Biosafety for Research and Clinical Trials Policy

Joseph Roberts, Provincial Lead – Research Integration,
Health System Access, Health Evidence & Innovation, PCE

October 28, 2024

Alberta Health Services

Outline

- Federal legislation and guidance
- Biosafety risks in clinical research
- Why does AHS need a biosafety policy for clinical research?
- Biosafety policy components
- How does the new policy impact you?

What is Biosafety?

- Containment principles, technologies, and practices that are implemented to prevent unintentional exposure to regulated materials (e.g., human pathogens and toxins), and their accidental release

Biosafety Terminology

Legislation

- Federal Human Pathogens and Toxins Act (HPTA) and Regulations (HPTR)

Program

- Includes a biosafety manual, biosecurity plan, institutional biosafety committee (IBC), training program, waste management, emergency response plan, etc.

Licence (PHAC)

- Issued to facilities (i.e., buildings), not studies, departments, institutes, etc.
- Lists a licence holder and biosafety officer (BSO)
- Requires a plan for administrative oversight (accountability, support, etc.)

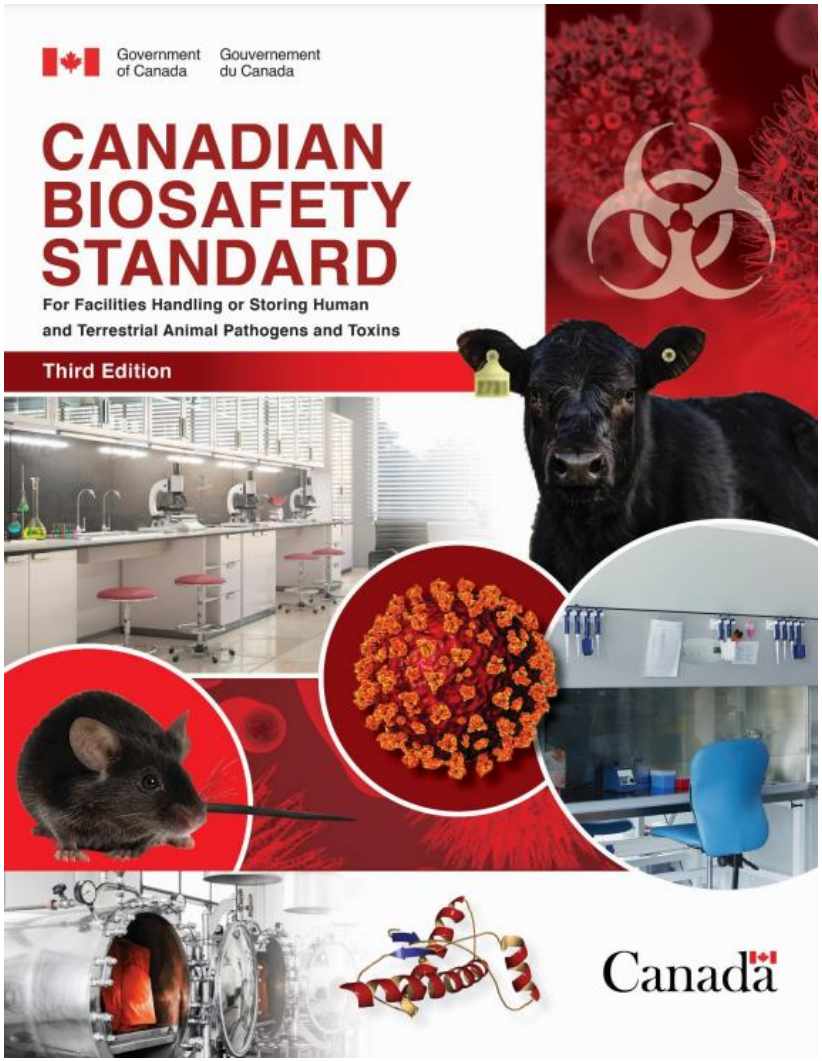
Biosafety in Canada is Federally Legislated

Human Pathogens and Toxins Act (HPTA) and Regulations (HPTR) – major revision 2015

- Licence exclusion: "a drug in dosage form whose sale is permitted or otherwise authorized under the *Food and Drugs Act* or contained in such a drug." (*HPTA* Section 4(b))

Clinical trials are regulated by the *Food and Drugs Act* and typically excluded from biosafety licence requirements

