



Ethical, Legal and Social Issues Associated with Infectious Disease Emergencies

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Infectious Disease Emergencies (IDE's)

- **Naturally occurring infectious diseases**
- **Emerging or re-emerging infectious diseases**
- **Deliberately caused outbreaks - bioterrorism**



Examples of Biological Agents Associated with IDE's

- **Infectious and contagious:**
 - **Smallpox, plague, VHF, influenza, SARS, polio**
- **Infectious but not contagious:**
 - **Anthrax, tularemia, cryptosporidiosis, West Nile Fever**
- **Toxins:**
 - **Botulinum, ricin**



Simulated Event of Pneumonic Plague



Scenario Overview

- **Aerosolized pneumonic plague bacteria dispersed in public bathrooms of heavily populated buildings**
- **Each release location will directly infect 110 people**
- **The secondary infection rate is used to estimate the total infected population**



Hypothetical Basic Data

- **Selected Inputs:**

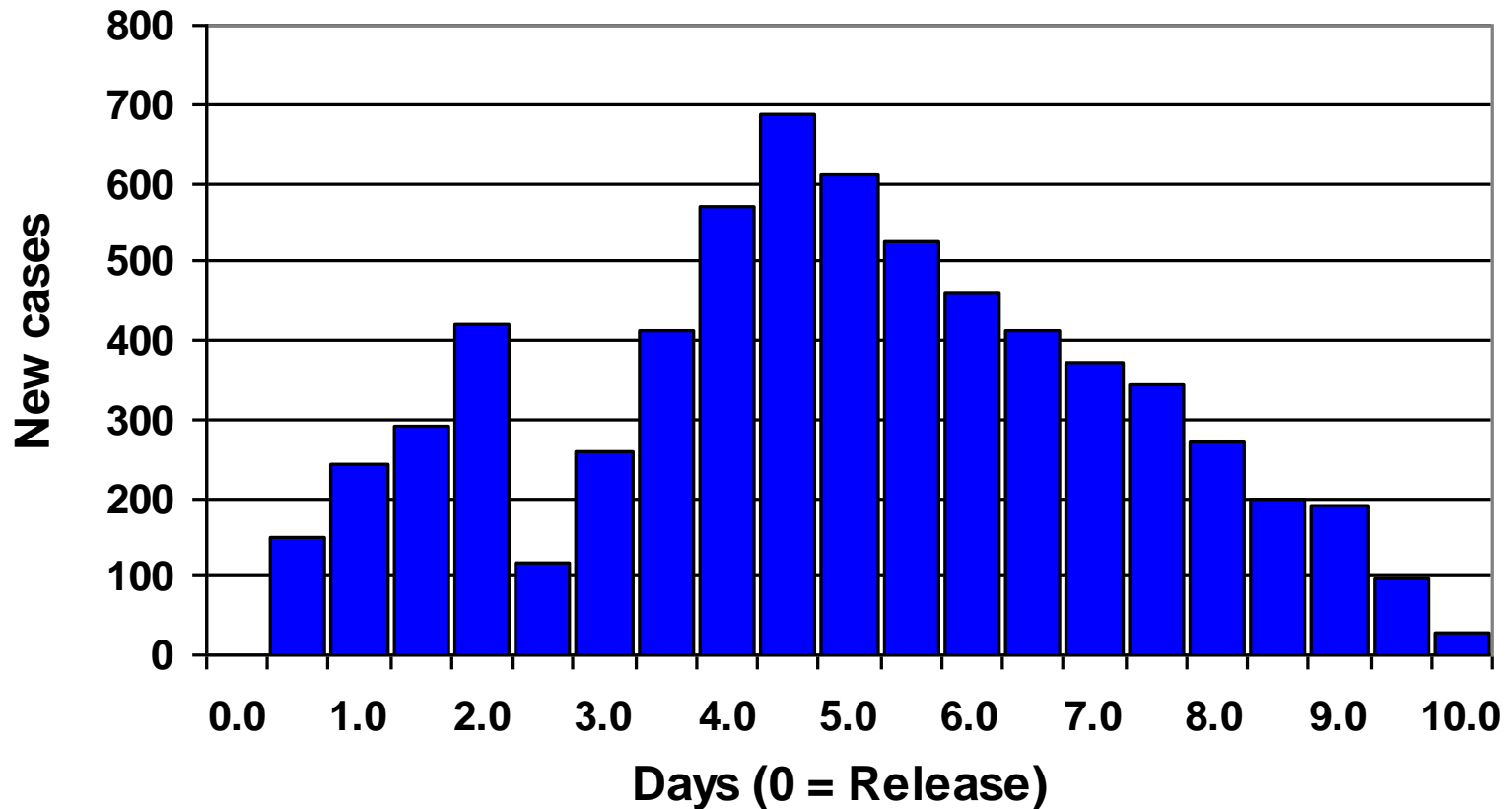
- **Release locations: 10**
- **Secondary Infection Rate: 5**

