Community Emergency Response Team

Contra Costa CERT Coalition

Disaster Medical Operations Part I

Released: 18 July 2026 **Contra Costa CERT Coalition**

0

Community Emergency Response Team

- Personal safety is ALWAYS the number one priority
- Show up prepared
  - Wear appropriate clothing and footwear, have WATER
  - Wear PPE – your personal protective equipment …gloves, helmet, goggles, mask, boots, etc.
  - Have at least one communications device: cell, radio, etc.
- Work as a team
- Size-up - maintain situational awareness
- The CERT goal is to do the **Greatest Good for the Greatest Number**
- *Hope for the best but plan for the worst!*

Visual DMO1.1 **Contra Costa CERT Coalition** 66

1

Unit Objectives

- Identify "**Three Killers**" **ABC**
- Apply techniques for
  - Opening **Airways**
  - Controlling **Bleeding**
  - Treating (**C**irculatory) **Shock**
- Conduct triage under simulated emergency conditions



"Logic clearly dictates that the needs of the many outweigh the needs of the few."
Spock in *The Wrath of Khan* (1982)

Visual DMO1.2 **Contra Costa CERT Coalition** 66

2

Death from Trauma

- Overwhelming and irreversible damage to vital organs, death within minutes
- Excessive bleeding, death within seconds or minutes
- Infection or multiple organ failure, death in several days or weeks

40% could be saved!

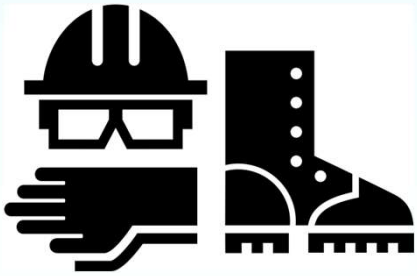
90% of disaster survivors are rescued by other survivors!

Visual DMO1.3 **Contra Costa CERT Coalition** 66

3

PPE – Personal Protective Equipment

- Helmet
- Goggles
- N95 mask
- Work gloves
- Sturdy shoes or boots
- Non-latex exam gloves

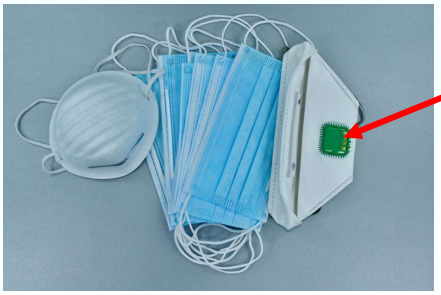




Visual DMO1.4 **Contra Costa CERT Coalition** 66

4

PPE – Types of Masks



VENT

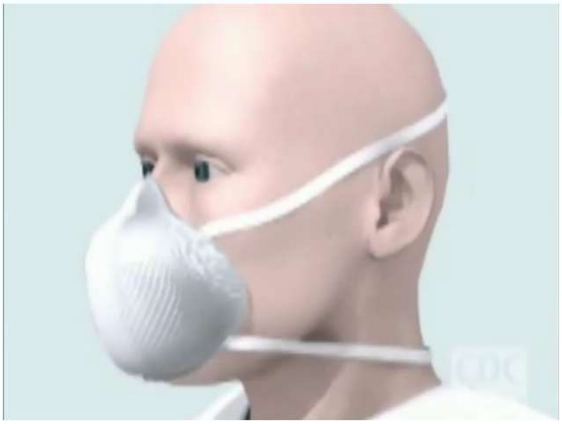


Visual DMO1.5 **Contra Costa CERT Coalition** 66

5

PPE – N95 mask

- How to put on / take off an N95 mask



Visual DMO1.6 **Contra Costa CERT Coalition** 66

6

Demo & Practice - PPE – Gloves

- How to put on / take off surgical gloves
- Practice !
- New gloves for every patient – if you can
- Wash or sanitize hands after removing gloves



https://www.youtube.com/watch?v=xTYioOo__6U

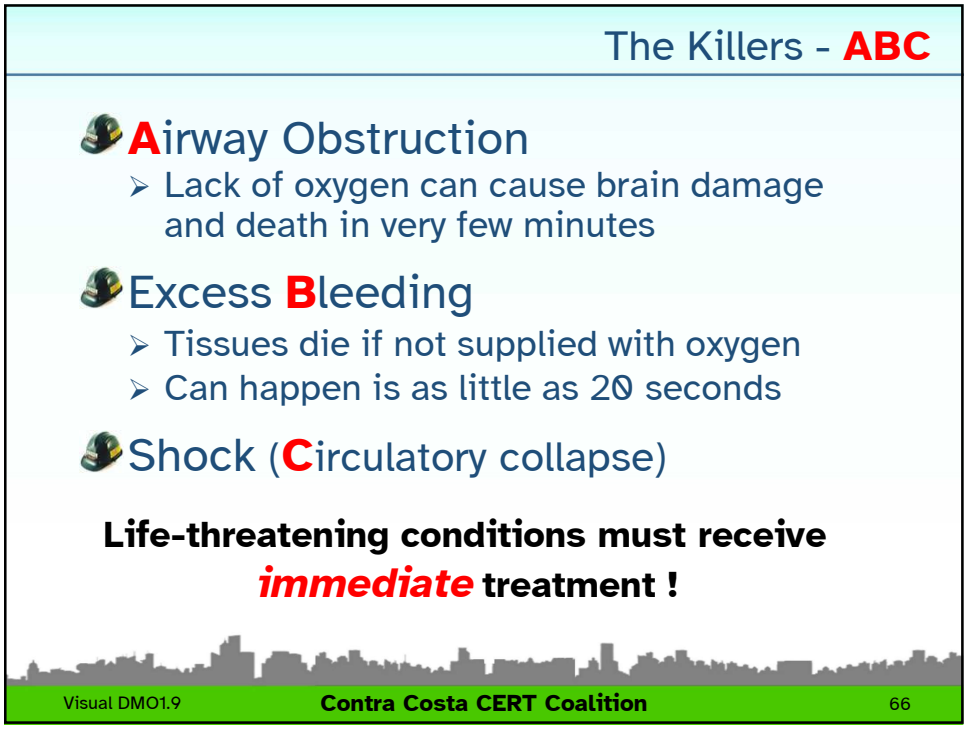


Visual DMO1.7 **Contra Costa CERT Coalition** 66

7


PPE – Personal Protective Equipment
IF IT'S WET or STICKY and NOT YOURS
DON'T TOUCH IT!
Visual DMO1.8
Contra Costa CERT Coalition
66

8


The Killers - ABC
Airway Obstruction
Lack of oxygen can cause brain damage and death in very few minutes
Excess Bleeding
Tissues die if not supplied with oxygen
Can happen is as little as 20 seconds
Shock (Circulatory collapse)
Life-threatening conditions must receive immediate treatment !
Visual DMO1.9
Contra Costa CERT Coalition
66

9

How to Approach a Patient

- Size-up: Check the scene for safety
- Be sure patient can see you
- Identify yourself
  - Your name, organization and training
- Request permission to evaluate and treat

"I am _____, from _____. I have first aid training. May I help you?"



- Respect cultural differences
- Protect patient privacy

Visual DMO1.10 **Contra Costa CERT Coalition** 66

10

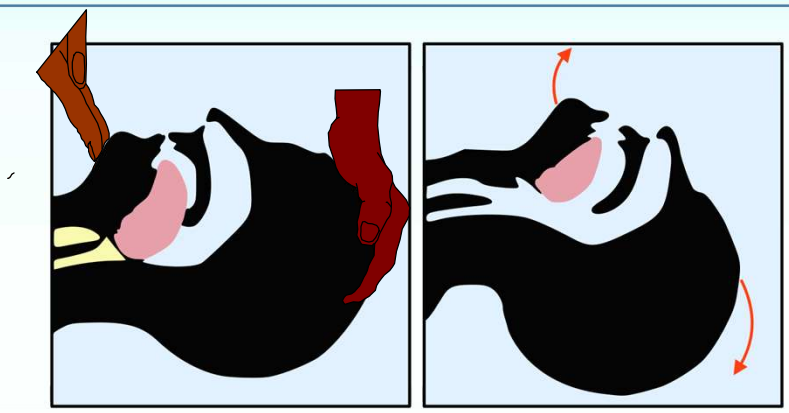
Unconscious Patient

- You have *implied consent* to treat
- Tap and shout
- Check for breathing. Ear over patient's mouth while looking at the chest
  - Look – for chest rise
  - Listen – for air exchange
  - Feel – abdominal movement
- Evaluate and if necessary, open airway and repeat **once** more

Visual DMO1.11 **Contra Costa CERT Coalition** 66

11

Opening the Airway

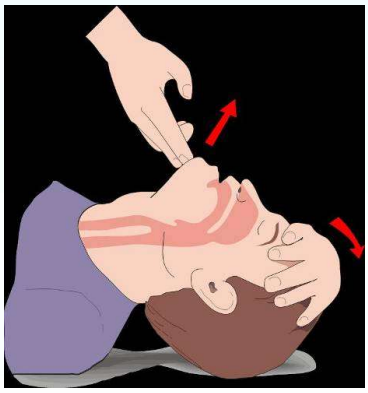


Palm on forehead, 2 fingers under chin and pull the jaw upward while tilting the head backwards slightly

Visual DMO1.12 **Contra Costa CERT Coalition** 66

12

Let's Practice!

