M-Pox NOT under High Consequence Infectious Diseases (HCIDs)

Thressia P Devassy

FFNM RCSI, MSc N (HCM), Grad. Cert (HC Ed.), PG Dip (IP&C), PG Dip (Neuro. N), BSc N, RNRM

Assistant Director of Nursing

Infection Prevention & Control Department

Mater Misericordiae University Hospital (MMUH) 1861-2024
Dublin, Ireland

What is a High Consequence Infectious Disease (HCID)?

- As the term indicates, it is highly infectious
- The preparedness cycle includes:
  - Planning
  - Identification and prioritization of risks
  - Training and simulation exercises
  - After action reviews
  - Evaluation of lessons learned
  - Implementation of the organizational change identified

HCID - Definition

- Acute Infectious Disease
- Typically have a high case-fatality rate
- May not have effective prophylaxis or treatment
- Often difficult to recognize and detect rapidly
- Ability to spread in community and within healthcare settings
- Requires an enhanced individual, population and system response to ensure they are managed effectively, efficiently and safely

HCID and Transmission Risks

- HCID's pose significant threats to human Health
- HCID's are contagious, requiring transmission based precautions for Healthcare workers depending on their mode of transmission and infectivity

  - Potential for large-scale epidemics
    - SARS in 2003
    - Ebola in West Africa 2014
  - Even pandemics
    - The Spanish Influenza pandemic in 1918).
    - COVID-19 in 2020
- HCID's are not endemic in Ireland, where the environmental conditions are unlikely to support the natural reservoirs and vectors of many of the HCID pathogens
- The most likely introduction of a HCID into Ireland would be via a person who has travelled to an endemic region or who has been in contact with a HCID case
- Could present with a variety of symptoms to a healthcare provider, including an Emergency Department (ED) or primary care setting
- Several HCID's are transmissible from person to person and therefore require healthcare workers to take precautions to prevent transmission

Contact HCID

- Argentine haemorrhagic fever (Junin virus)
- Bolivian haemorrhagic fever (Machupo virus)
- Crimean Congo haemorrhagic fever (CCHF)
- Ebola virus disease (EVD)
- Lassa fever
- Lujo virus disease
- Marburg virus disease (MVD)
- Severe fever with thrombocytopaenia syndrome (SFTS)

Airborne HCID

- Andes virus infection (hantavirus)
- Avian influenza, highly pathogenic A(H7N9) and A(H5N1)
- Avian influenza, highly pathogenic A(H5N6) and A(H7N7)
- Middle East respiratory syndrome (MERS)
- Nipah virus infection
- Pneumonic plague (Yersinia pestis)
- Severe acute respiratory syndrome (SARS)

