MEDICAL UNIVERSITY - PLEVEN
FACULTY OF MEDICINE

Department of Hygiene, medical ecology , occupational diseases and disaster medicine

Lecture

DISASTER MANAGEMENT. ADVANCED MEDICAL POST. TRIAGE.

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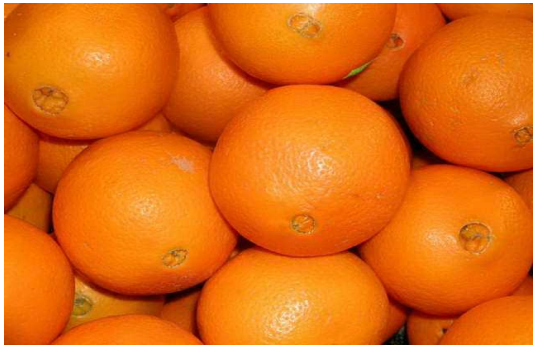
Triage



- “To Sort”
- Look at medical needs and urgency of each individual patient
- Triage in Daily Emergencies
  - Do the best for each individual
- Disaster Triage
  - Do the greatest good for the greatest number
  - Make an impossible task manageable

The triage is a very important but difficult, long and dynamic process.

- this is a sorting activity, developed originally to **classify the victims** of war and disaster, according to the **urgency** of their medical needs and their **likelihood** of survival, if treated.
- the word triage comes from French word for "sort out".
- various systems of triage have been developed, some of which have been in use for several decades.
- the Red Cross, for instance, uses a different system than the Civil Defense and this was different again from that used by the Armed Forces.

Triage should be understood as a complex process which includes:

A sorting, classification/categorization, selection

B initiating life-saving measures

C re-evaluation

D adaptive process (medical care/criteria) according to the evolution of:

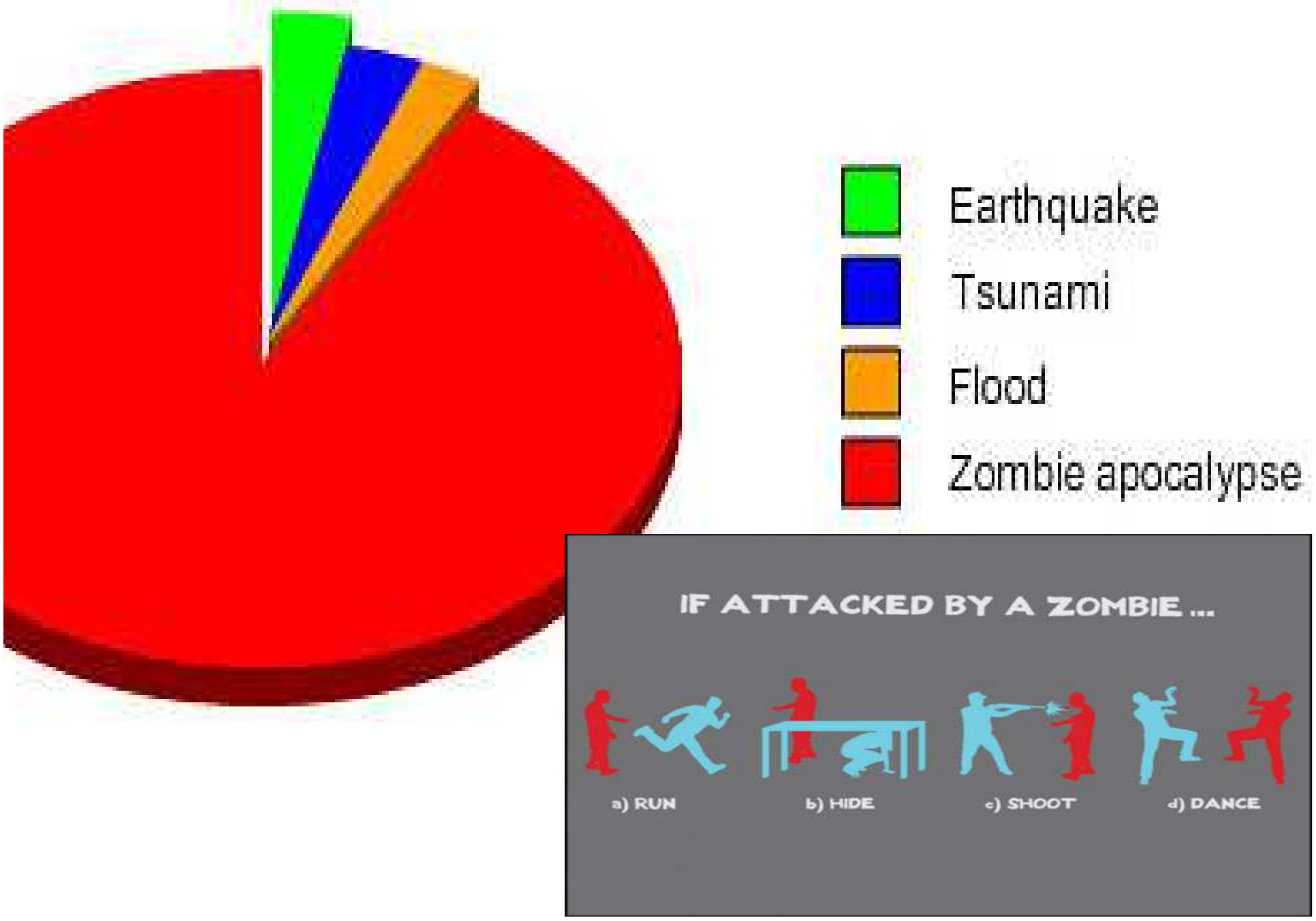
- needs
- condition of the victim
- treatment capacity at field level, during evacuation and at hospital

The triage is based on the clinical impression of the existing and expected condition of the injured person.

What Could Be an **MCI** (**M**ass-**C**asualty **I**ncident) For You?

Types of Common MCI's

- Highway Accidents
- Air Crashes
- Major Fires
- Train Derailments
- Building Collapses
- Explosions
- Terrorist Attacks
- Hazardous Materials Releases
- Earthquakes
- Tornadoes
- Hurricanes
- Floods

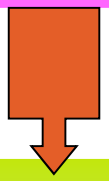

Earthquake
Tsunami
Flood
Zombie apocalypse
IF ATTACKED BY A ZOMBIE ...
a) RUN
b) HIDE
c) SHOOT
d) DANCE

EARTHQUAKE DRILL

In the event of an earthquake, lie down in a sheltered area & cover your head with your hands.

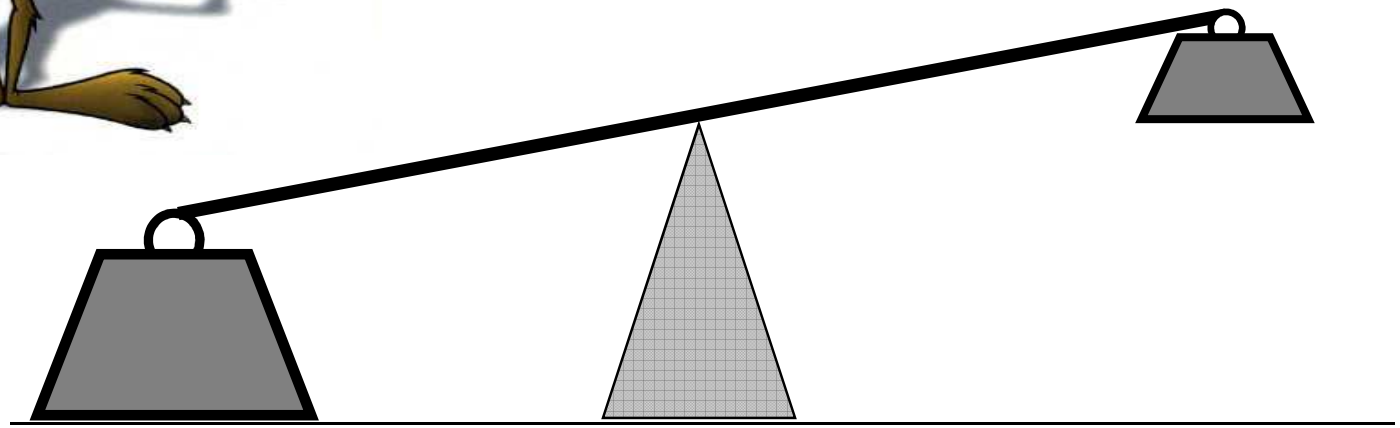

Thank you
for driving
carefully

Considerations During an MCI Response



- Supply vs. Demand
- Resource Allocation
- Coordination
- Medical Management
- Ethics

The Problem

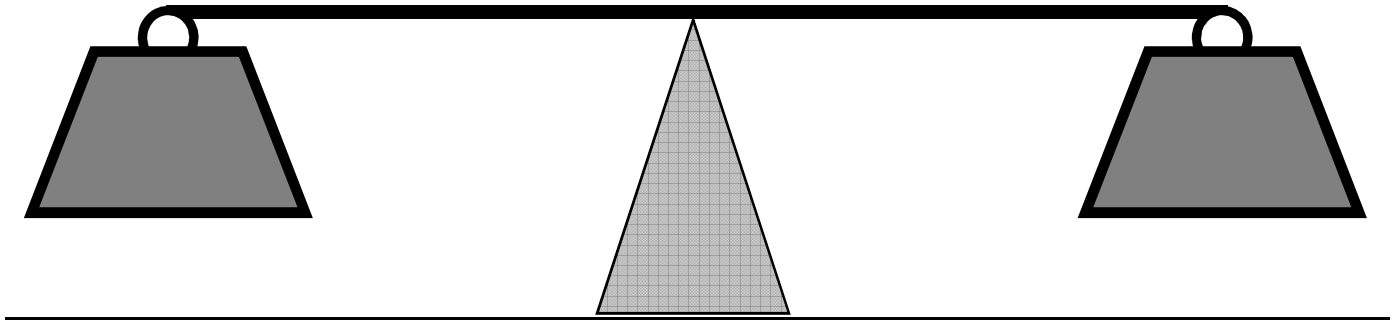


Casualties **Resources**

The triage process aims to:

- **Ensure care to casualties** according to:
  1. severity of injury
  2. need for treatment
  3. possibility of good quality survival
  4. availability of medical care
- **Determine priority** for evacuation.
- **Organize the dispatching and evacuation** of patients to hospital.
- **Decide priority** for surgical and other specific treatment.

The Objective



Casualties **Resources**

There are two major types of triage:

Primary (first), non medical pre-hospital triage; rescuer's triage; On scene prior to movement or at hospital (self transports)

Secondary (second), incident dependent, probably prior to or during transport or upon arrival to hospital; medical triage made by specially trained physicians at an **Advanced Medical Post (CCP)** or at the receiving Hospital.

Primary and Secondary Triage

- **Primary triage**
  - 1st contact
  - Assign triage category

- **Secondary triage**
  - ongoing process that takes place after the patient has been moved to a **treatment/holding area** awaiting transport.

In The Treatment Area

- Patients should be separated as tagged

Why Triage and Tag?

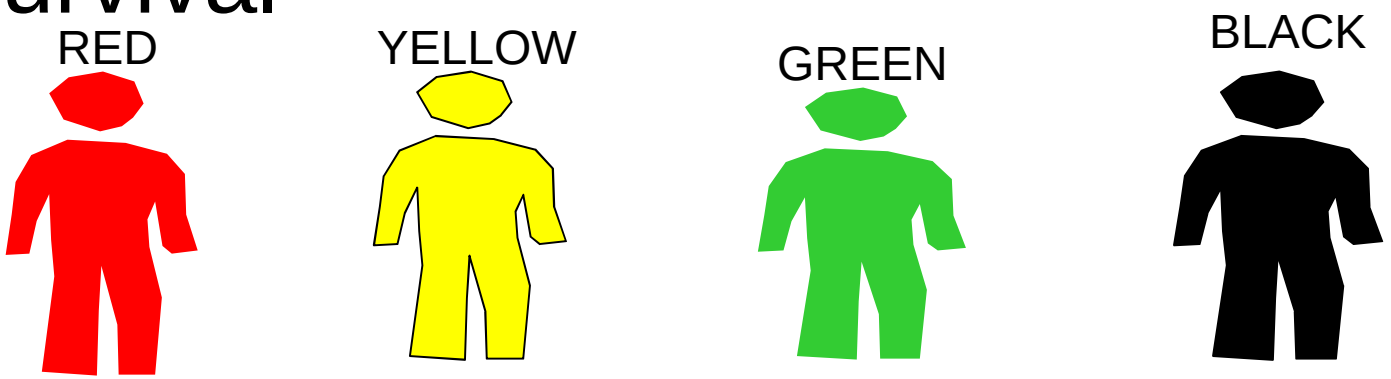
- Sorting of patients to provide for the survival of the most patients
- Assignment of resources in the most efficient method
- Most severe survivable injuries receive rapid treatment
- Accountability of patients
- Family reunification

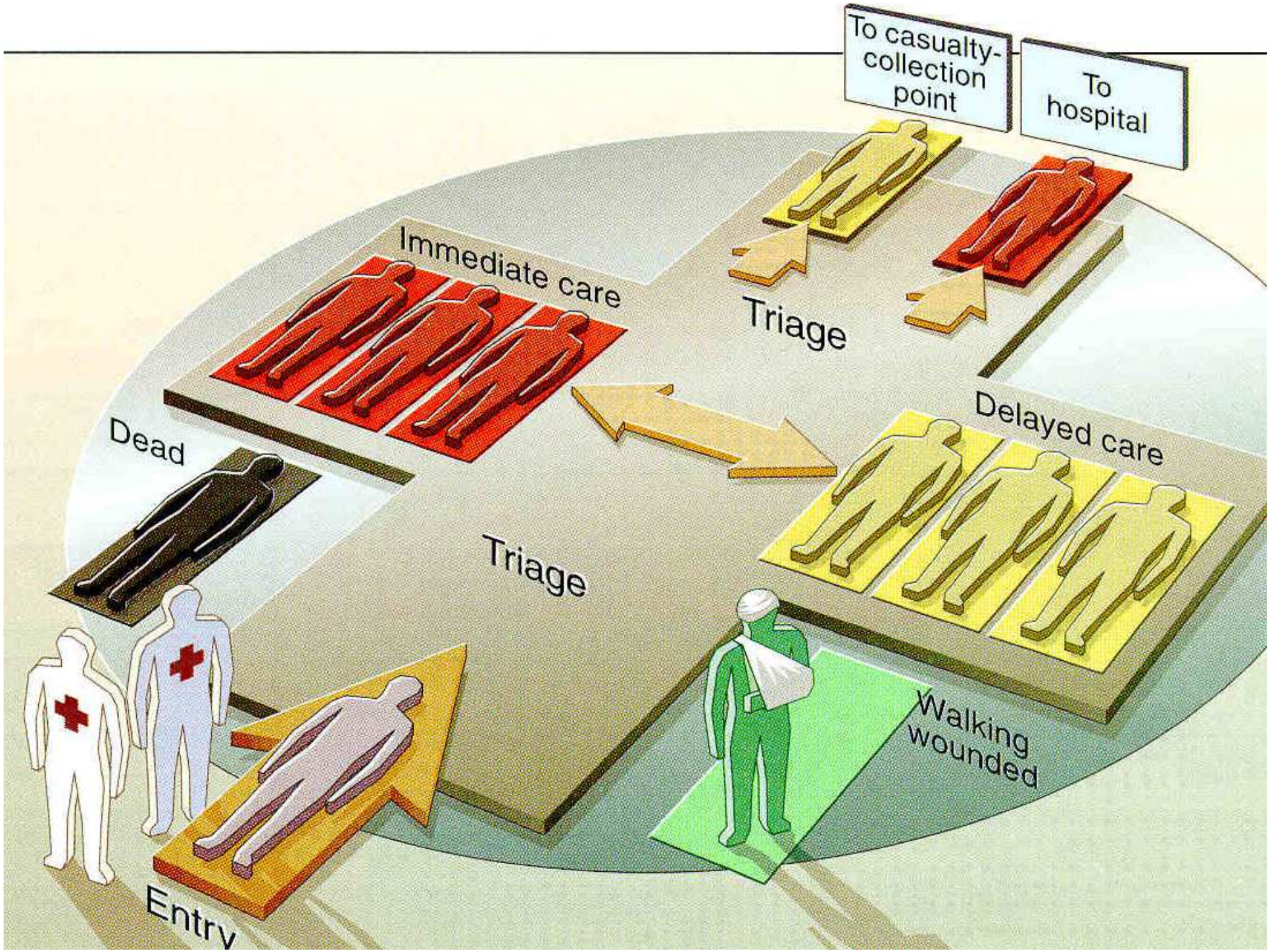
Triage Categories

- **Red (1)=** immediate - critical patient
- **Yellow (2)=** delayed - serious patient that could wait until all reds have been transported
- **Green(3)** = ambulatory / hold – minor injuries
- **Black** = deceased (expectant)

Triage Categories

- **RED** - Immediate/emergent
- **YELLOW** - Urgent
- **GREEN** - Nonurgent
- **BLACK**- Dead/little to no hope of survival




To casualty-collection point
To hospital
Immediate care
Triage
Delayed care
Dead
Triage
Walking wounded
Entry

RED Triage Category (Immediate)

Adult

Respirations > 30 BPM (breaths/min, RR (respiratory rate)
CR (capillary refill time) > 2 seconds or
no palpable radial pulse
Cannot follow simple commands

Pneumothorax
Hemorrhagic Shock
Closed Head Injury

Pediatric

Respirations < 15 or > 45
CR > 2 seconds or no palpable radial or brachial pulse
Inappropriate “Pain” (e.g., posturing) or “Unresponsive”

RED - Immediate

- **Severely injured but treatable injuries and able to be saved with relatively quick treatment and transport**
- Examples
  - Severe bleeding
  - Shock
  - Open chest or abdominal wounds
  - Emotionally out of control

Capillary nail refill test

The capillary nail refill test is a quick test done on the nail beds. It is used to monitor dehydration and the amount of blood flow to tissue.

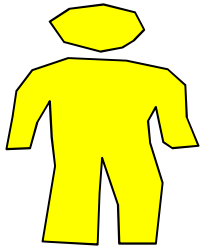
Pressure is applied to the nail bed until it turns white. This indicates that the blood has been forced from the tissue. Once the tissue has **blanched**, pressure is removed. Return of blood is indicated by the nail turning back to a **pink color**. This test measures how well the vascular system works in hands and feet. If there is good blood flow to the nail bed, a pink color should return in **less than 2 seconds** after pressure is removed. Blanch times that are **greater than 2 seconds** may indicate: ***Dehydration, SHOCK, Peripheral vascular disease (PVD), Hypothermia***

YELLOW Triage Category (Delayed)

Adult: respirations, capillary refill, and mentation are normal

- Isolated burns
- Extremity fractures
- Stable other trauma
- Most patients with medical complaints

Yellow - Delayed



Injured and unable to walk on their own. Potentially serious injuries but stable enough to wait a short while for medical treatment

- Examples
  - Burns with no respiratory distress
  - Spinal injuries
  - Moderate blood loss
  - Conscious with head injuries

GREEN Triage Category (Minor)

- “Walking wounded”
- Psychological casualties
- Always look for children being carried and assess them

Green – Non-Urgent

- Minor injuries that can wait for a longer period of time for treatment.
- May or may not be able to ambulate
- Examples
  - Minor fractures
  - Minor bleeding
  - Minor lacerations

GREY Triage Category (Expectant)

- This category is not currently in use and must not be utilized until approved by MIEMSS
- It is included on the paper tags in anticipation of national recognition and acceptance in the future
- GREY is for the patient that is not likely to survive even with emergent interventions

BLACK Triage Category (Deceased)

- Obvious mortality or death (pulseless and apneic)
  - Decapitation
  - Blunt trauma arrest
  - Injuries incompatible with life (future GREY)
  - Brain matter visible (future GREY)

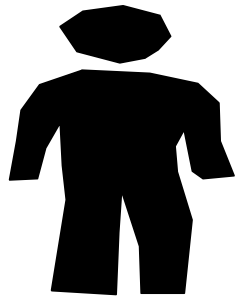
Blunt trauma arrest (Agonal)

- Severely injured patients (Class IV Shock) who are non- responders to fluid resuscitation.