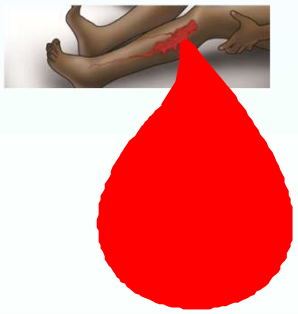


Head Tilt / Chin Lift

Visual DMO1.13 **Contra Costa CERT Coalition** 66

13

Bleeding

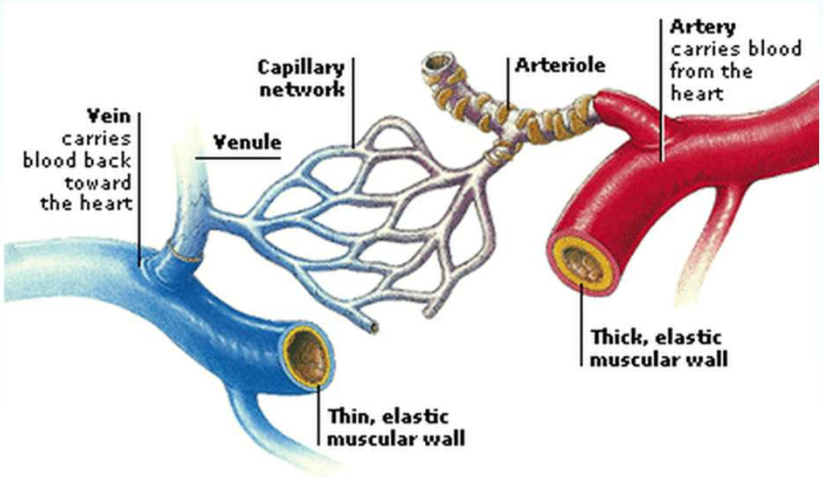


- Arterial … spurting
- Venous … flowing
- Capillary … oozing

Losing one liter can be life-threatening

14

Blood Flow



15

Life-Threatening Bleeding

- Spurting
- Pooling
- Soaking through clothes or bandages
- Amputation

Visual DMO1.16 **Contra Costa CERT Coalition** 66

16

Bleeding Control – Direct Pressure

- Wear PPE (gloves, goggles, mask)
- Locate the bleeding source
- Apply firm pressure directly to the source until the bleeding stops
- Bulky layers between the bleeding source and your hands decrease effectiveness of pressure



Visual DMO1.17 **Contra Costa CERT Coalition** 66

17

Bleeding Control – Tourniquet

- Tourniquets can stop life-threatening bleeding from limb injury
- Their use remains a subject of debate. Tourniquets stop all blood flow so all tissue below the tourniquet will die if patient doesn't get advanced care
- Tourniquets have low incidence of adverse events provided that patient receives prompt advanced care
- Tourniquets are now recommended for **uncontrollable life-threatening** limb bleeding. Better to lose a limb than a life
- Tourniquet training will be in Disaster Medical Operations - Part 2

Visual DMO1.18 **Contra Costa CERT Coalition** 66

18

Shock

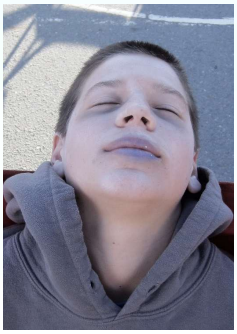
- Result of ineffective circulation of blood
  - Sufficient oxygen not delivered to cells
- Remaining in shock will lead to death of:
  - Cells
  - Tissues
  - Entire organs
  - Patient
- Types of shock
  - Hypovolemic shock – blood loss
  - Cardiogenic shock – heart not pumping
  - Septic shock – infection in bloodstream

Visual DMO1.19 **Contra Costa CERT Coalition** 66

19

Signs of Shock

- Confused or unconscious
- Weak, dizzy, restless or irritable
- Weak, rapid pulse
- Shallow, rapid breathing
- Pale, cool, moist skin
- Blue lips or fingernails
- Nausea and vomiting



Treat any unconscious victims for SHOCK

Visual DMO1.20 **Contra Costa CERT Coalition** 66

20

Shock Treatment

- Control major bleeding
- Place in Recovery Position
- Maintain body temperature
  - Replace wet clothing with dry layers
  - Place something between survivor and ground
  - Shield from elements
- Loosen restrictive clothing



Left Lateral Recovery Position

Visual DMO1.21 **Contra Costa CERT Coalition** 66

21

Recovery Position

- Airway better defended in the "recovery position"
- Two rescuers if possible
- Minimize movement of severely injured patients
- Place pregnant women left side down if possible
- Check for breathing before moving on