- **Casualties:**

- **Initial infected population: 1,100**
- **Secondary infected population: 5,544**
- **Total Plague Cases: 6,644**



The Epidemic Curve





Response to the Outbreak



Activities Following Identification of the Outbreak

- **Isolation**
- **Protection of health care workers**
- **Treatment**
- **Epidemiological investigation**
- **Burial of dead**
- **Evacuation**
- **Quarantine**
- **Social distancing**
- **Pharmacological prophylaxis**
- **Restriction of international travel**

Key Ethical Values

- **Individual liberty**
- **Protection of the public from harm**
- **Proportionality**
- **Reciprocity**
- **Transparency**
- **Privacy**
- **Protection from undue stigmatization**
- **Duty to provide care**
- **Equity**
- **Solidarity**



Timing of Actions Following a Report of a Suspected Outbreak

- **The first hour**
- **The first 24 hours**
- **The second day**
- **The third day**
- **The next four days**
- **The duration of the outbreak**
- **The aftermath**



Ethical and Legal Issues

- **Isolation - immediate**
- **Mortuary services - immediate**
- **Protection of health care workers - immediate**
- **Epidemiological investigation -data privacy - immediate**
- **Treatment priorities (triage) – the first 24 hr**
- **Evacuation – the second day**
- **Quarantine – the second day**
- **Social distancing – the second day**
- **Pharmacological prophylaxis – from the second day**
- **International travel – from the second day and the aftermath**



Legal Aspects of Quarantine

- **Not always clear legislation**
- **Not clear when to enforce**
- **How much force is permitted to enforce quarantine?**
- **Development of non-lethal weapons to restrict movement**



Legal Aspects of Evacuation

- **Can force be used?**
- **Protection of private property**
- **Who carries it out?**



First Responders – Safety and Restriction to Place of Work

- **Protective measures including vaccines – are they priorities?**
- **Liability**
- **Are there legal measures to ensure that they remain at work**



Border Closures

- **Not always clear guidelines**
- **Major economic and social consequences**

Case Study of SARS in Canada





SARS 1 in Canada – The First Case

- **Mrs K returned to Toronto from Hong Kong on Feb 23, 2003**
- **Two days later developed a high fever, muscle pains and cough**
- **Died at home on March 5**
- **Death certificate recorded heart attack as cause of death**



The Son

- **Two days later, her son, Mr. T, arrived at the ER with fever, respiratory symptoms**
- **Kept in an open emergency ward for 18 hours before being admitted, intubated, and put into ICU**
- **Toronto Public Health Office notified**
- **The rest of the family asked to isolate themselves at home**



WHO

- **On March 12, WHO issued a global alert regarding the mysterious illness**
- **Physicians in Toronto hospitals were not notified**
- **The son died on March 13**