Markers

- Heart rate less than **60**
- Systolic blood pressure less than **80**
- Any ventricular fibrillation, ventricular tachycardia , or pulseless
- Loss of signs of life – absent respirations, absent pupil response, **GCS 3 - 4**

Black - Deceased



- Dead or obviously dying. May have signs of life but injuries are incompatible with survival.
- Handle based on local protocols
- Examples
  - Cardiac arrest
  - Respiratory arrest with a pulse
  - Massive head injury
- Can be psychologically difficult to tag a child as black

SMART TAG

1

2

3

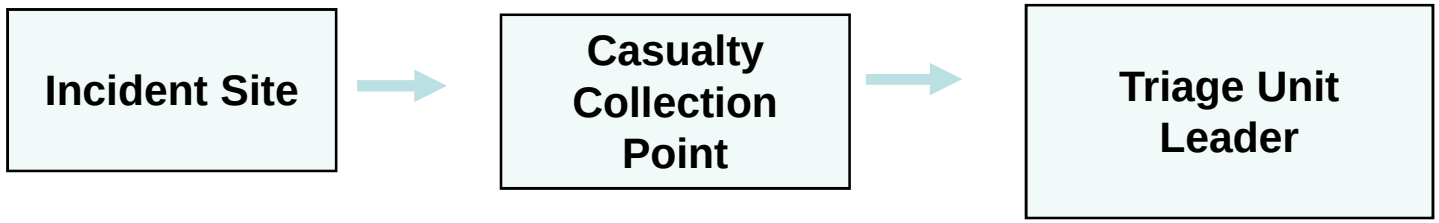
DEAD

Illinois Approved Triage Tag

Triage Coding

Priority treatment		Color
Immediate	1	RED
Urgent	2	Yellow
Delayed	3	Green
Dead	0	Black

Triage: A rapid approach to prioritizing a large number of patients

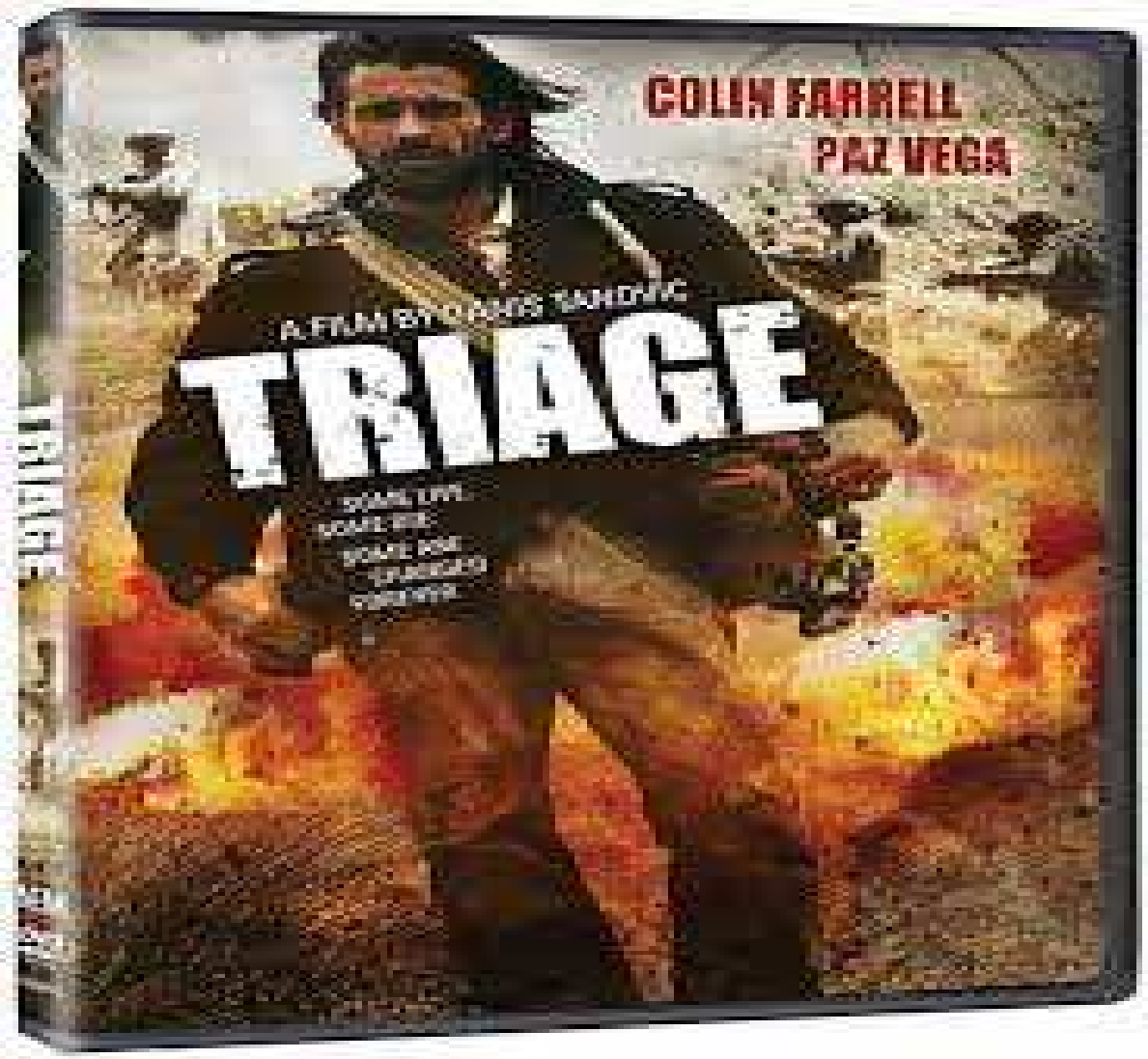


Simple **T**riage **A**nd **R**apid **T**reatment

JumpSTART

START TRIAGE

Simple Triage And Rapid Treatment



Triage

- Triage should be performed RAPIDLY
- Utilize START/ JumpSTART Triage to determine priority
- 30–60 seconds per patient
- Affix tag on left upper arm or leg

The "START" System of Triage

- using START Triage, evaluate victims and assign them to one of the following four categories:
  - **Walking wounded/minor (green)**
  - **Delayed (yellow)**
  - **Immediate (red)**
  - **Deceased/expectant (black)**

Triage: Sorting of Patients

- You can't commit to "one-on-one" care
- You have to be fast – 30 sec or less per patient
- Very limited treatment is provided
  - Manually open airways
  - Clear airway with finger sweep
  - Control major bleeding

"START"
Focus on tagging the patients

- **BEGIN…**

  Clear out all **ambulatory patients** – tag **Green**

- Rest of the patients require MORE triage – 3 steps: They will be either red, yellow or black.
  - **R**espiratory effort
  - **P**ulses/perfusion
  - **M**ental status


BBUA!
TRIACE
1

START –
4 things to think about…

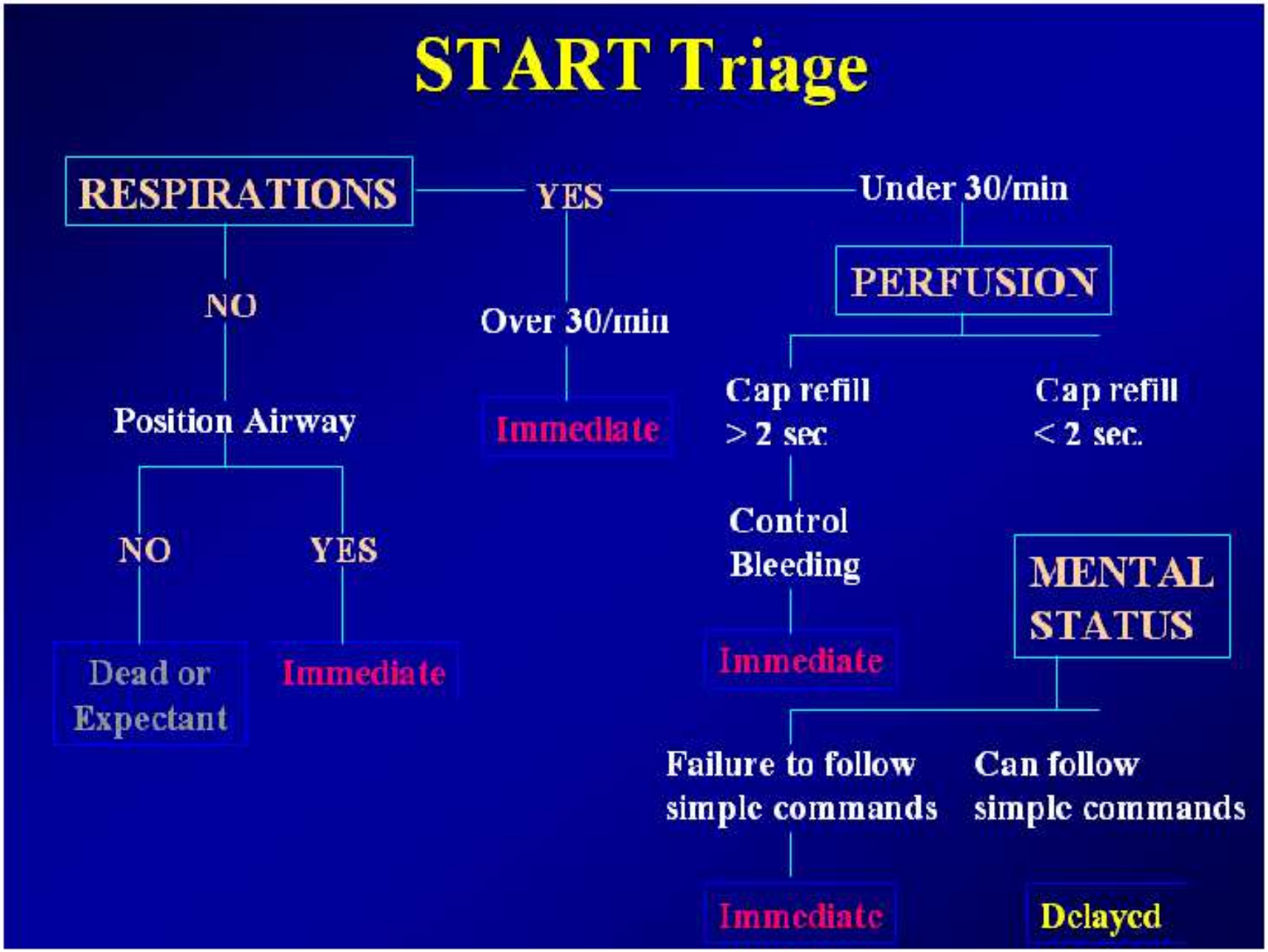
- Ability to **follow directions and walk**
- **R**espiratory effort
- **P**ulses/perfusion
- **M**ental status

"RPM'S"

START/*JumpSTART*

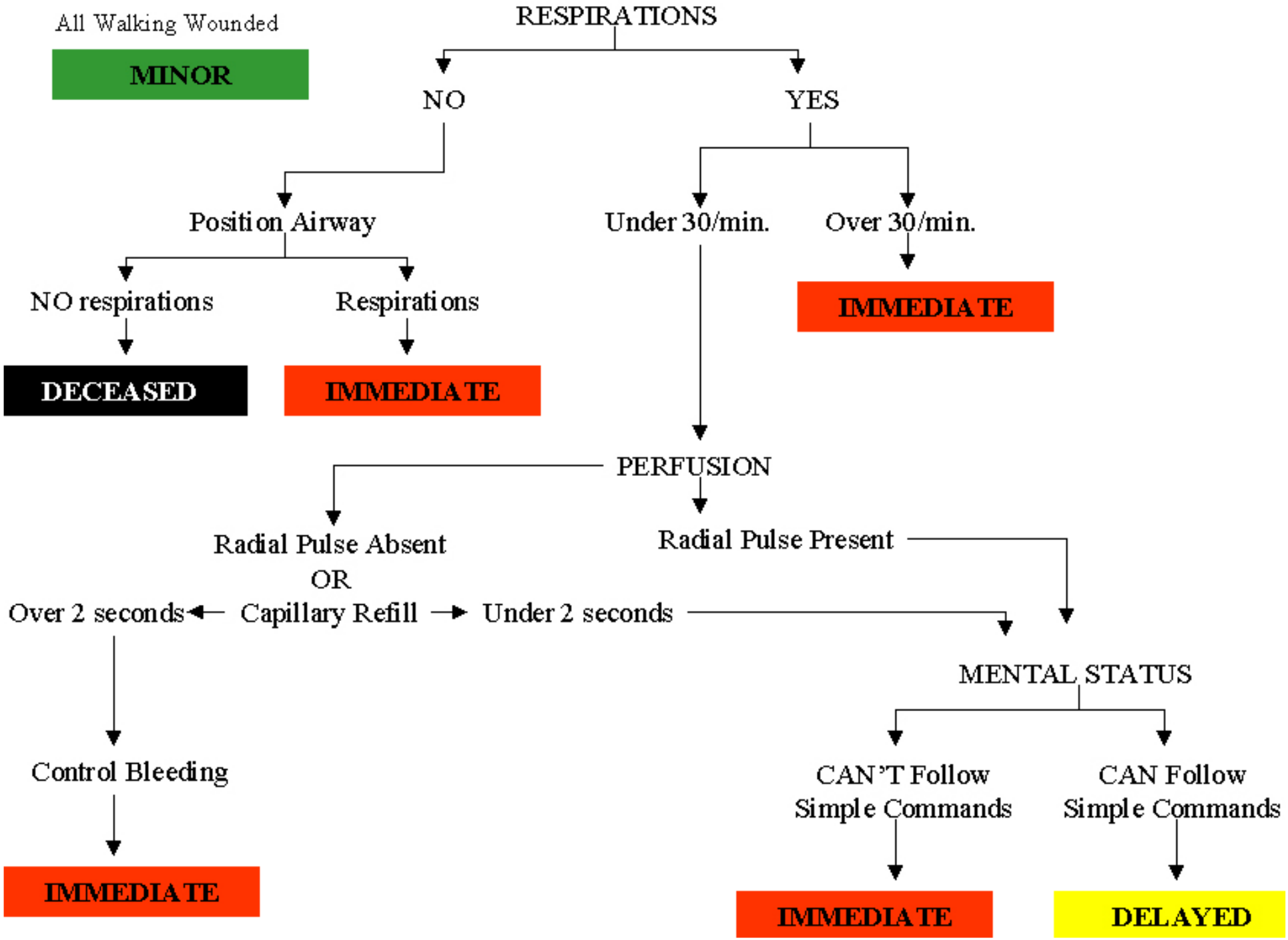
Categorize the patients by assessing each patient's *RPMs…*

- ✓**R**espirations
- ✓**P**ulse/perfusion
- ✓**M**ental Status


START Triage
RESPIRATIONS
YES
Under 30/min
NO
Over 30/min
PERFUSION
Position Airway
Immediate
Cap refill
> 2 sec
Cap refill
< 2 sec.
NO
YES
Control
Bleeding
MENTAL
STATUS
Dead or
Expectant
Immediate
Immediate
Failure to follow
simple commands
Can follow
simple commands
Immediate
Delayed

Mnemonic

R	30
P	2
M	Can do


All Walking Wounded
MINOR
RESPIRATIONS
NO
YES
Position Airway
Under 30/min.
Over 30/min.
IMMEDIATE
NO respirations
Respirations
DECEASED
IMMEDIATE
PERFUSION
Radial Pulse Absent
OR
Capillary Refill
Radial Pulse Present
Over 2 seconds
Under 2 seconds
MENTAL STATUS
Control Bleeding
CAN'T Follow Simple Commands
CAN Follow Simple Commands
IMMEDIATE
IMMEDIATE
DELAYED

START – JumpSTART Triage

- Clear the "**walking wounded**" with verbal instruction:

  If you can hear me and you can move, walk to…

- Direct patients to the **casualty collection point (CCP)** or treatment area for detailed assessment and medical care
- Assign a Green Minor Manager to the area to control patients and manage area
- Tag will be issued at the CCP
- These patients may be classified as **MINOR**

START/JumpSTART

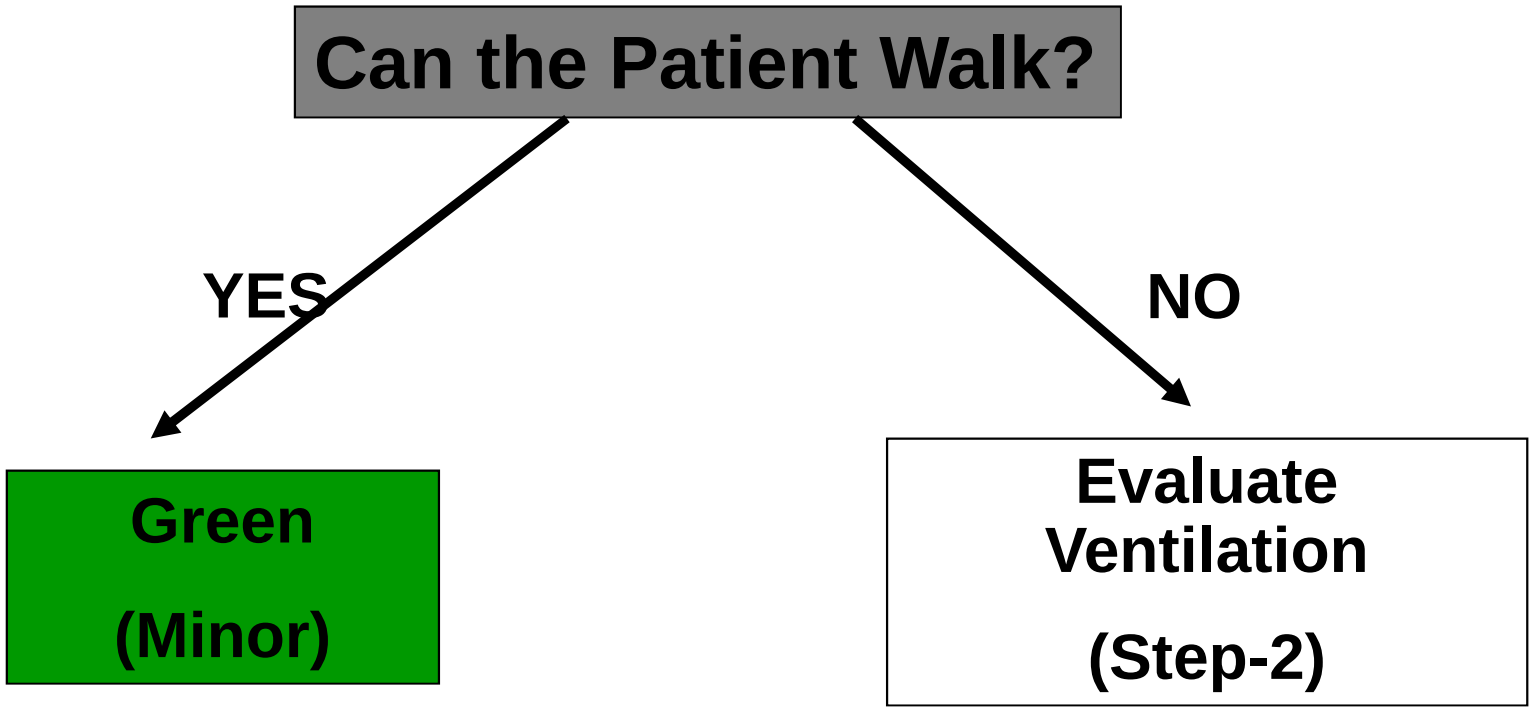
Now use START/JumpSTART to assess and categorize the remaining patients…

USE COLORED RIBBONS ONLY

START – Step 1
Respiratory Effort

- **Not breathing** – manually open their airway
  - If they start breathing - tag **RED**
  - If they don't start breathing – tag **BLACK**
- **Breathing** >30 or <10 = tag **RED**
- Breathing normal 10-30 = **go to next step**

START First Step



START/*JumpSTART*—*RPM*

RESPIRATIONS

Is the patient breathing?

Yes

Adult – respirations > 30 = **Red/Immediate**

Pediatric – respirations < 15 or > 45 = **Red/Immediate**

Adult – respirations < 30 = check perfusion

Pediatric – respirations > 15 and < 45 = check perfusion

START/JumpSTART—RPM

RESPIRATIONS

Is the patient breathing?

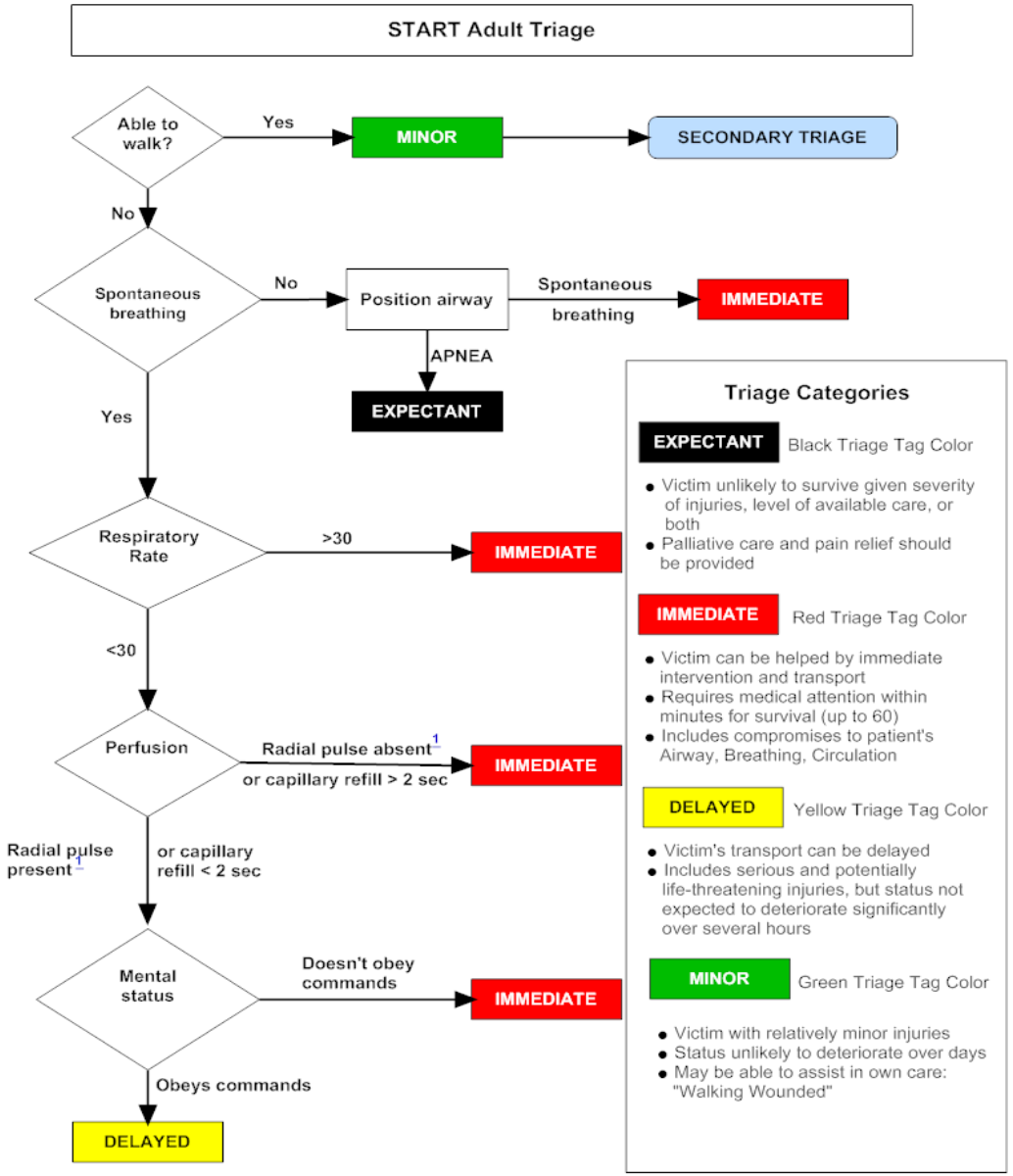
No

Reposition the airway…

Respirations begin = **IMMEDIATE/RED**

If patient is **APNEIC**

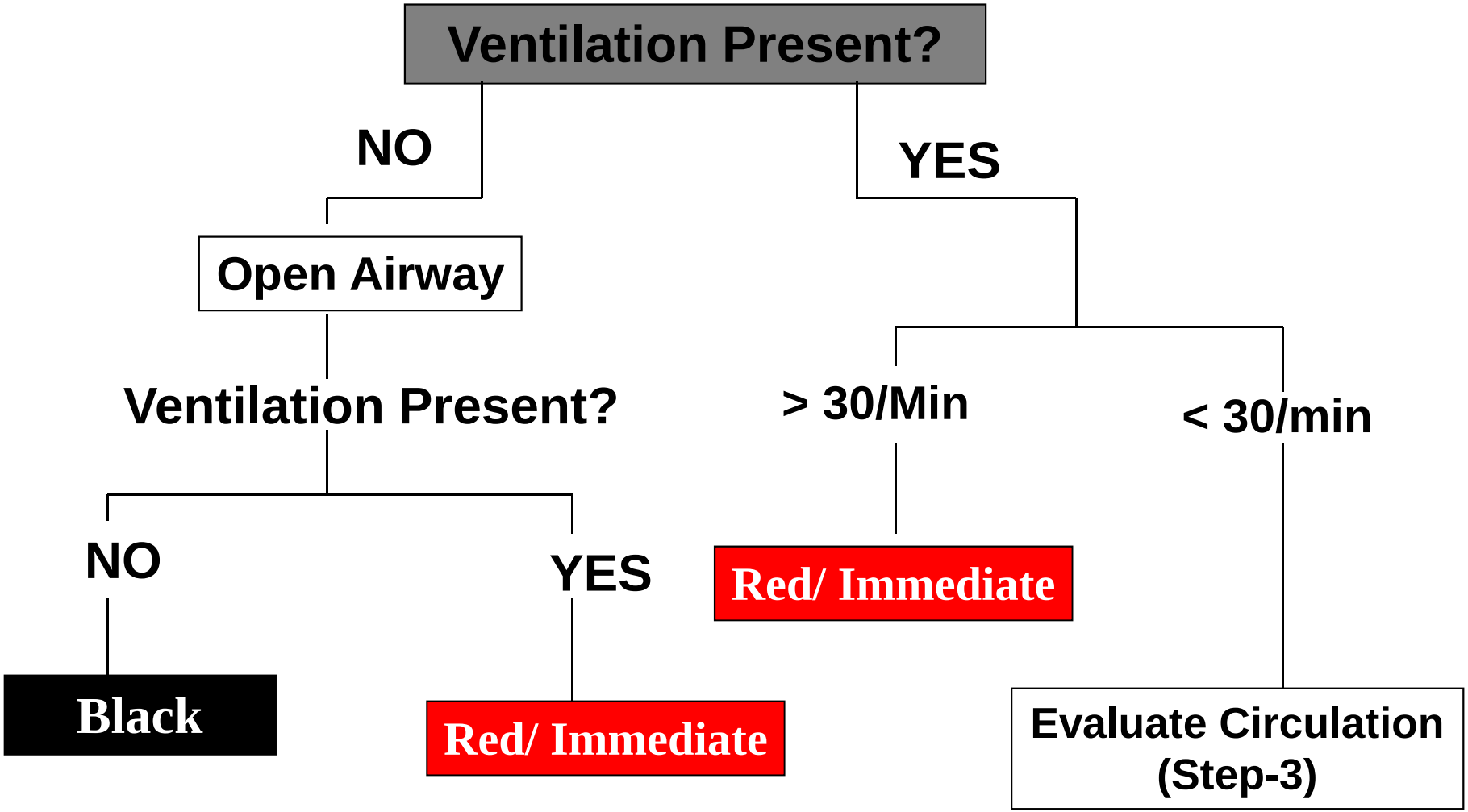
- Adult – deceased = BLACK
- Pediatric: Pulse Present – give 5 rescue breaths
  - respirations begin = **IMMEDIATE/RED**
  - absent respirations – deceased = BLACK



START – Step 2
Pulses/Perfusion

- Check for Radial pulse.
  - Radial pulse absent = tag **RED**
  - Radial pulse present = **go to next step**

START Step-2


Ventilation Present?
NO
YES
Open Airway
Ventilation Present?
> 30/Min
< 30/min
NO
YES
Red/ Immediate
Black
Red/ Immediate
Evaluate Circulation
(Step-3)

START/JumpSTART—RPM

PULSE/PERFUSION

Is the *RADIAL* pulse present?