Visual DMO1.22 **Contra Costa CERT Coalition** 66

22

Recovery Position Demo





Visual DMO1.23 **Contra Costa CERT Coalition** 66

23

Break

Let's take a 5 minute break



Visual DMO1.24 **Contra Costa CERT Coalition** 66

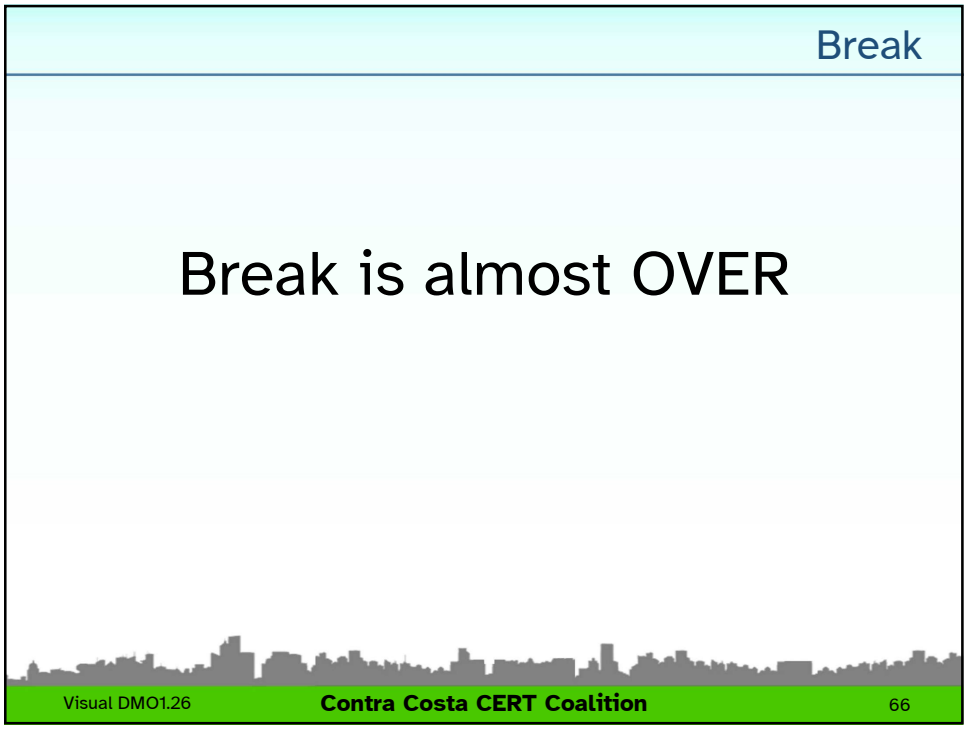
24

Break

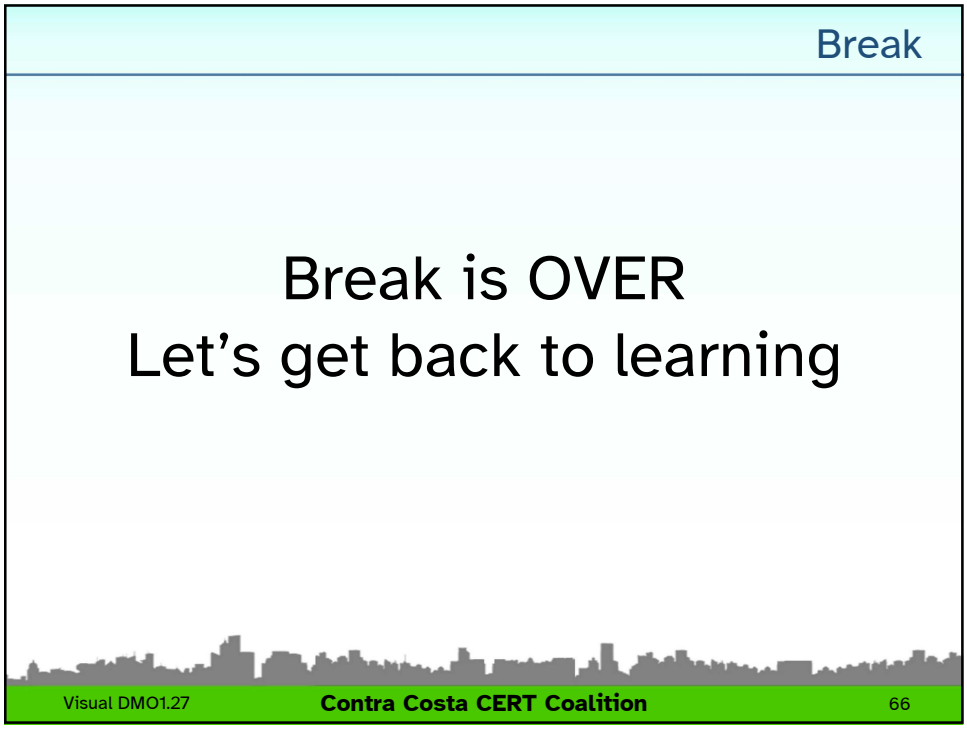
5 4 3 2 1

Visual DMO1.25 **Contra Costa CERT Coalition** 66

25


Break
Break is almost OVER
Visual DMO1.26
Contra Costa CERT Coalition
66

26


Break
Break is OVER
Let's get back to learning
Visual DMO1.27
Contra Costa CERT Coalition
66

27

Multi-Casualty Incident Definition

- A Multi-Casualty Incident (MCI) is any situation that overwhelms the normal emergency response capability



An MCI is also known as a Mass Casualty Incident or a Mass Casualty Event

28

Typical Multi-Casualty Incidents

- Earthquakes
- Terrorist Events
- Urban Wild Lands Fires
- Motor Vehicle Accidents
- Floods
- Tornados
- Hurricanes
- Explosions
- Train derailments
- Hazmat



29

CERT Size-Up

1. Gather Facts
2. Assess Damage
3. Consider Probabilities
4. Assess Your Situation
5. Establish Priorities
6. Make Decisions
7. Develop Plan of Action
8. Take Action
9. Evaluate Progress



Visual DMO1.30 **Contra Costa CERT Coalition** 66

30

Triage

TRIAGE – French term meaning *"to sort"*

- During triage, survivors are evaluated and prioritized according to the urgency of treatment needed
- Spending a lot of time trying to save one life may prevent a number of other patients from receiving the treatment they need

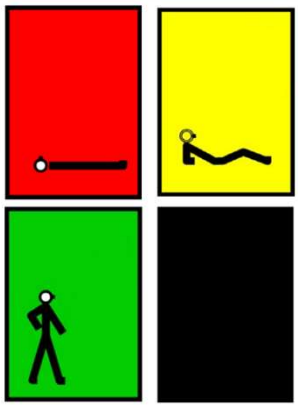


- Triage is a *Perishable Skill* and must be practiced regularly

Visual DMO1.31 **Contra Costa CERT Coalition** 66

31

The START Triage System



Simple
Triage
And
Rapid
Treatment

Visual DMO1.32 **Contra Costa CERT Coalition** 66

32

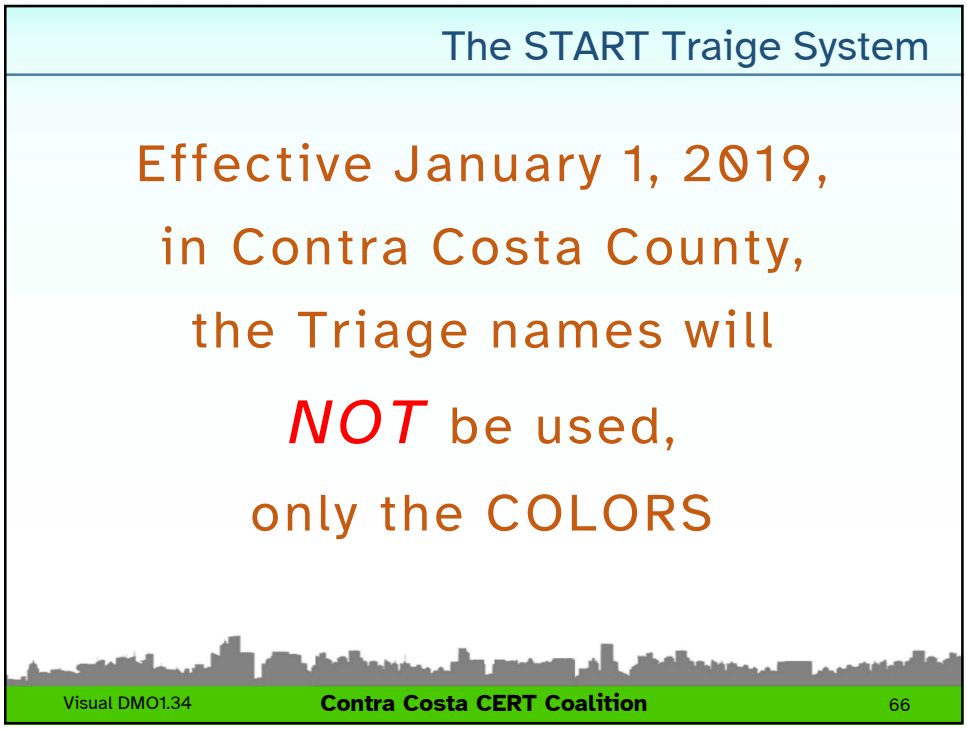
START Categories

- **GREEN**
- **RED**
- **YELLOW**
- **BLACK** or stripe

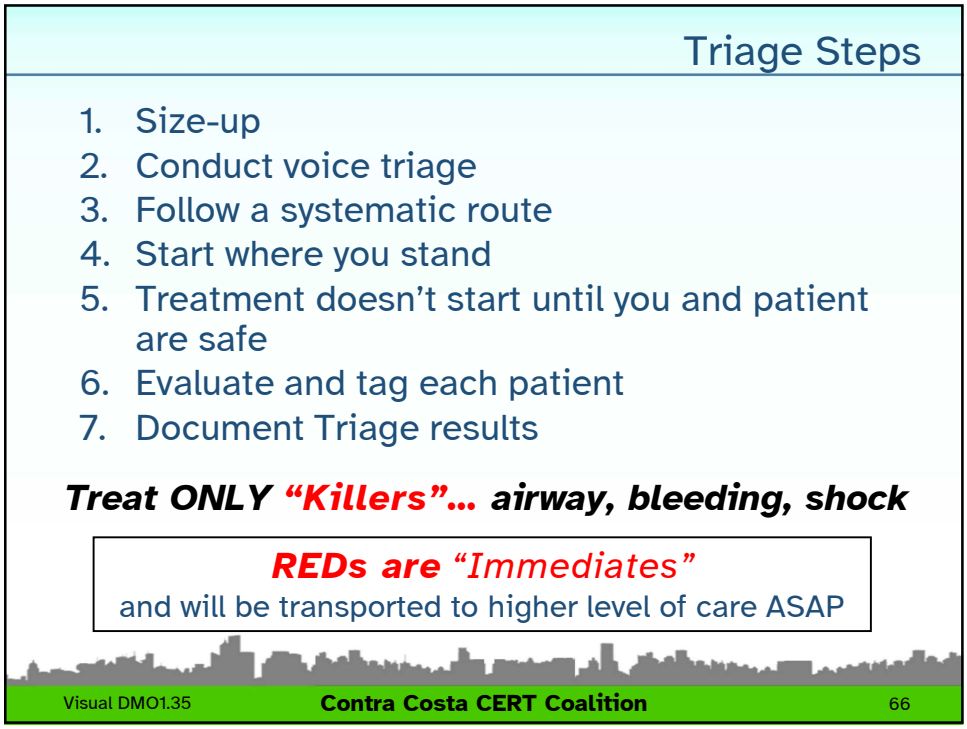


Visual DMO1.33 **Contra Costa CERT Coalition** 66

33


The START Traige System
Effective January 1, 2019,
in Contra Costa County,
the Triage names will
NOT be used,
only the COLORS
Visual DMO1.34
Contra Costa CERT Coalition
66

