Innovation in mass causality incident management and triage

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Disclaimer

I have no financial liabilities neither partnership to any of the material presented in this take


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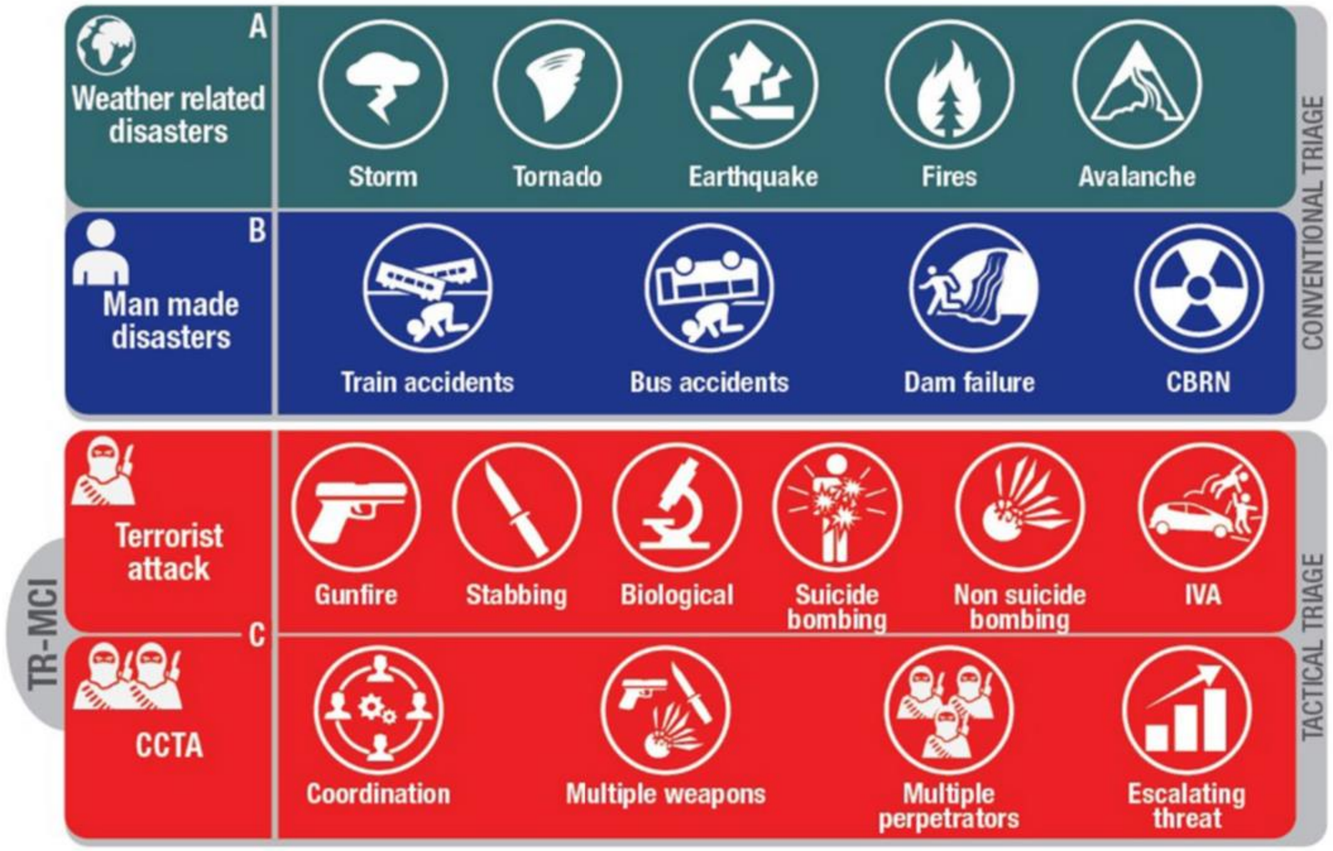
Types of MCI

- ***Two major types of MCI***



How to prepare for MCI?

Education and Training

Education and training

- Continuous and dynamic process
- Simulation and tabletop exercise at all levels I.e. first responders to definitive care
- It should include coordination between non medical agencies I.e. fire fighter, police
- Aim to improve communication and decision making skills during MCI

Technological innovation

- Sensors to monitor viral signs and transfer real time information to Command center and filed staff.