Is capillary refill (CR) *LESS* than < 2 seconds?

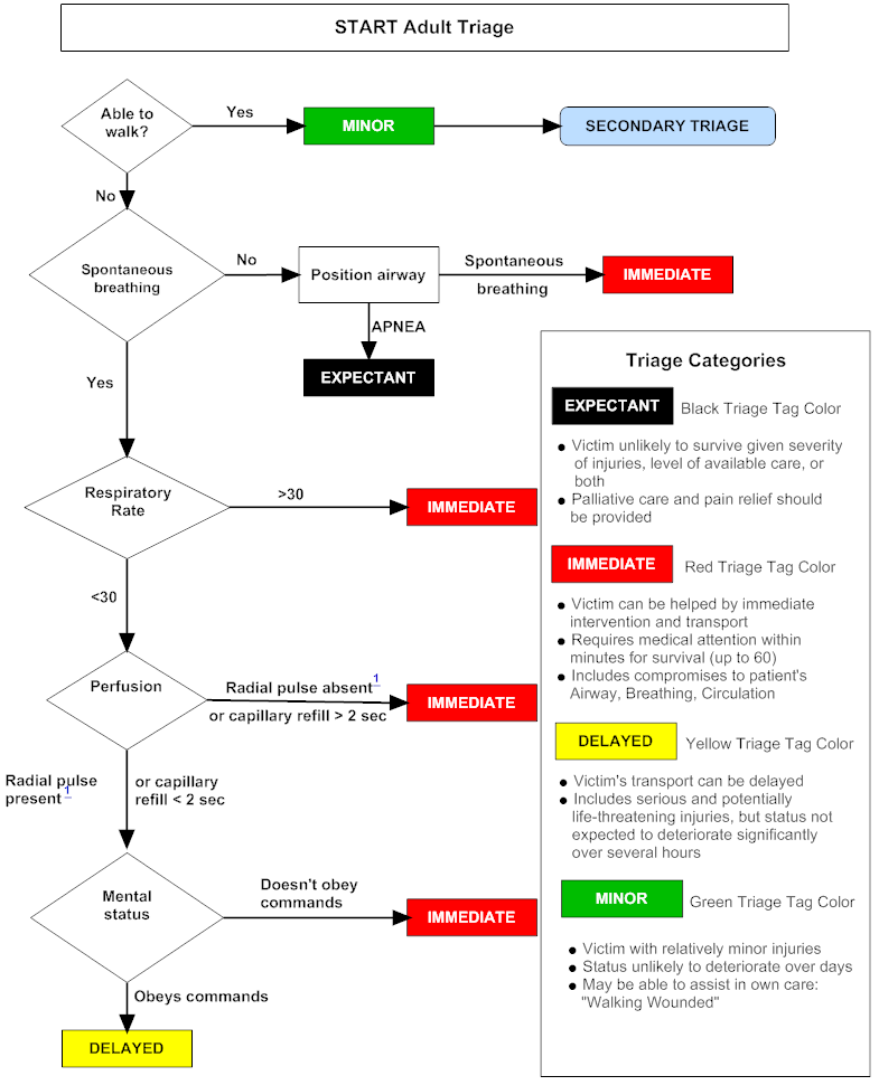
Yes

Check mental status

No

Adult: Pulse absent or CR > 2 seconds patient = **IMMEDIATE/RED**

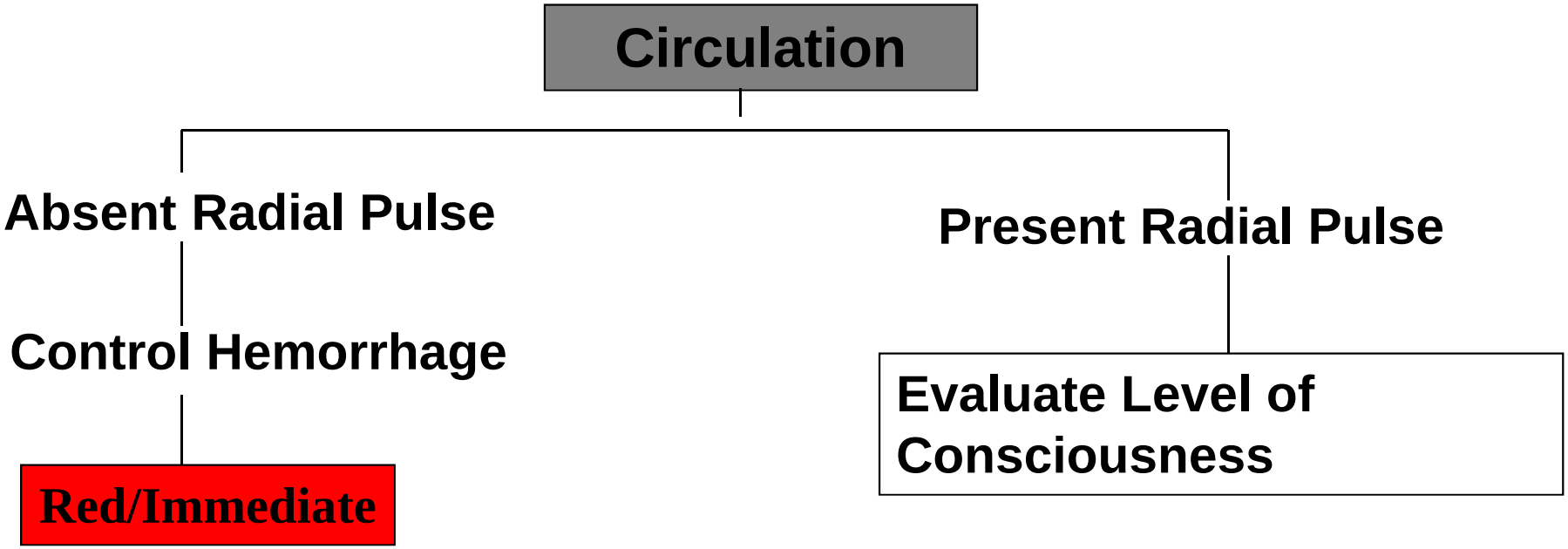
Pediatric: No palpable pulse patient = **IMMEDIATE/RED**



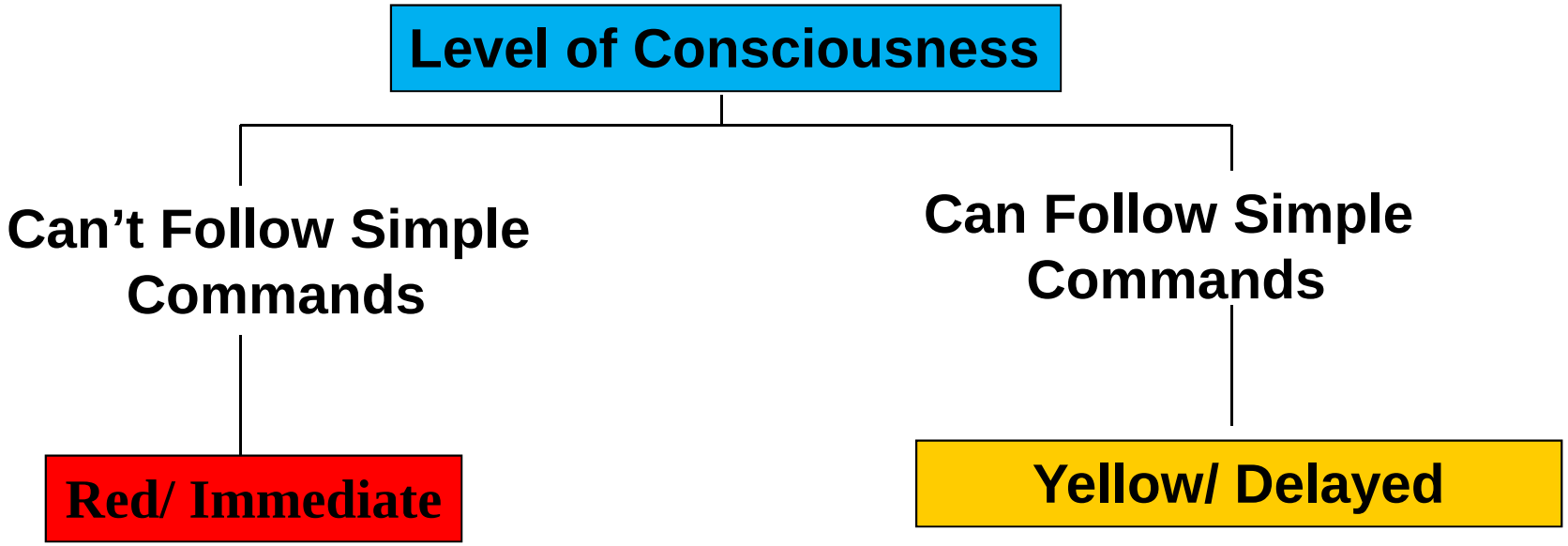
START – Step 3
Mental Status

- You are assessing whether or not the person can follow a simple command.
  - "Squeeze my hand"
- Can follow a simple command = tag **YELLOW**
- Cannot follow a simple command = tag **RED**

START Step-3


Circulation
Absent Radial Pulse
Present Radial Pulse
Control Hemorrhage
Evaluate Level of Consciousness
Red/Immediate

START Step-4


Level of Consciousness
Can’t Follow Simple Commands
Can Follow Simple Commands
Red/ Immediate
Yellow/ Delayed

START/JumpSTART—RPM

MENTAL STATUS…

Can the patient follow simple commands?

Yes

Adult = **DELAYED / YELLOW**

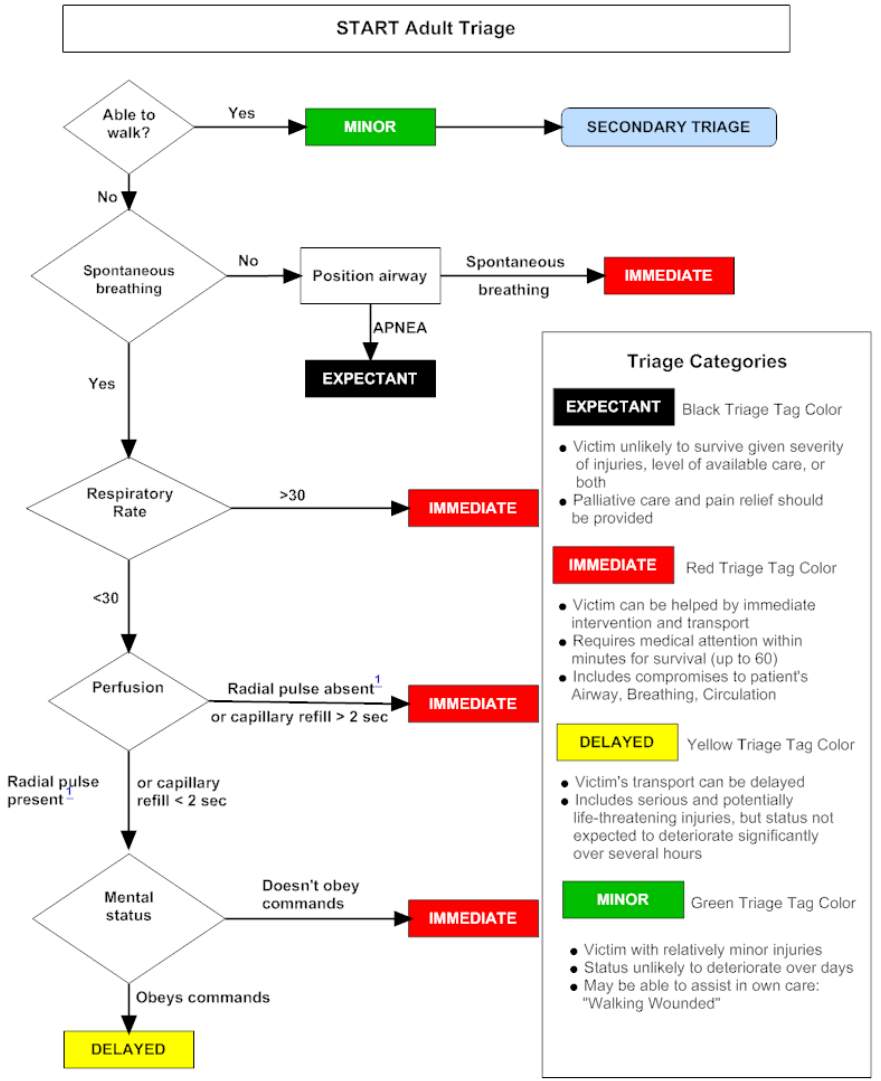
Pediatric: alert, verbal, or pain response is appropriate

= **DELAYED / YELLOW**

No

Adult = **IMMEDIATE / RED**

Pediatric – "P" pain causes inappropriate posturing or "U" unresponsive to noxious stimuli = **IMMEDIATE/ RED**



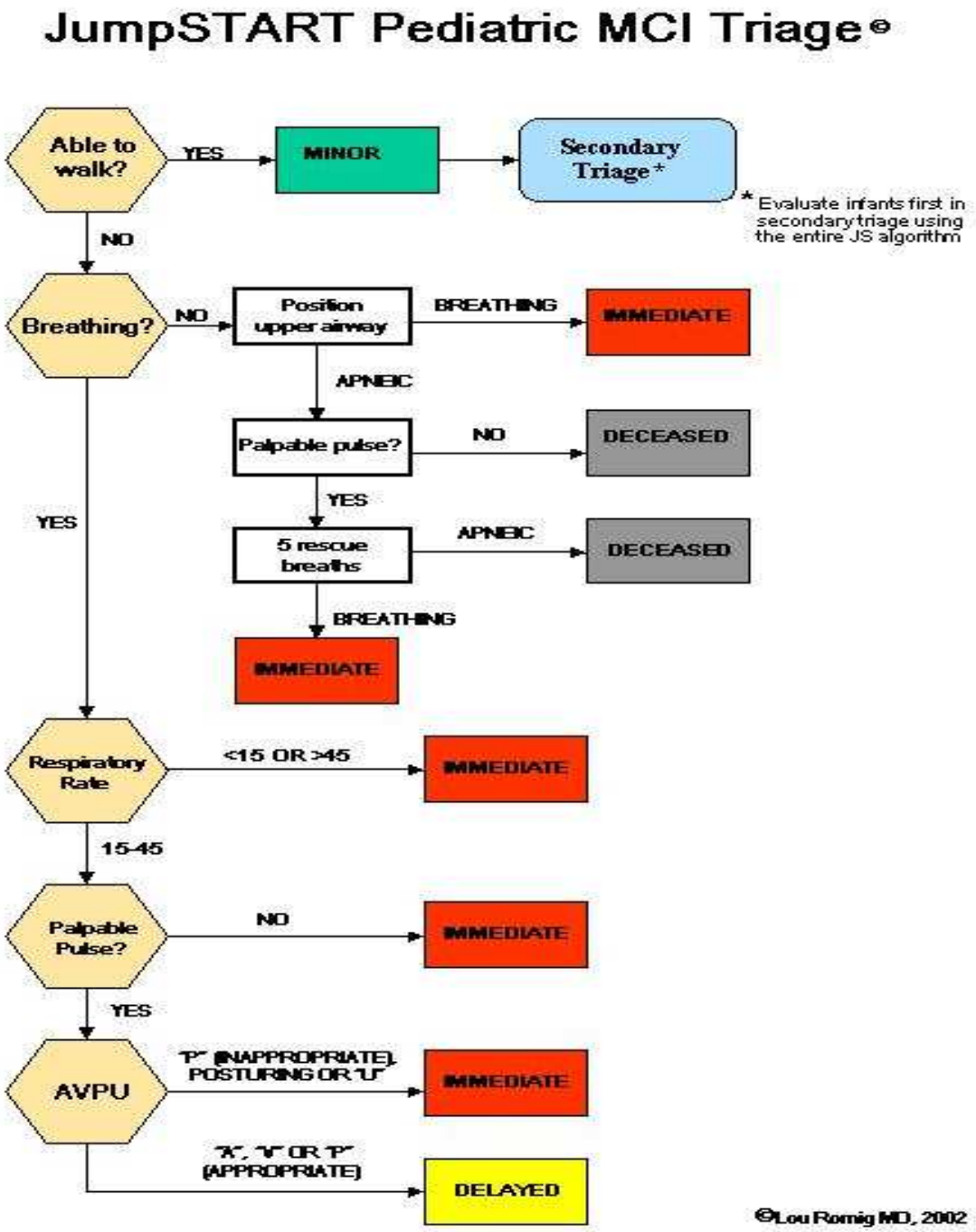
START/JumpSTART

If the patient is **IMMEDIATE/RED** upon initial assessment…then, before moving the patient to the treatment area, attempt only life-saving interventions:

Airway, Needle Decompression, Tourniquet, Antidote

DO NOT ATTEMPT ANY OTHER TREATMENT AT THIS TIME


IT'S FINE
We still got this.



- In children, circulatory failure usually follows respiratory failure.
- Apnea may occur relatively rapidly, rather than after a prolonged period of hypoxia.
- There may be a brief period when the child is apneic but not yet pulseless since the heart has not yet experienced prolonged hypoxia. It is felt that providing a brief trial of ventilations may help “jumpstart” their respirations.

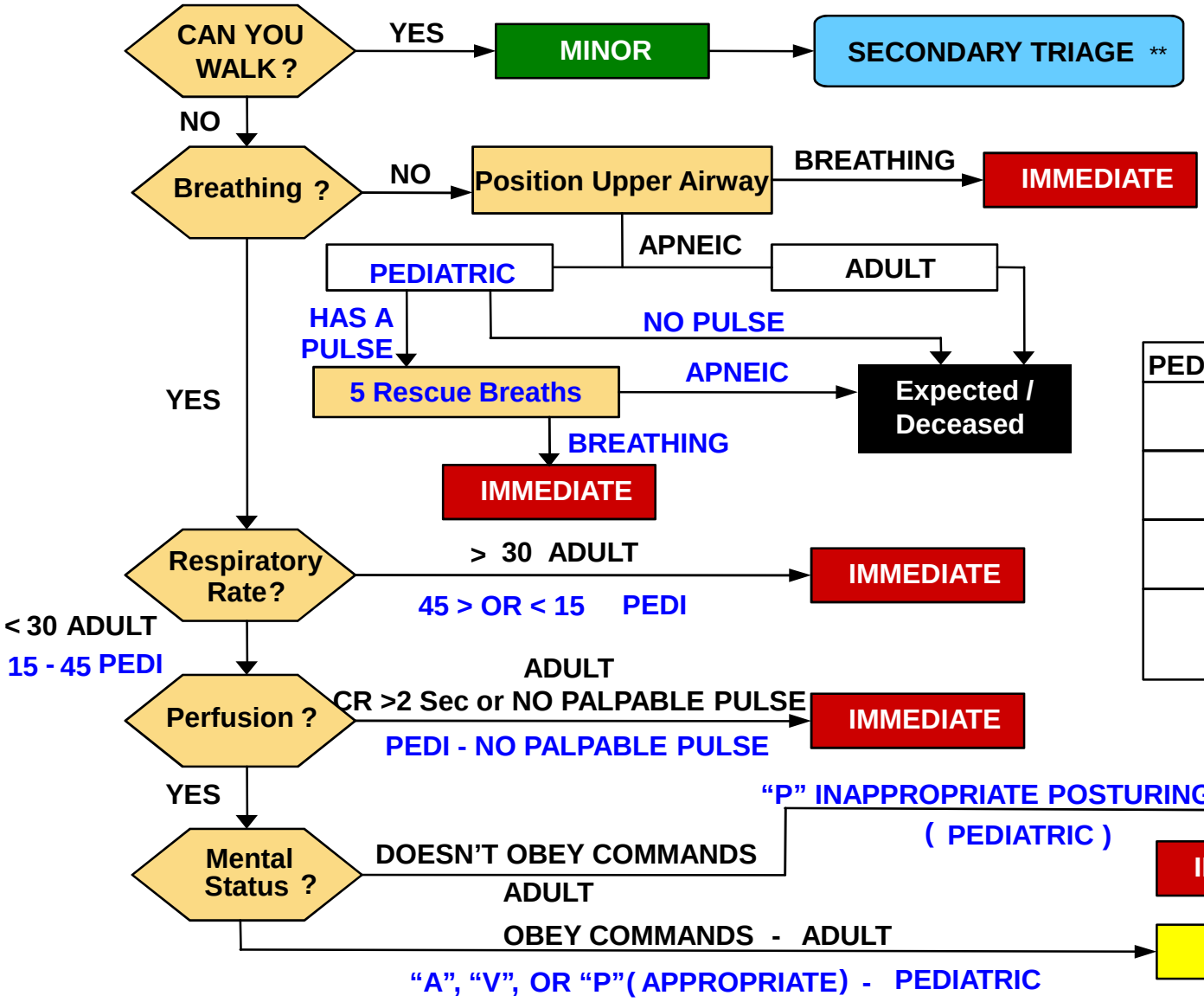
JumpSTART: Age

The ages of “tweens and teens” can be hard to determine so the current recommendation is:

*If a victim appears to be a **child**, use JumpSTART.*

*If a victim appears to be a **young adult**, use START*

Combined START/JumpSTART Triage



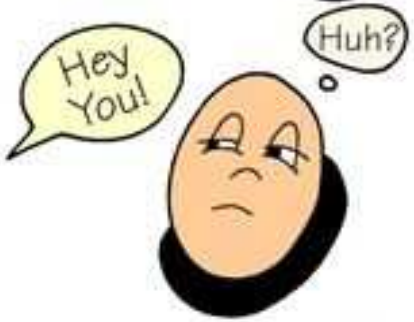
** Using the JS algorithm evaluate all children first who did not walk under their own power. Evaluate infants first in secondary triage using entire JS algorithm !