34


Triage Steps
1. Size-up
2. Conduct voice triage
3. Follow a systematic route
4. Start where you stand
5. Treatment doesn't start until you and patient are safe
6. Evaluate and tag each patient
7. Document Triage results
Treat ONLY "Killers"... airway, bleeding, shock
REDs are "Immediates"
and will be transported to higher level of care ASAP
Visual DMO1.35
Contra Costa CERT Coalition
66

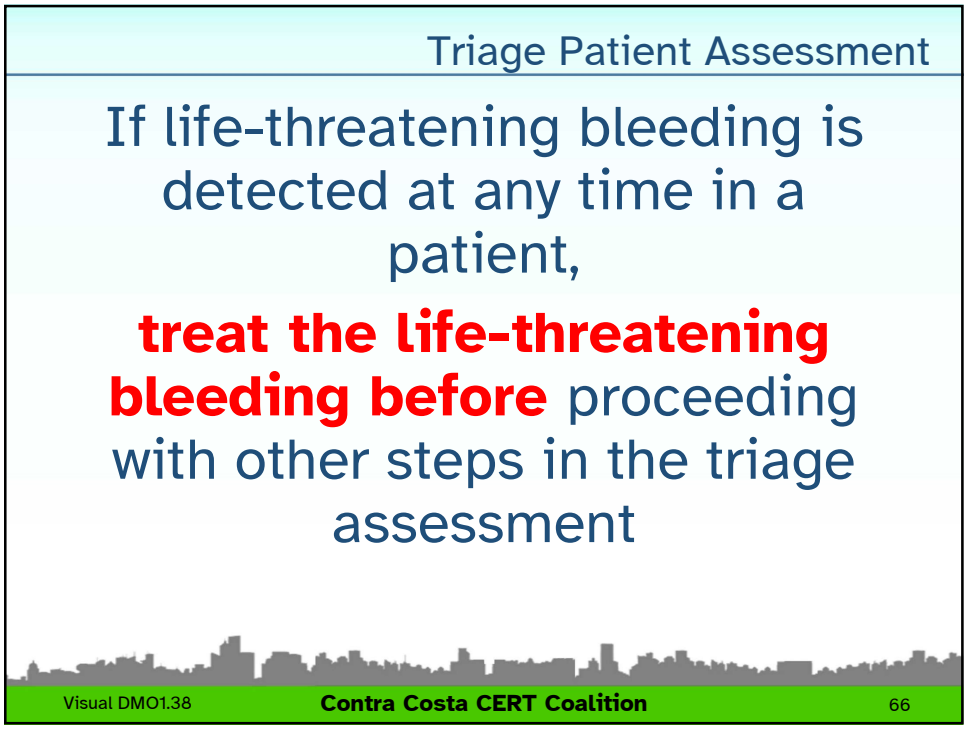
35


Triage Pitfalls
No team plan, organization, or goal
Indecisive leadership
Ignoring personal safety
Too much focus on one patient or the "loudest" (screamer) patient
Treatment of non-"killer" injuries (rather than triage) performed
Visual DMO1.36
Contra Costa CERT Coalition
66

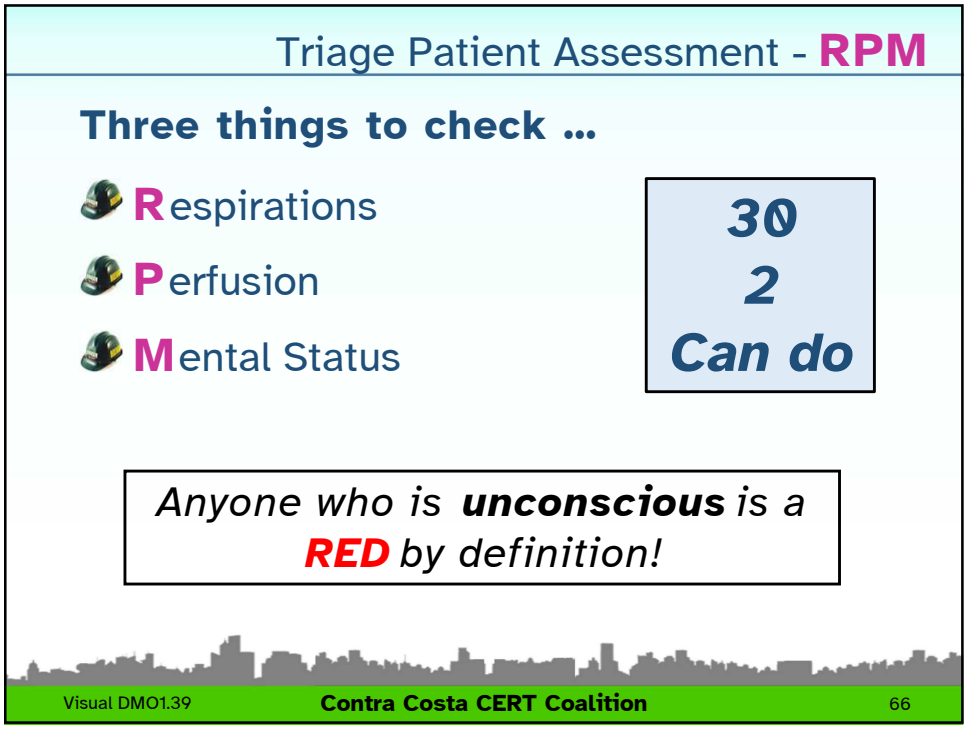
36


Triage - GREEN
Walking wounded
Do not require immediate/urgent care
Use as helpers to care for others
Direct GREEN patients to the casualty collection point (CCP) or treatment area for detailed assessment and medical care
Visual DMO1.37
Contra Costa CERT Coalition
66

37


Triage Patient Assessment
If life-threatening bleeding is detected at any time in a patient,
treat the life-threatening bleeding before proceeding with other steps in the triage assessment
Visual DMO1.38
Contra Costa CERT Coalition
66

38


Triage Patient Assessment - RPM
Three things to check …
Respirations
Perfusion
Mental Status
30
2
Can do
Anyone who is unconscious is a RED by definition!
Visual DMO1.39
Contra Costa CERT Coalition
66

39

RPM … Respirations

- Target Range:
  - Adults: under 30 breaths per minute
  - Children to 12 years: 15 – 45 breaths per minute
    - Depends on the size of the child
    - Infants breath faster than larger children
    - Go by body size, not age

Visual DMO1.40 **Contra Costa CERT Coalition** 66

40

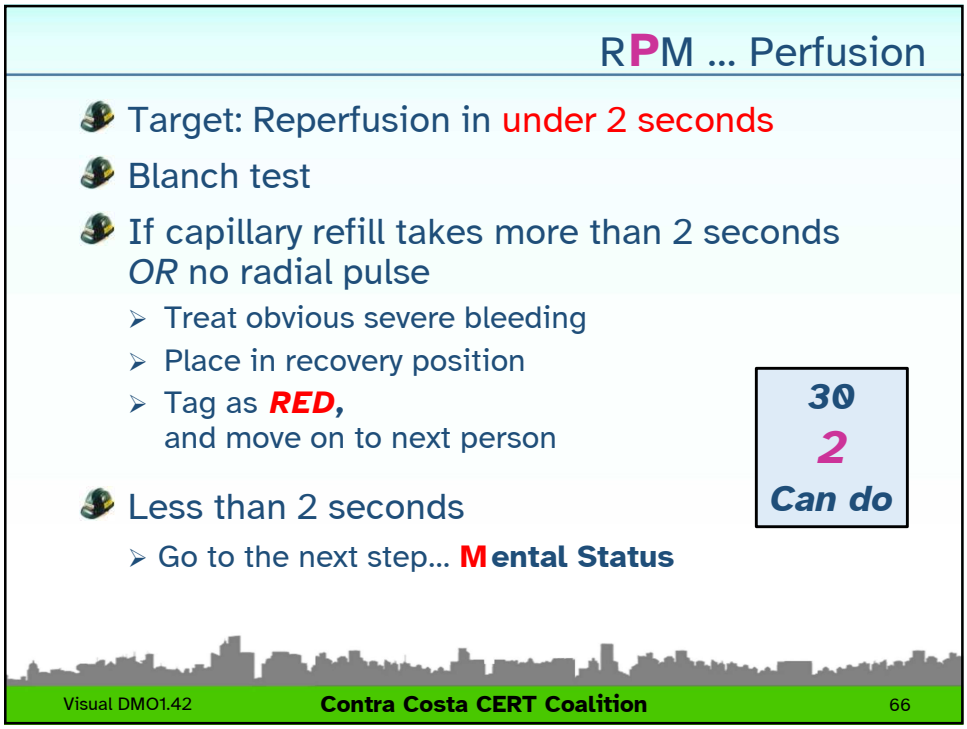
RPM … Respirations

- No breathing
  - Open airway, if still not breathing, try a second time
  - If still not breathing, tag as ***BLACK*** and move on to next person
- If breathing, count breaths
- Out of range for breaths per minute
  - Place in recovery position
  - Tag as ***RED***, move on to next person
- Within range for breaths per minute
  - Go to the next step… **Perfusion**