- "take all reasonable precautions to protect the health and safety of the public against the risks posed by that activity" (*HPTA* Section 6)
- *Reasonable precautions* in the clinical context is **not** defined by the HPTA, HPTR, or the Government of Canada


Government of Canada
Gouvernement du Canada
CANADIAN BIOSAFETY STANDARD
For Facilities Handling or Storing Human and Terrestrial Animal Pathogens and Toxins
Third Edition
Canada


Government of Canada
Gouvernement du Canada
CANADIAN BIOSAFETY HANDBOOK
AUTHORIZED PERSONNEL ONLY
BIOHAZARD
Second Edition
Canada

Biosafety = Safety

AHS cares safety

Safety is a Core Value of AHS

Examples of clinical trials with biosafety considerations include:

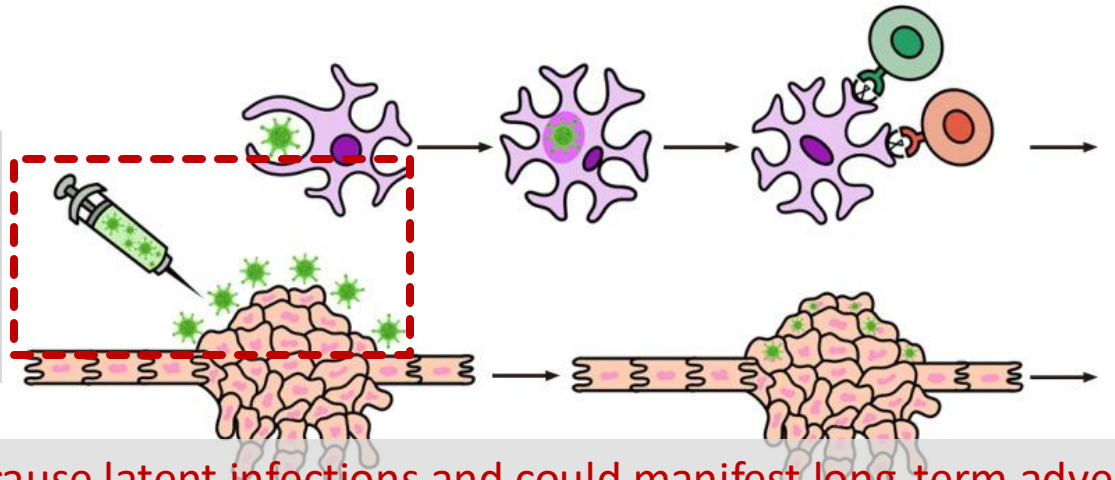
- Oncolytic virus therapy
- CAR T-Cell therapy
- CRISPR gene editing therapy

Commonly identified biosafety risks/concerns with biologic-based trials include:

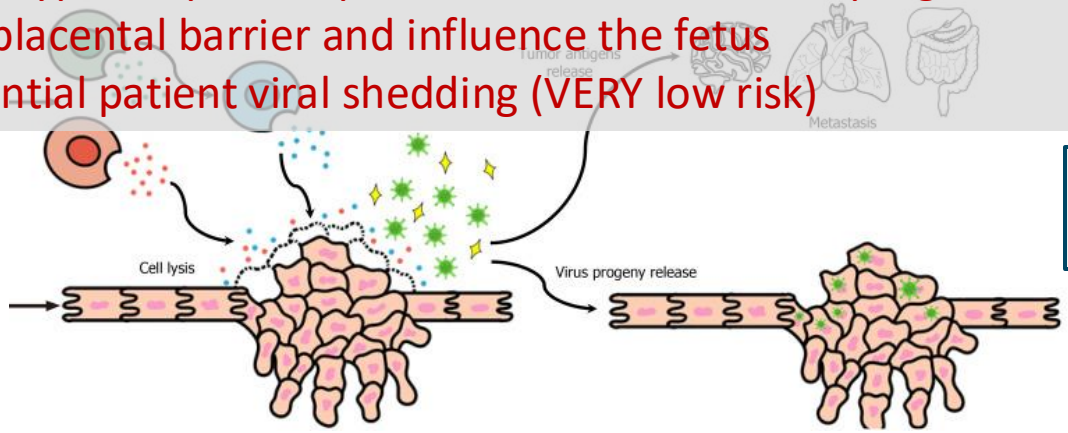
- Potential for latent infections and manifestation of long-term adverse effects
- Little to no available research on exposure consequences to healthy, pregnant/breast feeding, or immune-compromised individuals
- Potential for patient viral shedding (VERY low risk)

