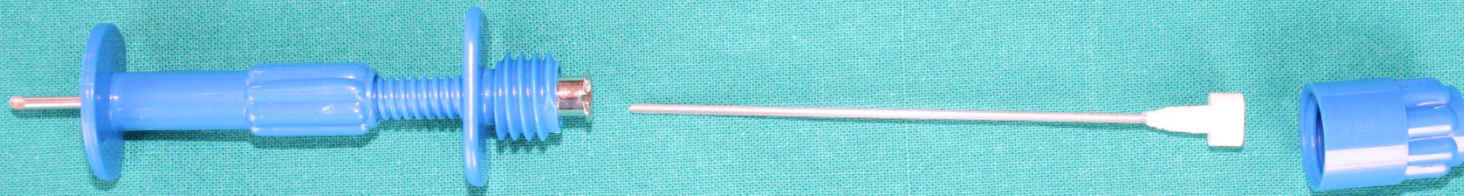
- Burns with suspicion of inhalation injury.
- Any type of burns if there is doubt about the treatment.
 - Major electrical burns.
 - Major chemical burns.

EBA 2011 THE ACHEN

- The Hydration in first h increase the survival of the 95%.
- The recovery in Burns Center in the first 2h increase the survival of the 95%.
- Without an EV access, the transosseus decrease the mortality of the 40%

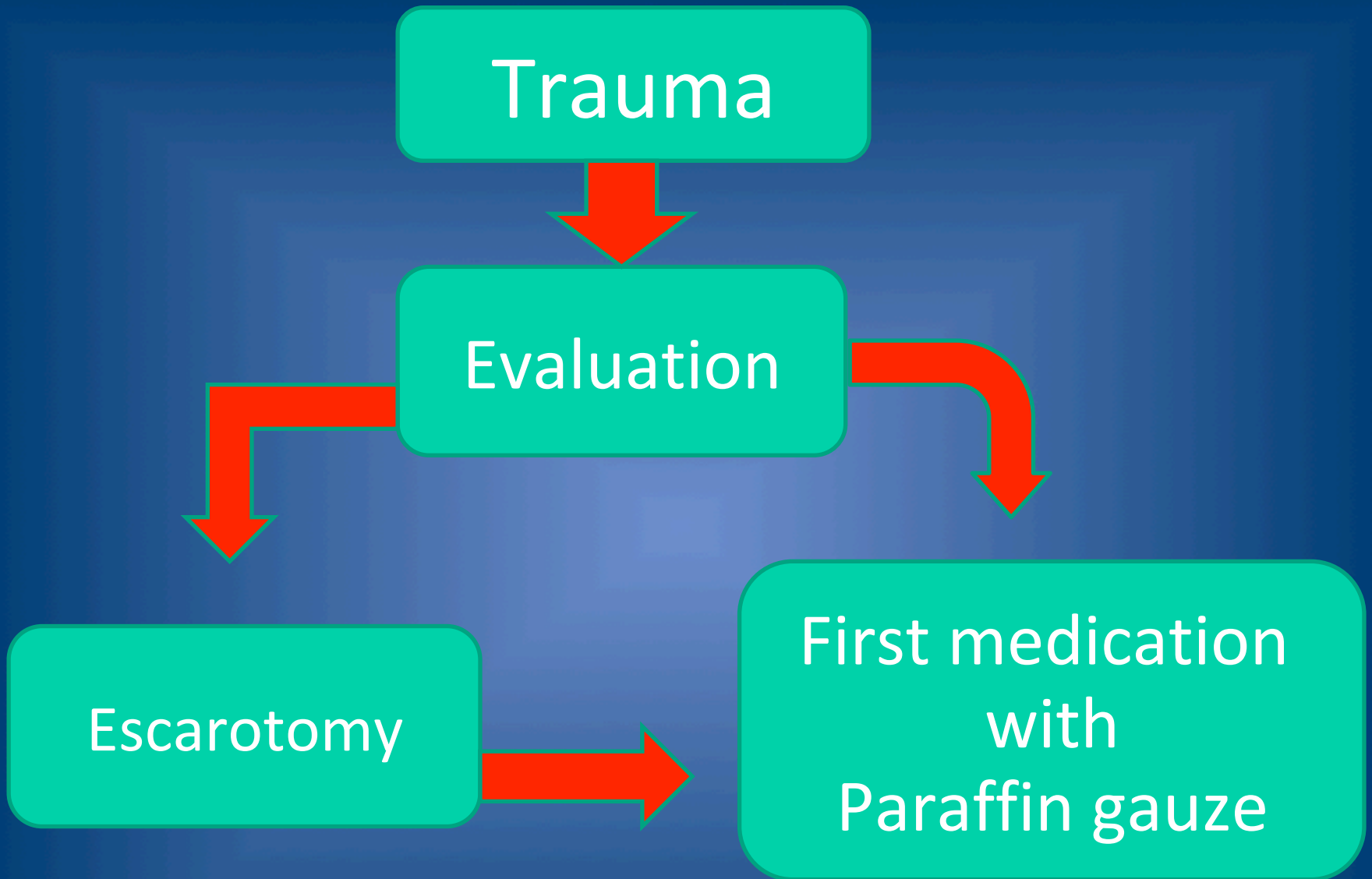
(*A. Young, South West Children's Burns Centre Frenchay Hospital, Bristol, U.K.*)