PEDI Neurological Assessment	
A	Alert
V	Responds to Verbal Stimuli
P	Responds to Painful Stimuli
U	Unresponsive To Noxious Stimuli

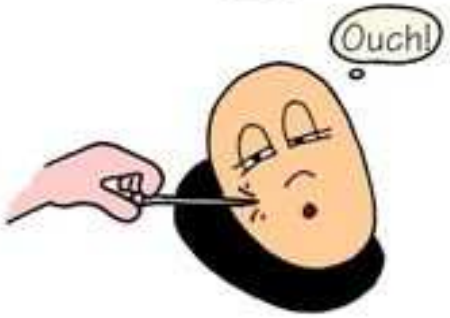
LEVELS OF CONSCIOUSNESS

A Alert

V Verbal Stimuli



P Painful Stimuli

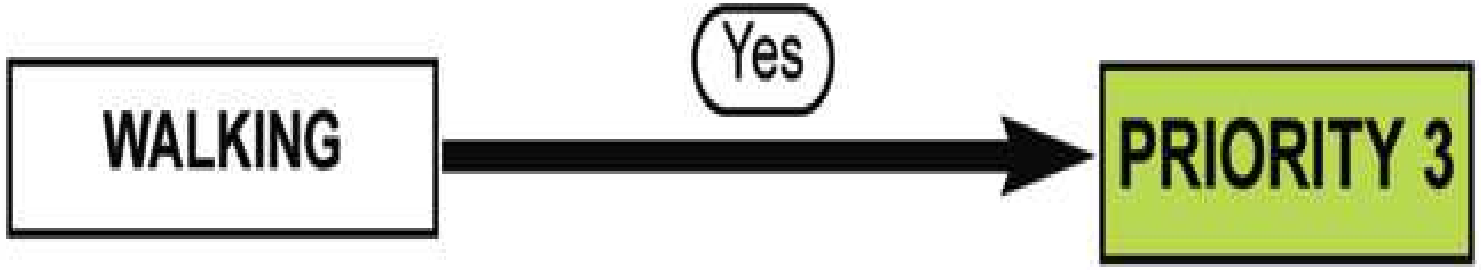


U Unresponsive

AVPU

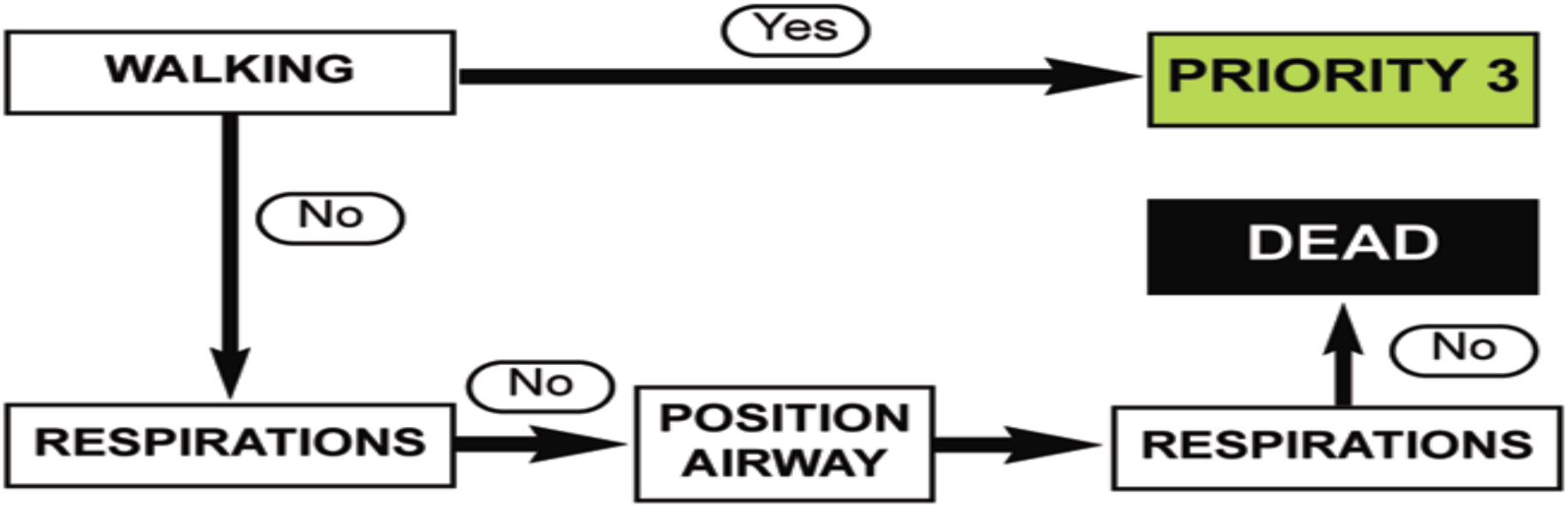
- **A**lert/awake – not necessarily oriented
- **V**erbal – responds to verbal stimuli before tactile/touch stimuli
  - You shout for the patient to open their eyes and their eyelids flicker or they open their eyes
  - In non-verbal children, evaluate the cry
- **P**ainful – responds to tactile stimuli; does not have to be painful stimuli but can be to touch
  - A flicker of the eyelids is a positive response
- **U**nresponsive – there is absolutely no response large or small

Primary Triage



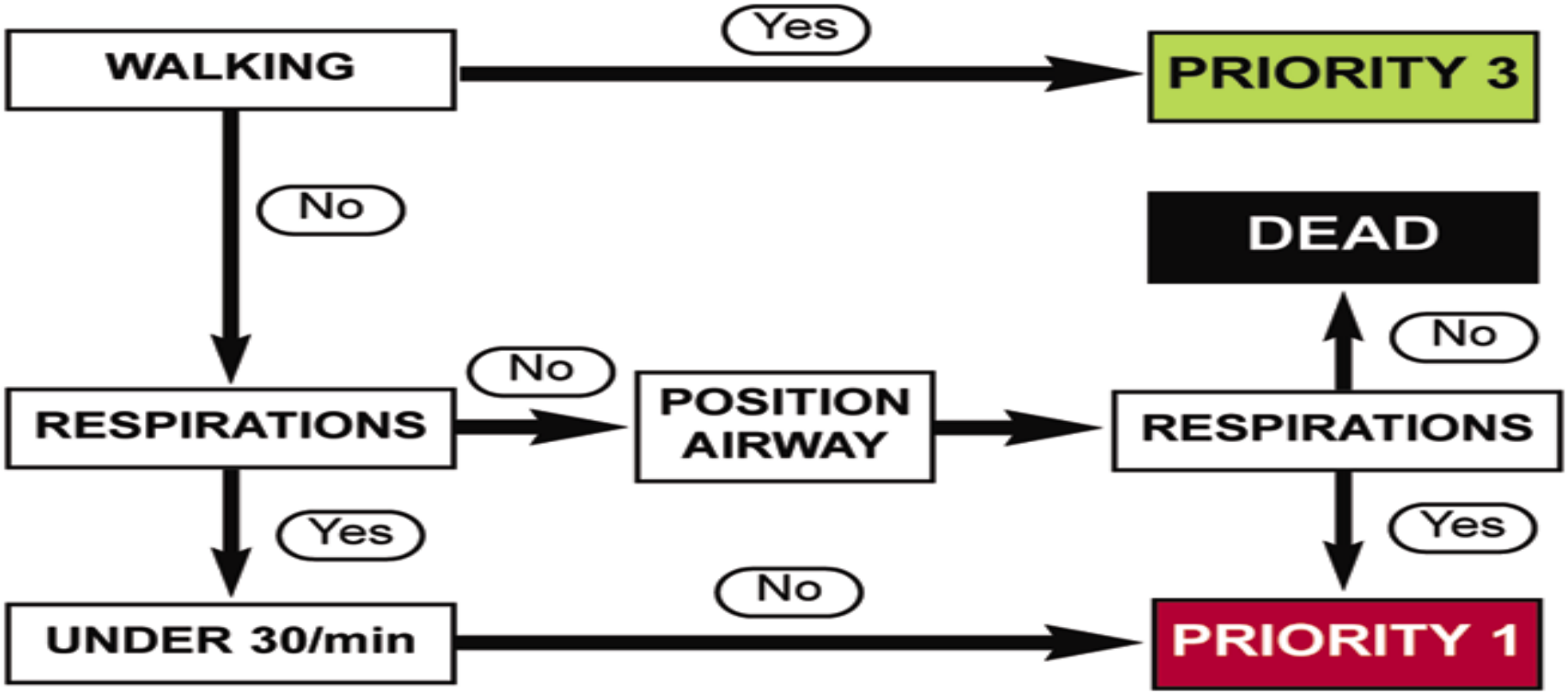
The first attempt at balancing resources and casualties/injured

Primary Triage



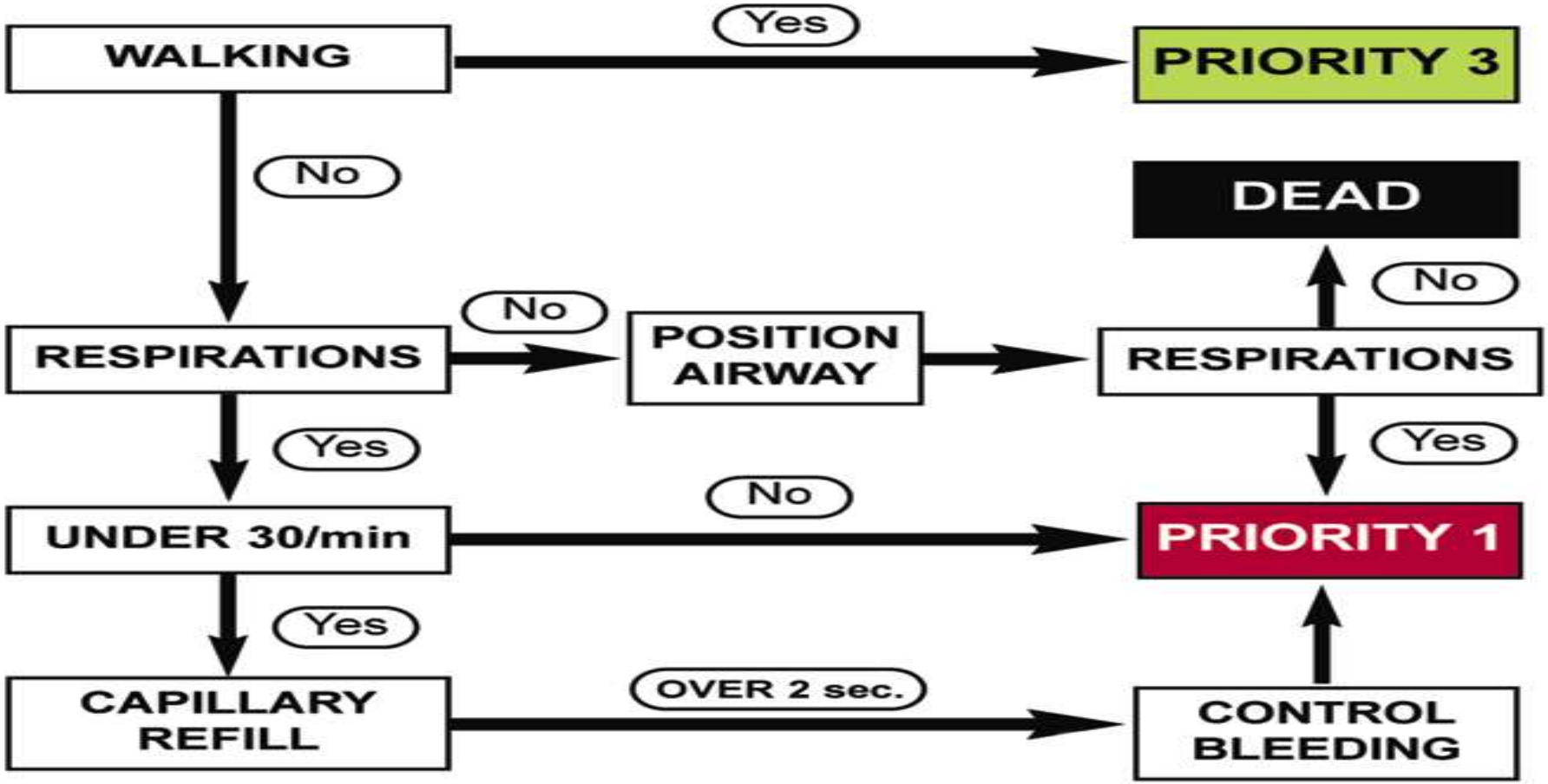
Determining whether there is an airway and breathing

Primary Triage



If breathing, at what rate & is it good enough?

Primary Triage



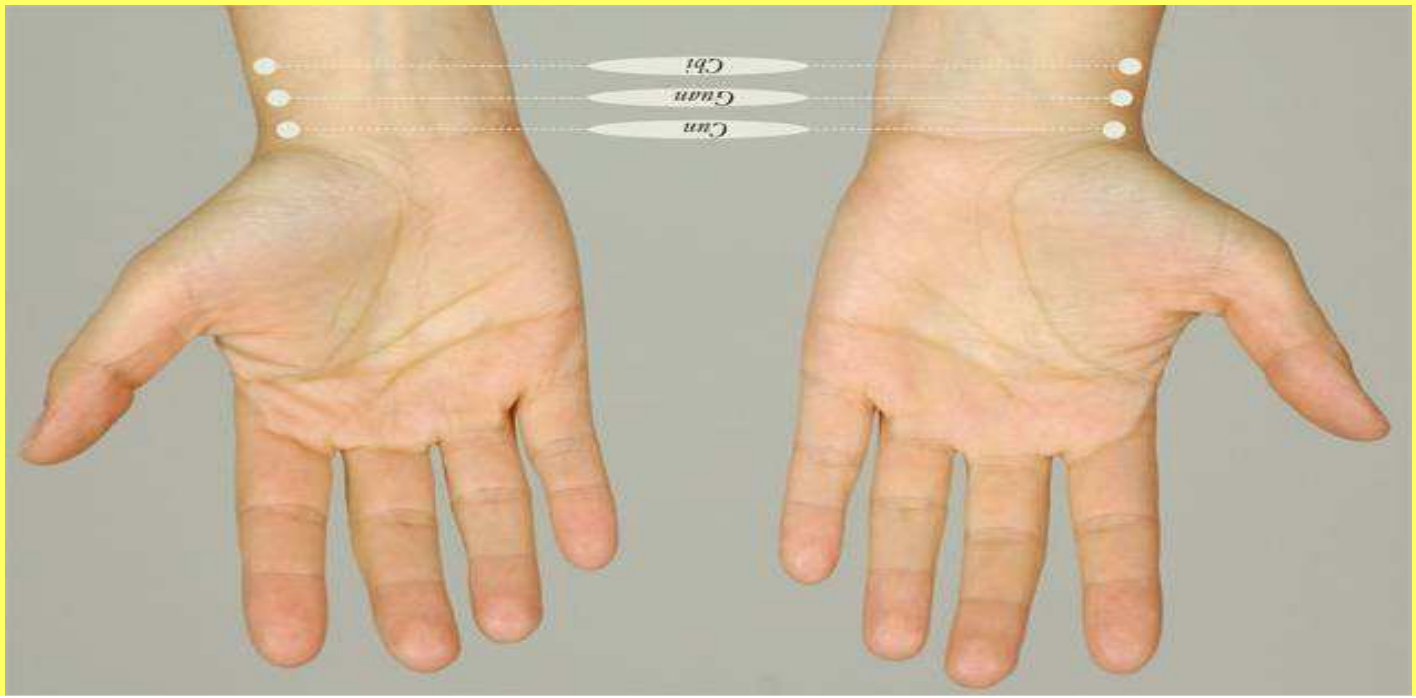
They have an airway, are breathing.

Are they circulating blood sufficiently?

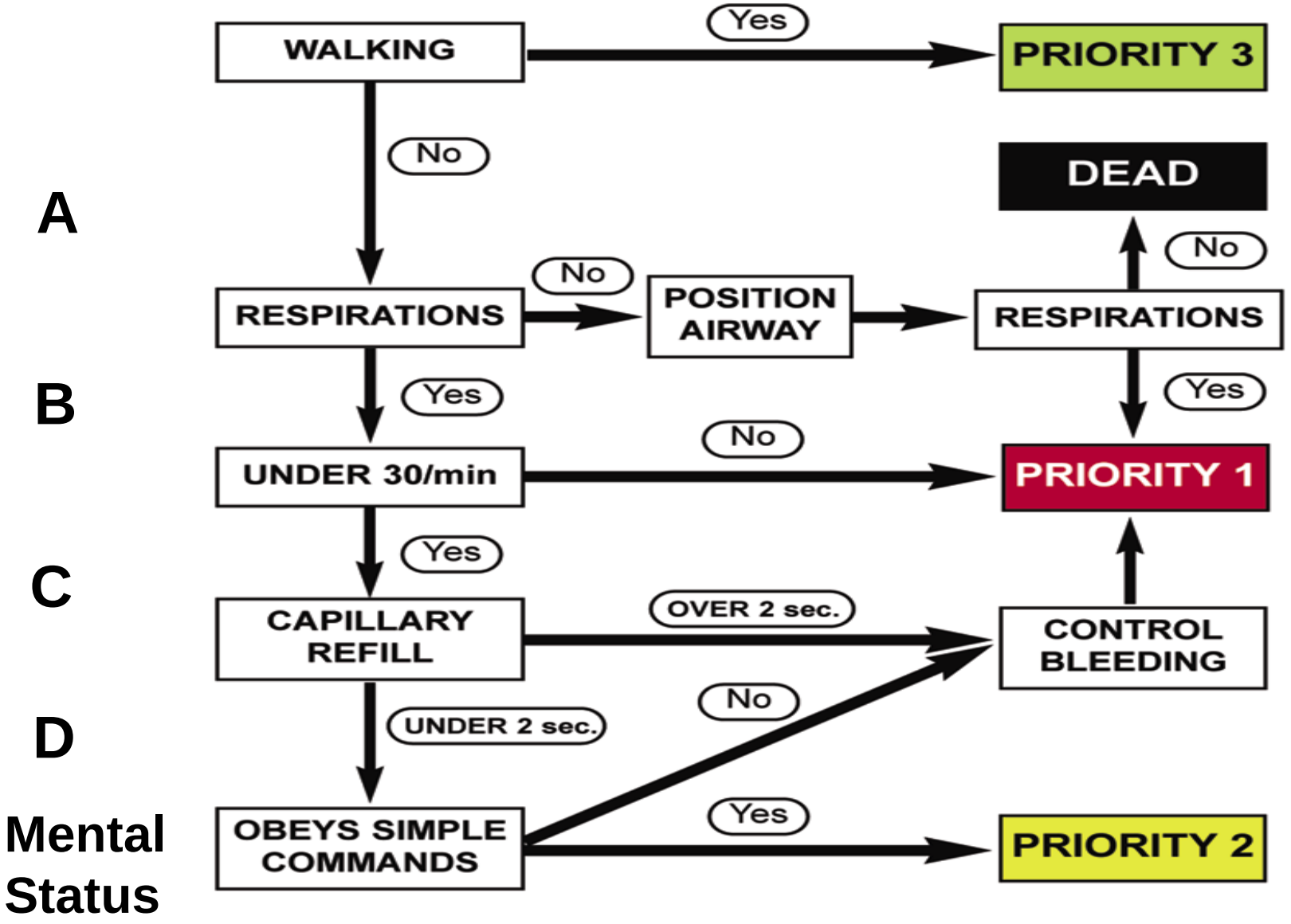
Circulatory Check

If you are unable to obtain a capillary refill, check the radial pulse. If absent then control any bleeding and prioritize the patient

PRIORITY 1



Primary Triage



PRIORITY 3

- Not injured or “Walking wounded”
- Have motor, respiratory, mental function

DELAYED

Example

Patient walks over to you and has an obvious broken arm

Respirations are 22

Pulse is 124 (Radial)

He is awake, alert, and crying

PRIORITY 1

- Opening airway, starts to breathe
- Breathing is greater than 30 or less than 10
- Delayed capillary refill time (> 2 seconds)
- Absent radial pulses
- Bleeding that needs to be controlled
- Does not follow instructions

Immediate

Example

Patient has an open head
Wound, bleeding controlled

Respirations are 16

Pulse is 88 (Radial)

He is unconscious

PRIORITY 2

- Did not move out, when asked
- Airway OK
- Breathing within 11 and 29
- Capillary refill less than 2 seconds or radial pulses present
- Can follow instructions to move unaffected limb

Urgent

Example

Patient states he can’t move or feel his legs

Respirations are 26

Pulse is 110 (Radial)

He is awake and oriented

EXPECTANT/DEAD

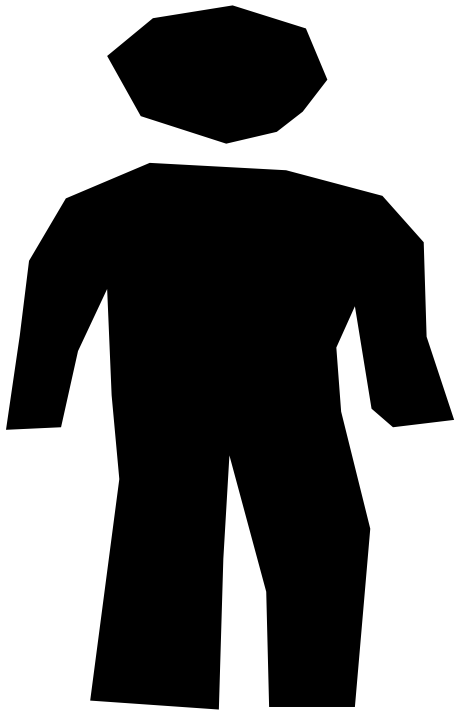
- Still require resources
- Focus of care is comfort
- Psychologically most challenging for healthcare providers