Oncolytic Virus Therapy

Genetically modified viral vector (e.g. Vaccinia virus)



- Can cause latent infections and could manifest long-term adverse events
- Wild-type Herpes Simplex Virus-1 could infect a pregnant woman, cross the placental barrier and influence the fetus
- Potential patient viral shedding (VERY low risk)

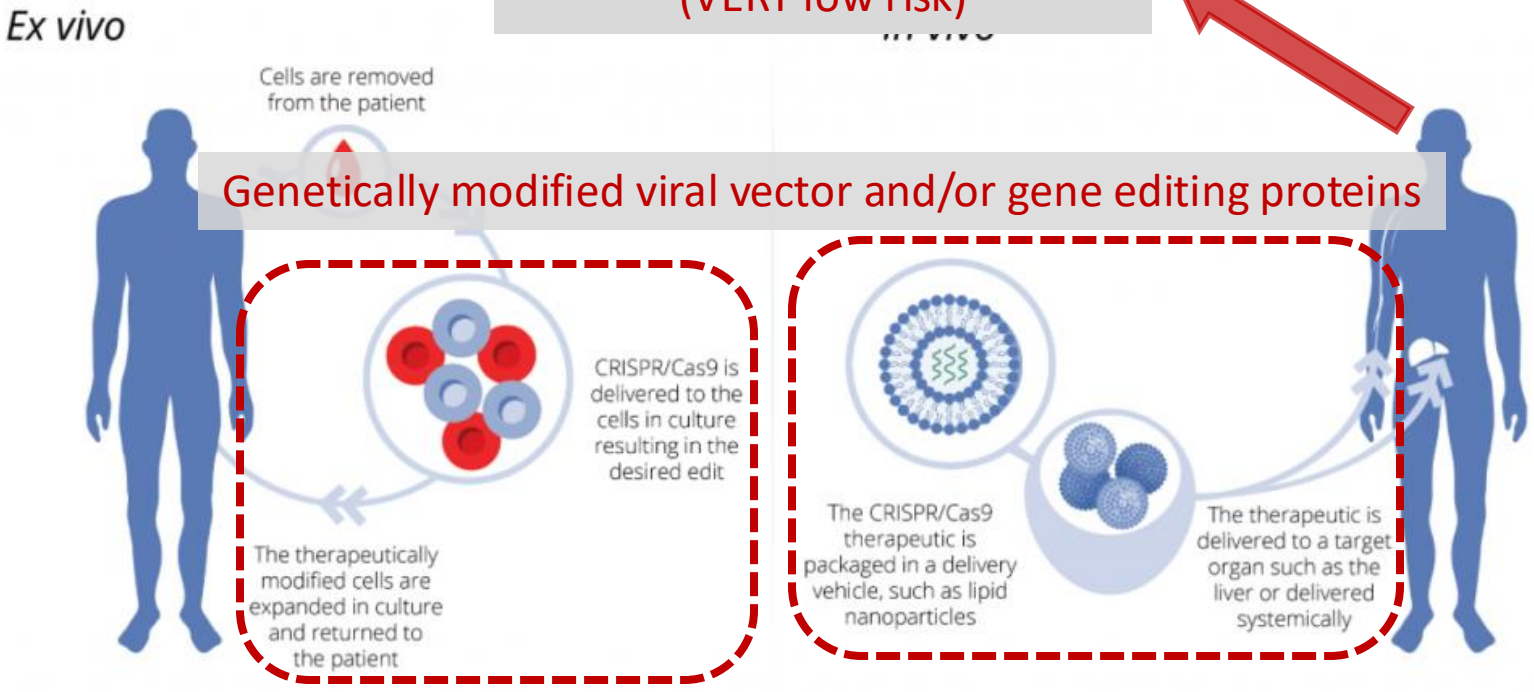


191 ongoing trials listed on clinicaltrials.gov

Apolonio *et al.* 2021 World J Virol.