Flow chart

- **Keep Kalm!!!!**
- Wash the patient for 15 - 20 min.
- Start Fluid rianimation
- First medication
- Transfer the patient (if is possible)



2° Superficial
(Healing Alone)

```
graph TD; A["2° Superficial (Healing Alone)"] --> B["Paraffin Gauze every 24-36h"]; A --> C["Silver Sulfadiazine 1% Every 24 h"]; B <--> C; B <--> D["Every Ointment"]; C <--> D;
```

Paraffin Gauze every
24-36h

Silver Sulfadiazine 1%
Every 24 h

Every Ointment





Fluid resuscitation

- Consensus formula (parkland formula)

4 ml/ Kg/ % TBSA

½ in the first 8 h

½ in the rest of 24 h

Fluid resuscitation

- The goal of fluid reanimation is to achieve an urine output of:

0,5-1ml /kg/h

Recommendations of EBA

Every burn patient is unique

Fluid resuscitation

- New formula

2-4 ml/ Kg/ % TBSA

$\frac{1}{2}$ in the first 8 h

$\frac{1}{4}$ in the second 8 h

$\frac{1}{4}$ in the last 8h

Target of fluid resuscitation

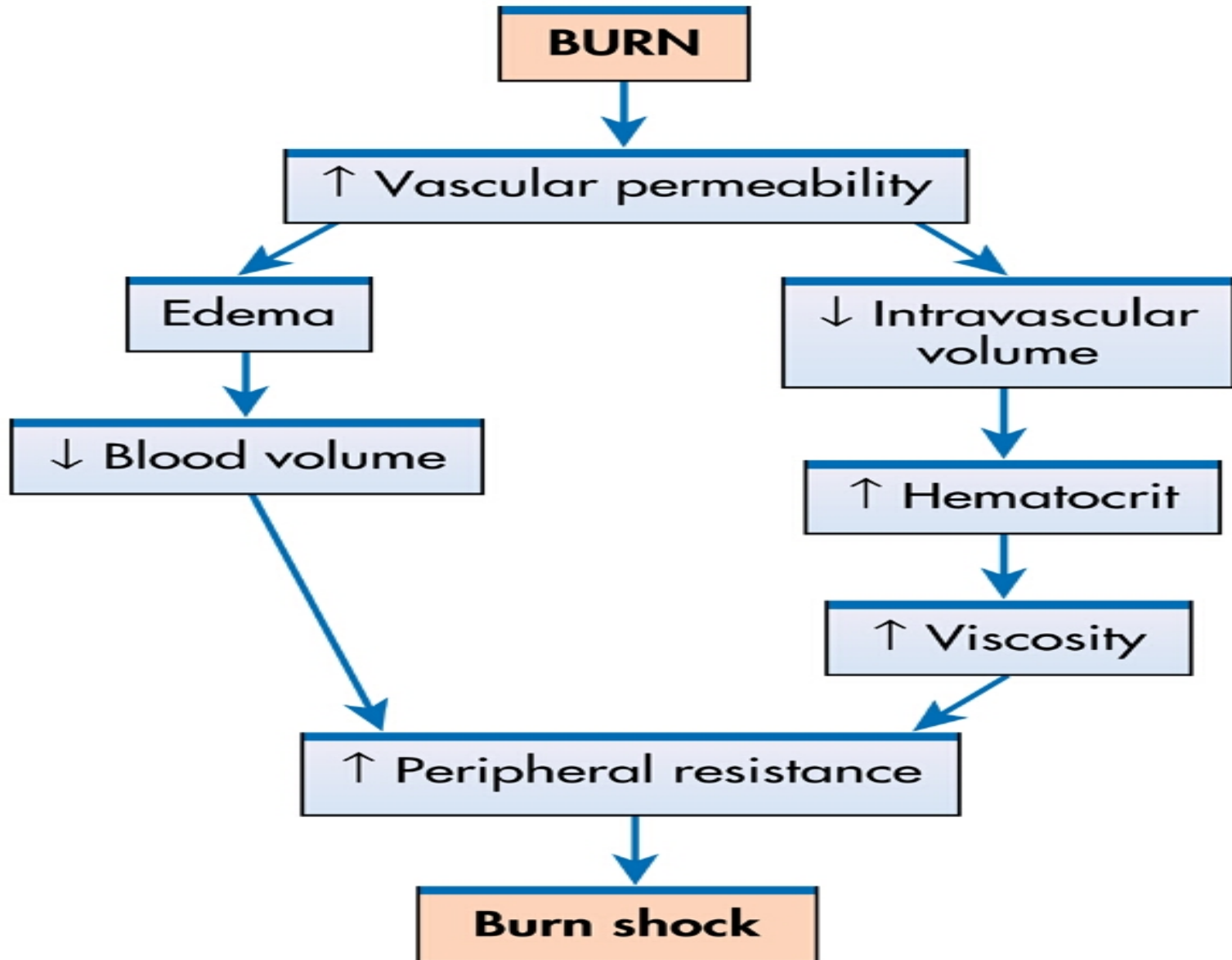
Rehydrate the patient;