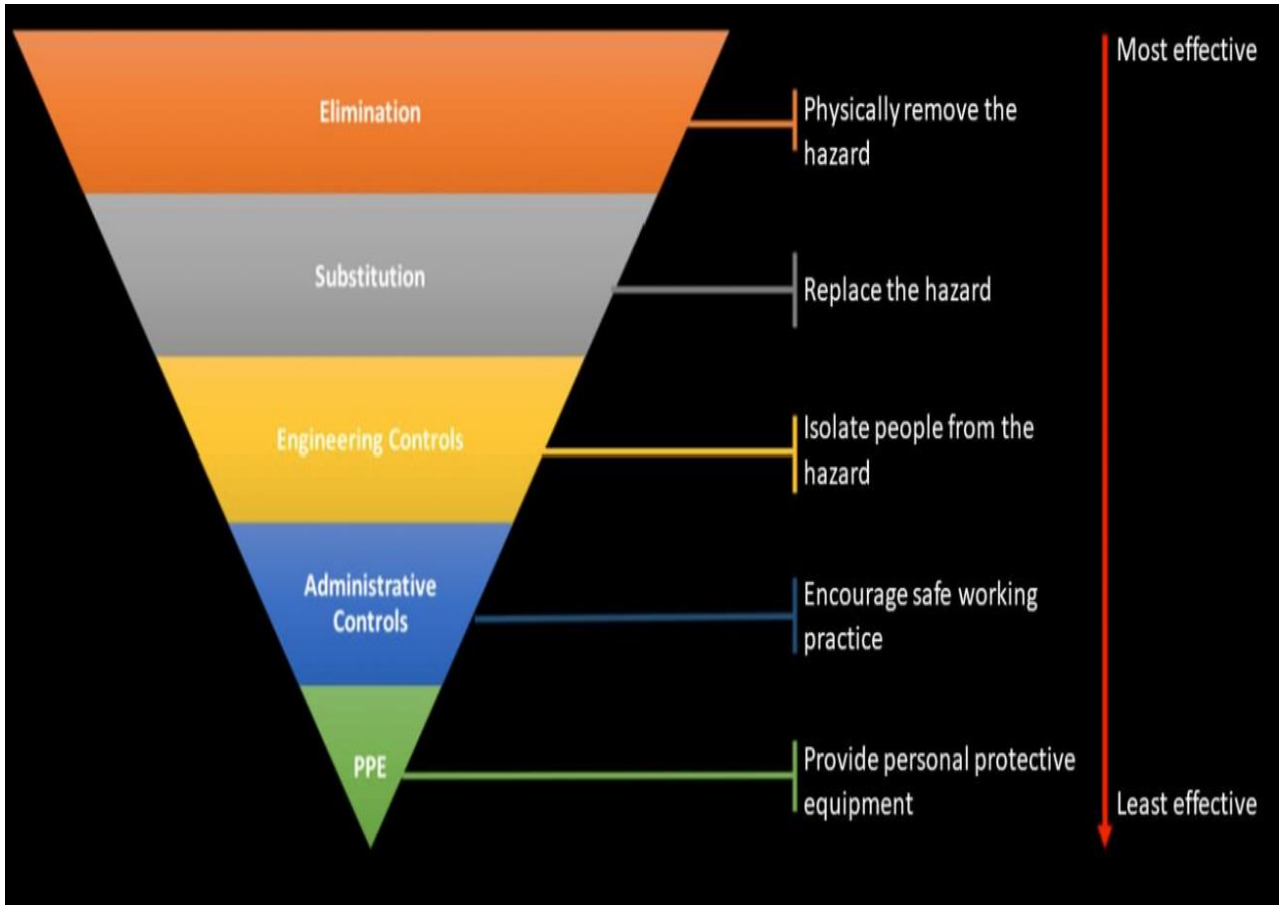
HCID and **Personal protective equipment (PPE)**

Personal protective equipment (PPE)

- Should be viewed as the ‘Last Line of Defence’ against hazards which cannot be otherwise controlled

- A variety of physical barriers used by healthcare workers for protection

- In the Context of HCID settings:
  - The PPE must be adequate and effective to provide protection and maximum safety against infective agents
  - Formal competency-based sign-off and annual refresher training required



(OSHA, n.d.; HPSC, 2024; DOH, 2023; UNICEF, 2021; Poller *et al.*, 2018)

Personal protective equipment

HCID PPE Coverall Standards		
Regulation/Directives	European Standards	International Standard Organization (ISO) Standards
▪ European Union Regulation (EU) 2016/425 – Biological Protective Coveralls fall under Category III: Chemical Protection Coveralls. ▪ EU Directive 2000/54/EC – protection of workers from risk related exposure to biological agents at work; Ebola Virus Disease (EVD) is classified as Risk Group 3 as per this directive.	▪ EN 14605:2005 – High Impermeability to liquid chemicals: Type 3 (liquid-tight) or Type 4 (spray-tight); higher protection against liquid penetration; seams are stitched and taped ▪ EN 14126:2003 – Impermeability to blood; fabric must be tested against viral penetration or against infective agents	▪ ISO 16603:2004 – fabric must undergo laboratory test methods used to measure penetration resistance by blood and body fluids using synthetic blood. ▪ ISO 16604:2004 – fabric must undergo laboratory test methods used to measure penetration resistance by blood-borne pathogens using bacteriophage Phi-X-174; the most critical standard as per UNICEF is selecting coveralls to provide protection against viral transmission in the case of EVD.

(OSHA, n.d.; DOH, 2023; UNICEF, 2021)

Powered Air Purifying Respirator (PAPR)

- Powered device that provides protection to the user by filtering contaminants off the air.
- Uses a blower device to route pressurised filtered air via a ventilation tube to a hood, helmet, or respirator.

