

Biosafety & Biosecurity Overview



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Biosafety

- “The application of a combination of laboratory practices and procedures, laboratory equipment and safety equipment for working with potentially infectious micro-organisms”

Role of laboratory services



Objectives

- To recognize overarching International Biosafety authorities
 - To recognize societal expectation with regards to Biosafety and Biosecurity
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Biosafety and Biosecurity

- ❑ Biosafety protects people from the germs
 - Containment principles, technologies and practices to avoid unintentional exposure to pathogens or toxins or accidental dispersion
- ❑ Biosecurity protects germs from people
 - Institutional and personal security measures developed to avoid the loss, theft, misuse, dispersion or intentional use of pathogens and toxins



Strengthening Biological Risk Management



Vision for Integrated BioRisk Management:

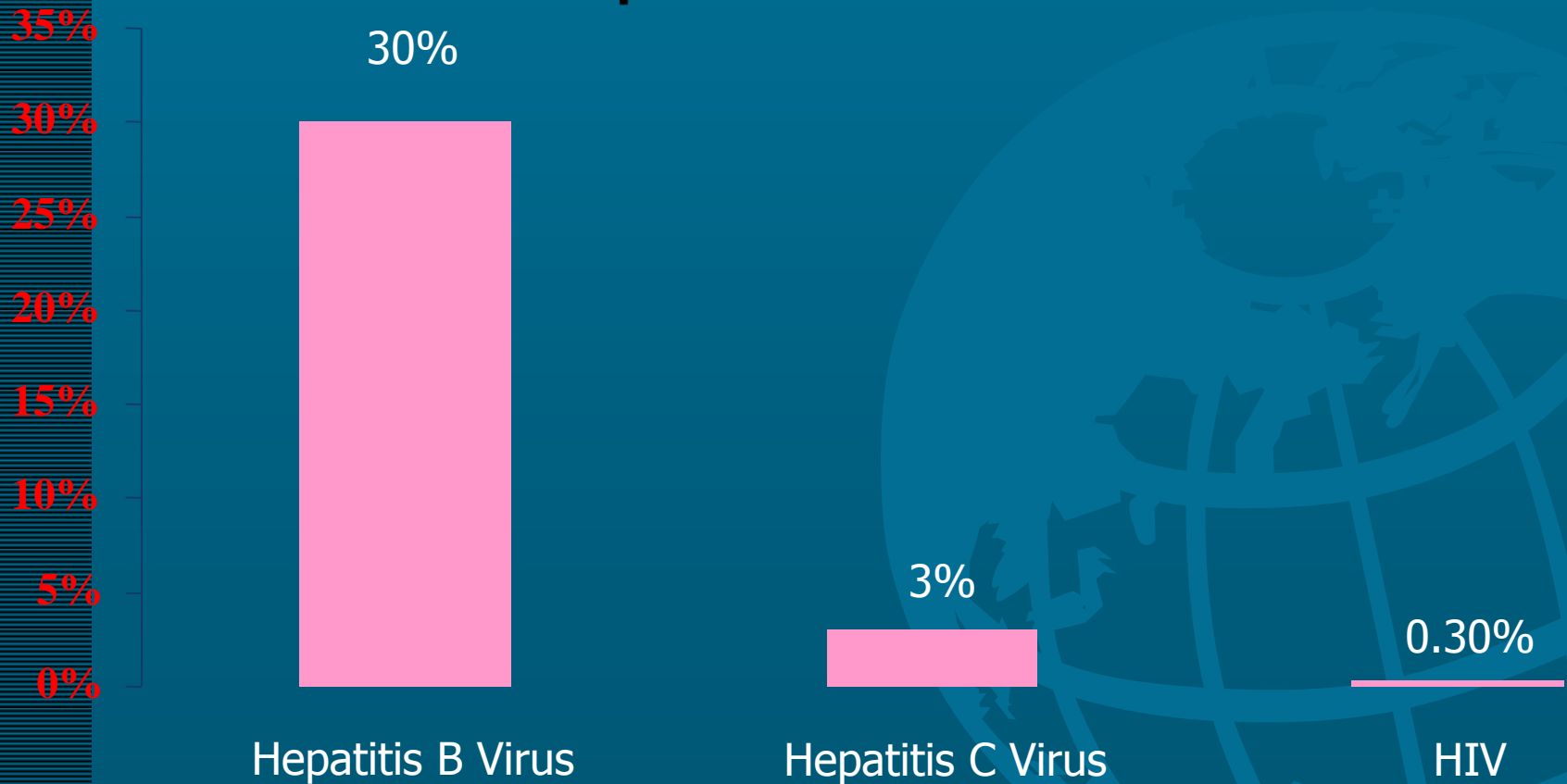
- ✓ Increased focus on "awareness" to change current culture
- ✓ Clarify terminology
- ✓ Development of targeted "training strategies"
- ✓ Securing "commitment" from key stakeholders, including government officials, who must be on board
- ✓ Continue increasing "capacity" based on Regional/Country needs and establish accountability through development of Country "report cards"

SOME POTENTIAL AGENTS

- Biological weapons are any disease causing bacteria, virus, or natural toxin that can be used against an enemy.