Examples

Patient gurgles but can’t maintain an open airway and Is not breathing

Weak Carotid Pulse

She is unresponsive

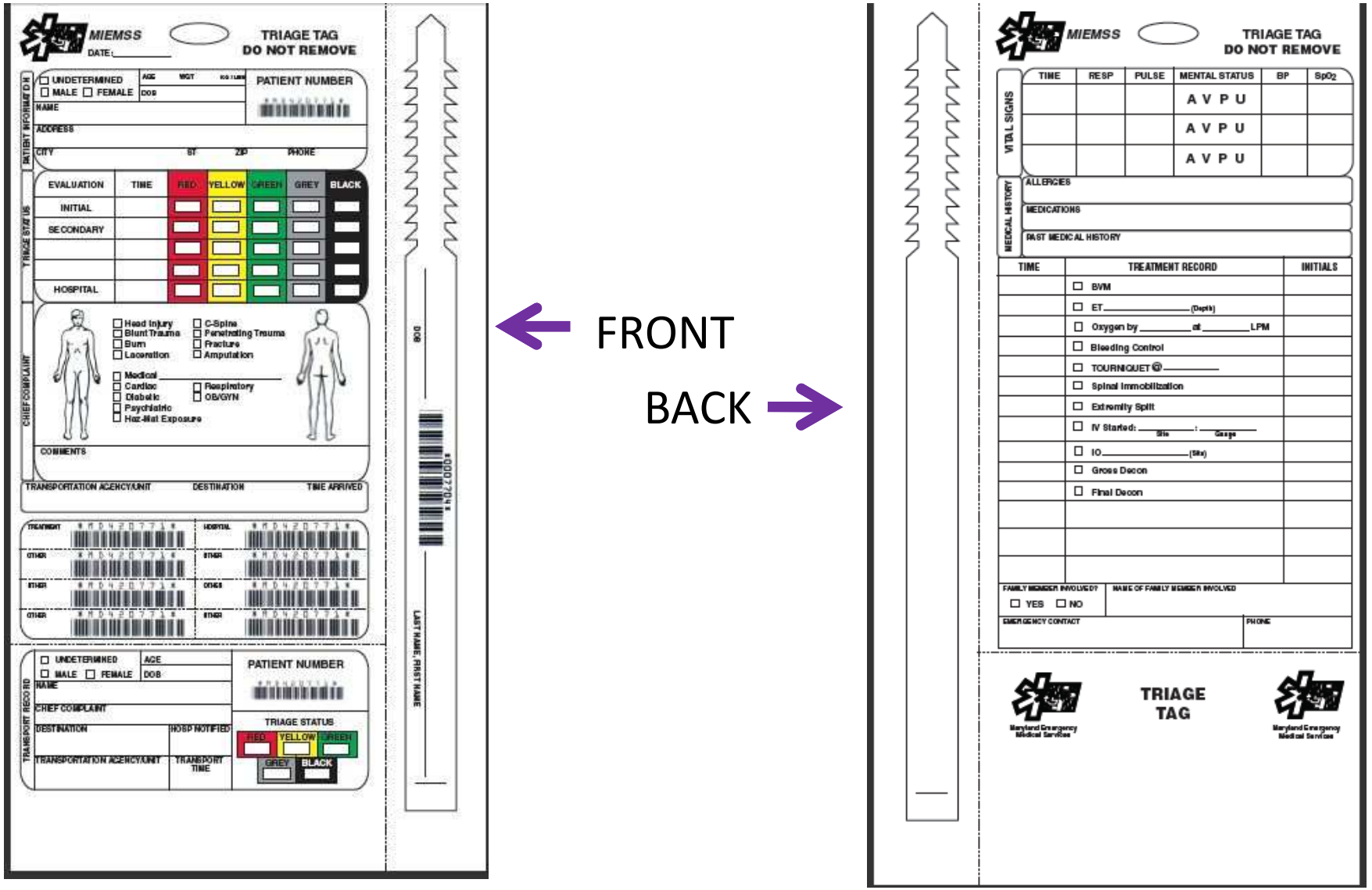


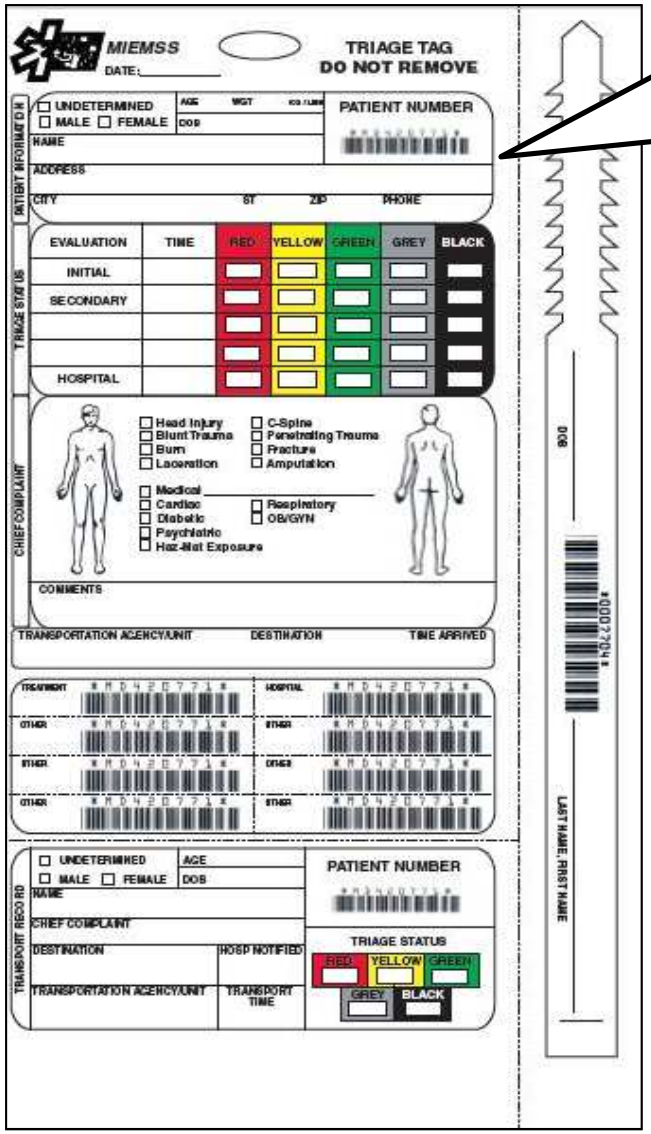
Triage Tag Sections

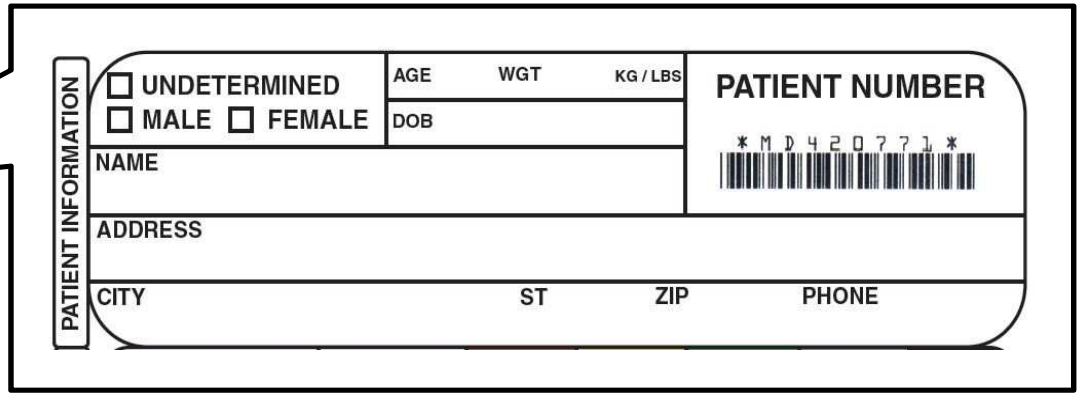
- Patient information
- Triage status
- Chief complaint
- Transporting unit
- Peel-off bar codes
- Transport record
- Vital signs
- Medical history
- Treatment
- Family contact
- Wrist band

*** Triage tags should be used in all MCI scenarios, even when handheld device is employed**

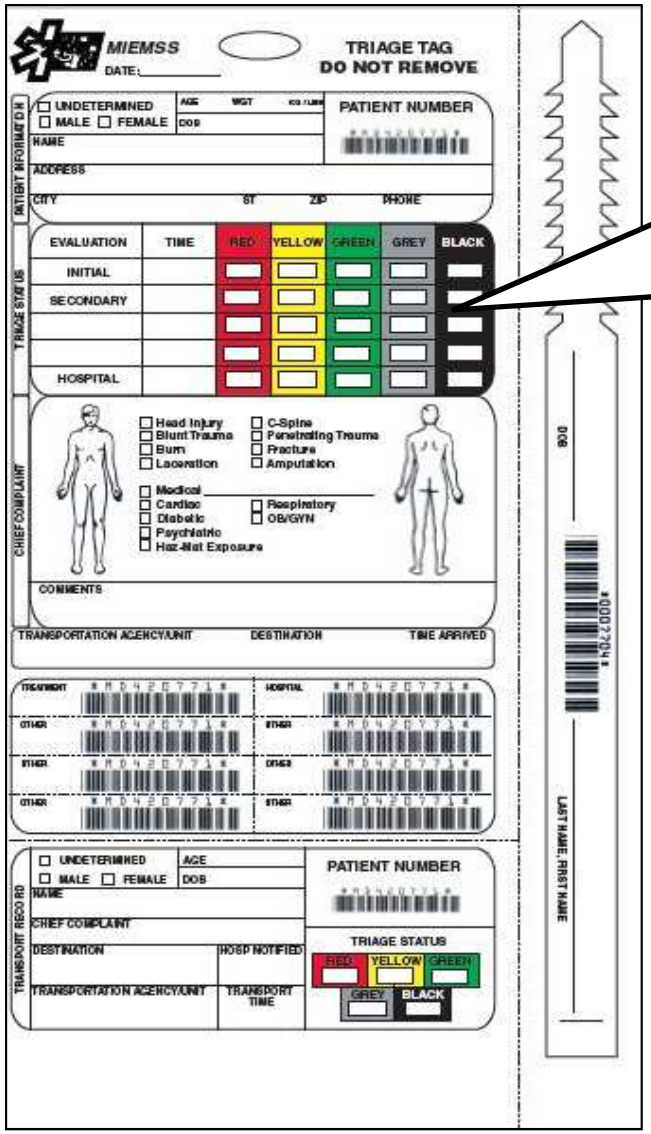
Revised Paper Triage Tag

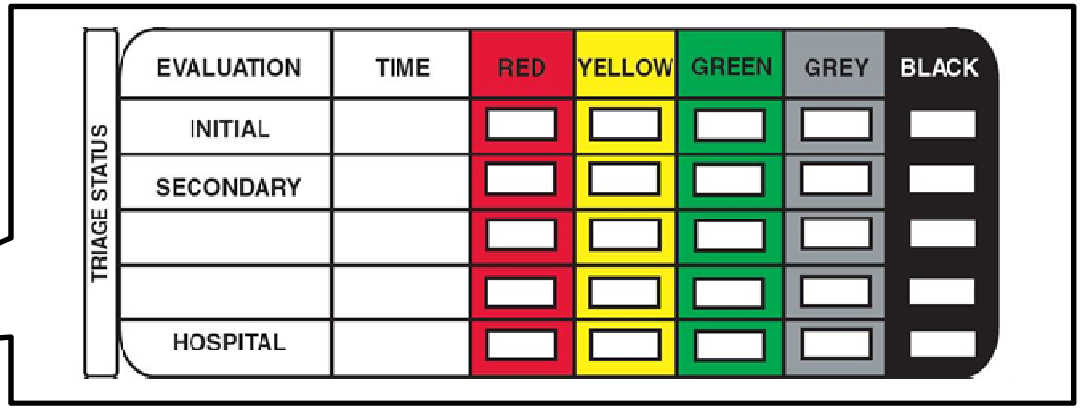






- **PATIENT INFORMATION**
- **Triage status**
- **Chief complaint**
- **Transporting unit**
- **Peel-off bar codes**
- **Transport record**
- **Vital signs**
- **Medical history**
- **Treatment**
- **Family contact**
- **Wrist band**

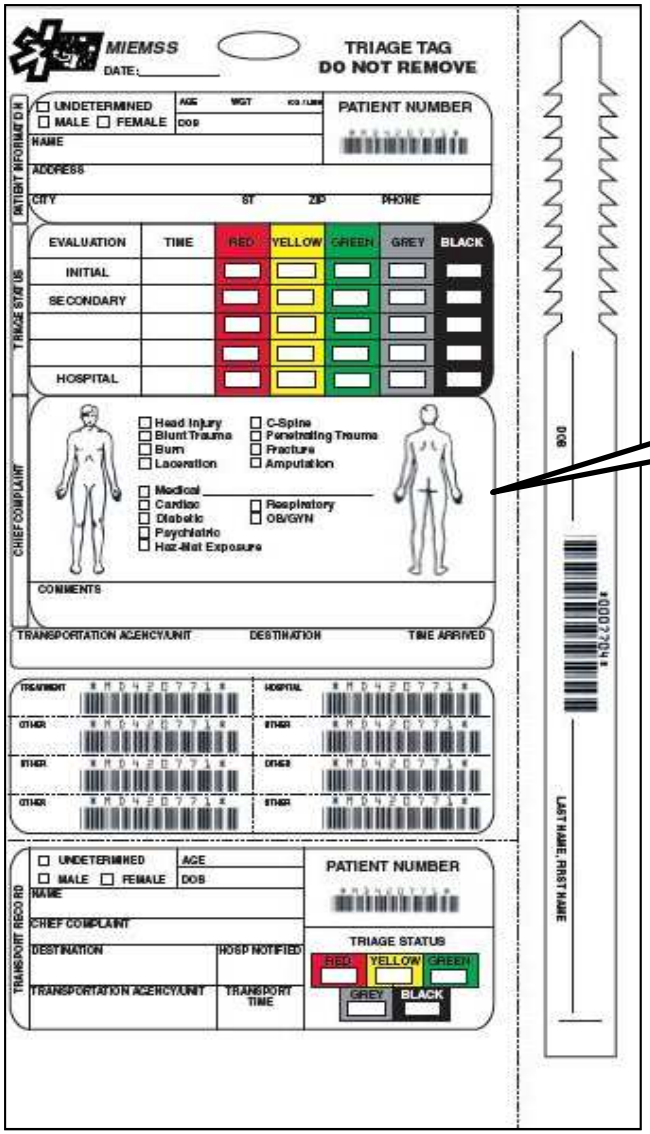


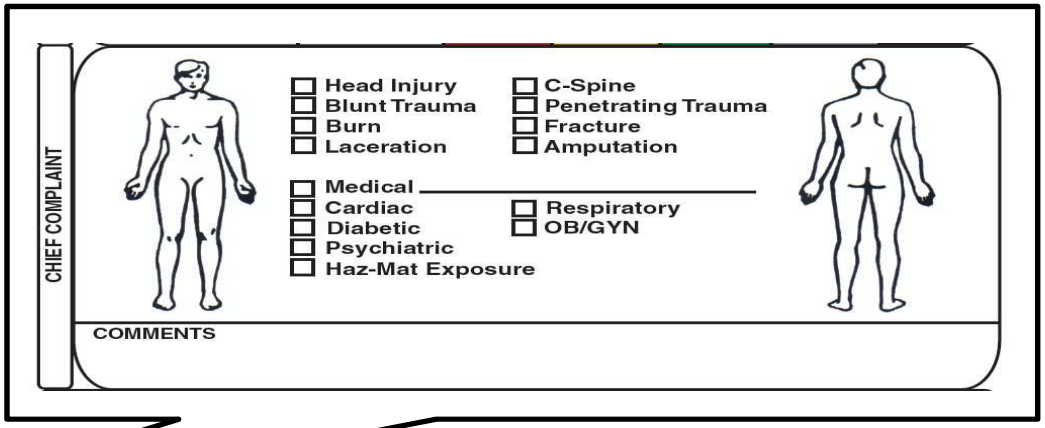


The paper triage tag includes a **GREY** category for ***future use*** based on ***anticipated*** national acceptance.

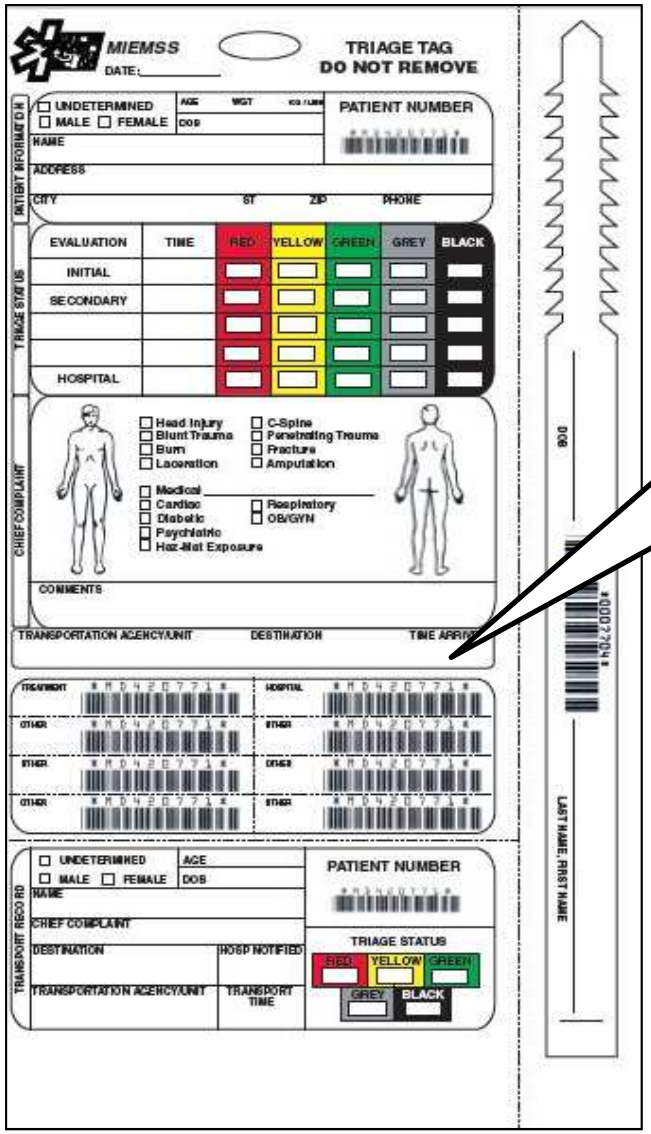
IT WILL NOT BE USED IN THE TRIAGE OF PATIENTS UNTIL APPROVED BY MIEMSS.

- **Patient information**
- **TRIAGE STATUS**
- **Chief complaint**
- **Transporting unit**
- **Peel-off bar codes**
- **Transport record**
- **Vital signs**
- **Medical history**
- **Treatment**
- **Family contact**
- **Wrist band**



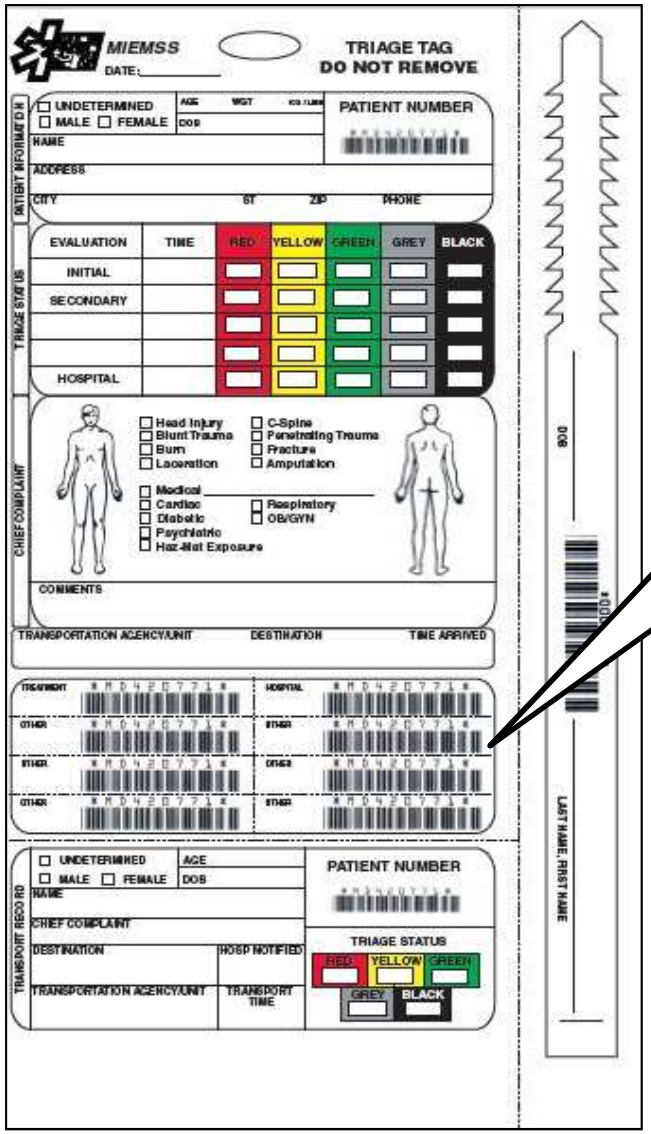


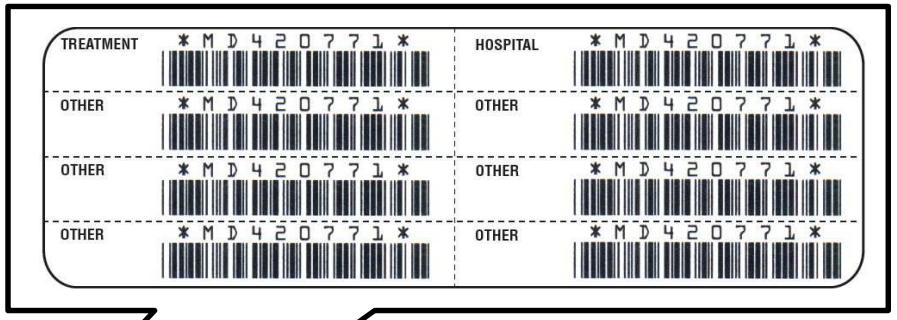
- Patient information
- Triage status
- **CHIEF COMPLAINT**
- Transporting unit
- Peel-off bar codes
- Transport record
- Vital signs
- Medical history
- Treatment
- Family contact
- Wrist band



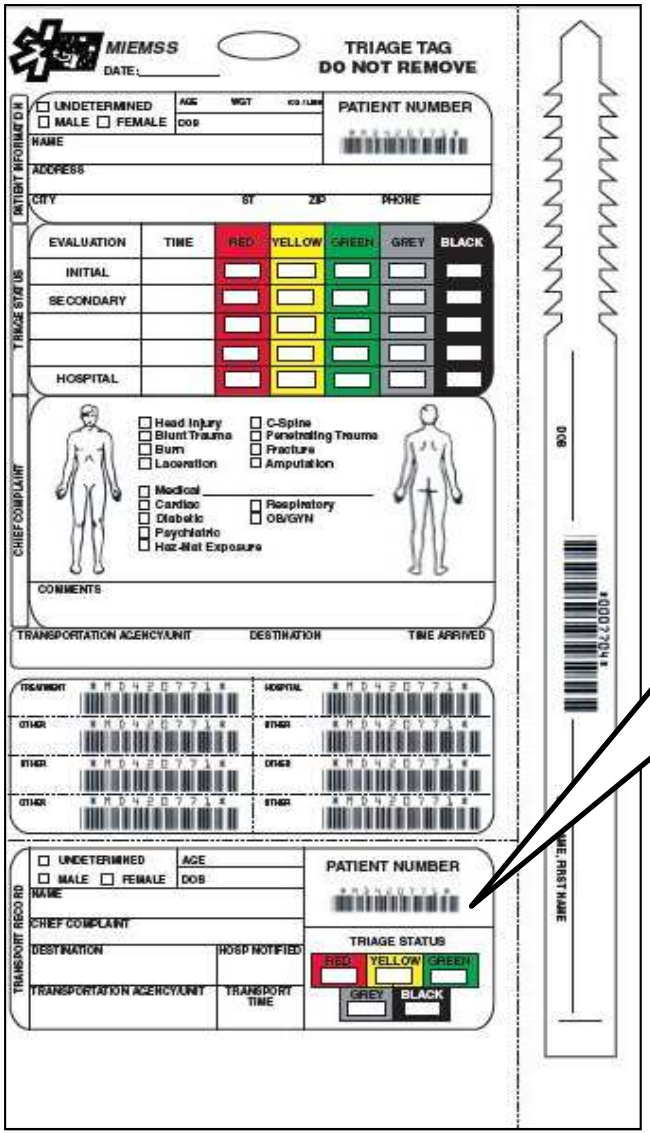
TRANSPORTATION AGENCY/UNIT | DESTINATION | TIME ARRIVED

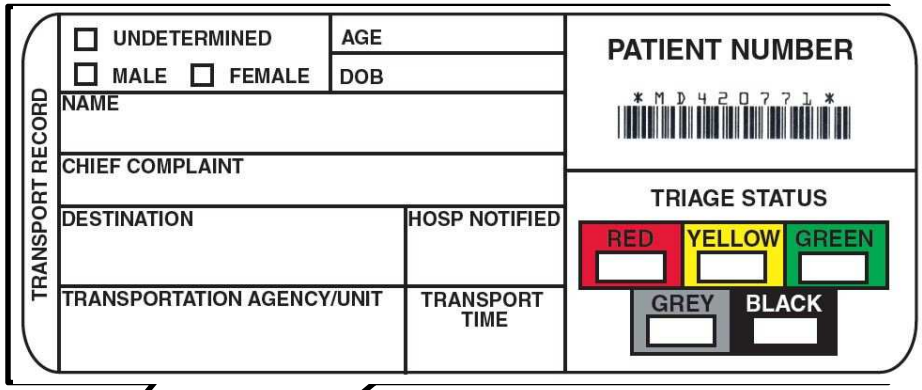
- Patient information
- Triage status
- Chief complaint
- **TRANSPORTING UNIT**
- Peel-off bar codes
- Transport record
- Vital signs
- Medical history
- Treatment
- Family contact
- Wrist band