CRISPR Gene Editing Therapy

Potential patient viral shedding
(VERY low risk)



Genetically modified viral vector and/or gene editing proteins

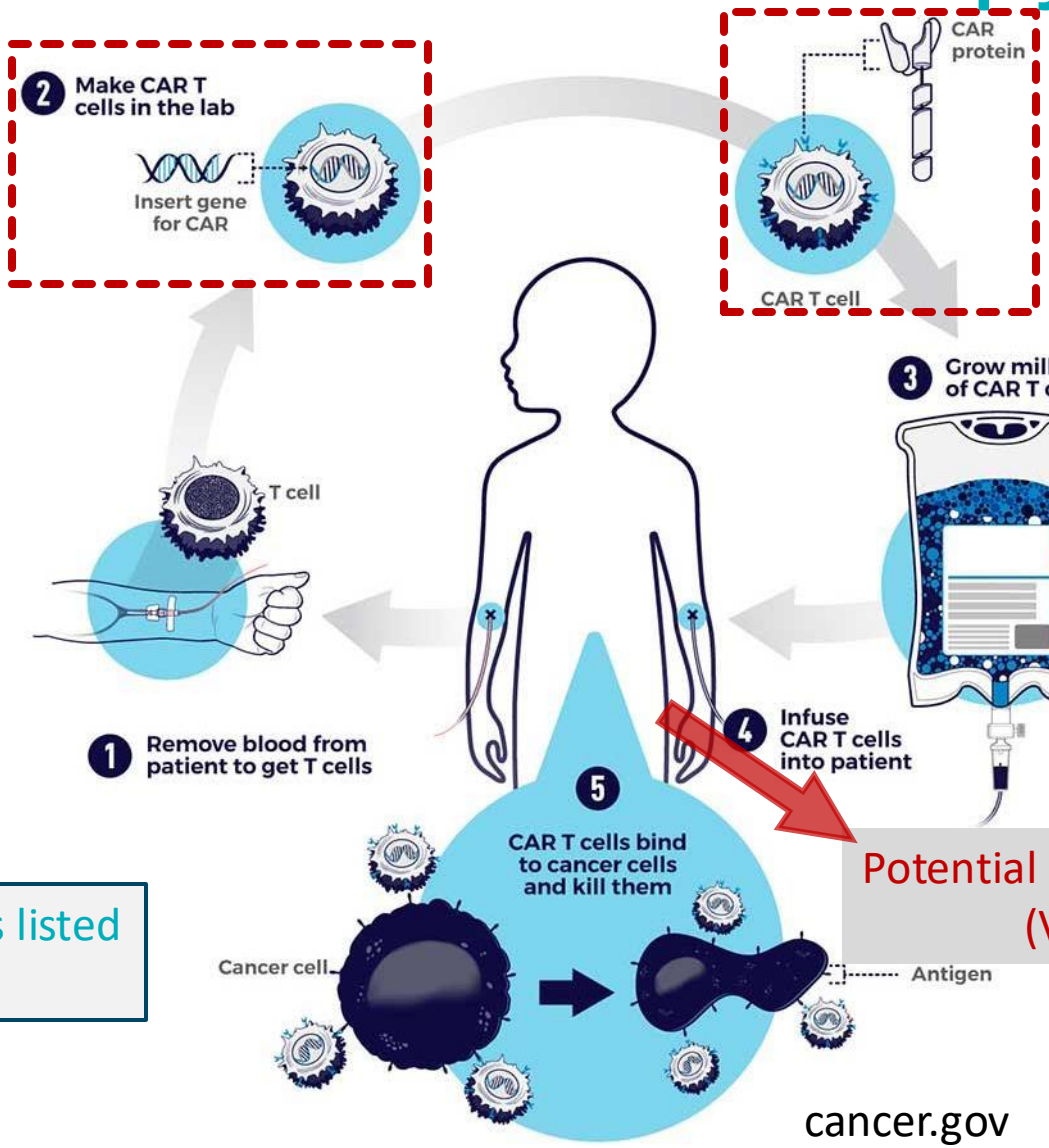
Risk of off target effects and stability of the edit

Can be considered a dual-use technology

80 ongoing trials listed on clinicaltrials.gov

CAR T-Cell Therapy

Genetically modified viral vector (e.g. Lentivirus)



Accidental exposure could trigger an immune response in a healthy individual

Potential patient viral shedding (VERY low risk)

1,626 ongoing trials listed on clinicaltrials.gov

cancer.gov

Health Canada & Biosafety Oversight

Health Canada *No Objection Letter*

- No deficiencies (clinical and/or quality) identified, and the trial is deemed acceptable by Health Canada
- Only assesses risks to the patient, NOT the public, environment, and staff handling, compounding, using, storing, containing, transporting and disposing of investigational products – HPTA *reasonable precautions*

Trial sponsors beginning to require biosafety review when considering prospective sites

- Gene therapy trial
- Vaccine trial
- All NIH-sponsored trials involving recombinant nucleic acid technologies (e.g., cell and gene therapy trials)

Why a new AHS Policy?

