DISASTER MANAGEMENT CYCLE

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INTRODUCTION

- *"Just a few days ago, on August 2, 2025, a powerful **8.8 magnitude earthquake** struck **off the eastern coast of Russia**, triggering **tsunami alerts** across multiple countries—including Japan, the Philippines, and even Alaska.*
- *The tremors were strong, the ocean surged, and alerts were issued within minutes. But here's what's remarkable: despite the strength of the earthquake and the scale of warnings, **there were very few casualties and minimal destruction**."*

How was such a large-scale disaster handled so effectively ?

INTRODUCTION

- *"This real-life example is a perfect demonstration of the* ***Disaster Management Cycle—***
- ***a systematic approach that includes not just reacting to a disaster, but also preparing for it, reducing its effects, and recovering afterward.***
- *Let's explore how this cycle works and why it's the backbone of disaster resilience worldwide."*

GAR 2025: Resilience Pays

Disaster costs now exceed over $2.3 trillion annually when cascading and ecosystem costs are taken into account. Smarter investment can re-set the destructive cycle of disasters, debt, un-insurability and humanitarian need that threatens a climate-changed world.

Learn how | Download the report

What's new

DISASTER DEFINITION

- UNDRR (United Nations Office for Disaster Risk Reduction) defines disaster as
- A **serious disruption** of the functioning of a community or a society
- involving **widespread** human, material, economic or environmental **losses**
- and **impacts which exceed the ability** of the affected community or society **to cope using its own resources**

INTRODUCTION

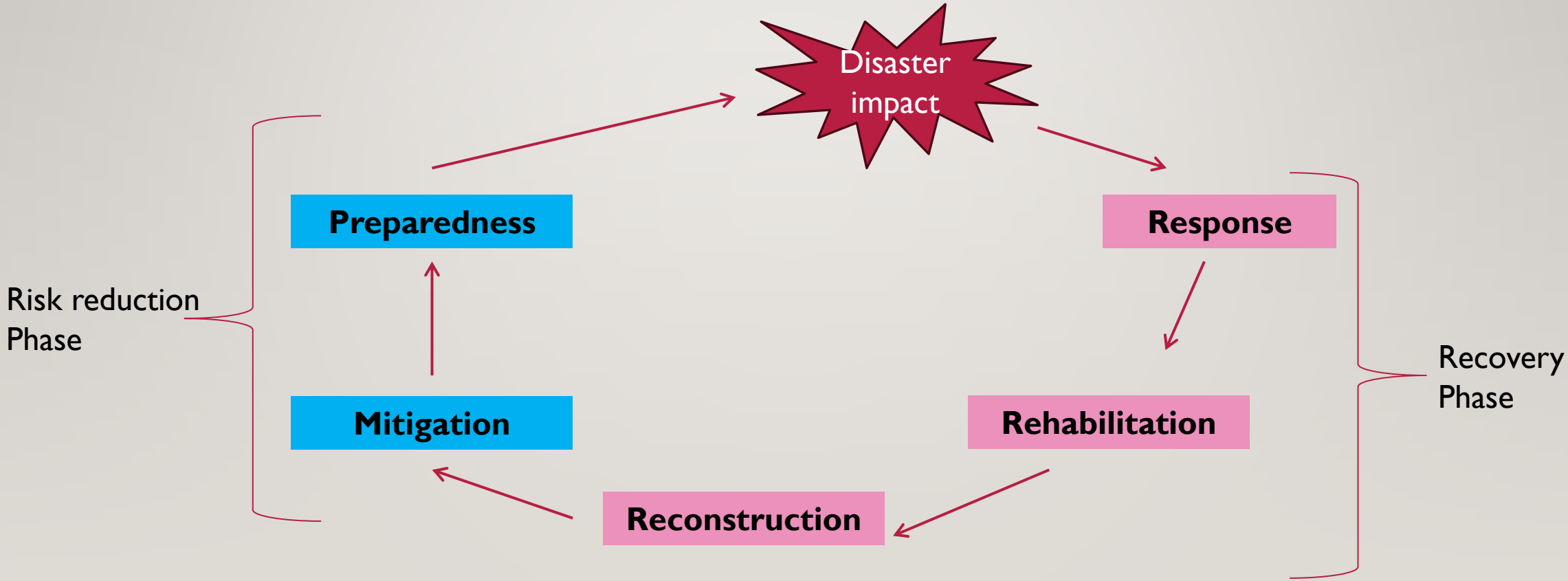
- UNDRR defines disaster risk management as the **systematic process of**

using administrative decisions, organizations, operational skills and capacities	to **implement** policies, strategies	and **coping capacities** of the society and communities	to **less the impacts** of natural hazards and related environmental and technological disasters.