30
2
Can do

Visual DMO1.41 **Contra Costa CERT Coalition** 66

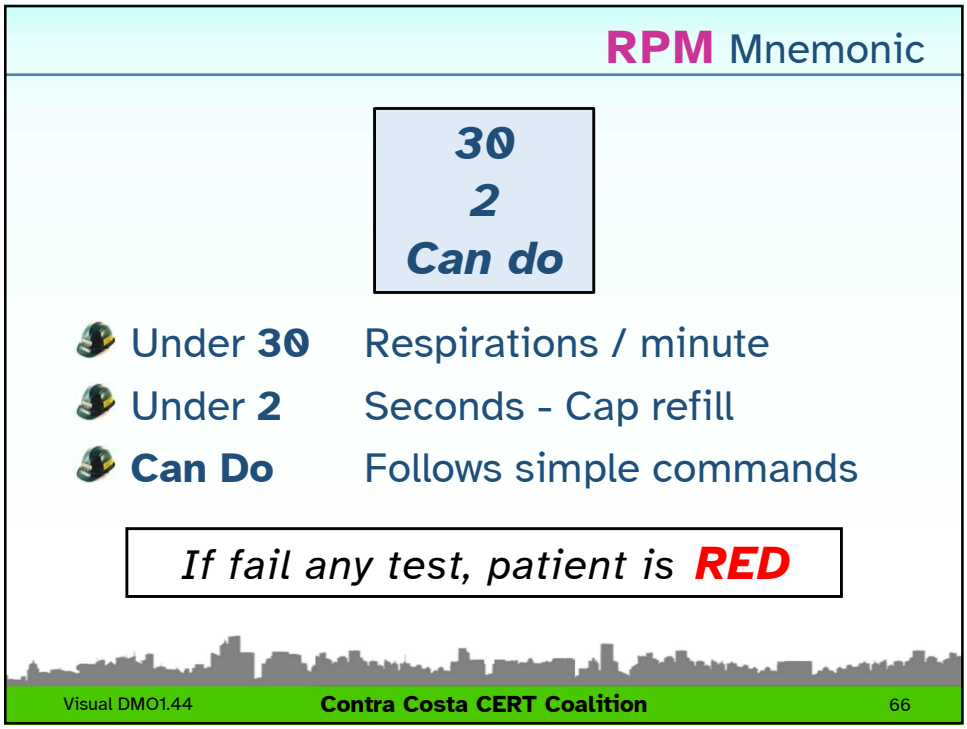
41


RPM ... Perfusion
Target: Reperfusion in under 2 seconds
Blanch test
If capillary refill takes more than 2 seconds OR no radial pulse
Treat obvious severe bleeding
Place in recovery position
Tag as RED, and move on to next person
Less than 2 seconds
Go to the next step... Mental Status
30
2
Can do
Visual DMO1.42
Contra Costa CERT Coalition
66

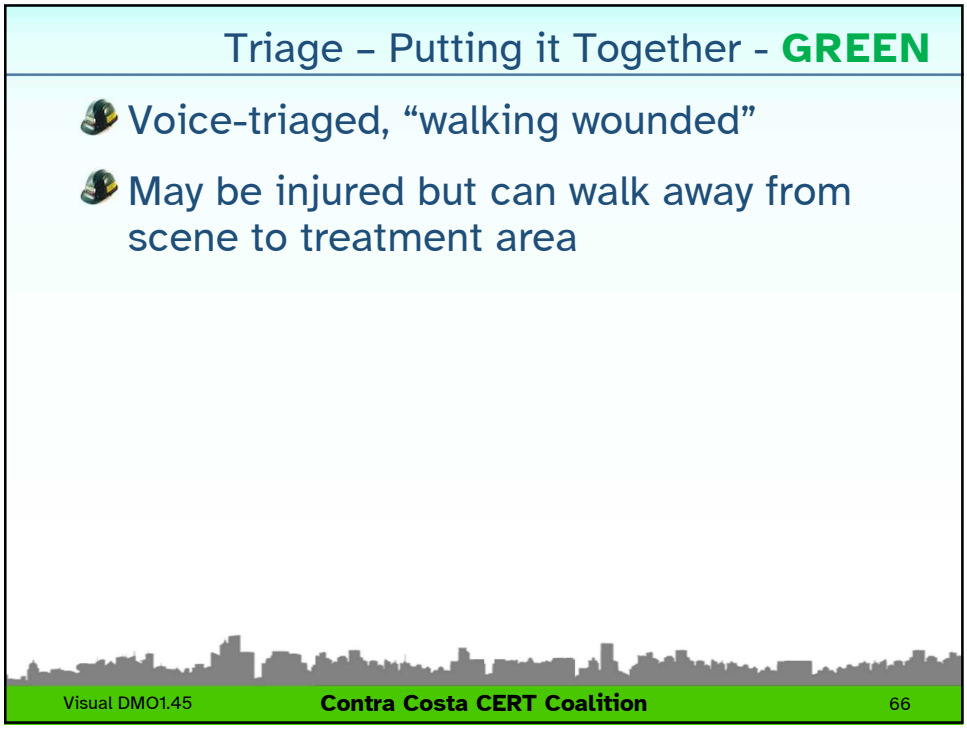
42


RPM ... Mental Status
Target: Follow simple command
Cannot follow directions
Tag as RED, place in recovery position and move on to next person
Can follow directions
Tag as YELLOW, and move on to next person
30
2
Can do
Visual DMO1.43
Contra Costa CERT Coalition
66

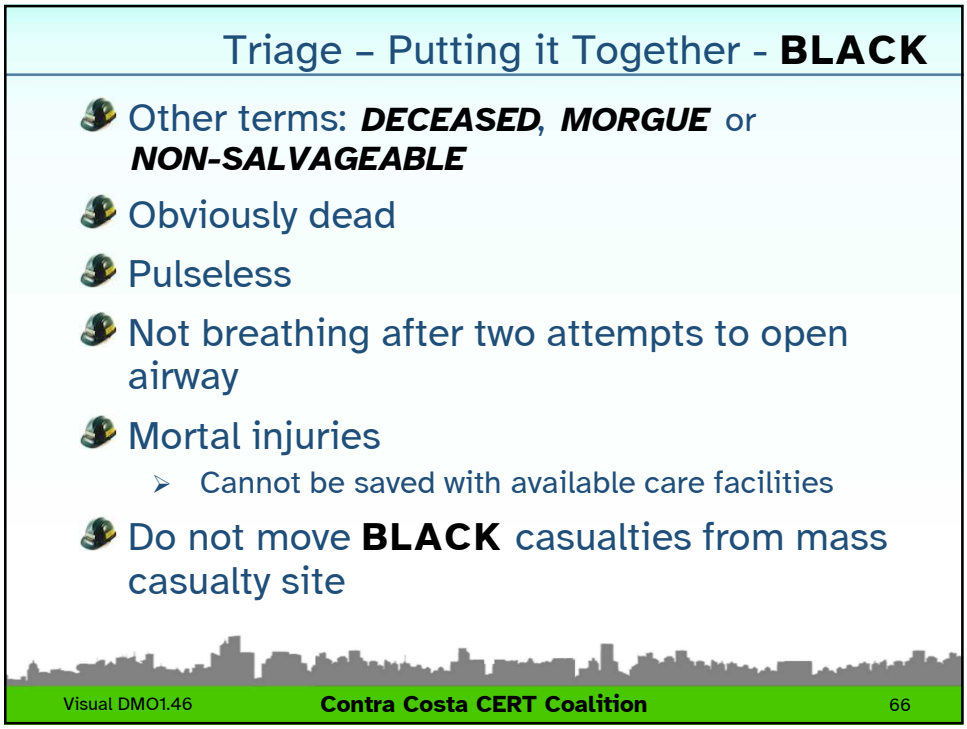
43


RPM Mnemonic
30
2
Can do
Under 30 Respirations / minute
Under 2 Seconds - Cap refill
Can Do Follows simple commands
If fail any test, patient is RED
Visual DMO1.44
Contra Costa CERT Coalition
66