Technological innovation

- ***“DRONES”***
- *Known as Unmanned Aerial Vehicles (UAVs)*
- *They are rapidly becoming a valuable tools for emergency medical services and disaster around the world.*

Drones

Search and rescue

- Can quickly scan large areas, providing aerial views that help locate victims in difficult-to-reach terrain or during natural disasters.
- Equiped with thermal imagine cameras, they can even identify victims in lower light conditions or buries beneath debris
- Example:
  - ***In 2017, a drone helped locate a missing hiker in the Swiss Alps, saving his life.***

Drones

Medical Delivery

- Drones can deliver vital medical supplies, such as blood, medications and defibrillators to patients in remote locations or during traffic congestion
  - This can significantly reduce response times and improves patient outcomes
- Examples:
  - ***In 2020, drones were used to deliver COVID-19 kits and medical supplies to remote areas in Rwanda***

Drones

Disaster Assessment

- Drones can provide real-time aerial imagery of disaster zones, helping emergency responders assess the situation and prioritise their efforts
- Identified damaged infrastructure, locate survivors and direct resources to where they are needed most
- Example:
  - In 2019, drones Were used to assess the damaged caused by Hurricane Dorian in the Bahamas helping to guide recovery efforts

Drones

Telemedicine

- Drones equipped with cameras and communication technology can be used to provide remote medical care to patients in underserved areas
- Especially beneficial for patients with chronic conditions who require regular checkup for consultations in remote locations
- Example:
  - ***In 2021, a drone was used to deliver a telemedicine consultation to a patient on a remote islands in Scotland***

Drones

Public Safety

- Drones can be used to monitor large crowds at the events and public spaces, helping to identify and respond to potential threats
- They can be equipped with loudspeakers to deliver safety announcements or warning
- Example:
  - ***In 2018, drones were used to monitor the crowds during the hajj pilgrimage in Mecca, Kingdom of Saudi Arabia***

Drones

Challenges of using drones in disaster and EMS

- **Regulations**
  - Many countries have regulations in place regarding the use of drones, which can limit their deployment in certain situations
- **Weather conditions:**
  - Drones can be affected by wind, rain, and snow, limiting their usefulness in certain weather conditions
- **Privacy concerns:**
  - Drones used to capture images and video of people without their consent
- **Saftey considerations:**
  - Drones can pose a Safety hazard of not operated properly

Drones

Summary

- Despite the challenges, the future of drones in disaster and EMS is bright.
- As technology continues to improve and regulations evolve
- Drones are likely to become an increasingly important tool for emergency responders around the world

Driver less ambulance

Definition

- *Driverless ambulances have the potential to revolutionise emergency medical services by providing faster, more efficient and safer transportation for patient*

Driver less ambulance

Potential benefits

- **Faster response time:**
  - Drive fast between traffic
  - 50% reduction in response time
- **Improved patient care**
  - Paramedics focus solely on providing care to patients
- **Reduced costs**
  - Labor, fuel and maintenance costs
- **Increased safety**
  - Less prone to accidents than human-driven vehicles

Driver less ambulance

Challenges

- Public acceptance
- Regulatory rules
- Technology limitation (I.e. still underdevelopment)

Artificial intelligence

Potential & promising uses

Artificial intelligence

Dispatch

- **Automatic Speech Rocognition (ASR)**
  - Software that transcribes emergency calls can help dispatcher to identify critical information and dispatch appropriate resourseces faster to the patient
- **Predictive dispatch**
  - AI can analyse historical data to predict demand for EMS services and pre-deploy resources in response to disaster
- **Medical Priority Dispatch systems**
  - AI can assist dispatchers in prioritising emergency calls bases on the patient’s symptoms and medical history

Artificial intelligence

Prehospital care

- **AI-powered diagnostic tools:**
  - Tools to analyze medical images, vital signs and other data can assist paramedics in diagnosing patients faster and more accurately
- **AI-driven treatment protocols:**
  - AI can suggest optimal treatment protocols on the patient’s condition and available resources
- **Remote patient monitoring:**
  - AI-enabled wearables and sensors can continually monitor a patient’s vital signs and transmit them to medical professionals in real time

Artificial intelligence

Training

- **Immersive training simulation:**
  - AI can create realistic virtual environments for paramedics to train in high-risk, low-occurrence scenarios
- **Personalised learning:**
  - AI can recommend tailored learning materials and training exercise to individual paramedics based on their strengths and weaknesses

Artificial intelligence

Challenges and considerations

- **Cost and implementation:**
  - Implementing AI-powered solutions can be expensive and require significant changes to exisiting workflows
- **Data privacy and security:**
  - AI systems require access to large amounts of sensitive patient data, raises concerns about privacy and security
- **Ethical consideration:**
  - AI algorithms should be developed and used in a way that is fair, transparent and accountable
- **Lack of standardised data:**
  - Lack of standardised data across different agencies can make it difficult to develop and deploy AI-powered solutions

Artificial intelligence

Summary

Overall, AI has the potential to significantly improve the quality and efficiency of care during disaster situation. However, it is important to address the challenges and considerations before widespread adoption.

Social media

- Provide valuable information for general public

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