Avoid an abdominal Hypertension

Restore the permeability of the capillar wall

Protect the kidney

Restore the oncotic pressure

















A. De Bellis, M.D.



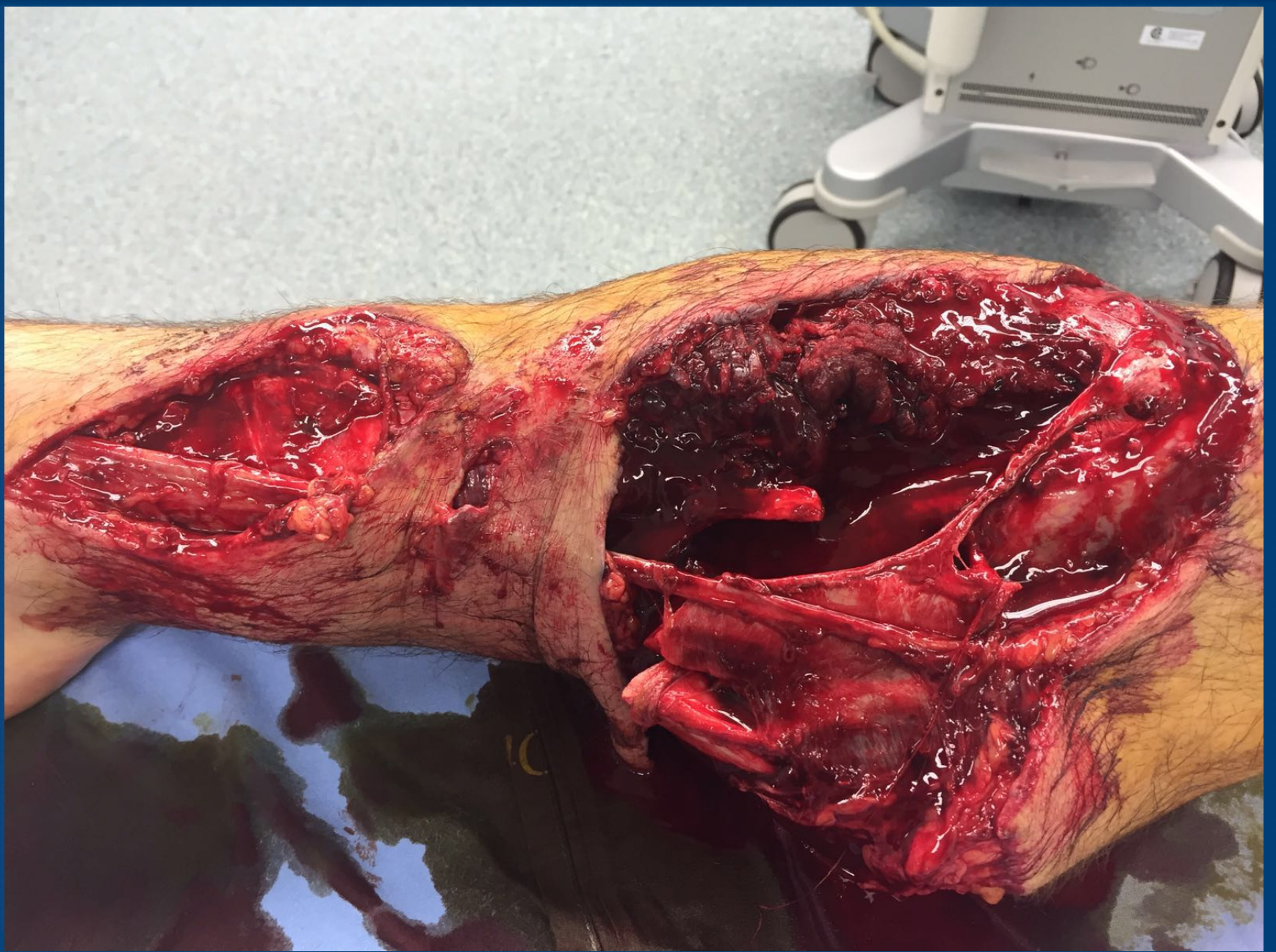


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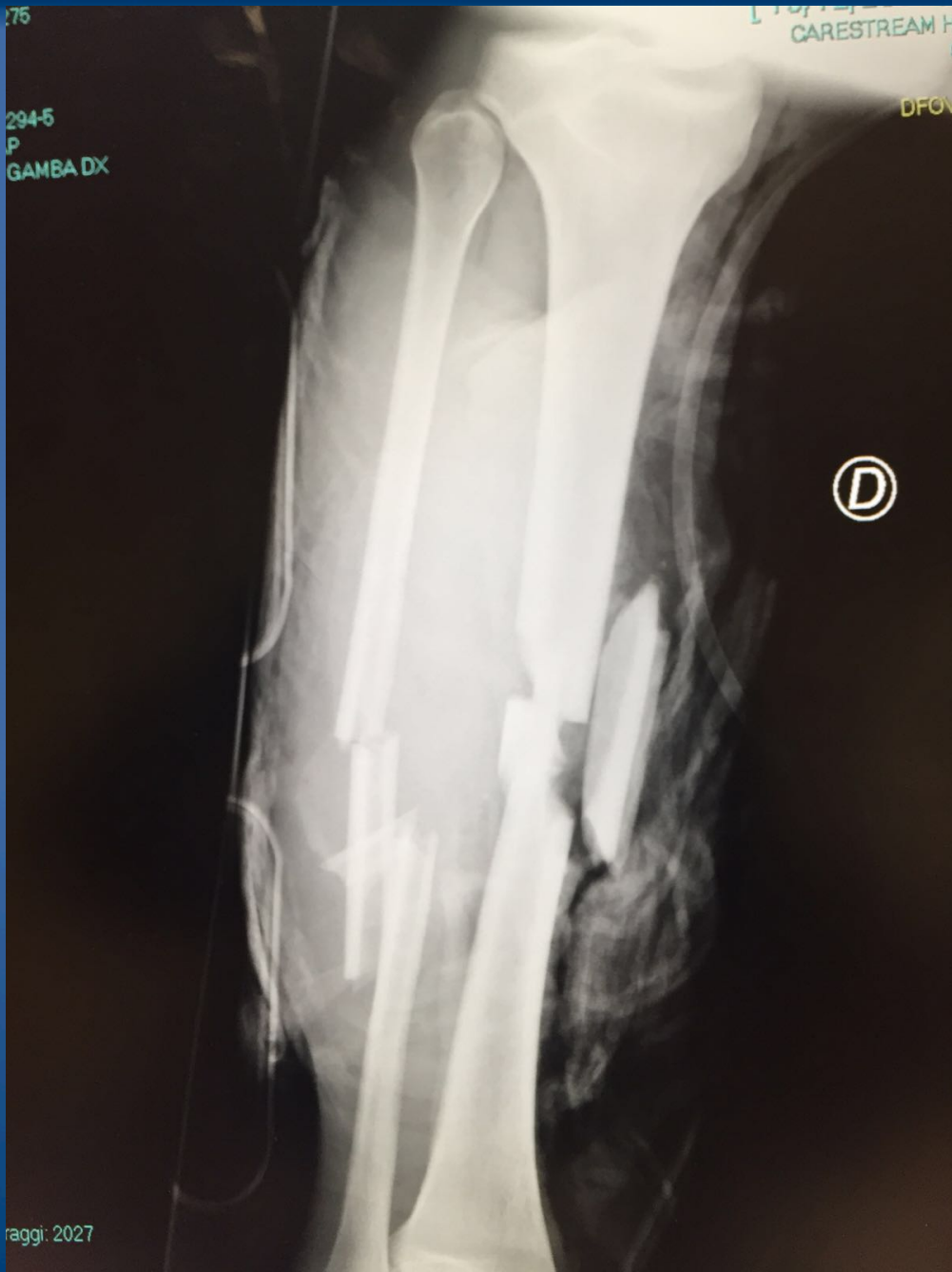