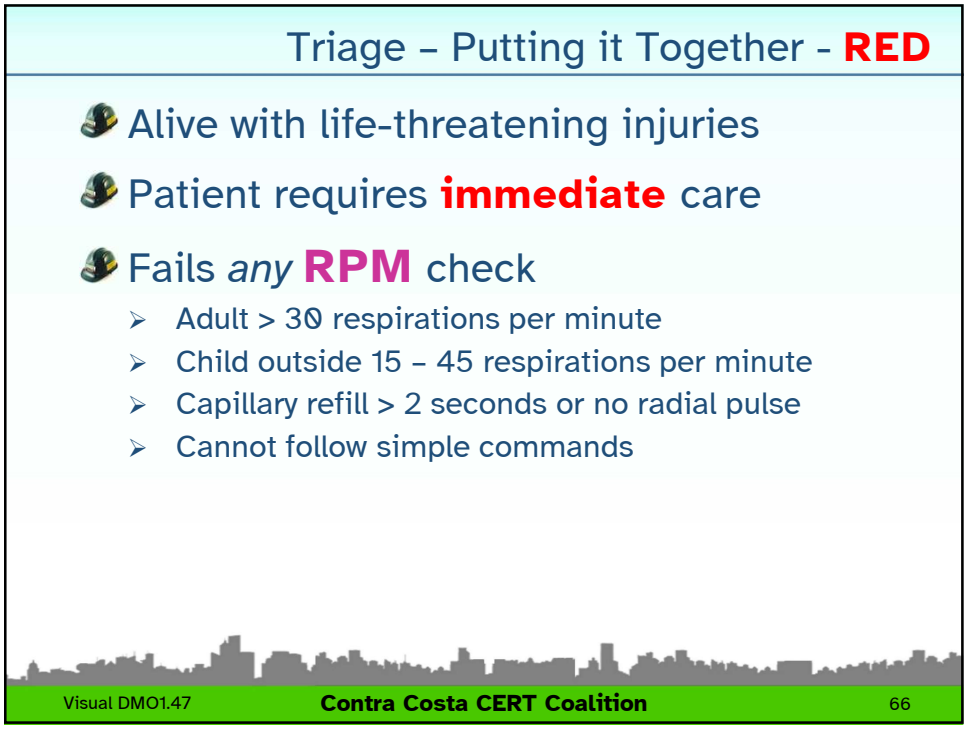
44


Triage – Putting it Together - GREEN
Voice-triaged, "walking wounded"
May be injured but can walk away from scene to treatment area
Visual DMO1.45
Contra Costa CERT Coalition
66

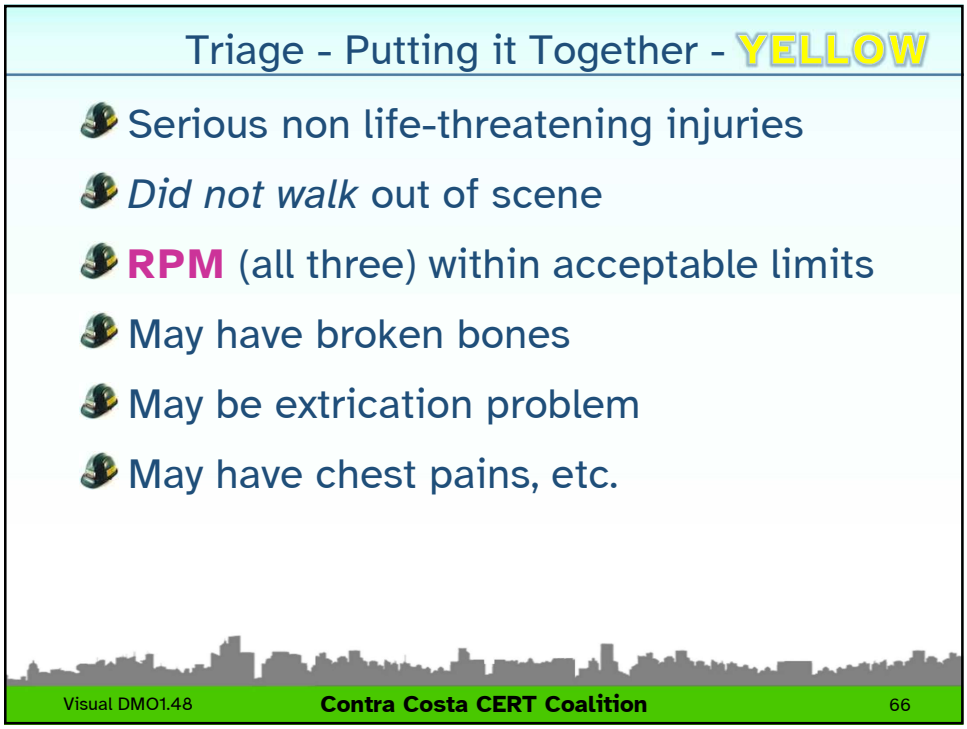
45


Triage – Putting it Together - BLACK
Other terms: DECEASED, MORGUE or NON-SALVAGEABLE
Obviously dead
Pulseless
Not breathing after two attempts to open airway
Mortal injuries
Cannot be saved with available care facilities
Do not move BLACK casualties from mass casualty site
Visual DMO1.46
Contra Costa CERT Coalition
66

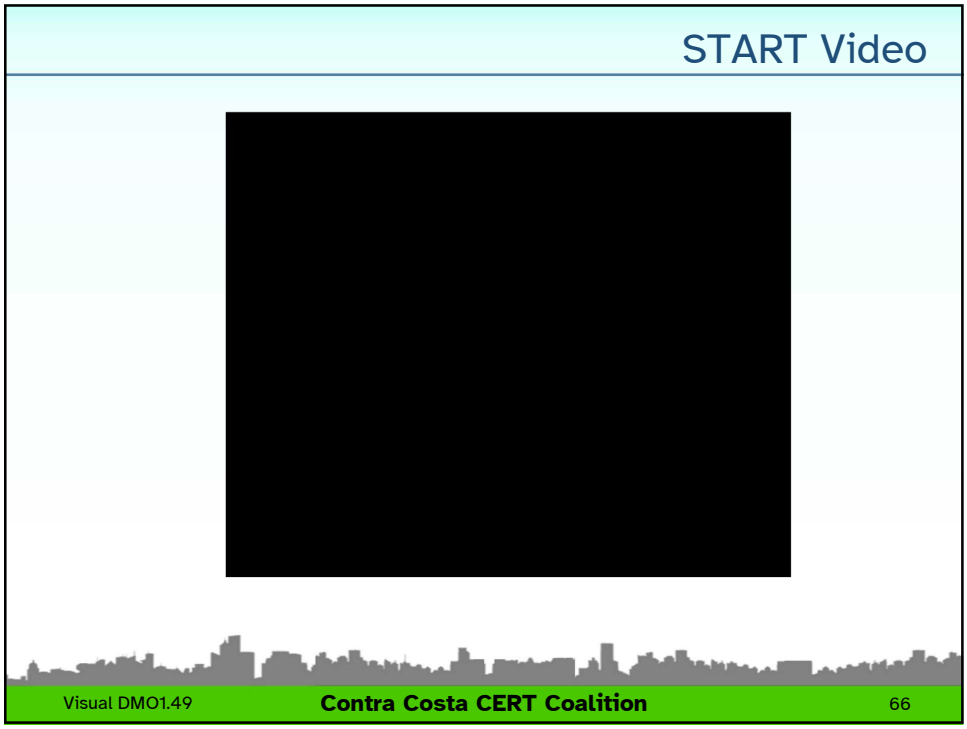
46


Triage – Putting it Together - RED
Alive with life-threatening injuries
Patient requires immediate care
Fails any RPM check
Adult > 30 respirations per minute
Child outside 15 – 45 respirations per minute
Capillary refill > 2 seconds or no radial pulse
Cannot follow simple commands
Visual DMO1.47
Contra Costa CERT Coalition
66

47


Triage - Putting it Together - YELLOW
Serious non life-threatening injuries
Did not walk out of scene
RPM (all three) within acceptable limits
May have broken bones
May be extrication problem
May have chest pains, etc.
Visual DMO1.48
Contra Costa CERT Coalition
66

48


START Video
Visual DMO1.49
Contra Costa CERT Coalition
66

49

Triage Operations Review

- **Size Up** … *What's happening?*
  - Check the scene
  - Stop, look, listen and think
- **Assess your situation** … *What could happen?*
- **Develop a plan of action** … *What will we do?*
  - Conduct voice triage, get walking wounded out
  - Start where you stand
  - Follow a systematic route
  - Use **RPM** to evaluate and tag each patient
  - **Only** allowed treatments in triage are: **Open airway**; **Stop major bleeding**; **Recovery position**
  - Call for ***REDs*** to be urgently transported to advanced care!
- **Document Triage results**

Visual DMO1.50 **Contra Costa CERT Coalition** 66

50

START Triage Exercise

SCENARIO: December 23rd, 1700 hrs. A bus has gone out of control at the Walnut Creek BART station. It careened through the lower BART plaza, hitting commuters and Christmas shoppers. The bus continued downhill finally crashing into rush hour traffic on Ygnacio Valley Rd. Several smashed cars have caught fire.