A governance document is not required to compel individuals to comply with government legislation/regulations

AHS Departments have independently developed internal processes to provide appropriate biosafety oversight (*i.e.*, **reasonable precautions**)

- Cancer Care Alberta – Institutional Biosafety Committee
- Alberta Precision Laboratories
- Health Evidence & Innovation

AHS has deemed an organizational-wide policy necessary to:

1. standardize the assessment and management of the risks to the public, environment, and staff supporting trials involving biological-based therapies, and

2. remain competitive when attracting clinical trial opportunities

Policy Components

- Applicability
- Biosafety Review and Approval Requirements
- Biosafety Program Requirements
- Biosafety Licencing Requirements
- Responsibilities (Executive Management, Leaders, Biosafety officers/authorities, IBC, WHS, IP&C, Pharmacy, etc.)

Applicability

- Anybody conducting research with biosafety considerations in an AHS setting
  - Includes PIs and university employees
- Non-compliance may impact access to AHS resources

Biosafety Review and Approval Requirements

Establishes the Biosafety Authority (BSA) role

- A biosafety officer listed on an AHS biosafety licence or an individual granted authority to issue biosafety approvals on behalf of AHS

All studies involving biological-based investigational products require an operational approval from Pharmacy Services

BSAs responsibilities, in conjunction with biosafety licence holders, pharmacy services, and institutional biosafety committees (IBC), include:

- Preforming research study reviews and issuing biosafety approvals
- Determining if a biosafety licence is required for facility where a research study is proposed
- Deciding if a research study requires a full IBC review

When is a Biosafety Approval Required?

Controlled Activity

- Activities involving human pathogens and toxins with a Risk Group 2 or higher and modified Risk Group 1 agents (regulated biological materials)
- health.canada.ca/en/epathogen – Risk Group Database

Biological-based investigational product

- Regulated biological material
- Human and non-human primate blood, body fluids, tissues and primary or established cell lines
- Recombinant or synthetic nucleic acid molecules, or cells, organisms, and viruses containing such molecules

Biosafety Licencing and Program Requirements, Responsibilities

- Compliance with biosafety legislation, regulations, and standards
- Programs and licences require AHS senior and site leadership approval
- Involvement of AHS Workplace Health & Safety, Infection, Prevention and Control, and Pharmacy Services

How does the new policy impact you?

- **How research and clinical trials are reviewed and approved by AHS remains the same**
  - Biosafety oversight has been integrated into AHS research and clinical trial review for 3+ years
    - Biosafety approval required for AHS Administrative Approval of a research study via Health System Access
    - Cancer Care Alberta Rapid Trial Review
- Strengthens AHS' ability to support PIs studying advanced interventions across Alberta

Biosafety intake questions

1. Does your study involve an investigational product that is a **biologic*** based drug or vaccine?
2. Does your study involve the use of organisms/viruses (whether genetically modified or not), recombinant or synthetic nucleic acid molecules and/or gene therapy? [e.g., CRISPR, viral vector-based, etc.]
3. As part of the protocol, are you collecting human clinical specimens (tissue, cells, blood, bodily fluids, etc.) from a patient population **known or reasonably expected** to be infected with, or carriers of, a human pathogen [e.g., HIV, HPV, HepB, etc.]?
4. Does your study involve a purposeful isolation or manipulation of a **risk group 2¥** or higher pathogen?

Coming Soon…

Biosafety – Research and Clinical Trial Review and Approval Procedure

Biosafety – Research and Clinical Trial Biological Materials Management Procedure

Biosafety for Research and Clinical Trials Policy

Standardized biosafety assessment and management

Organizational Policy & Procedures

Research Biosafety Framework

Institutional Biosafety Committee (IBC)

Culture of Biosafety

Partnering with WHS, IP&C, and Pharmacy

Biosafety Training Courses (14 courses live on MLL and 9 courses on ahs.ca/research)

Thank you!

Questions?

Joseph Roberts (Joseph.Roberts@ahs.ca)

Alberta Health Services