- Patient information
- Triage status
- Chief complaint
- Transporting unit
- **PEEL-OFF BAR CODES**
- Transport record
- Vital signs
- Medical history
- Treatment
- Family contact
- Wrist band

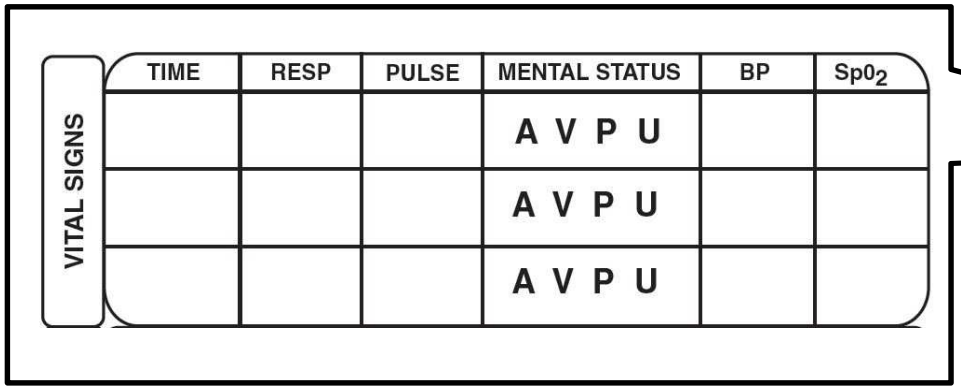


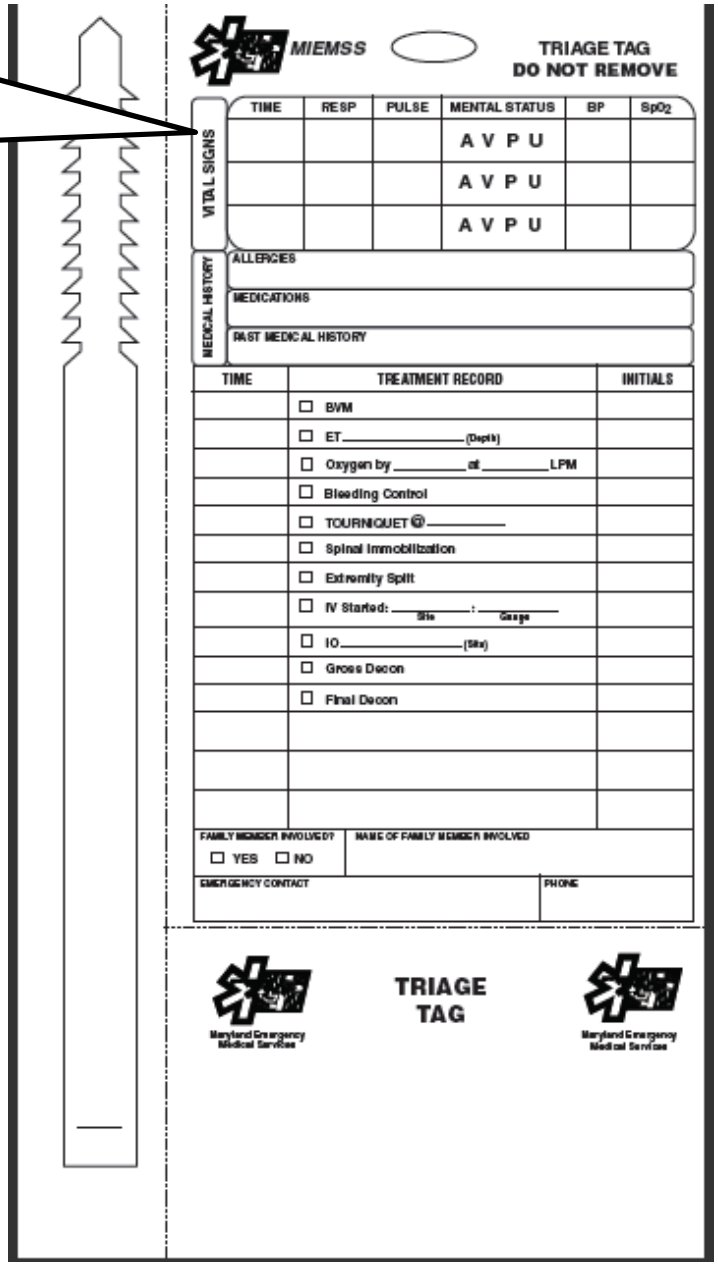


- Detachable as a tear-off and as a peel-off sticky label
- Used to document patient movement
- Must be affixed to Transport Tactical Worksheet with the unit, priority, and destination marked and initialed.

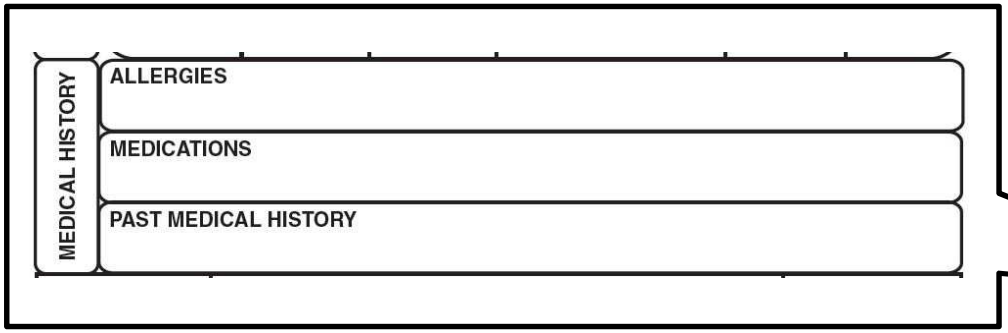
Commonly called the “Ticket”

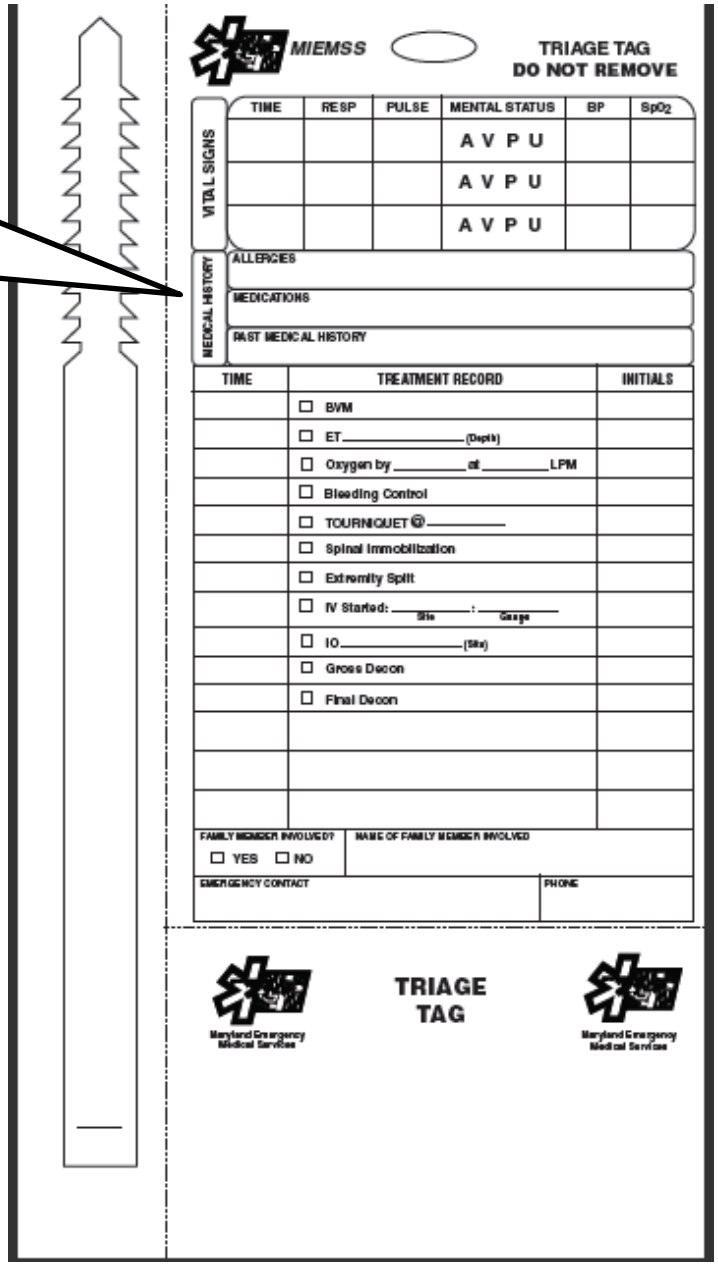
- **Patient information**
- **Triage status**
- **Chief complaint**
- **Transporting unit**
- **Peel-off bar codes**
- **TRANSPORT RECORD**
- **Vital signs**
- **Medical history**
- **Treatment**
- **Family contact**
- **Wrist band**



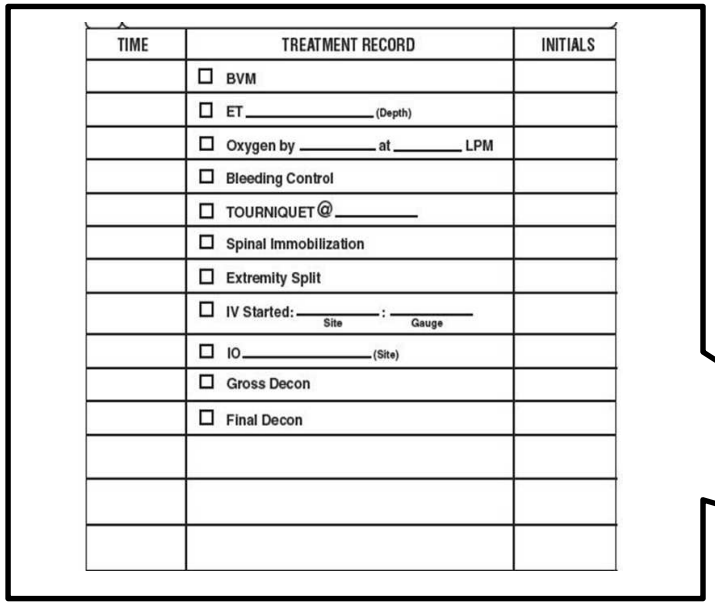


- Patient information
- Triage status
- Chief complaint
- Transporting unit
- Peel-off bar codes
- Transport record
- **VITAL SIGNS**
- Medical history
- Treatment
- Family contact
- Wrist band



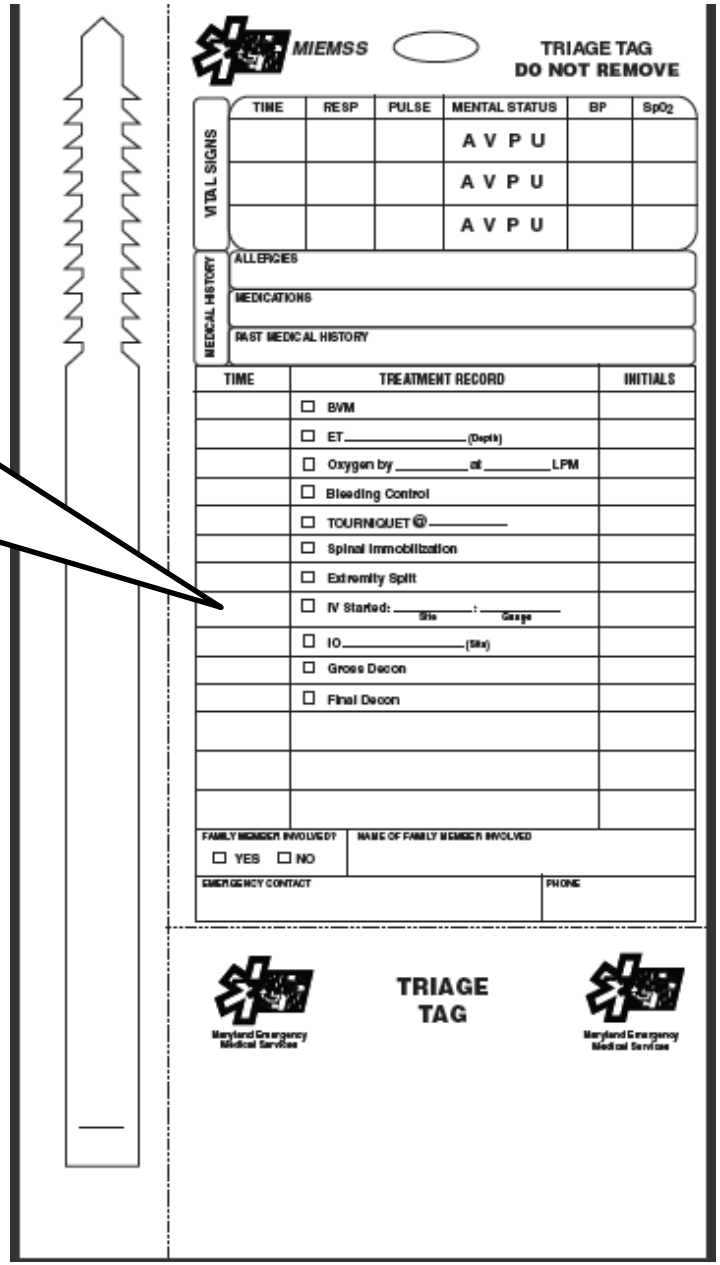


- Patient information
- Triage status
- Chief complaint
- Transporting unit
- Peel-off bar codes
- Transport record
- Vital signs
- **MEDICAL HISTORY**
- Treatment
- Family contact
- Wrist band



TIME	TREATMENT RECORD	INITIALS
	☐ BVM	
	☐ ET _____ (Depth)	
	☐ Oxygen by _____ at _____ LPM	
	☐ Bleeding Control	
	☐ TOURNIQUET @ _____	
	☐ Spinal Immobilization	
	☐ Extremity Splint	
	☐ IV Started: _____ (Site) : _____ (Gauge)	
	☐ IO _____ (Site)	
	☐ Gross Decon	
	☐ Final Decon	

- Patient information
- Triage status
- Chief complaint
- Transporting unit
- Peel-off bar codes
- Transport record
- Vital signs
- Medical history
- **TREATMENT**
- Family contact
- Wrist band



MIEMSS

TRIAGE TAG
DO NOT REMOVE

VITAL SIGNS

TIME	RESP	PULSE	MENTAL STATUS	BP	SpO_2
			A V P U		
			A V P U		
			A V P U		

MEDICAL HISTORY

ALLERGIES

MEDICATIONS

PAST MEDICAL HISTORY

TIME	TREATMENT RECORD	INITIALS
	☐ BVM	
	☐ ET _____ (Depth)	
	☐ Oxygen by _____ at _____ LPM	
	☐ Bleeding Control	
	☐ TOURNIQUET @ _____	
	☐ Spinal Immobilization	
	☐ Extremity Splint	
	☐ IV Started: _____ (Site) : _____ (Gauge)	
	☐ IO _____ (Site)	
	☐ Gross Decon	
	☐ Final Decon	

FAMILY MEMBER INVOLVED? ☐ YES ☐ NO

NAME OF FAMILY MEMBER INVOLVED

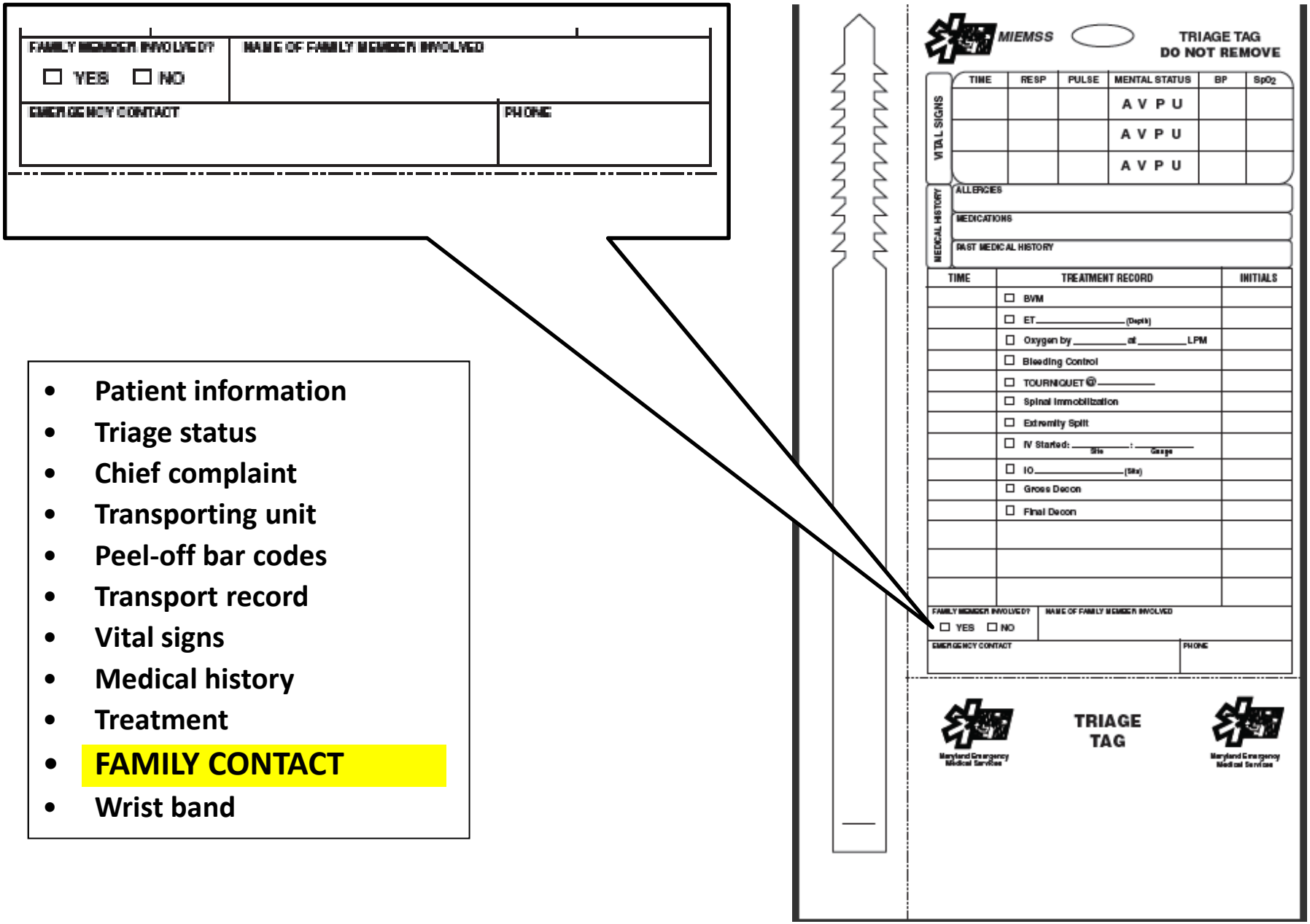
EMERGENCY CONTACT

PHONE

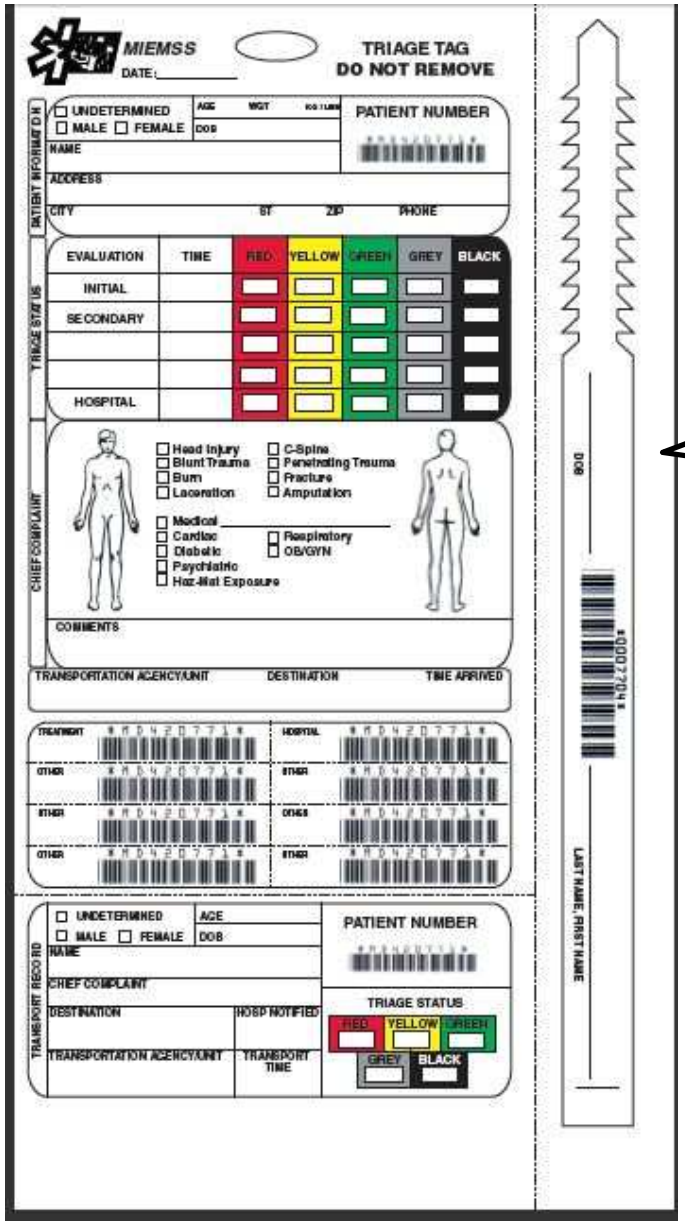
Maryland Emergency Medical Services

TRIAGE TAG

Maryland Emergency Medical Services



- Patient information
- Triage status
- Chief complaint
- Transporting unit
- Peel-off bar codes
- Transport record
- Vital signs
- Medical history
- Treatment
- **FAMILY CONTACT**
- Wrist band



Removable wrist band has been added with an area for DOB and name

- Patient information
- Triage status
- Chief complaint
- Transporting unit
- Peel-off bar codes
- Transport record
- Vital signs
- Medical history
- Treatment
- Family contact
- **WRIST BAND**


Gutsy move
...for a brain!

Secondary Triage

- Generally used when there is an extended duration event
- After initial color coding triage
- Healthcare professionals who respond to the scene or PH/Hospital response teams may be utilized to further determine who gets transported from scene first

Secondary Triage

Glasgow Coma Score

Eye Opening :		
Spontaneous	4	
To Voice	3	
To Pain	2	
None	1	
		+
Verbal Response :		
Orientated	5	
Confused	4	
Inappropriate words	3	
Incomprehensible words	2	
No response	1	
		+
Motor Response :		
Obeys commands	6	
Localises	5	
Pain withdraws	4	
Pain flexion	3	
Pain extension	2	
No response	1	
		=
Glasgow Coma Scale Total :		

Total Glasgow Coma Scale	13 - 15	4	
	9 - 12	3	
	6 - 8	2	
	4 - 5	1	
	3	0	
			+
Respiratory Rate	10 - 29	4	
	30 or more	3	
	6 - 9	2	
	1 - 5	1	
	0	0	
			+
Systolic BP	90 or more	4	
	76 - 89	3	
	50 - 75	2	
	1 - 49	1	
	0	0	
			=
			Total :

12	=	Priority 3
11	=	Priority 2
10 or less		Priority 1

Scenario #1

An explosive device is detonated at a large outdoor sporting event. At least 50 people are confirmed injured. EMS is on scene, but patients begin to arrive at your hospital before EMS.

Triage and “Tag” the following patients.