INTRODUCTION

- Three fundamental aspects of disaster management
    1. Disaster response
    2. Disaster mitigation
    3. Disaster preparedness

DISASTER MANAGEMENT CYCLE



DISASTER RESPONSE

- The greatest need for emergency care occurs in the first few hours.
- The management of mass casualties can be further divided into
- Search and rescue → First Aid → Triage → stabilization of victims → hospital treatment → redistribution of patients to other hospitals if necessary

SEARCH, RESCUE AND FIRST AID

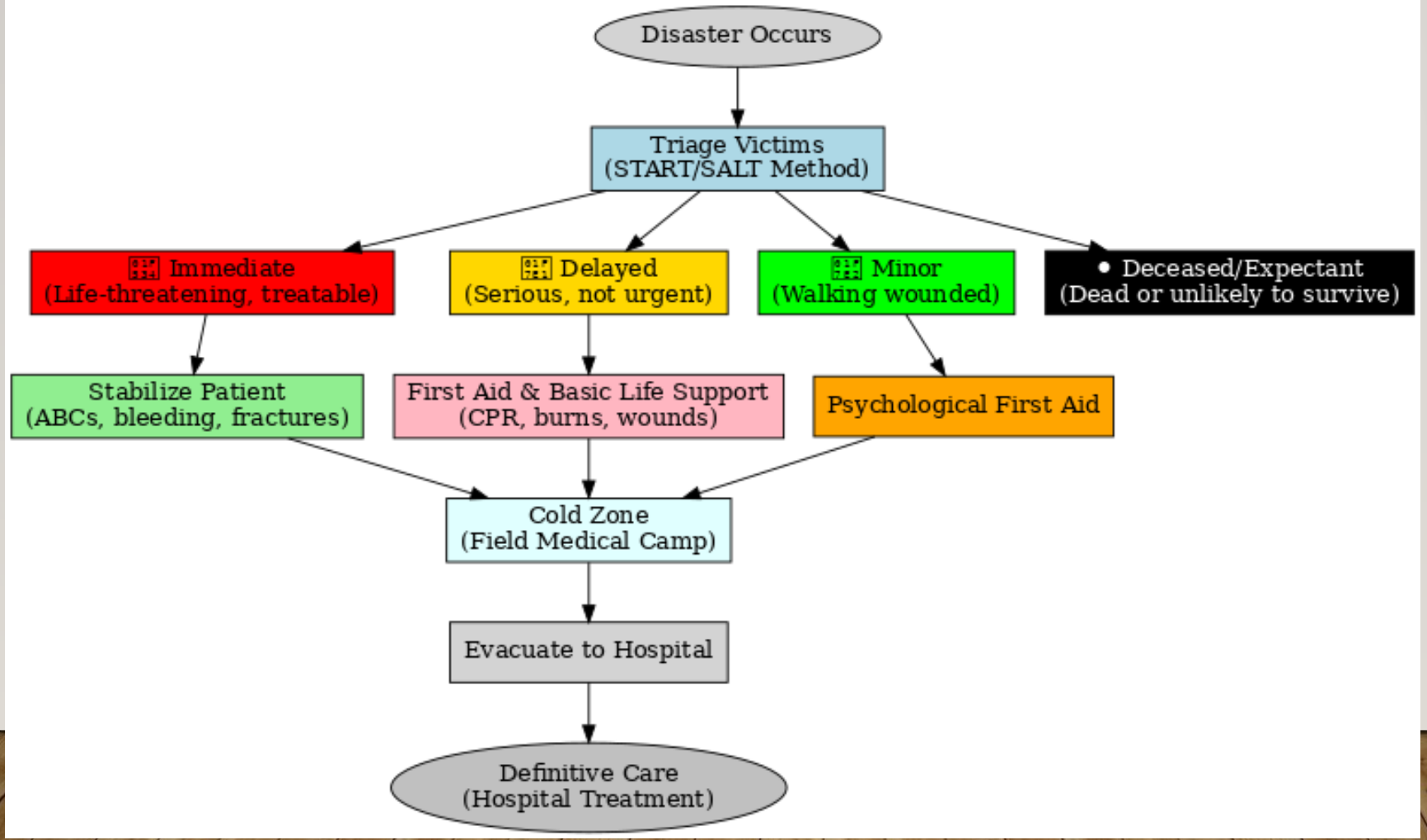
Component	Goal	Who Performs It	Key Tools
Search	locating **trapped, injured, or missing persons**	NDRF, SDRF, trained civilians	Drones, GPS, dogs
Rescue	**safely extracting victims** and transporting them to a safe location	Fire dept., military, volunteers	Stretchers, cutters
First Aid	**initial medical care** given before professional help	Medics, first responders, public	First aid kits, CPR, ABC