The Spread

- **The patient next to Mr. T returned to the hospital on March 15 with fever and respiratory symptoms**
- **His wife and three other family members were infected**
- **His wife infected 7 visitors to the emergency department, 6 hospital staff, 2 patients, 2 paramedics, a firefighter and a housekeeper**



The Emergency

- **On March 26, Ontario premier declared SARS a provincial emergency under the Emergency Management Act**
- **Hospitals were ordered to activate their “Code Orange” alert**
- **This restricts routine services and can do harm to others**



SARS and Restriction of International Travel



SARS 1 - Canada

- **Ended by mid-May 2003**
- **Eased infection control procedures**
- **SARS 2 started on May 23**



SARS 2 - Canada

Dr Richard Schabas, York Central Hospital

- **“SARS 1 was not avoidable...**
- **We were struck by lightning”**
- **“Everything after that was avoidable”**



WHO Travel Advisory Criteria for SARS

- **The presence of at least 60 probable SARS cases**
- **Export of SARS to other countries**
- **Community spread**



Comments on the WHO Travel Advisory During SARS in Canada

- **“Whether the WHO travel advisory was justified or not remains debatable”**
- **“What is beyond debate is the fact that the economic and social impact of such advisories can be devastating”**



Validity of the WHO Travel Advisory Criteria for SARS

- **“None of these criteria have been validated as a reason for issuing a travel advisory”**
- **“The number of cases is a function of the size of the community (?)”**
- **“Spread in the community was never explicitly defined”**



Questions about the WHO Travel Advisory During SARS in Canada

- **“What is the process whereby different nations and international agencies such as WHO generate criteria for travel advisories and proceed to issue them?”**
- **“What are the benefits and harms of travel advisories?”**



Important Questions

- **How adequate is current legislation for dealing with isolation of patients, quarantine and social distancing?**
- **Can workers be forced to remain at work (particularly health workers)?**
- **Are the international health regulations adequate (IHR)?**
- **Are the regulations appropriate for implementation in real time?**



Conclusions

- **Responses to IDE's are accompanied by numerous ethical, legal, and social issues**
- **Many questions remain outstanding**
- **In particular, the legislation regarding quarantine, social distancing and travel restrictions may be inadequate**

Thank you for your attention!





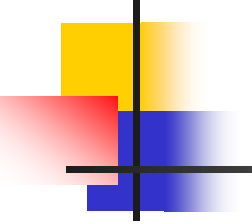


Questions



Second Case Study

Anthrax



Anthrax Outbreak at Sverdlovsk

Non-Contagious Disease

Refs:

1. Jeanne Guillemin, Proc Amer Phil Soc 2002;146:18-36
2. Biot #324: Jan 22, 2006. Internet



The Outbreak

- **Release of anthrax spores from a biological weapons facility**
- **Probable exposure date - April 2, 1979**
- **6 admitted to hospital on April 4**



Case 1 – Anna Komina

- **Age 54**
- **On April 4, faintness, dizziness, trouble with breathing**
- **April 8, collapsed at home, hospitalized and died the following day**
- **Family given tetracycline**



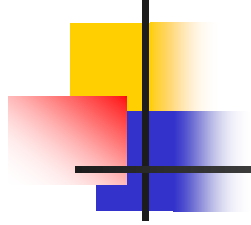
Case 2 – Mikhail Markov

- **Age 47**
- **Illness started on April 6**
- **Symptoms – cough**
- **Doctor diagnosed flu**
- **April 9, felt cold, was shivering, developed a fever**
- **Died that night in hospital**



