

Community Emergency Response Team




Disaster Medical Operations  
Part I


Released: 20 January 2023

Contra Costa CERT Coalition


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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!*

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## Unit Objectives

- 🧑‍🚒 Identify “**Three Killers**” **ABC**
- 🧑‍🚒 Apply techniques for
  - Opening **A**irways
  - Controlling **B**leeding
  - Treating (**C**irculatory) **S**hock
- 🧑‍🚒 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)

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## 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!**


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PPE – Personal Protective Equipment


 Helmet


 Goggles

 N95 mask

 Work gloves

 Sturdy shoes or boots

 Non-latex exam gloves



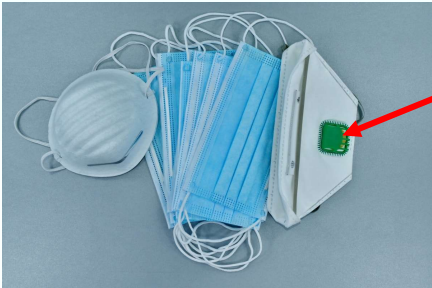
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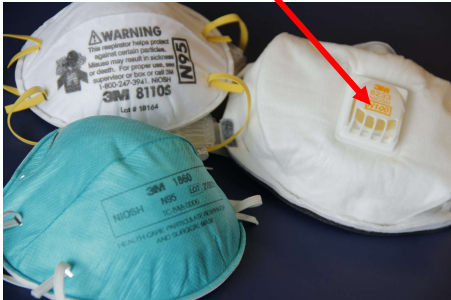
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PPE – Types of Masks



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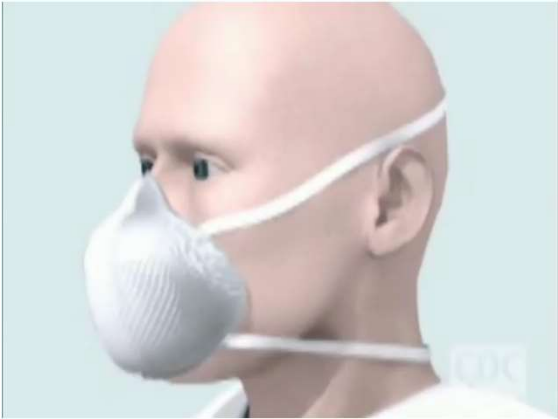
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PPE – N95 mask

 How to put on / take off an N95 mask




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Demo & Practice - PPE – Gloves

 How to put on / take off surgical gloves

 Practice !

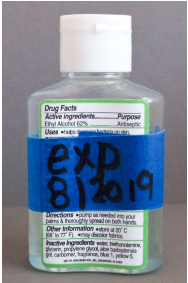
 New gloves for every patient – if you can

 Wash or sanitize hands after removing gloves



Disclaimer: This video is for educational purposes only. Never practice nursing skills without the proper credentials. While we strive for 100% accuracy, errors may occur, and nursing procedures may change. Always follow the latest protocols for your area.

[https://www.youtube.com/watch?v=xTYioOo\\_\\_6U](https://www.youtube.com/watch?v=xTYioOo__6U)



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PPE – Personal Protective Equipment

**IF IT'S WET or STICKY and  
NOT YOURS**


**DON'T TOUCH IT!**




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The Killers - **ABC**

 **A**irway Obstruction


- Lack of oxygen can cause brain damage and death in very few minutes

 **E**xcess **B**leeding

- Tissues die if not supplied with oxygen
- Can happen in as little as 20 seconds

 **S**hock (**C**irculatory collapse)

**Life-threatening conditions must receive  
*immediate* treatment !**




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### 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



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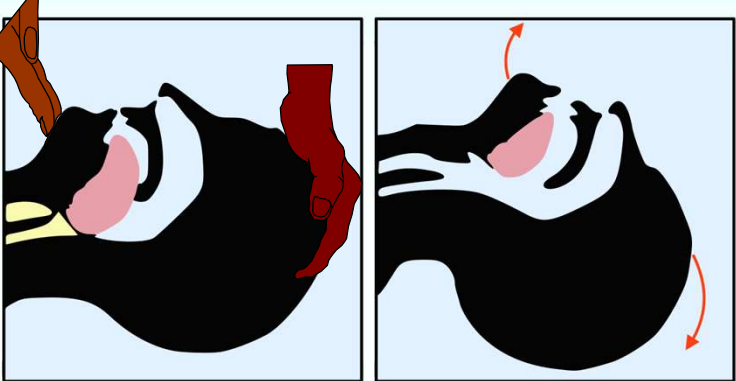
### Unconscious Patient

- 🚒 You have *implied consent* to treat
- 🚒 Tap and shout
- 🚒 Open airway before checking 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, repeat **once** more

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Opening the Airway




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

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Let's Practice!



Head Tilt / Chin Lift

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Bleeding



 Arterial ... spurting

 Venous ... flowing

 Capillary ... oozing

***Losing one liter can be life-threatening***


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Life-Threatening Bleeding

 Spurting

 Pooling

 Soaking through clothes or bandages

 Amputation

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## 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



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## 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


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Shock

 Result of ineffective circulation of blood

➤ Sufficient oxygen not delivered to cells


 Remaining in shock will lead to death of:

➤ Cells

➤ Entire organs

➤ Tissues

➤ Patient

 Types of shock

➤ Hypovolemic shock – blood loss

➤ Cardiogenic shock – heart not pumping

➤ Septic shock – infection in bloodstream

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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**

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### 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

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### 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

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Recovery Position Demo




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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


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Typical Multi-Casualty Incidents


 Earthquakes


 Terrorist Events

 Urban Wild Lands Fires


 Motor Vehicle Accidents


 Floods


 Tornadoes

 Hurricanes

 Explosions

 Train derailments

 Hazmat



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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



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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



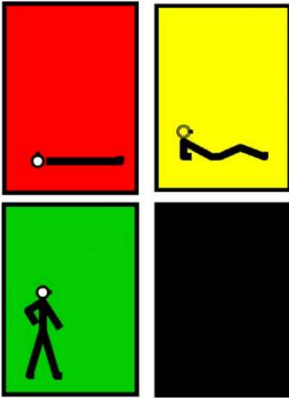
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The START Triage System



**Simple  
Triage  
And  
Rapid  
Treatment**

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START Categories

**GREEN**

**RED**

**YELLOW**

**BLACK** or stripe



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The START Traige System

Effective January 1, 2019,  
in Contra Costa County,  
the Triage names will  
***NOT*** be used,  
only the COLORS

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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

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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

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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

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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


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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!


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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





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### 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... **P**erfusion

30  
2  
Can do





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### 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... **M**ental Status

30  
2  
Can do

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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

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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**


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Triage – Putting it Together - **GREEN**



Voice-triaged, “walking wounded”



May be injured but can walk away from scene to treatment area


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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

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### 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




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### 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.



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START Video




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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**

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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

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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.

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### 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.


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### Questions ?




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Takeaways

 **YOUR SAFETY IS PARAMOUNT!**

- Wear PPE
- Medical treatment doesn't start until you (and your patient) are safe

 **THE KILLERS**

- Airway
- Bleeding
- Shock


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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**

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