FIELD CARE

Field care is **on-site** or **pre-hospital care** provided to stabilize victims of disasters—physical, mental, or environmental—until they can be transported to definitive medical care facilities.

Zone	Function	Example
Hot Zone (Disaster Epicenter)	Only for trained rescuers	Hazardous rescue, limited medical care
Warm Zone (Triage Zone)	Field care begins here	Triage, stabilization
Cold Zone (Medical Camp)	Extended care & documentation	Field hospital, transport prep

FIELD CARE


Disaster Occurs
Triage Victims
(START/SALT Method)
Immediate
(Life-threatening, treatable)
Delayed
(Serious, not urgent)
Minor
(Walking wounded)
Deceased/Expectant
(Dead or unlikely to survive)
Stabilize Patient
(ABCs, bleeding, fractures)
First Aid & Basic Life Support
(CPR, burns, wounds)
Psychological First Aid
Cold Zone
(Field Medical Camp)
Evacuate to Hospital
Definitive Care
(Hospital Treatment)

TRIAGE

- When the quantity and severity of injuries overwhelm the operative capacity of health facilities, a different approach to medical treatment must be adopted.
- **Triage** is a critical process in disaster management where victims are **sorted and prioritized** based on the **severity of their injuries** and the **urgency of medical treatment** needed.
- It ensures that **limited resources** (doctors, medicines, evacuation) are used **efficiently** to **save the maximum number of lives**.

TRIAGE – START (SIMPLE TRIAGE AND RAPID TREATMENT)

1.Can the patient walk?
- ✅ → Tag **Green**
- ❌ → Go to next step

2.Is the patient breathing?
- ❌ → Open airway
  - Still not breathing → Tag **Black**
  - Breathing resumes → Tag **Red**
- ✅ Breathing → Check rate
  - 30/min → Tag **Red**
  - ≤30/min → Go to next step

3.Check circulation:
- Capillary refill >2 sec or no radial pulse → Tag **Red**
- Normal → Go to next step

4.Check mental status:
- Cannot follow commands → Tag **Red**
- Can follow commands → Tag **Yellow**

