

COUNTERING  
THE MISUSE OF  
CBRN  
MATERIALS AND  
RELATED  
INFORMATION

**Biological weapons and public health:  
challenges and opportunities**

Dr Maria Espona

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NATURAL  
OUTBREAKS

ACCIDENTAL  
OUTBREAKS

INTENTIONAL  
OUTBREAKS



FORENSICS, DISEASE  
SURVEILLANCE, DATA  
ANALYSIS WILL HELP TO  
IDENTIFY THE ORIGIN OF  
THE OUTBREAK

IDENTIFICATION  
AND  
TREATMENT

UNDER THE PROPER BIOSAFETY CONDITIONS

DECONTAMINATION  
AND WASTE  
MANAGEMENT

While in front of a disease outbreak, at the very first moment it is not possible to understand its origin.

But, gathering data about the patients, their activities over the past few days, knowing the national epidemiological situation allows to get closer to understand its origin and which disease is affecting people.

Why is this important:

- To treat the patients as fast as possible against the right disease, under the proper biosafety conditions;
- To isolate, if needed, the patients and set up an environment to treat accordingly without risking the doctors and nurses (including ventilation system);
- Set up a chain of custody of the biomaterials, decontamination, and execute safe waste management;
- Understand the origin, and in case of:
  - Natural: check if the usual pattern of the disease changed;
  - Accidental: inspect, assess and improve the biosafety conditions at the lab; and
  - Intentional: identify and prosecute the perpetrators.

# Challenges and opportunities 1

## Early detection/biological agent identification

- create a reporting system and health care and laboratories network;
- data gathering and analysis (including artificial intelligence) that would be applicable to all the possible scenarios;
- data protection and secure sharing; and
- raise awareness in the health care system to expect the unexpected and react in a fast and safe way.

## Biosafety situation

- in laboratories, usually is good; but
- in the health care system, not so much (e.g. problems with the central heating or ventilation systems; good practices implementation; etc)

## Challenges and opportunities 2

### Climate change

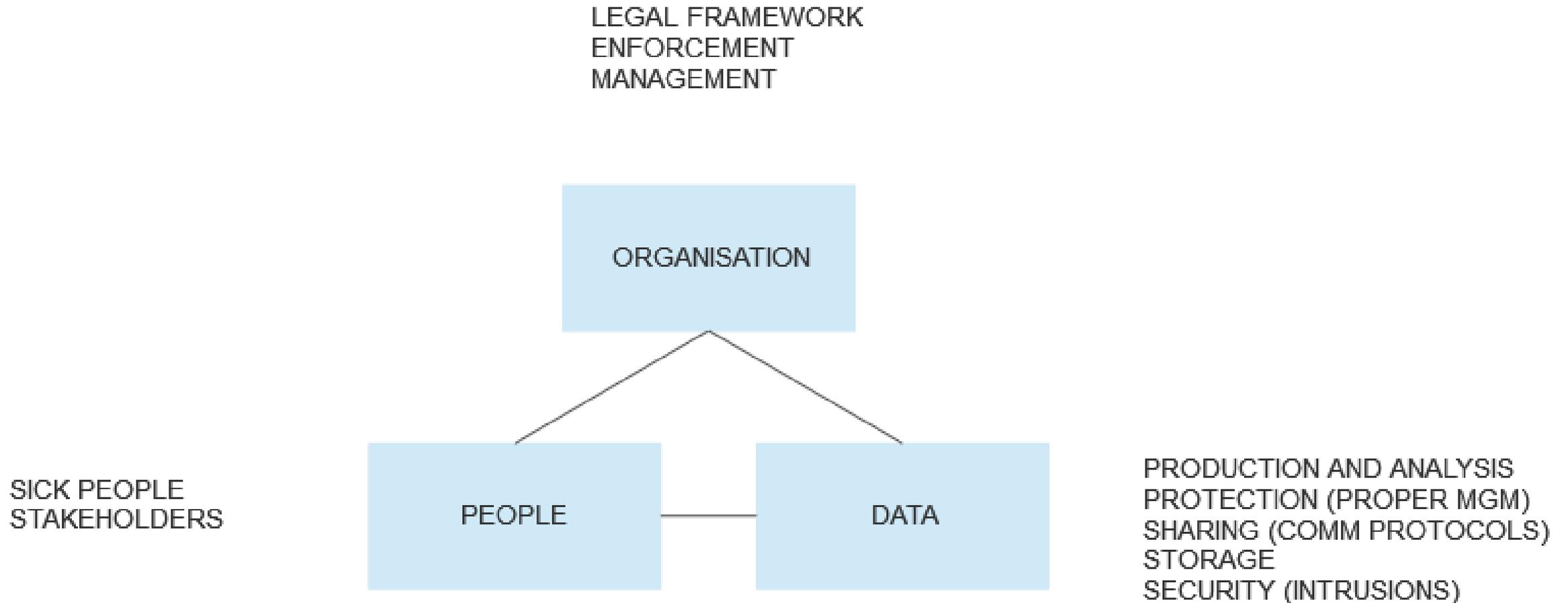
- alters biological agents distribution, evolution (including new species or properties), hosts, vectors, etc.
- changes the environment and as a consequence, the biodiversity and its dynamic
- infrastructure: could be affected (structurally) or render obsolete.

## **Challenges and opportunities 3**

### Science and technology evolution

- new developments
- old stuff with new applications (innovation)
- convergence of disciplines (difficulties related to risk assessment, communication)

One of the biggest challenges is the lack of a governance of biorisks framework (systemic approach to the problem) that includes all the relevant stakeholders, activities and data



## **Final thoughts**

It is possible to identify many challenges, but also opportunities for improvement.

Here we mostly discussed the case of biological agents affecting humans, but the same analysis is needed for the animal and plant diseases.

A transdisciplinary approach to build a governance framework, which will include not only the stakeholders, data and organisations involved, but the current swiftly changing landscape.

Thank you!



[mariaespona@argiq.com.ar](mailto:mariaespona@argiq.com.ar)