Patient #1

Apneic

Pulse-less

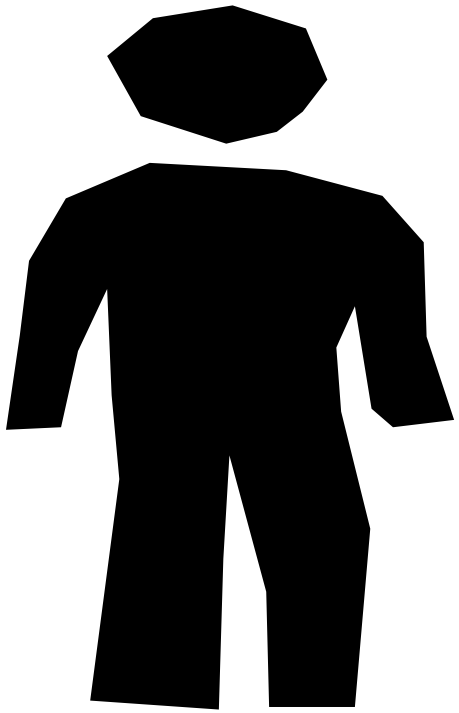
Missing LUE

Patient #1

Apneic

Pulse-less

Missing LUE



Patient #2

Eviscerated bowel

Multiple penetrating wounds to chest & head

Brain matter exposed

Unresponsive to tactile stimuli

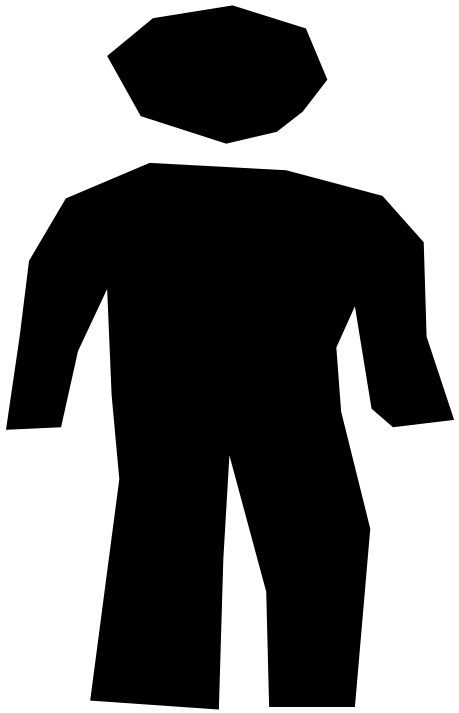
Patient #2

Eviscerated bowel

Multiple penetrating wounds to chest & head

Brain matter exposed

Unresponsive to tactile stimuli



Patient #3

Abd. Tenderness and minor penetrating trauma

Ambulating

A & O x 3

RR 24

Strong radial pulse

Patient #3

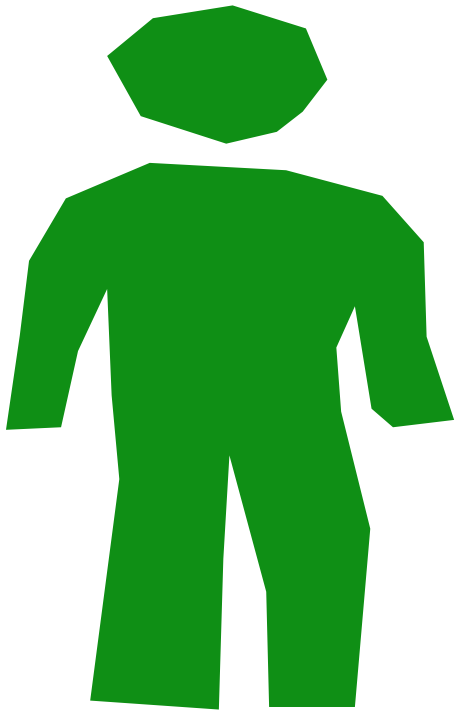
Abd. Tenderness and minor penetrating trauma

Ambulating

A & O x 3

RR 24

Strong radial pulse



Patient #4

Multiple penetrating injuries, blood in ears

Responds only to pain

Airway clear

RR 20

Strong Radial pulse

Patient #4

Multiple penetrating injuries, blood in ears

Responds only to pain

Airway clear

RR 20

Strong Radial pulse

Patient #5

Extremity fractures,
blood in ears

A & O x 3

RR 26

Strong radial pulse

Patient #5

Extremity fractures,
blood in ears

A & O x 3

RR 26

Strong radial pulse

Patient #6

Child, screaming

blood in ears

RR 30

Moving all extremities

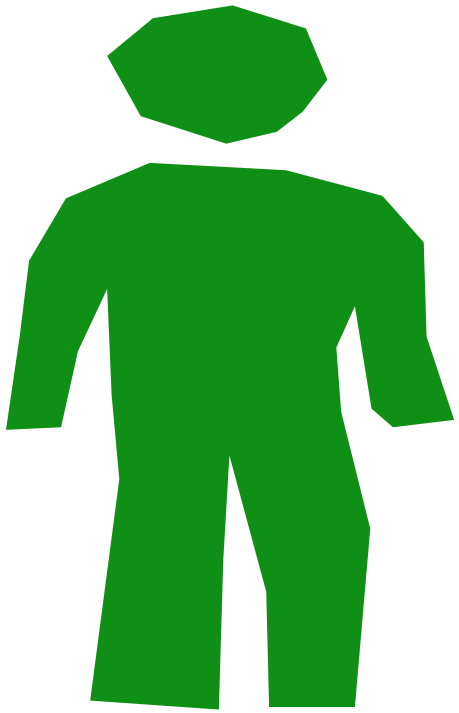
Patient #6

Child, screaming

Minor lacs, blood in ears

RR 30

Moving all extremities



Patient #7

Amputated fingers,
head injury

A & O x 3

Dizzy

RR 24

Smells like beer

Patient #7

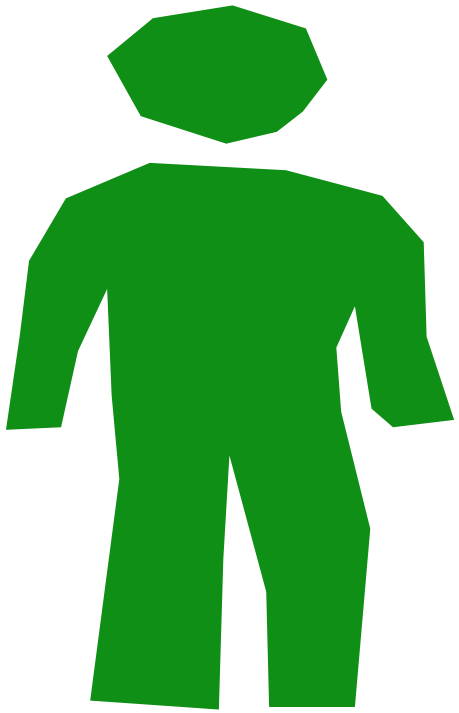
Amputated fingers,
head injury

A & O x 3

Dizzy

RR 24

Smells like beer



Patient #8

Chest pain, SOB

No trauma noted

RR 34

Shallow

Weak radial pulse

Patient #8

Chest pain, SOB

No trauma noted

RR 34

Shallow

Weak radial pulse

Patient #9

Blood in nose, mouth and ears

Not breathing

What would you do?

Patient #9

Blood in nose, mouth and ears

Not breathing

RR 10 with manual opening

Patient #10

Some penetrating trauma

Unresponsive

Apneic

No radial pulse

Carotid 130/min

Patient #10

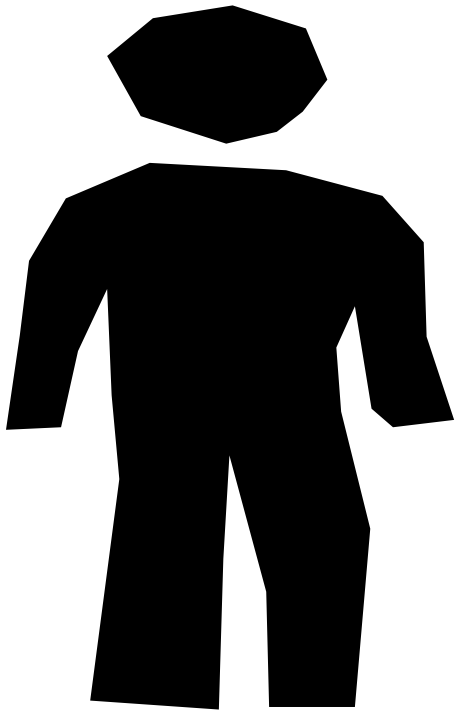
Some penetrating trauma

Unresponsive

Apneic

No radial pulse

Carotid 130/min



Patient #11

Arterial bleed from leg

Responsive to pain

RR 34

No radial pulse

Carotid 130/min

Patient #11

Arterial bleed from leg

Responsive to pain

RR 34

No radial pulse

Carotid 130/min

Patient #12

Child

Crying

Ambulatory

RR 24

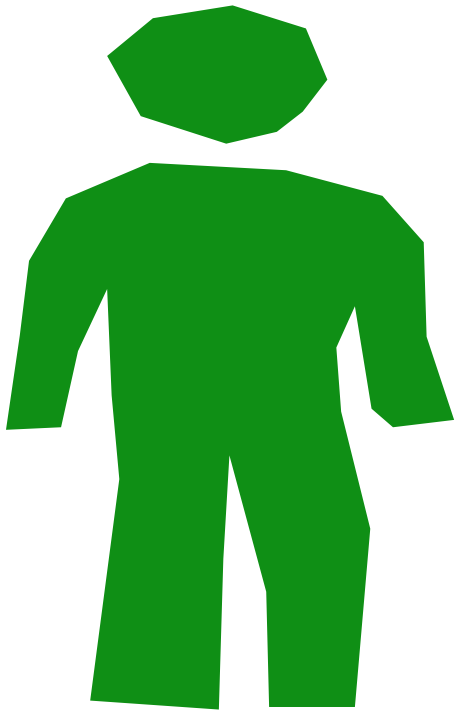
Patient #12

Minor lacs

Crying

Ambulatory

RR 24



Patient #13

Deviate trachea

RR 40

Weak radial pulse

+JVD

Cyanosis

Patient #13

Deviate trachea

RR 40

Weak radial pulse

+JVD

Cyanosis

Patient #14

Open fracture of RUE

Non-ambulatory

A & O x 3

RR 26

Strong radial pulse

Patient #14

Open fracture of RUE

Non-ambulatory

A & O x 3

RR 26

Strong radial pulse

Patient #15

100% TBS burns
(partial and full)

A & O x 2

RR 36

Coughing

Strong radial pulse

Patient #15

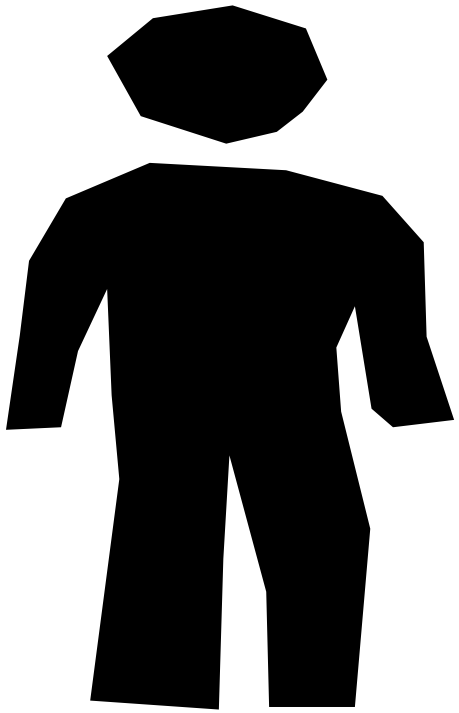
100% TBS burns
(partial and full)

A & O x 2

RR 36

Coughing

Strong radial pulse



Patient #16

CP, SOB

Slurred speech

R sided weakness

A & O x 1

RR 24

Strong radial pulse

Patient #16

CP, SOB

Slurred speech

R sided weakness

A & O x 1

RR 24

Strong radial pulse

Patient #17

Avulsion RUE

Arterial bleed

A & O x 2

RR 30

“I’m thirsty”

Patient #17

Avulsion RUE

Arterial bleed

A & O x 2

RR 30

“I’m thirsty”

Patient #18

Open fractures BLE

Blood in ears

A & O x 3

RR 28

Strong radial pulse

Patient #18

Open fractures BLE

Blood in ears

A & O x 3

RR 28

Strong radial pulse

Patient #19

Hysterical, screaming

Blood in ears

A & O x 3

RR 36

Strong radial pulse

Patient #19

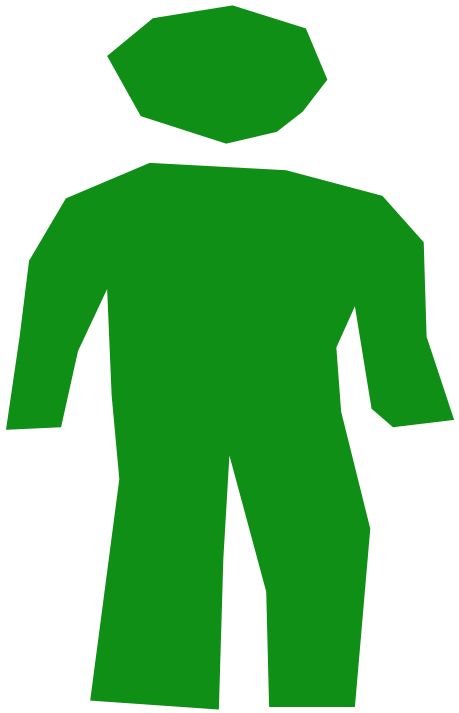
Hysterical, screaming

Blood in ears

A & O x 3

RR 36

Strong radial pulse



Patient #20

Child

Cyanotic

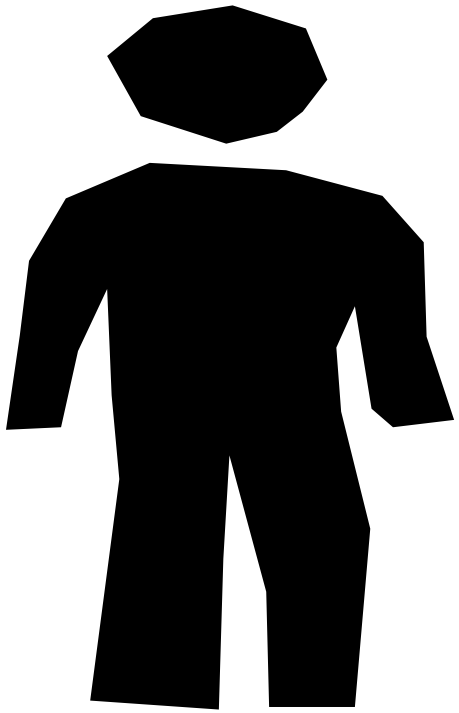
Apneic

Patient #20

Child

Cyanotic

Apneic



Patient Tracking

- Document minimal information depending on your situation
  - **Primary Triage**
    - Very little documentation
  - **Secondary Triage**
    - More information
    - More assessment and treatment will be done
- Smart Tag has a command board to keep track of where the patient went.

Important Info

- Remember that anyone who can walk at the scene will be tagged **GREEN**.

- The patient **could deteriorate** or you may determine a different priority when you re-triage at the scene or the ED.

Morgue – Tagged Black

- Establish an area away from other patients
- It should be a secure area away from on-lookers, media, etc.
- Accessible for you and coroner staff
  - At scene…

In The Treatment Area

- Designate someone to **oversee** the entire treatment area or each color depending on scale of the event
- **Additional treatment** can be provided in this area while awaiting transport
- Secondary triage is **ongoing** – patients can and do deteriorate.

Pediatric Modifications for START = JUMPSTART

- Kids Are A Little Different
  - Expect children to be part of a disaster
  - JumpStart – modified START for kids
  - Designed for children ages 1-8 y/0

Pediatric Modifications - RPMs

- **Respiratory effort** – not breathing
  - Open the airway
  - If the patient starts breathing tag **RED**
  - If apneic and no pulse tag **BLACK**
  - If apneic with pulse try **5 rescue breaths**
  - If still apneic tag **BLACK**
  - If starts breathing tag **RED**
- Respirations < 15 or > 45 tag **RED**
- Respirations 15-45 go to next step (Pulse)

Pediatric START - RPMs

- Pulse
  - No distal pulse – **tag RED**
  - Pulse present go to next step (Mental)
- Mental status – use AVPU
  - Alert, responds to verbal or responds to pain = **tag YELLOW**
  - Inappropriate response, posturing or unresponsive **tag RED**

All Babies **Under 1 Year**
Get Secondary Triage
(Meaning **No Greens!**).

Follow JumpStart to
Determine **Yellow** or **Red**.

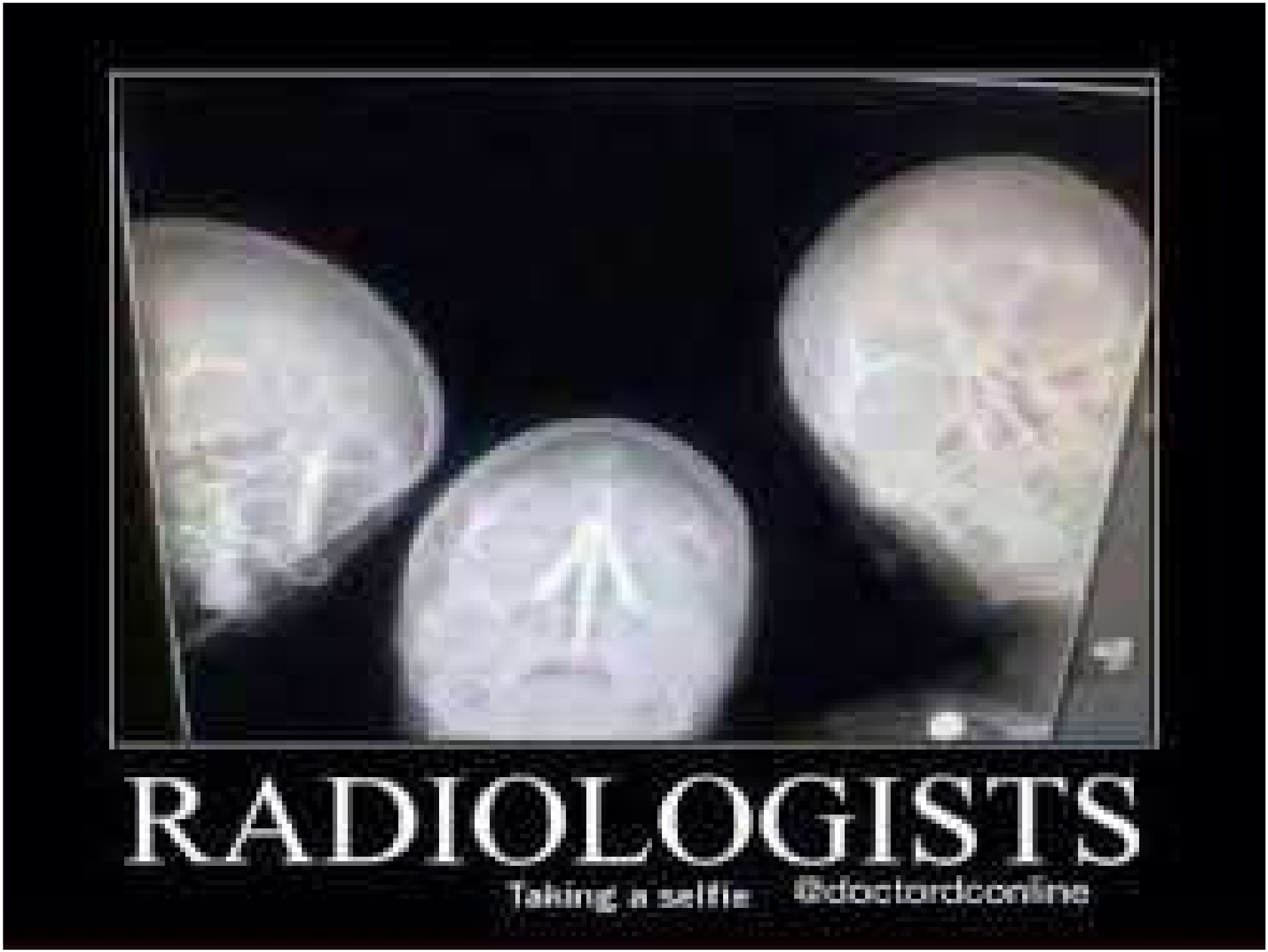
SMART TRIAGE TAG

- A kit versus a group of tags
- Larger, easier to see colors
- Patient condition changes, tag changes
- Larger area for documentation
- Better Patient tracking system
- Decon/Hazmat capabilities

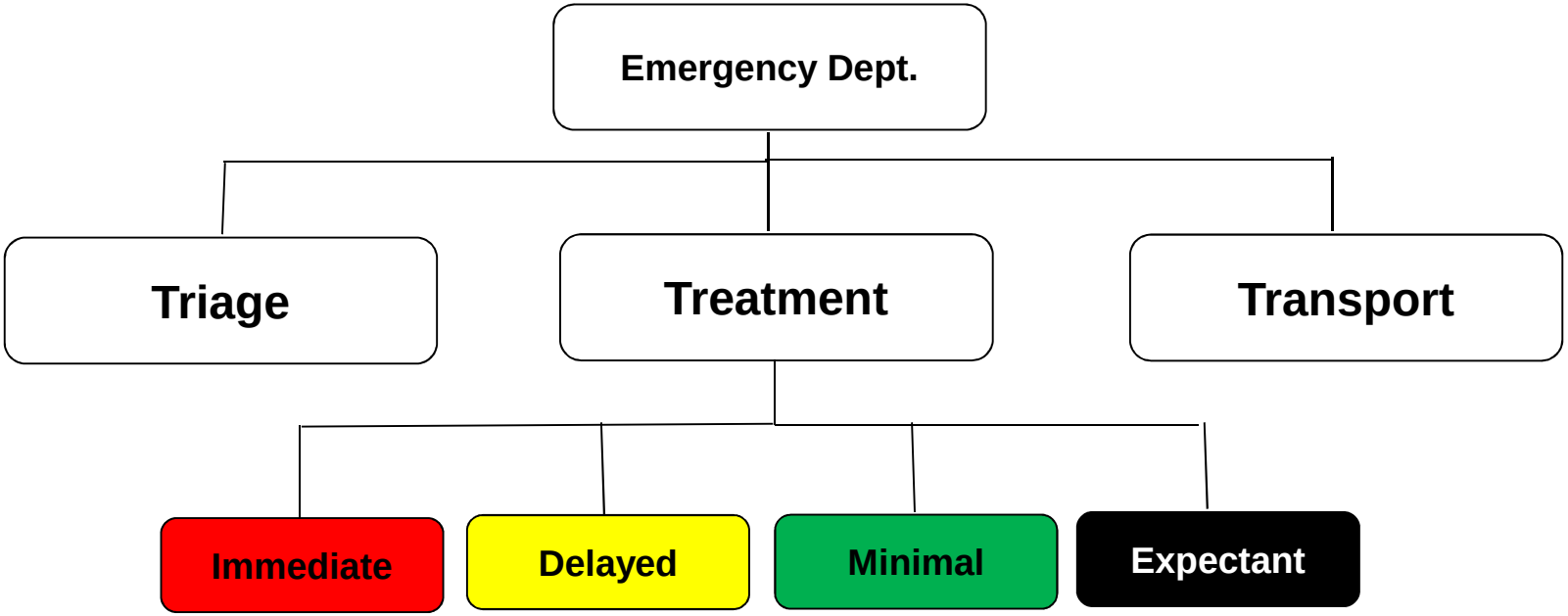
It's a **RED** that is **VERY Critical**

What about HAZMAT

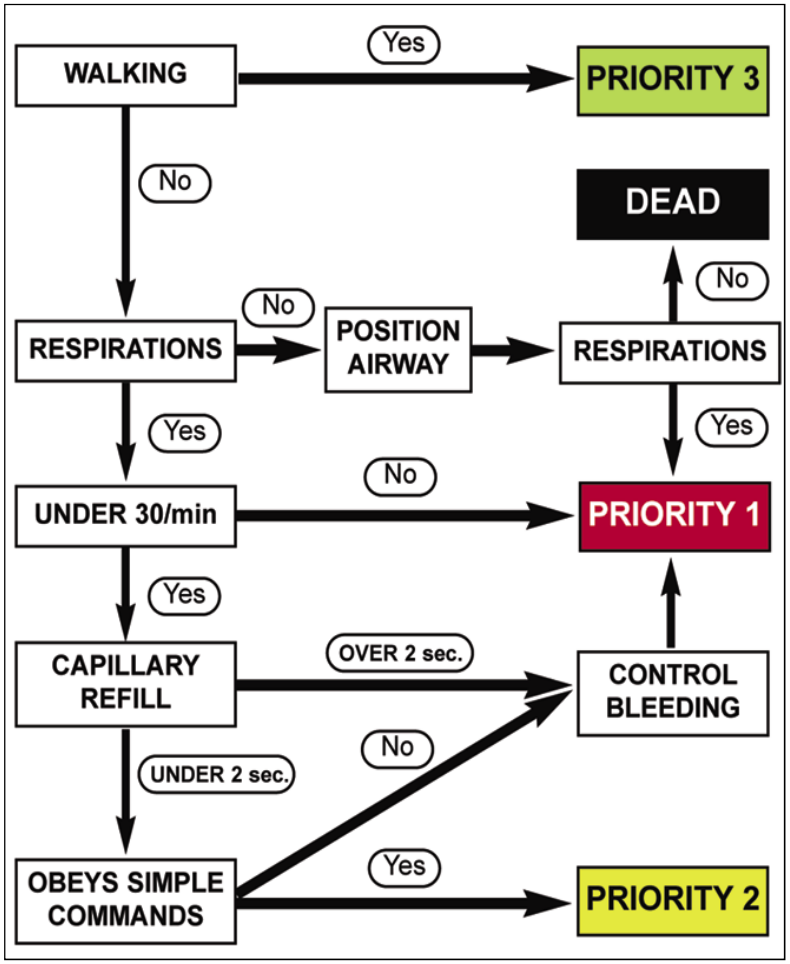

NUCLEAR LUNCH DETECTED


RADIOLOGISTS
Taking a selfie
@doctordconline

Incident Command System



Triage Protocol (START)



The Triage Sieve flow chart on the reverse should only be used for an adult.
For Paediatric Triage (0 to 10 years) use the Smart Paediatric Triage Tape.