Estimated risk of infection from accidental injury from the needle of an infected patient



Source: study of needle injuries among healthcare personnel

Laboratory accidents and biosafety

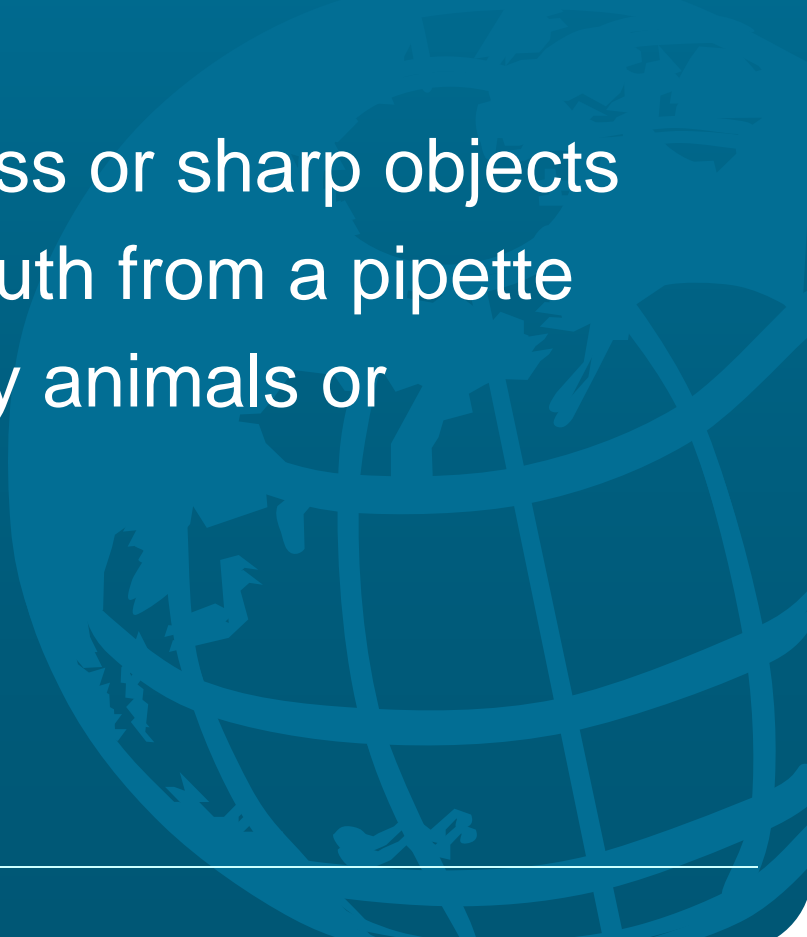
- Influenza H1N1 Russia 1977
- SARS: Singapore 2003
- SARS: Taiwan 2003
- SARS: China 2004
- Tularemia: USA 2004
- Ebola: Russia 2004

What if:

- The smallpox virus was released?
- A laboratory released the polio virus after its eradication?

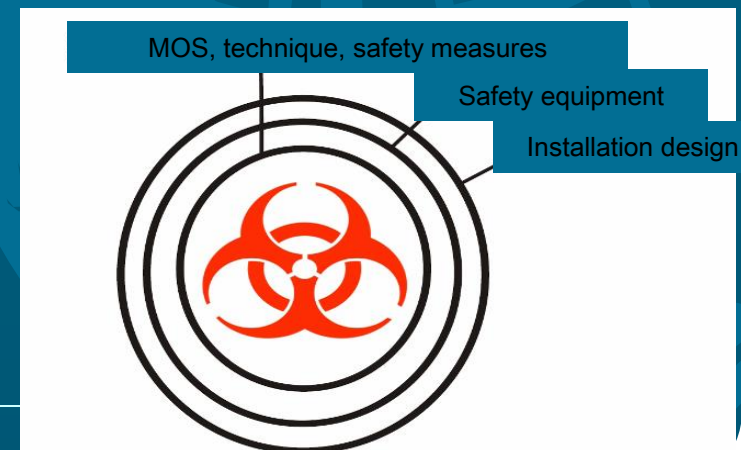


5 main types of accidents

1. Accidents involving the use of needles or syringes
 2. Spills and aerosols
 3. Injury from broken glass or sharp objects
 4. Aspiration into the mouth from a pipette
 5. Bites and scratches by animals or ectoparasites
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What are the goals of biosafety measures?