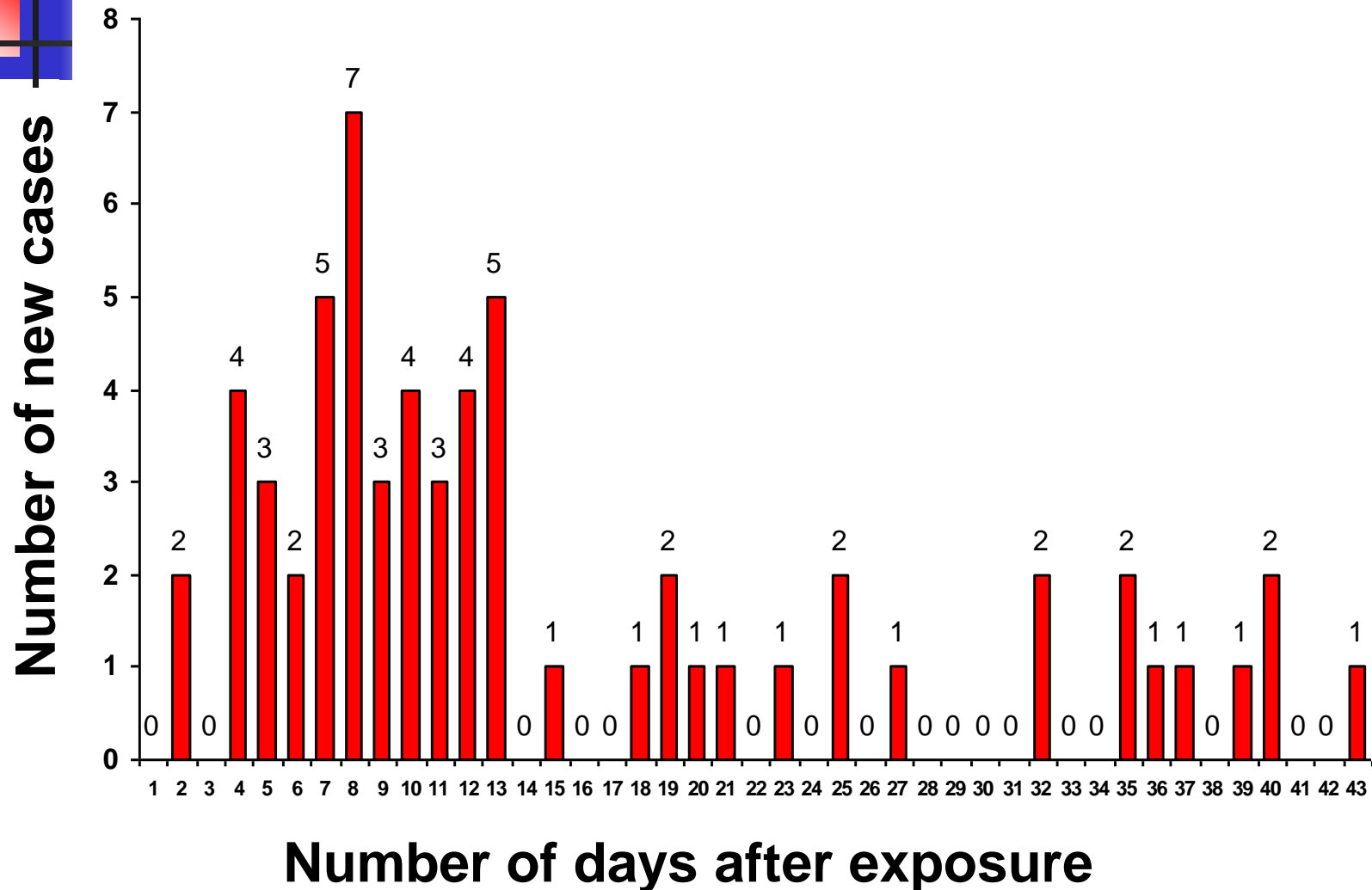
Warnings

- **On April 7 and 8, Dr Yakov Klipnitzer, warned by his physicians that two patients had arrived at the hospital and died suddenly**
- **Other deaths reported**
- **Dr. Nikolay Babich, epidemiologist, decribed how people died in streetcars and lobbies of buildings**



The Epidemic Curve

Number of new cases after accidental release of anthrax spores – Sverdlovsk, 1979





Legal and Ethical issues

- **Production of biological weapons**
- **Public's right to know about possible exposure**
- **International notification**