*The first arriving fire engine has already tried once to remove all patients who can walk **(Greens)** to the South parking lot.*

Begin triaging the remaining patients using START triage principles. Identify the category of the patients (GREEN, BLACK, RED, and YELLOW) and what treatment you might render according to START (opening of airways, application of direct pressure for bleeding). Write answers below each patient.

30
2
Can do

Visual DMO1.51 **Contra Costa CERT Coalition** 66

51

START Triage Exercise

1. 30yo male with a compound fracture of left tibia, bleeding moderately. Resp. rate is 24, cap refill < 2 sec. Follows simple commands.	8. 7yo old female lying on the ground, left leg amputated below the knee. Moderate bleeding. Resp. rate is 38. Cap refill < 2 sec. Follows simple commands.
2. 18yo female sitting feeling faint with abrasion to forehead and a bloody nose. Resp. rate is 28. Cap refill < 2 sec. Follows simple commands.	9. 42yo female with an open fracture left ankle. Resp. rate is 28. Cap refill < 2 sec. Follows simple commands.
3. 18yo male complaining of chest pain and SOB. Resp. rate is 40. Cap refill 4 sec. Follows simple commands.	10. 21yo female with abrasion to forehead, is 8 months pregnant and in labor. Resp. rate is 36. Cap refill < 2 sec. Follows simple commands.
4. 23yo male with impaled metal pole through right chest. Resp. rate is 26. Cap refill < 2 sec. Follows simple commands.	11. 12yo male with 3rd degree burns over 50% of body. Resp. rate is 28. Cap refill < 2 sec. Follows simple commands.
5. 50yo male with 2nd/3rd degree burns over 70% of body. Resp. rate is 26. Cap refill < 2 sec. Follows simple commands.	12. 64yo female walking around crying. No injuries seen. Resp. rate is 24. Cap refill < 2 sec. Follows simple commands.
6. 75yo male lying on the ground. Gurgling respirations after 2 attempts to open airway. Capillary refill > 2 secs. Unconscious, unresponsive.	13. 65yo male bus driver slumped over in seat. Resp. rate is 0. No radial pulse. Unconscious and unresponsive.
7. 40yo male lying on the ground with blood coming out of ears and nose. Resp. rate is 0. No radial pulse.	14. 28yo female walking around with abrasion to forehead. Repeatedly asking "Where's Billy?" Resp. rate is 18. Cap. Refill < 2 secs. Does not follow "squeeze my fingers" command.

52

START Triage Exercise

15. 28yo male lying on ground with abdominal pain. Resp. rate is 24. Cap refill > 2 sec. Follows simple commands.	23. 20yo male sitting up with large scalp laceration bleeding heavily. Resp. rate is 24. Cap refill < 2 sec. Follows simple commands.
16. 44yo male sitting up with dislocated shoulder. Resp. rate is 36. Cap refill is < 2 secs. Follows simple commands.	24. 44yo male sitting up with chest pain. Resp. rate is 24. Cap refill < 2 sec. Follows simple commands.
17. 25yo female with large abdominal evisceration. Resp. rate is 0. No radial pulse. Unconscious and unresponsive.	25. 56yo female bilateral femur fractures. Resp. rate is 28. Cap. Refill is > 2 seconds. Conscious and follows commands.
18. 11yo female partial amputation left arm, blood spurting from wound. Resp. rate is 28. Cap refill > 2 seconds. Unconscious.	26. 58yo male with massive facial trauma. Resp. rate is 0. Reposition Airway, resp. = 0. Cap refill < 2 sec. Unconscious and unresponsive.
19. 67yo male lying on ground. No obvious injuries. Resp. rate is 0 after 2 attempts to open airway. Cap. Refill is > 2 secs.	27. 11yo female lying on ground, with abrasions to face. Resp. rate is 20. Cap refill < 2 secs. Conscious but does not follow commands.
20. 28yo female with fracture to left wrist. Resp. rate is 28. Cap refill is < 2 seconds. Follows simple commands.	28. 76yo male with deep laceration to left thigh. Heavy bleeding. Resp. rate is 24. Cap refill > 2 sec. Follows simple commands.
21. 36yo male with neck pain. Can't feel legs. Resp. rate is 24. Cap refill < 2 sec. Follows simple commands.	29. 51yo male with abdominal pain. Resp. rate is 28. Cap. Refill > 2 secs. Follows simple commands.
22. 24yo female with back pain. Resp. rate is 28. Cap refill < 2 sec. Follows simple commands.	30. 85yo male with deep cuts to both forearms. Resp. rate is 24. Capillary refill > 2 secs. Follows simple commands.

53

Bites and Stings

- If a bite or sting is suspected, and the situation is non-emergency:
  - Remove stinger if still present by scraping edge of a credit card or other stiff, straight-edged object across stinger
  - Wash site thoroughly with soap and water
  - Place ice on site: 10 minutes on, 10 minutes off



Visual DMO2.54 **Contra Costa CERT Coalition** 88

54

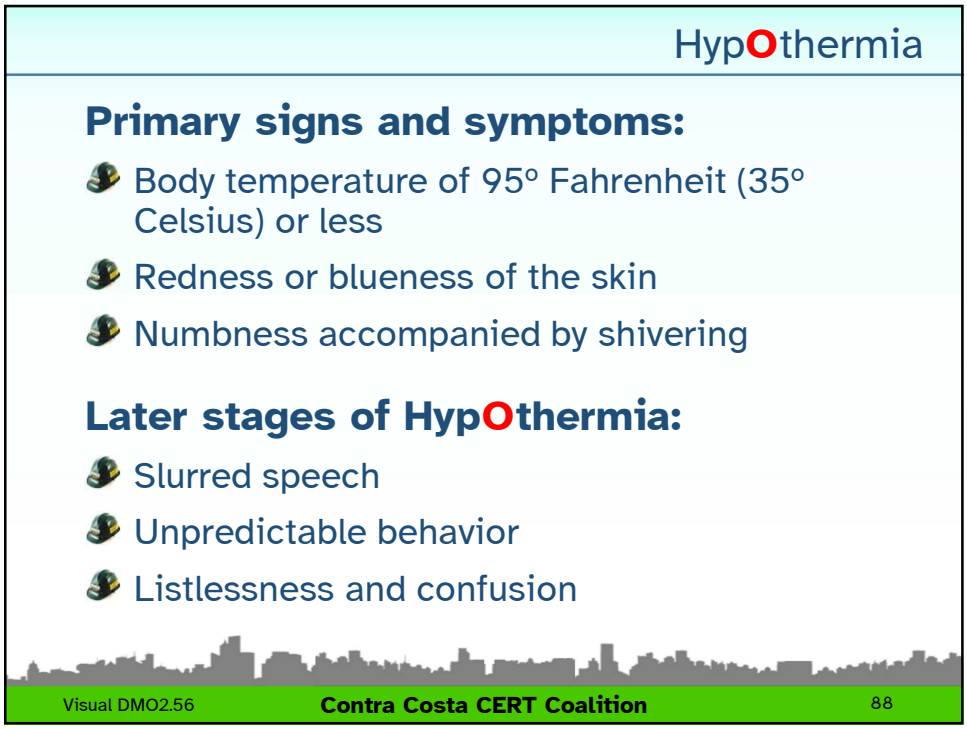
Anaphylaxis

- Anaphylaxis is a serious, life-threatening allergic reaction. The most common anaphylactic reactions are to foods, insect stings, medications and latex
- Check airway and breathing
- Remove constrictive clothing and jewelry
- Find and help administer victim's auto-injector following package instructions
- Write time administered on victim's skin
- Watch for signs of shock and treat appropriately