- The ultimate goal is to ensure proper containment of pathogens
- Obtained in different ways
 - Good knowledge of causal agents, their epidemiology and the risks associated
 - Laboratory techniques and practices
 - Safety equipment (primary barrier)
 - Organization of premises (secondary barrier)
 - Destruction of agents
- We will be taking a look at these different aspects

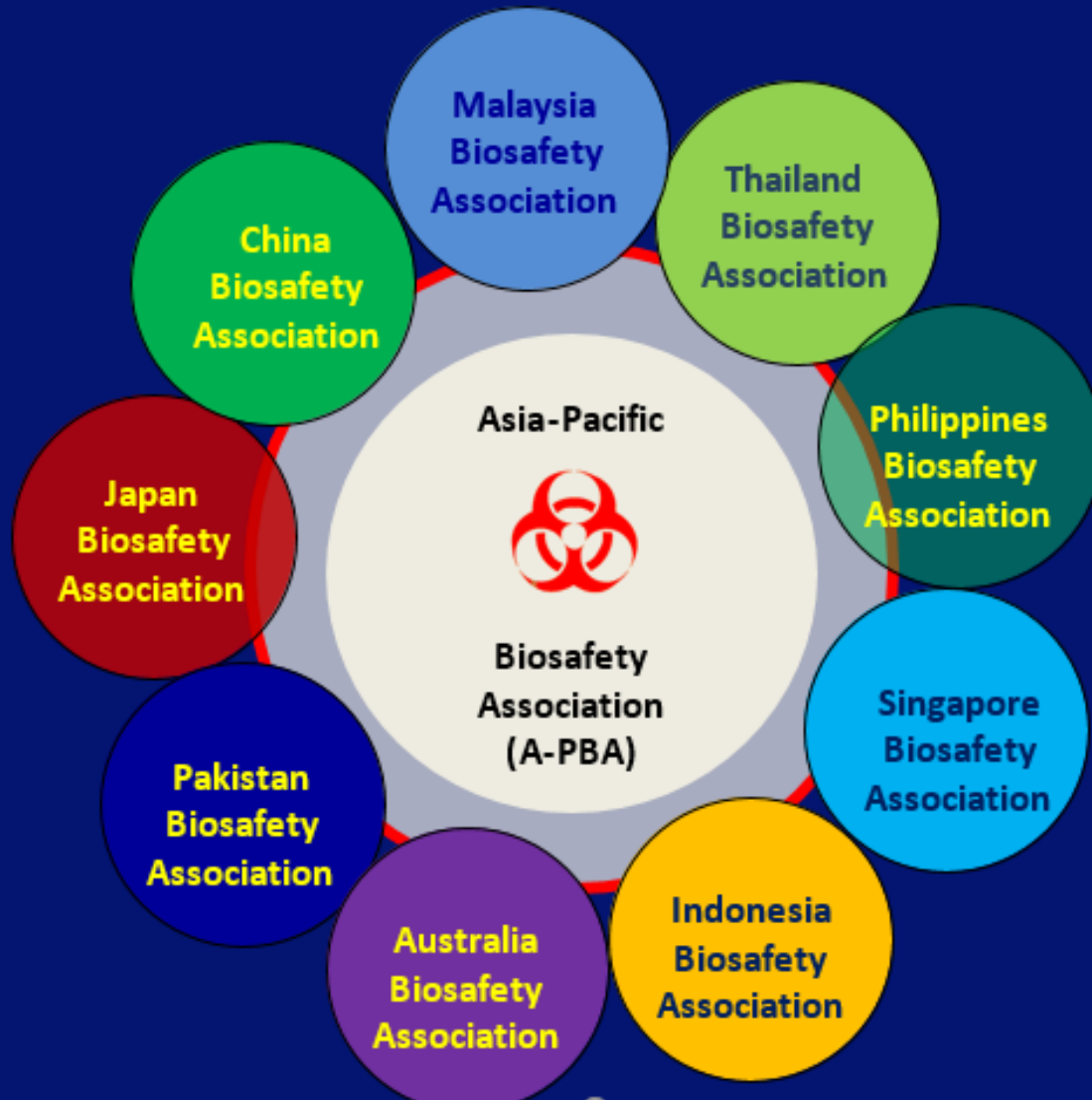


Related issues to take in consideration

- Biosafety
- Biosecurity
- Biorisk
- Bioweapon
- Dual use
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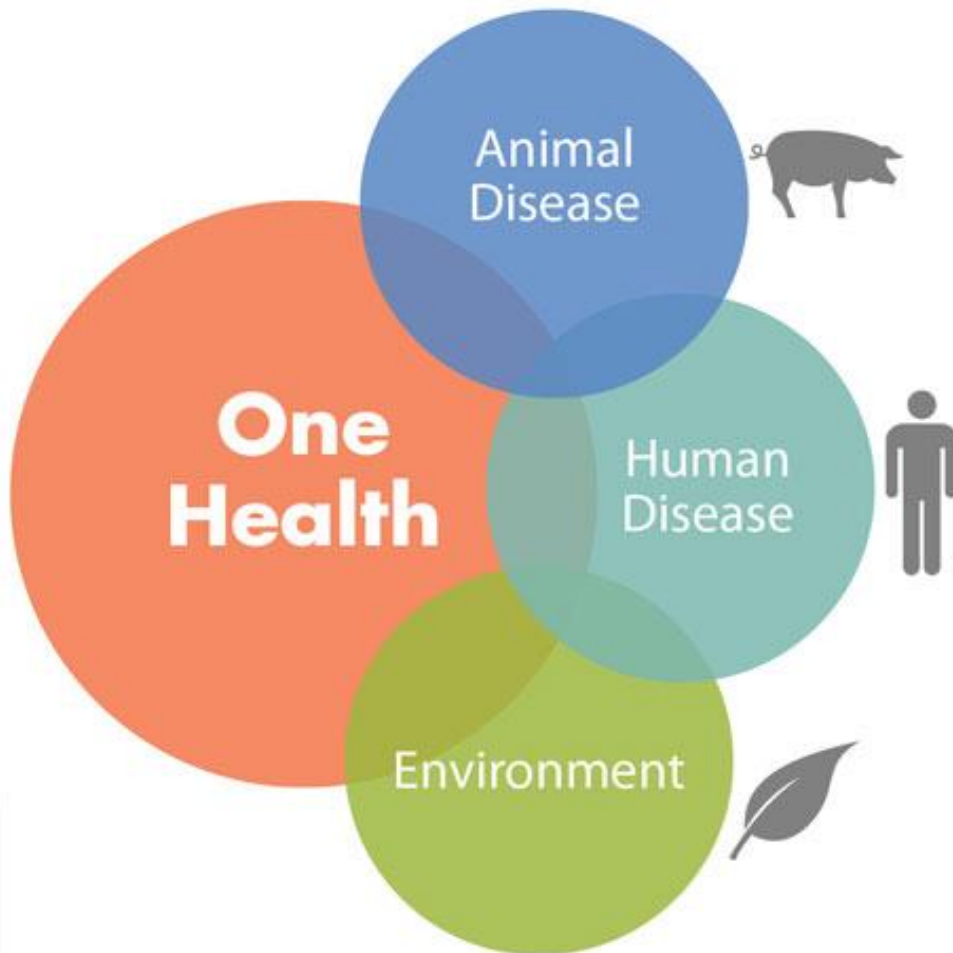


A-APBA



One Health

ONE HEALTH



The One Health concept recognizes the interrelationship between animal, human and environmental health.

Joint External Evaluation (JEE)

- Biosafety and Biosecurity is one of components of International Health Regulation (2005) Joint External Evaluation
- Many countries in the region conducted JEE in 2017
- Lao PDR had conducted JEE in 21-24 February 2017



Biosafety and Biosecurity Recommendation

- Establish a national licensing and regulating body for biosafety and biosecurity. In addition to facility management regulations, this body should create national standards and guidelines for:
 - packaging and transportation of samples (both domestically and internationally),
 - training and certification,
 - assessment and inspection, and
 - administration of occupational health programs for laboratorians.

Biosafety and Biosecurity Recommendation (Con't)

- Conduct a national inventory of dangerous pathogens across all human and animal health labs, using a list of select agents specifically identified for Lao PDR, and update laboratory-specific risk assessments as appropriate following this inventory.
- Identify, train, and credential biosafety/biosecurity officers and security managers for all regulated human and animal health laboratory facilities throughout the country

Objectives of JEE

- To enhance Biosafety and Biosecurity to improve the understanding of laboratory technicians and policymakers and maximize the use of national resources employed to comply with internationally-mandated requirement;
- To Improve Biosafety and Biosecurity for laboratory and hospitals to protect both health workers and patients from occupational hazard associates with handling of hazardous laboratory supplies and chemical;
- Experience sharing from ASEAN members for Lao implementation

Conclusion

MOS, technique, safety measures

Safety equipment

Installation design



- The main challenge = containment
- If containment fails → destruction or inactivation of the agent

- These key points depend upon good preparation that has been implemented and practiced before hand
- It will be very difficult to carry out organized emergency action without prior preparation

ANGER MANAGEMENT



Sometimes when you are angry with someone,
It helps to sit down and think about the problem.

Reference:

- Dr. TM Chua

Thank you

