



Confounding On-the-Ground Compounds: The Challenges of Chemical Attacks by Terrorists



Asa M. Margolis, DO, MPH, MS, FACEP
Deputy Medical Director, United States Secret Service
Assistant Professor
Department of Emergency Medicine
Division of Special Operations
Johns Hopkins Medical Institutions



Disclosure

I have no disclosures of any financial or commercial interests or relationships



Objectives

- Review the evolving landscape with respect to chemical agents
- Discuss the response to an attack with an unknown substance
- Review the countermeasures utilized during a chemical attack



The Problem

Terrorist attacks are increasing in frequency and complexity throughout the world, including the use of chemical-warfare agents.



The Objective

The classes of chemical-warfare agents that are most rapidly lethal (i.e., nerve and opioid agents and asphyxiants), should be quickly addressed with the use of a toxidrome-based system of rapid triage

The Evolving Landscape

- Moscow Theatre Siege 2002 – deaths from aerosol of fentanyl-related compounds





The Evolving Landscape

- Assassination of Kim Jong-nam on February 13, 2017 with reported VX nerve agent
- Poisoning of Sergei and Yulia Skripal on March 4, 2018 with reported Novichok agent
- Poisoning of Charlie Rowley and Dawn Sturgess on June 30, 2018 with reported Novichok agent



Fourth Generation Agents (FGAs)

- Also known as A-series or Novichok
- Chemical warfare agents that are unique organophosphate compounds
- More persistent than other nerve agents
- At least as toxic as VX



Fourth Generation Agents (FGAs)

- May cause rapid or delayed onset of symptoms
- Require more aggressive supportive care, greater amounts of medication, and longer duration of treatment



Fourth Generation Agents (FGAs)

- Diarrhea
- Urination
- Miosis
- Bradycardia, Bronchorrhea,
Bronchospasm
- Emesis
- Lacrimation
- Salivation, Secretions, Sweating
- Salivation
- Lacrimation
- Urination
- Defecation
- Gastro
- Emesis
- Miosis

SLUDGE + killer Bs



FGAs – Prehospital Management

- **ABC** – supportive care
- **Decontamination** – Remove clothing, spot decontamination / gross decontamination
- **Drugs** – anticholinergics, reactivators, and anticonvulsants



FGAs – Prehospital Management

Decontamination = medical countermeasure that mitigates the conversion of an external dose to an internal dose



FGAs – Prehospital Management



A horizontal banner at the top of the slide features a close-up, slightly blurred image of the American flag, showing the stars and stripes in detail.

Keys to Success ?

- Define and educate about the problem
- Availability of job aid
- Simplify to the fewest number of steps / decision points
- Focused training



Conclusion

- Rise in complex, multimodal terrorist attacks
- FGAs present new unique challenges
- Ongoing preparedness for all hazards
- Job aids can help simplify the approach to a few immediate, time-critical steps

Thank You For Your Attention