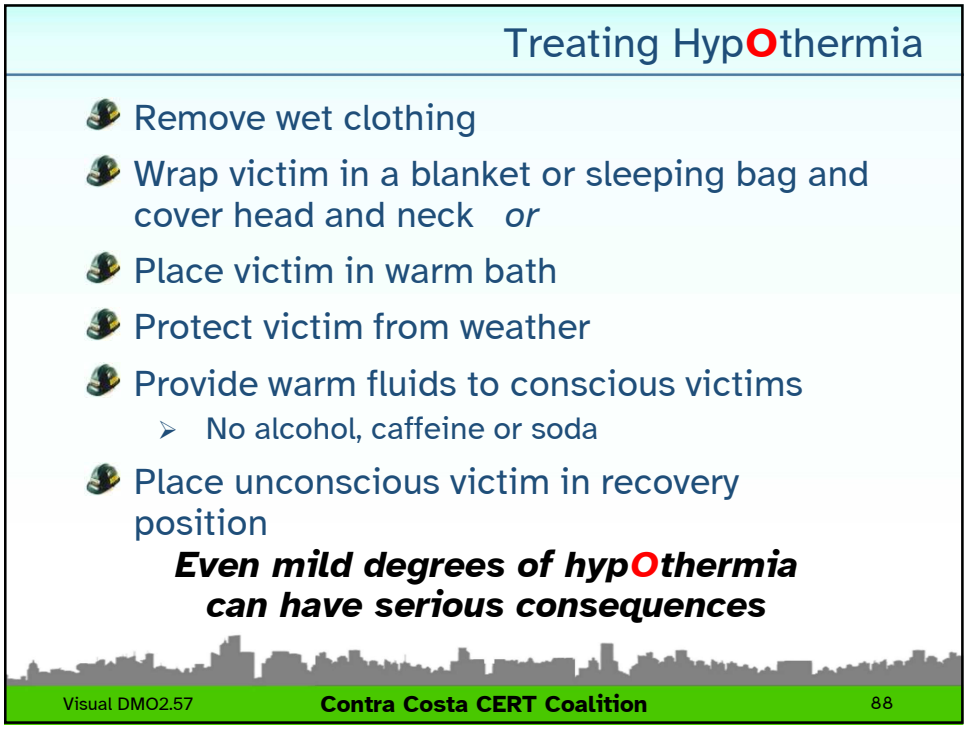


Visual DMO2.55 **Contra Costa CERT Coalition** 88

55


HypOthermia
Primary signs and symptoms:
Body temperature of 95° Fahrenheit (35° Celsius) or less
Redness or blueness of the skin
Numbness accompanied by shivering
Later stages of HypOthermia:
Slurred speech
Unpredictable behavior
Listlessness and confusion
Visual DMO2.56
Contra Costa CERT Coalition
88

56


Treating HypOthermia
Remove wet clothing
Wrap victim in a blanket or sleeping bag and cover head and neck or
Place victim in warm bath
Protect victim from weather
Provide warm fluids to conscious victims
No alcohol, caffeine or soda
Place unconscious victim in recovery position
Even mild degrees of hypOthermia can have serious consequences
Visual DMO2.57
Contra Costa CERT Coalition
88

57

Frostbite

- Frostbite is an injury caused by freezing of the skin and underlying tissues
- Symptoms include:
  - Skin discoloration
  - Burning or tingling sensation
  - Partial or complete numbness





Visual DMO2.58 **Contra Costa CERT Coalition** 88

58

Treating Frostbite

- Immerse injured area in warm (NOT hot) water until tissue is soft, red or purple
- Warm slowly!
- Do NOT allow part to re-freeze
- Do NOT massage
- Wrap affected body parts in bulky dry, sterile dressing



wikiHow

Visual DMO2.59 **Contra Costa CERT Coalition** 88

59

Stages of HypERthermia

- Hyperthermia comes in many stages, from heat stress though heat stroke
- **Heat cramps** are muscle spasms brought on by over-exertion in extreme heat
- **Heat exhaustion** results from exercising or working in extreme heat, resulting in loss of bodily fluids
- **Heat stroke** occurs when the body's temperature regulation system shuts down and the body temperature rises so that brain damage or death may result
- Special attention is needed when wearing PPE in heated environments



Visual DMO2.60 **Contra Costa CERT Coalition** 88

60

Symptoms of HypERthermia

Heat Exhaustion	**Heat Stroke**
Heavy sweating	**Red, hot, dry skin (no sweating)**
Not Confused	**Confusion**
Tiredness	**Unconsciousness**
Cold, pale, clammy	Body temperature over 103˚F
Rapid, strong pulse	Fast, weak pulse
Muscle cramps	Throbbing headache
Dizziness or headache	Dizziness
Nausea or vomiting	Nausea

Heat Stroke is the most severe form of hypERthermia and is a ***life-threatening emergency!***

Visual DMO2.61 **Contra Costa CERT Coalition** 88

61

Treating Severe HypERthermia

- Remove from heat to cool environment
- Cool body – ***immediate water immersion****/shower/ garden hose/evaporative cooling* if heat stroke suspected – *before* transport
- Sports drink (not salt tablets) or water, if sports drink-like solution not available – slowly, avoid vomiting
- No food or drink if patient is experiencing vomiting, abdominal cramping, or is losing consciousness
- If heat exhaustion does not improve in 15-20 min or if there are signs of heat stroke, triage status is **red**, patient requires **immediate transport to advanced care**
- Must be symptom-free for 24 hours before returning to work and may need to stay out of heat for a while

Visual DMO2.62 **Contra Costa CERT Coalition** 88

62

Questions ?

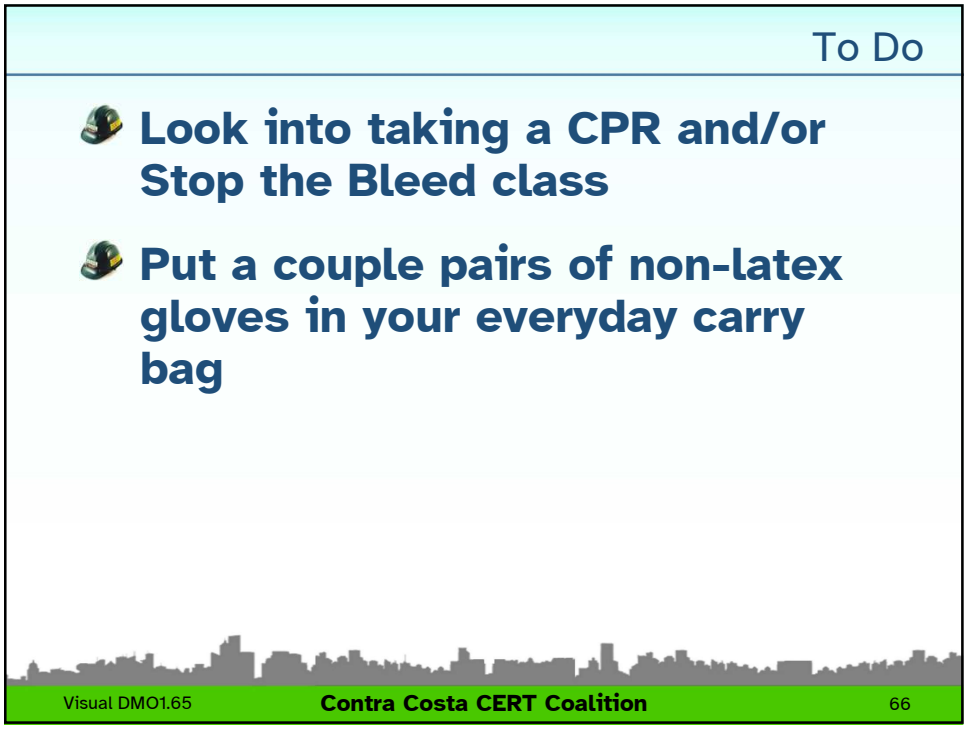


Visual DMO1.63 **Contra Costa CERT Coalition** 66

63


Takeaways
YOUR SAFETY IS PARAMOUNT!
Wear PPE
Medical treatment doesn't start until you (and your patient) are safe
THE KILLERS
Airway
Bleeding
Shock
Visual DMO1.64
Contra Costa CERT Coalition
66

64


To Do
Look into taking a CPR and/or Stop the Bleed class
Put a couple pairs of non-latex gloves in your everyday carry bag
Visual DMO1.65
Contra Costa CERT Coalition
66

65