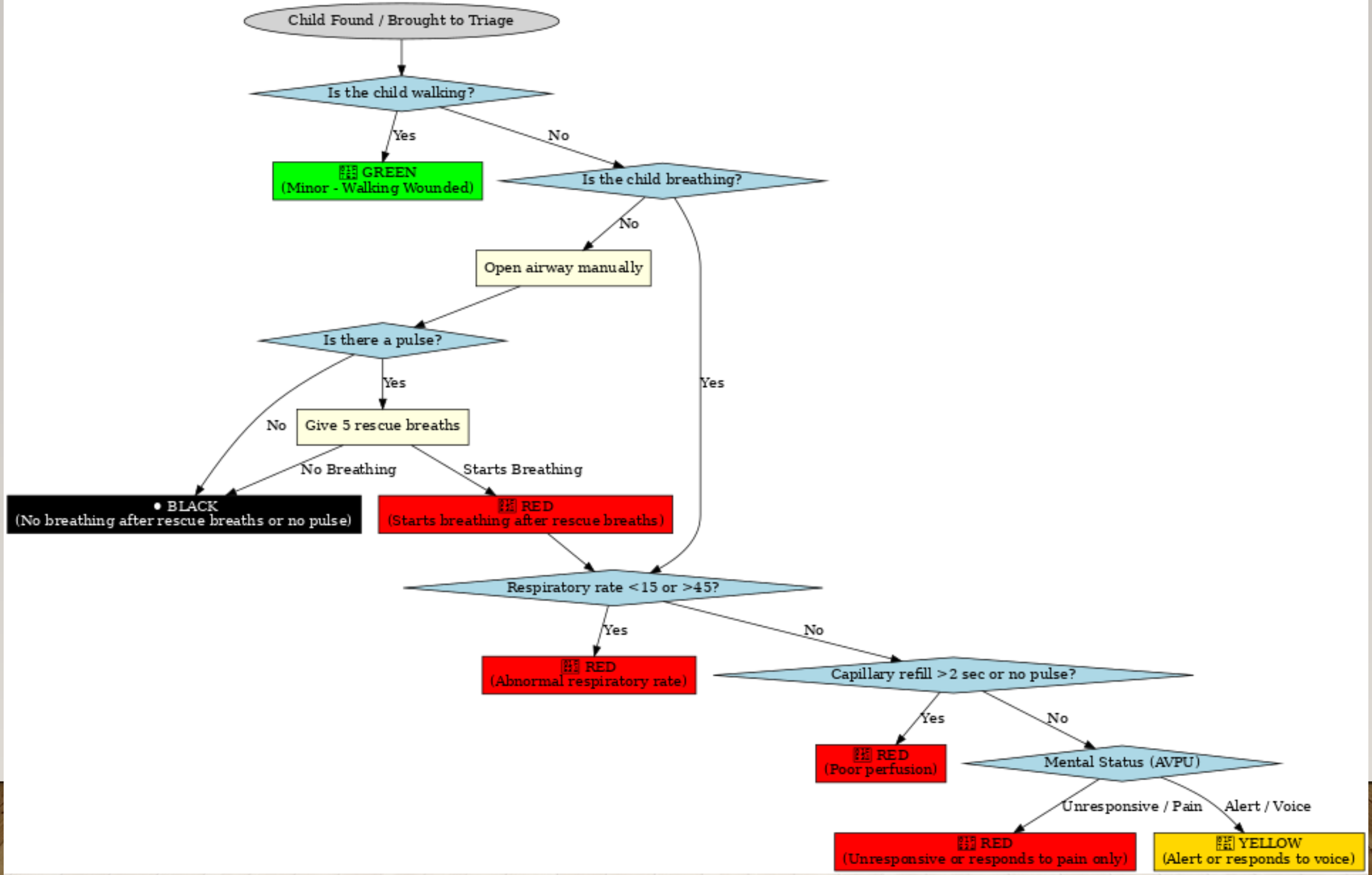
Color	Priority
Red	**Immediate**
Yellow	**Delayed**
Green	**Minor**
Black	**Deceased / Expectant**

TRIAGE

Patient	Condition	Triage Category
Person A	Unconscious, not breathing after airway check	Black
Person B	Breathing rapidly, bleeding heavily	Red
Person C	Fractured arm, conscious	Yellow
Person D	Minor cuts, walking	Green

JUMPSTART TRIAGE IN CHILDREN

- **Is the child walking?**
  - ✅ Yes → 🟢 **Green,** ❌ No → Continue assessment
- **Is the child breathing?**
  - ✅ Yes → Go to step 3, ❌ No → Open airway, Still not breathing?
    - Check **pulse**: Pulse present → **Give 5 rescue breaths,** Still no breathing → ⚫ **Black,** Starts breathing → 🔴 **Red**
      - No pulse → ⚫ **Black**
- **Breathing Rate**:
  - <15 or >45 breaths per minute → 🔴 **Red,** 15–45 breaths per minute → Continue
- **Perfusion (circulation):**
  - No palpable pulse or capillary refill >2 sec → 🔴 **Red**
- **Mental Status (AVPU scale):** A = Alert, V = Responds to Voice, P = Responds to Pain, U = Unresponsive
  - If child is **unresponsive or only responds to pain (P/U)** → 🔴 **Red**
  - If Alert or responds to voice → 🟡 **Yellow**