Cross the next number in each row as you find a new casualty

PRIORITY 1 IMMEDIATE	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
PRIORITY 2 URGENT	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
PRIORITY 3 DELAYED	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
DEAD	1 2 3 4 5 6 7 8 9 10

Scenario # 1

Explosion at a local factory where it has taken place due to a gas leak. Utility workers have turned off power and gas at this time and the scene is safe. There are 435 workers at the site and many were in the area of the explosion.

Scenario#1

- The following patients (#1 thru #5) are involved in a worksite explosion.
- Looking around, you visualize 40 – 50 workers involved.
- You begin the triage process…

Patient #1

- You are assigned to triage at a factory where an explosion has taken place. According to the START Triage, when you assess pulses, you would check:
  - A) Radial Pulses
  - B) Pedal Pulses
  - C) Femoral Pulses
  - D) Carotid Pulses

Patient #1

- According to the START Triage and PMS criteria, when you assess pulses, you would check:
  - **A) Radial Pulses**
    - *NOTE: Checking peripheral pulses would give you an idea of BP. The presence of a radial pulse would mean a BP systolic BP of 80-90 range*

Patient #2

- You notice this patient is not breathing, you would
  - A) Tag Black and rapidly go to next patient
  - B) Tag Red, hopefully that he will begin to breath shortly,
  - C) Don't waste time with tagging process and proceed to next patient.
  - D) Open the Airway, tag Red if he starts to breath.

Patient #2

- You notice this patient is not breathing, you would
  - **D) Open the Airway, tag Red if he starts to breath.**
    - *NOTE: Start Triage does allow you to open an airway, if he starts to breath, tag red, if not, tag black*

Patient #3

- The next patient is a 50 y/o welder with partial amputation of RLE at the ankle. No radial pulses are noted. RR 28/min.
  - A) **Tag Black**
  - B) **Tag Red**
  - C) **Tag Yellow**
  - D) **Tag Green**

Patient #3

- The next patient is a 50 y/o welder with partial amputation of RLE at the ankle. No radial pulses are noted. RR 28/min.
  - B) **Tag Red**
    - NOTE: Breathing is good, but absent of radial pulse confirms RED

Patient #4

- The next patient is a 36 year old pipe fitter with fracture of humerus. He is in pain, but no other obvious distress or injury noted. He rates pain of 8/10 when prompted. You would anticipate:
  - A) **Tag Black**
  - B) **Tag Red**
  - C) **Tag Yellow**
  - D) **Tag Green**

Patient #4

- The next patient is a 36 year old pipe fitter with fracture of humerus. He is in pain, but no other obvious distress or injury noted. He rates pain of 8/10 when prompted. You would anticipate:
  - D) **Tag Green**
    - NOTE: as long as he can walk, he would be rated a green. If unable for any reason, he would become a YELLOW.

Patient #5

- The next patient is a 42 y/o fabricator with fracture of tib/fib with deformity. He is in severe pain 10/10. RR 34, Radial pulse 120. You would tag:
  - A) **Tag Black**
  - B) **Tag Red**
  - C) **Tag Yellow**
  - D) **Tag Green**

Patient #5

- The next patient is a 42 y/o fabricator with fracture of tib/fib with deformity. He is in severe pain 10/10. RR 24, Radial pulse 120. You would tag:
  - B) **Tag Red**
    - NOTE: RPM, Pulses are present, able to answer questions, but RESP are ok, but unable to walk.

Scenario #2

- The next scenario also involves multiple victims and you will triage 5 patients.
- A tornado hits a small town and a day care with approximately 25 children is involved.
- You serve as the triage officer and use the **JUMPSTART** triage system.

Patient #1

- You first patient is 2 year old who was thrown from the building. He is unresponsive with a hematoma to the forhead. RR 34, Radial pulse 120. You would tag:
  - A) **Tag Black**
  - B) **Tag Red**
  - C) **Tag Yellow**
  - D) **Tag Green**

Patient #1

- You first patient is 2 year old who was thrown from the building. He is unresponsive with a hematoma to the forhead. RR 34, Radial pulse 120. You would tag:
  - B) **Tag Red**

    NOTE: based on RPM, mentation is abnormal

Patient #2

- As you begin to assess a 9 month old, you remember patients less that one year old are not tagged:
  - A) **Black**
  - B) **Red**
  - C) **Yellow**
  - D) **Green**

Patient #2

- As you begin to assess a 9 month old, you remember patients less that one year old are not tagged:
  - D) **Green**
    - NOTE: due to low body mass, injuries are frequent and/or serious. Therefore, we do not use the green tag on infants (<1 y/o)

Patient #3

- You third patient is 2 year old who was trapped under building debris. He is unresponsive, no pulse and not breathing. You would:
  - A) Tag Black
  - B) Preform CPR at 15:2 rate
  - C) Provide 10 rescue breaths
  - D) Provide 5 rescue breaths

Patient #3

- You third patient is 2 year old who was trapped under building debris. He is unresponsive, no pulse and not breathing. You would:
  - D) Provide 5 rescue breaths
    - NOTE: Unlike adults, you may provide rescue breaths to pediatrics in hopes that they begin to breath.

Patient #4

- After 5 rescue breaths, a 4 year old who was trapped under the building debris takes 2 breaths, but quickly becomes apneic and pulseless. You would:
  - A) **TAG Black**
  - B) **Tag Red**
  - C) **Tag Yellow**
  - D) **Again, give 5 rescue breaths**

Patient #4

- After 5 rescue breaths, a 4 year old who was trapped under the building debris takes 2 breaths, but quickly becomes apneic and pulseless. You would:
  - A) **TAG Black**

Patient #5

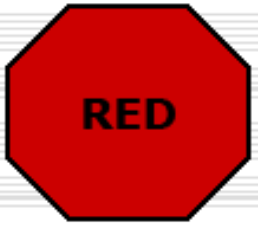
- A 6 y/o was found in a back bedroom. He is semiconscious. RR are 10/min. Pulses are present. According to JumpStart, you would:
  - A) **TAG Black**
  - B) **Tag Red**
  - C) **Tag Yellow**
  - D) **Tag Green**

Patient #5

- A 6 y/o was found in a back bedroom. He is semiconscious. RR are 10/min. Pulses are present. According to JumpStart, you would:
  - B) **Tag Red**
    - Using RPMs, Respirations are too slow. Also, level of consciousness would be a concern.

What's your call?

- A young school aged boy is found lying on the roadway 10 ft from the bus.
- Breathing 10/min
- Good distal pulse
- Groans to painful stimuli
- Would you TAG
  GREEN, **RED**, **YELLOW** or **BLACK**?

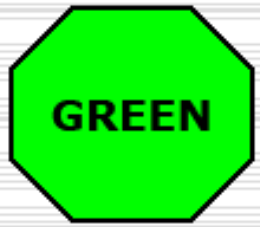


What's your call?

- An adult kneels at the side of the road, shaking his head. He says he's too dizzy to walk.
- RR 20
- CR 2 sec
- Obeys commands
- Would you TAG
  GREEN, **RED**, **YELLOW** or **BLACK**?

What's your call?

- A school aged girl crawls out of the wreckage. She's able to stand and walk toward you crying.
- Jacket and shirt torn
- No obvious bleeding
- Would you TAG
  GREEN, **RED**, **YELLOW** or **BLACK**?



What's your call?

- A toddler lies with his lower body trapped under a seat inside the bus.
- Apneic
- Remains apneic with modified jaw thrust
- No pulse
- Would you TAG **GREEN**, **RED**, **YELLOW** or **BLACK**?

What's your call?

- Adult female driver still in the bus, trapped by her lower legs under caved-in dash.
- RR 24
- Cap refill 4 sec
- Moans with verbal stimulus
- Would you TAG
  GREEN, **RED**, **YELLOW** or **BLACK**?

What's your call?

- A young school aged boy props himself up on the road.
- RR 28
- Good distal pulse
- Answers question and commands.
- Has obvious deformity of both lower legs.
- Would you TAG
  GREEN, **RED**, **YELLOW** or **BLACK**?

What's your call?

- A toddler lies among the wreckage.
- RR 50
- Palpable distal pulse
- Withdraws from painful stimulus
- Would you TAG
  GREEN, **RED**, **YELLOW** or **BLACK**?

Mangled Extremity Severity Score (MESS)

Type	Characteristics	Injury	Points
1	Low energy	stab wound, simple closed fx, small-caliber GSW	1
2	Medium energy	Open/multilevel fx, dislocation, moderate crush	2
3	High energy	shotgun, high-velocity GSW	3
4	Massive crush	Logging, railroad, oil rig accidents	4
Shock Group			
1	Normotensive	BP stable	0
2	Transiently hypotensive	BP unstable in field but responsive to fliud	1
3	Prolonged hypotension	SBP <90mmHg in field and responsive to IV fluids in OR	2
Ischemia Group			
1	None	Pulsatile, no signs of ischemia	1
2	Mild	Diminished pulses without signs of ischemia	2
3	Moderate	No dopplerable pulse, sluggish cap refill, paresthesia, diminished motor activity	3
4	Advanced	Pulseless, cool, paralyzed, numb without cap refill	4
Age Group			
1	<30y/o		0
2	>30 <50		1

MESS score: six or less consistent with a salvageable limb. Seven or greater amputation generally the eventual result.

SAVE Triage Guidelines

- Crush Injury to Lower Extremity
  - Patients are assessed using the MESS score
  - Score of 7 or more: amputate
  - Score less than 7: attempt limb salvage

SAVE Triage Guidelines

- Head Injury (adults)
  - Use the Glascow Coma Score (GCS)
  - Score 8 or above: treat
    - Better than 50% chance of a normal or good neurologic recovery
  - Score 7 or less: comfort care only

SAVE Triage Guidelines

- Burn Injury: less than 50% chance of survival
  - 70% TBSA burn
  - Age > 60 with inhalational injury
  - Age < 2 with 50% TBSA burn
  - Age > 60 with 35% TBSA burn
- Comfort care only

SAVE Triage Guidelines

- Abdominal Injury
  - No data to guide evaluation
  - 4 ml/kg hypertonic saline X 2
  - If no response, comfort care only
  - Role of handheld ultrasound?

"Trust your instincts not the paramedics!"


TRUST ME, I'M A
DOCTOR

Time-2-Treatment

ATS category	Treatment acuity (maximum waiting time)	Performance indicator (%)
1	Immediate	100
2	10 minutes	80
3	30 minutes	75
4	60 minutes	70
5	120 minutes	70

Physiological Predictors

	Category 1 Immediate	Category 2 10 minutes	Category 3 30 minutes	Category 4 60 minutes	Category 5 120 minutes
Airway	Obstructed/ partially obstructed	Patent	Patent	Patent	Patent
Breathing	Severe respiratory distress/absent respiration/ hypoventilation	Moderate respiratory distress	Mild respiratory distress	No respiratory distress	No respiratory distress
Circulation	Severe haemodynamic compromise/ absent circulation Uncontrolled haemorrhage	Moderate haemodynamic compromise	Mild haemodynamic compromise	No haemodynamic compromise	No haemodynamic compromise
Disability	GCS <9	GCS 9–12	GCS >12	Normal GCS	Normal GCS

Risk factors for serious illness/injury – age, high risk history, high risk mechanism of injury, cardiac risk factors, effects of drugs or alcohol, rash and alterations in body temperature – should be considered in the light of history of events and physiological data. Multiple risk factors = increased risk of serious injury/illness. Presence of one or more risk factors may result in allocation to a triage category of higher acuity.

Predictors of Bad Outcomes!

- Physiological abnormalities
- Failure to recognise & treat
- Age >65

SEPSIS

Assessment @ Triage

Its all about:

- Airway
- Breathing
- Circulation
- Disability
- Exposure/Environment

Airway

Always check patency

– Consider C-Spine precautions

- Occluded or compromised airway

=

ATS 1

Breathing

Assessment includes:

- Resp Rate
- Work of Breathing

- Detecting hypoxia is paramount!

Circulation

Assessment includes:

- Heart rate
- Pulse & pulse characteristics
- Cap refill

- Signs of haemodynamic compromise

=

ATS 1 or 2

Disability

Assessment includes:

– Use AVPU or GCS

- Signs of altered level of consciousness

=

Important indicator of serious injury/illness

Environment

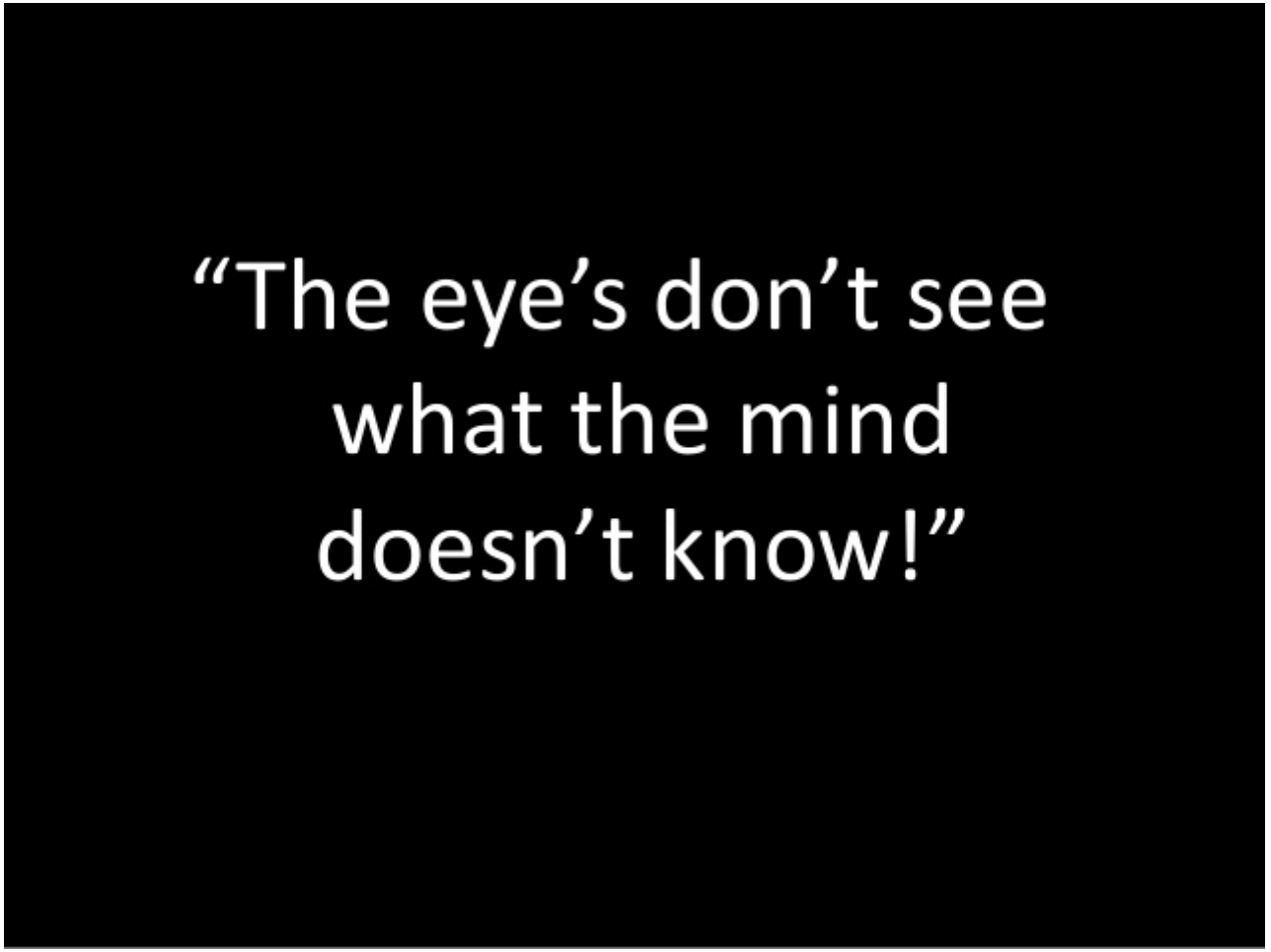
Assessment Includes:

– Assess Temperature

- Hypo/hyperthermia are important indicators of serious illness!

PAIN

Descriptor	ATS category
Very severe	2
Moderately severe	3
Moderate	4
Minimal	5


“The eye’s don’t see
what the mind
doesn’t know!”

The Eyes

Category 1 Immediate	Category 2 10 minutes	Category 3 30 minutes	Category 4 60 minutes	Category 5 120 minutes
	• Penetrating eye injury • Chemical injury • Sudden loss of vision with or without injury • Sudden onset severe eye pain	• Sudden abnormal vision with or without injury • Moderate eye pain, e.g. – blunt eye injury – flash burns – foreign body	• Normal vision • Mild eye pain, e.g. – blunt eye injury – flash burns – foreign body	• Normal vision • No eye pain

Extremes of Age

- Be aware:

- Physiological differences, limited reserves

High Risk Features

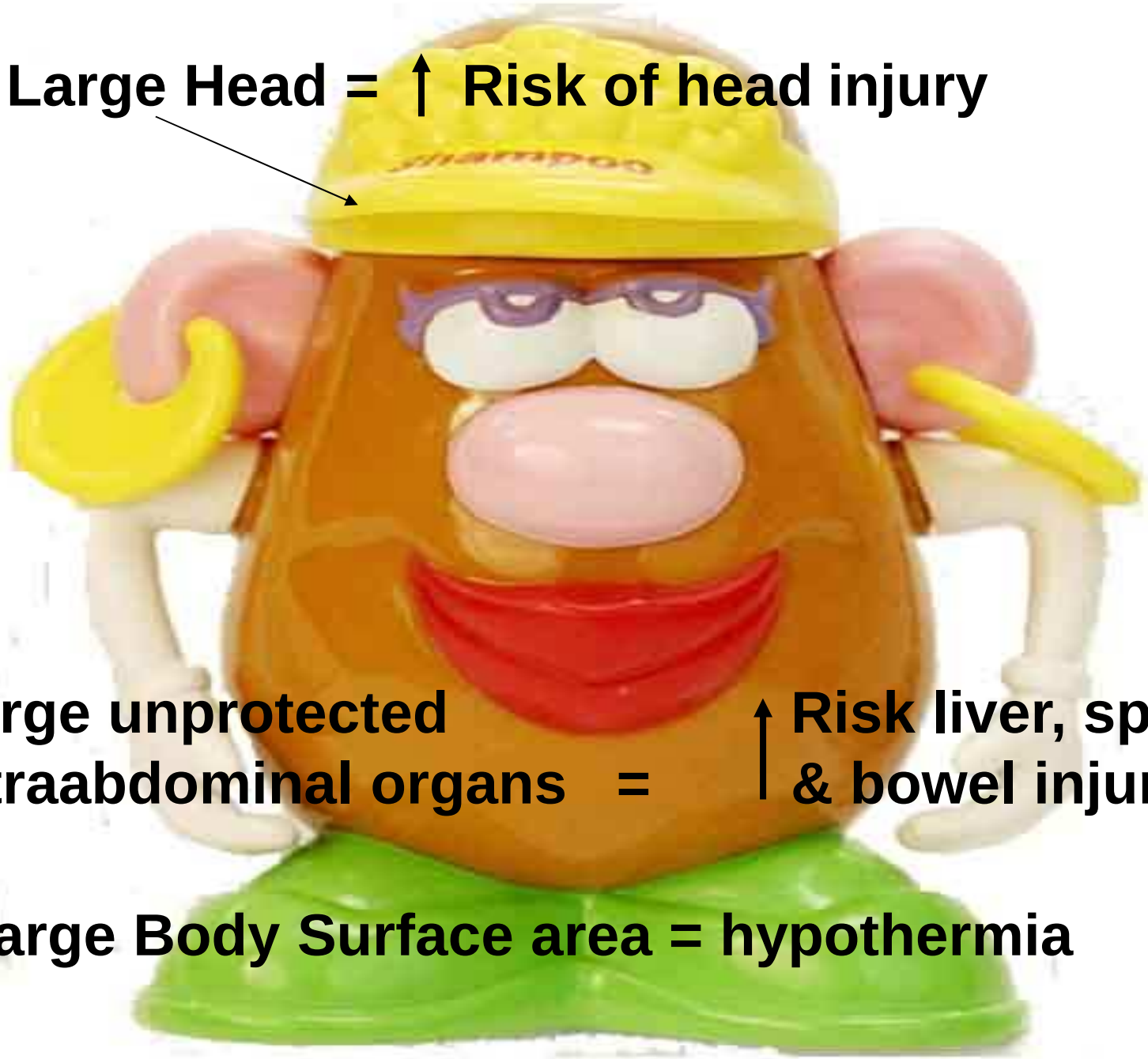
- Chronic Illness
- Cognitive impairment
- Co-morbidities
- Poisonings
- Severe pain

- Use caution allocate higher ATS

Contaminated Patients

- **Patients with exposure (potential or real) to contaminants should be tagged as BLUE**
- **This category will continue to stay until patient is adequately decontaminated then follow START as usual**
- **Some recommend a “double tagging” with blue and the standard START color**


HAZMAT
DECON


Large Head = ↑ Risk of head injury
Large unprotected intraabdominal organs =
↑ Risk liver, spleen & bowel injury
Large Body Surface area = hypothermia