21.10.2013

A. De Bellis, M.D.











Types of Burn Injury

Chemical burns

Chemical burns can be caused by acids or bases that come into contact with tissue

Acid is proton donor (H^+)

Bases is proton acceptor (OH^-)

Both acids and bases can be defined as **caustics**, which cause significant tissue damage on contact

Types of Burn Injury

Chemical Burns

**Result from tissue injury and destruction from
necrotizing substances**

Most commonly caused by acids

The severity of the burn is related to a number of factors

the pH of the agent

the concentration of the agent

the length of the contact time

the volume of the offending agent

and the physical form of the agent

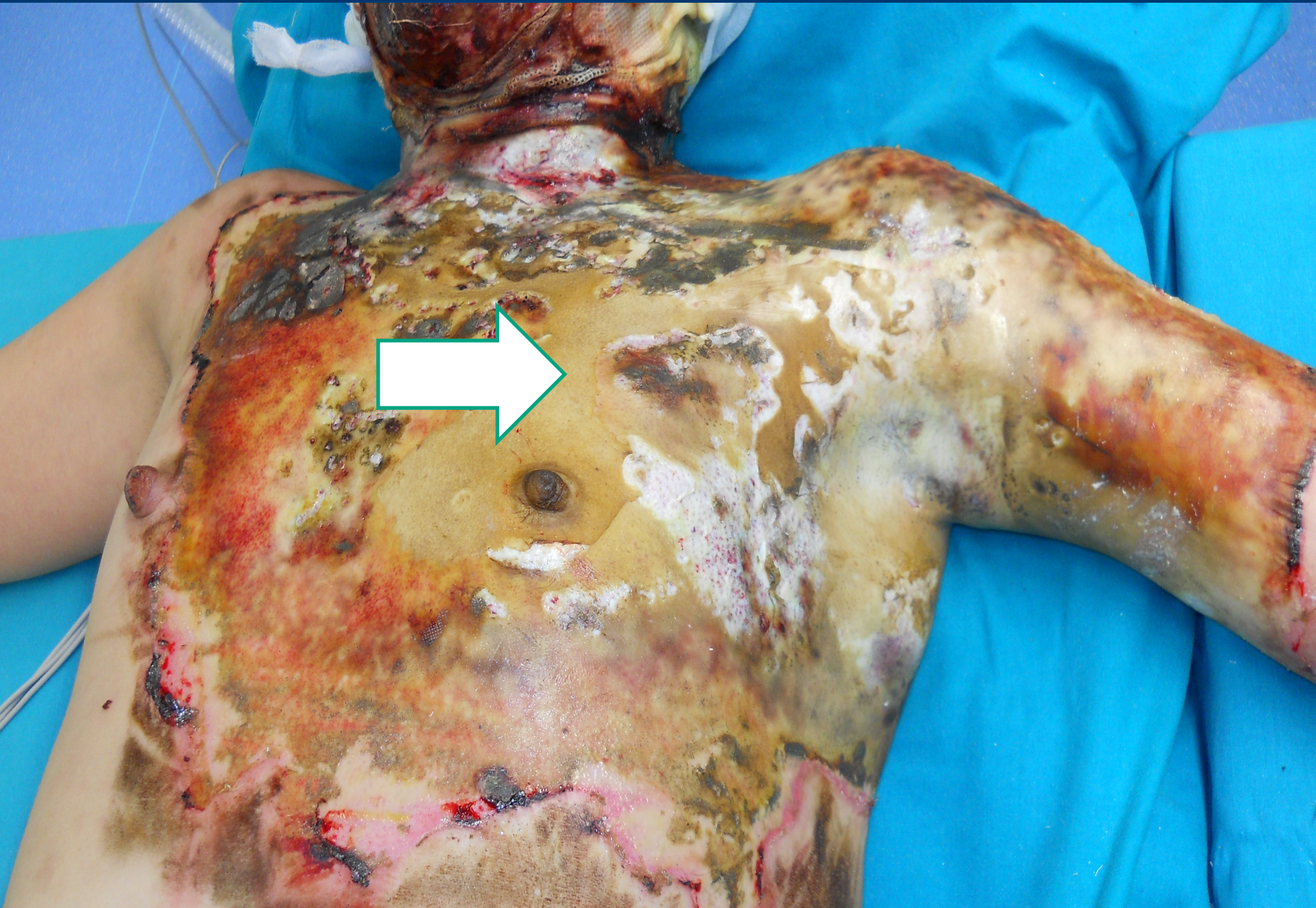
Types of Burn Injury

Chemical Burns

- Respiratory and systemic problems
- Eye injuries
- Clothing containing the chemical should be removed
- Tissue destruction may continue for up to 72 hours after a chemical injury

Decontamination

Initial decontamination involves removal from the contaminated environment, removal of all contaminated clothes and jewelry, and copious irrigation with **water**.



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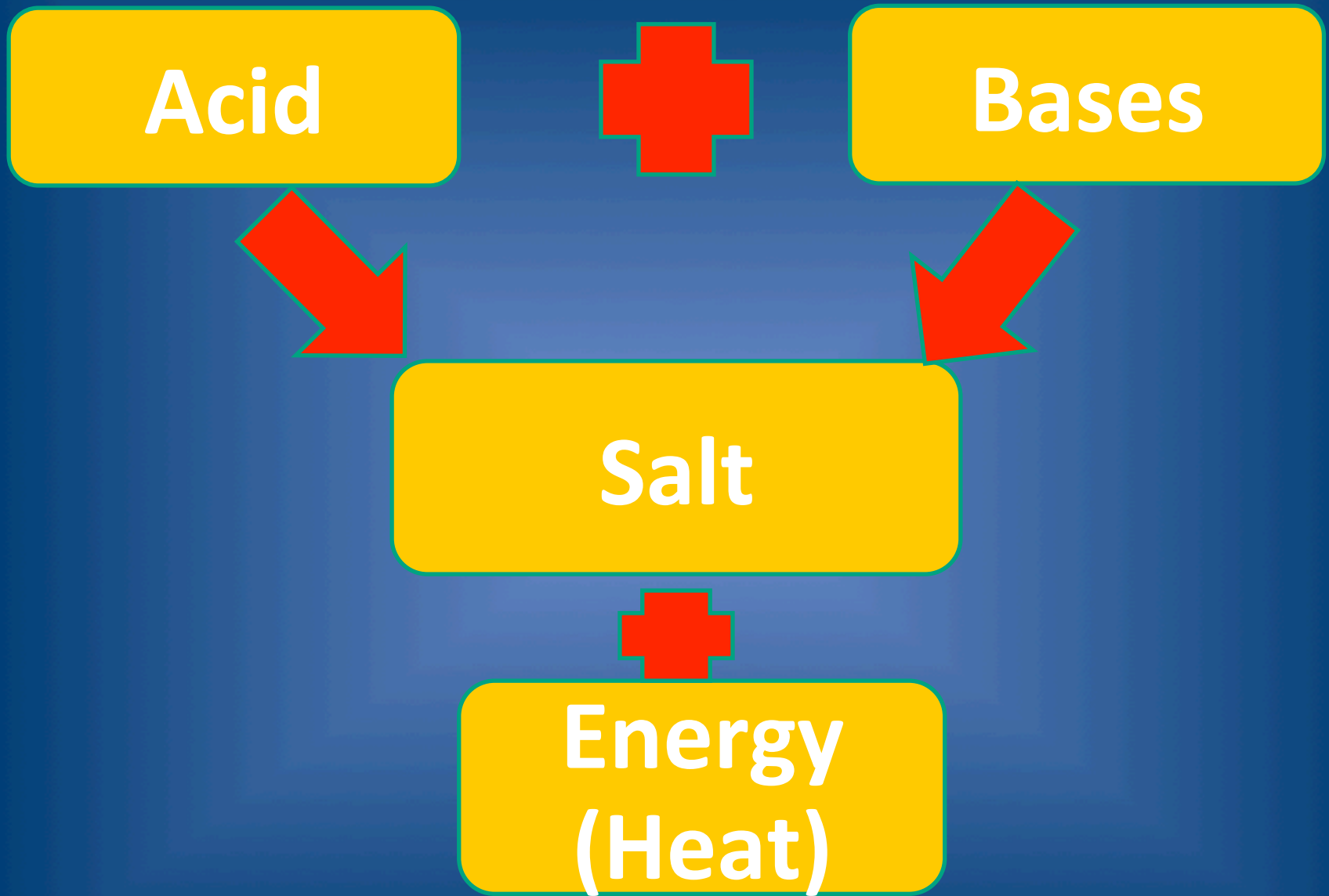