Child Found / Brought to Triage
Is the child walking?
Yes
No
GREEN
(Minor - Walking Wounded)
Is the child breathing?
No
Yes
Open airway manually
Is there a pulse?
Yes
No
Give 5 rescue breaths
No Breathing
Starts Breathing
BLACK
(No breathing after rescue breaths or no pulse)
RED
(Starts breathing after rescue breaths)
Respiratory rate <15 or >45?
Yes
No
RED
(Abnormal respiratory rate)
Capillary refill >2 sec or no pulse?
Yes
No
RED
(Poor perfusion)
Mental Status (AVPU)
Unresponsive / Pain
Alert / Voice
RED
(Unresponsive or responds to pain only)
YELLOW
(Alert or responds to voice)

TAGGING

- All the patients should be identified with tags stating their
  - name,
  - age,
  - place of origin,
  - triage category,
  - diagnosis
  - and initial treatment

IDENTIFICATION OF DEAD

- Taking care of dead is essential part of disaster management
- It includes
    1. Removal of dead from disaster scene
    2. Shifting to the mortuary
    3. Identification
    4. Reception of bereaved relatives
- Proper respect of dead is of great importance

RELIEF PHASE

- Relief phase begins when the assistance from outside start to reach the disaster area.
- It typically lasts from a **few hours up to several weeks**, depending on the **scale and impact** of the disaster.

Time Since Disaster	Typical Activities
0–24 hrs	Rapid assessment, rescue, basic first aid, food/water
1–3 days	Mass shelters, large-scale food distribution, medical camps
4–14 days	Disease surveillance, sanitation support, social relief
2–4 weeks	Transition to rehabilitation and early recovery planning

RELIEF PHASE

- There are four principal components in managing humanitarian supplies
  1. Acquisition of supplies
  2. Transportation
  3. Storage
  4. Distribution

Item Type	Examples
Food	Rice, wheat, lentils, oil, salt, biscuits
Water	Bottled water, tankers, purification tablets
Shelter	Tents, tarpaulin, mats, ropes
Medical	ORS, first aid kits, basic medicines
Clothing	Sarees, dhotis, blankets, towels
Infant care	Baby food, diapers, milk powder
Sanitation	Buckets, soaps, sanitary pads, latrines

PUBLIC HEALTH ACTIVITIES IN RELIEF PHASE

1. 🦠 **Disease Surveillance & Early Warning**

Daily reporting of **fever, diarrhea, cough, skin infections**

2. 💧 **Safe Water Supply & Sanitation**

Minimum of **15 liters of water/person/day** (WHO guideline), Construction of **emergency latrines** (1 per 20 persons)

3. 🥣 **Nutrition and Food Safety**

Distribution of **2100 kcal/person/day** (minimum standard)

Prevention of **foodborne diseases** via cooked/hot food

PUBLIC HEALTH ACTIVITIES IN RELIEF PHASE

4. 🚑 Emergency Medical Care

Setting up **mobile health camps,** Stocking **ORS, antibiotics, analgesics, anti-malarials**

5. 💉 Vaccination

Re-establishing routine immunization, Cold chain re-establishment

6. 🧘 Mental Health & Psychosocial Support

Provide **psychological first aid (PFA),** Establish **safe spaces** for children and women

7. 🚫 Vector Control

Spraying **larvicides/insecticides** in stagnant water, Distribution of **mosquito nets**

PUBLIC HEALTH ACTIVITIES IN RELIEF PHASE

8. 📢 Health Education & Risk Communication

IEC activities about: Handwashing, Safe drinking water, Safe food handling, Symptoms to report

9. 🧪 Environmental Monitoring

Water quality testing (residual chlorine ≥ 0.5 ppm), Noise and crowd control in shelters

10. 📊 Health Information Management

Registration of all patients seen at camps, **Daily morbidity and mortality reporting**

INDICATORS OF EFFECTIVE RELIEF PHASE

- Rapid response time (<6 hours)
- Sufficient food and water per person per day
  (e.g. ≥2100 kcal/day, ≥15L water/person/day)
- No major outbreaks of disease
- Functional temporary shelters
- Protection of vulnerable groups (women, children, elderly)

REHABILITATION

- The **rehabilitation phase** begins **after the immediate relief phase** is over. It focuses on **restoring normalcy** in the lives of affected people and **rebuilding essential infrastructure and services**, both physically and socially.