DECONTAMINATION

Why don't use a basis or acids or bicarbonate to neutralize?



Types of Burn Injury

Radiations

- A nuclear blast is an explosion with intense light and heat, a damaging pressure wave, and widespread radioactive material that can contaminate the air, water, and ground surfaces for Km around.
- **RDD:** Radiological Dispersion Device.

Types of Burn Injury

Radiations

- **In general, potential targets include**
 - **Strategic missile sites and military bases.**
 - **Centers of government, and capitals.**
 - **Important transportation and communication centers.**
 - **Manufacturing, industrial, technology, and financial centers.**
 - **Petroleum refineries, electrical power plants, and chemical plants.**
 - **Major ports and airfields.**

Types of Burn Injury

Radiations

- 1 Gy= 1 Gray=100 Rads
- 3Gy=caduta di capelli
- 6Gy= ustioni
- 10-15Gy Desquamazione secca
- 20-50GY desquamazione bagnata
- 50Gy necrosi cutanea e ulcerazioni

Types of Burn Injury

Radiations

- $>0,7\text{Gy}$ anemia neutropenica
- 10Gy Sindrome Gastro-intestinale
- 20Gy Sindrome cerebro-vascolare
- $3,5\text{Gy}$ mortale in 60gg senza trattamento
- 7Gy = mortale in 7gg con trattamento
- $>100\text{Gy}$ mortale in ore

Decontamination

Initial decontamination involves removal from the contaminated environment, removal of all contaminated clothes and jewelry, and copious irrigation with **water**.

Therapy

Ioduro di potassio

Adulti 130mg

Bambini 32-65 mg

Therapy

Con esposizione >2Gy

Filgastrim

5mcg/kg/die

EV in 15-30 min

Radiation Injury



White Phosphorus

White phosphorus skin exposure results in painful chemical burn injuries. The resultant burn typically appears as a necrotic area with a yellowish color and characteristic garlic like odor.

White phosphorus is highly lipid soluble and, as such, is believed to have rapid dermal penetration once particles are embedded under the skin. This deep absorption can result in heart, liver, and kidney damage.

White Phosphorus

The accepted lethal dose is 1 mg/kg, although the ingestion of as little as 15 mg has resulted in death

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White Phosphorus

ATTENTION

White Phosphorus+Humidity of the Air =

Phosphoric Acid

Liposoluble

Insoluble in Water

**Can self-heat in the air at room temperature (34°C)
without any added energy and then **ignite****

White Phosphorus

Continue irrigation; do not allow areas of exposure to dry, as this may result in re-ignition of white phosphorus.

Grossly debride as much white phosphorus as possible. The use of a Wood lamp (ultraviolet light) results in the fluorescing of the white phosphorus and may facilitate its removal.

MEDICATION

Paraffin gauze

And

Silver sulfadiazine 1%





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Flow Chart on site

Undressed the patient

Wash for 15-20 min with water

EV access or intraosseus and start infusion

Ringer Lactate at 300ml/h

Vescical catheter

Put medication

Chek list con Ustione < 6%

- V. periferica;
- C. Vescicale;
- Antidolorifico EV
- (Perfalgan 10mg/kg)
- Medicare con teli bagnati di R. lattato se inviato allo specialista entro 4h.
- Medicare con g. grassa se inviato oltre le 4h.

Se Ustione >6%

2 vene periferiche o CVC

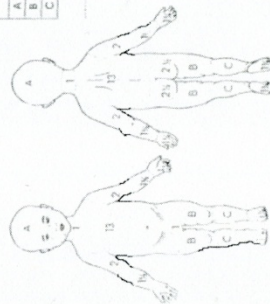
Interossea

NB sulla busta delle urine scrivere sempre:

Luogo, data, ora

A	B	C	1	2	3
A	1/2 della testa	1/3	0,5	0,5	0,5
B	1/2 di una coscia	2/3*	3	3	4
C	1/2 di una gamba	2/3	2,5	2,5	2,5*

Percentuale delle superfici ustionate



La mano del paziente (dita escluse) corrisponde all'1% di S. Corporea. Contare il n. di "mani" ustionate.

Analisi utili da fare in PS e comunicare al C. ustioni:

- Emocromo;
- Azotemia;
- Glicemia
- Elettroliti (Na;K;Ca;Mg;Cl)
- Pt, PTT, Fibrinogeno, ATIII;
- Sgot; SGPT
- Es. urine
- Proteina C reattiva
- Albumine mia
- ECG

Se folgorato:

enzimi cardiaci tutti

Formula di Parkland

(Consensus Formula)

4ml/kg/%TBSA

½ infusa nelle prime 8h

½ nelle rimanenti 16h

Un bambino deve urinare

1ml/kg/h

Se ustione al volto:

Desametasone (soldesam)

0,5mg/kg in due

somministrazioni/die

Numeri telefonici:

Asl RM/C

06/51001

H. S. Eugenio

06/51002628

Centro Ustioni Roma

06/51002202

FAX S. Eugenio

06/5923968

T.I.P. Gemelli

06/30155203

Vademecum sul trattamento dei bambini ustionati.

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www.ustionipediatriche.it

Il presente foglio può essere fotocopiato e
distribuito liberamente senza apportarvi alcuna
modifica

Massive Bleeding

Airway

Respiration

Circulation

Head/Hypothermia

Massive Bleeding

No pulse

No breathing

No circulation

DON'T Rianimate

CODICI TRIAGE

BIANCO: NON critico; paz non urgenti

VERDE: Poco critico, assenza di rischi evolutivi, prestazioni differibili

GIALLO: Mediamente critico; presenza di rischio evolutivo, possibile pericolo di vita.

ROSSO: molto critico, pericolo di vita, priorità massima, EMERGENZA paziente in pericolo di vita con almeno una funzione vitale compromessa

(Fonte: WWW.Salute.gov.it)

CODICI TRIAGE

NERO: Paz deceduto o prossimo al decesso.

ARANCIONE: Paziente contaminato NBCR

(Fonte: WWW.Salute.gov.it)

Triage maxi emergenze

BIANCO: va a casa

VERDE: Va dal curante


GIALLO: Va in ospedale per primo

ROSSO: Va in ospedale per secondo (Eventualmente)

NERO: Non va in Ospedale: Morfina ad alte dosi

● Pointe conique
arrondie
● Permanent Marker
PERMANENT MARKER
Nach Gebrauch Kappe schließen.
* Nur in gut belüfteten Räumen verwenden.




DTC3B-F
EN149:2001 FFP3 NR
CE0194

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Thanks