- ⏳ **Timeframe:** Weeks to months (may extend into years for large-scale disasters)

REHABILITATION

Objective	Description
🏘️ **Restore essential services**	Water, sanitation, electricity, health, education
👩‍🔧 **Restore livelihoods**	Agriculture, employment, businesses
🧠 **Address long-term health needs**	Physical, mental, and chronic illness care
🧰 **Repair infrastructure**	Homes, roads, schools, hospitals
🛡️ **Enhance resilience**	Safer housing, disaster-resistant systems
👫 **Social reintegration**	Rebuilding community networks, support systems

INDICATORS OF SUCCESSFUL REHABILITATION

Indicator	Benchmark
🏥 Health services	≥80% functionality restored in PHCs
🏠 Housing	All families in secure shelters within 6 months
💧 Water supply	≥15 L/person/day accessible safely
📚 Schools	100% children back to school in 3–6 months
💼 Livelihoods	≥75% recovery in income-generating activities

MITIGATION

- **Mitigation** refers to all activities taken **before a disaster strikes** to **reduce the risk, impact, or severity** of disasters.
- It includes both **structural** and **non-structural** measures that aim to **protect lives, property, and the environment**.

OBJECTIVES OF MITIGATION

- 🛡️ **Reduce hazard impact**
- 👨‍👩‍👧 **Protect people and property**
- 📉 **Minimize economic losses**
- 🔁 **Enhance resilience**
- 🔔 **Reduce need for emergency response**

STRUCTURAL MITIGATION

- IT Involves physical constructions or engineering solutions to withstand disasters.

Disaster Type	Examples
🌊 Flood	Embankments, check dams, floodwalls, elevated buildings
🌪️ Cyclone	Cyclone shelters, wind-resistant roofing
🔥 Fire	Firebreaks, fire-resistant construction materials
🌋 Earthquake	Earthquake-resistant buildings, retrofitting
🌾 Drought	Drought-proofing tanks, drip irrigation systems

NON-STRUCTURAL MITIGATION

- Involves policies, laws, public awareness, and institutional frameworks.

Area	Examples
🌐 Policy	Land-use zoning, no-construction zones in floodplains
📢 Education	Community disaster education, school safety programs
📊 Insurance	Crop/life/property insurance (e.g., PMFBY, PMJAY)
📑 Legal	Building codes (e.g., BIS codes), environmental laws
🛰️ Forecasting	Early warning systems (cyclone alerts, flood forecast)

PREPAREDNESS

- **Preparedness** refers to all planning, training, and readiness activities undertaken **before a disaster occurs**, aimed at enabling effective response and reducing loss of life and property.
- It is a **short-term**, **proactive** phase that ensures individuals, communities, institutions, and governments can act quickly and efficiently when a disaster strikes.

OBJECTIVES OF PREPAREDNESS

- ⏱️ Ensure quick response
- 👨‍⚕️ Minimize casualties
- 🏠 Protect property
- 🔄 Maintain services
- 🧠 Reduce panic

KEY ACTIVITIES IN PREPAREDNESS

1. Preparing Disaster Preparedness Plans
2. Setting Early Warning Systems
3. Conducting Mock Drills & Training
4. Stockpiling Essential Supplies
5. Improving Public Awareness & Education
6. Medical Preparedness
7. Vulnerability & Risk Mapping
8. Developing Communication Systems
9. Maintaining inter departmental Coordination Mechanisms

MITIGATION VS PREPAREDNESS

Aspect	Mitigation	Preparedness
Focus	Risk reduction	Readiness for response
Timing	Pre-disaster (long term)	Pre-disaster (short term)
Examples	Building earthquake-resistant houses	Drills, emergency kits, training

CONCLUSION

- The Disaster Management Cycle is not just a theoretical framework—it is a **lifesaving strategy**, as demonstrated by the swift, coordinated, and effective handling of the **August 2025 Russian earthquake**.
- From triage in the immediate aftermath to long-term rehabilitation and risk reduction, each phase plays a crucial role in protecting human lives and property.
- For communities, governments, and institutions, embracing the **Disaster Management Cycle** is essential not just to respond effectively to disasters, but also to build a **resilient future** where the impact of natural and man-made disasters is minimized.

THANK YOU…