PAPR Blower Unit
(3S Suit)

Ventilation Unit
(Aspida Armor)

(Licina & Silvers, 2021; WHO, 2018)

PAPR-Based All-in-One PPE

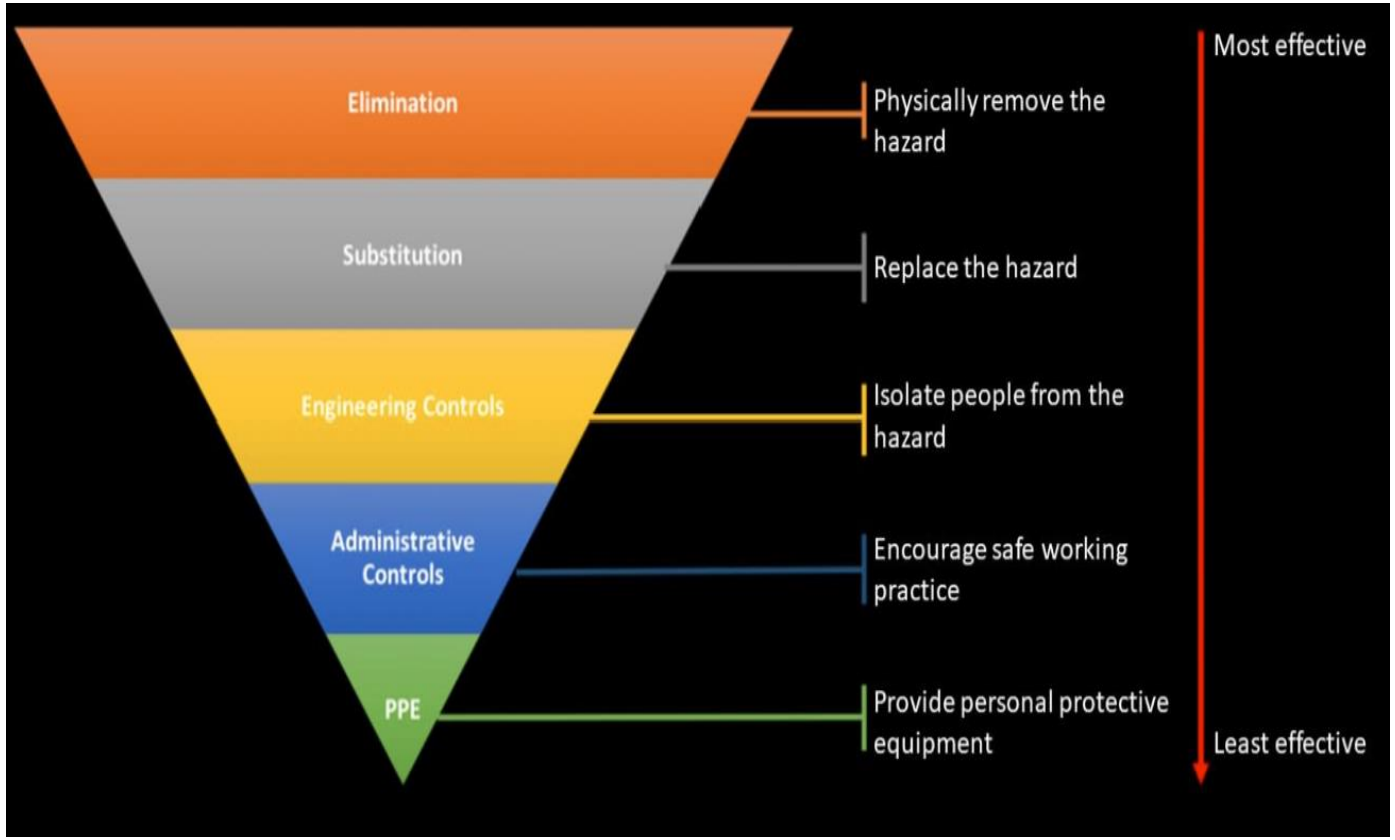
A. Aspida Armor Suit

B. 3S All-in-One Suit

PPE Doffing Buddy

- A trained buddy or observer significantly helps reduce contamination during the doffing process.

- The buddy should be a fully trained individual who can:
  - Lead the doffing process
  - Provide situational awareness
  - Prevent contamination



(OSHA, n.d.; HPSC, 2024; Poller *et al.*, 2018)

Summary of HCID IPC Considerations

For patients identified with confirmed or suspected HCID

- Patient placement
- Standard and transmission-based precautions
- Management of visitors – No visitors to that particular area if in a ward
- Communication- All stakeholders/ family-video call if well enough/?Media
- Sharps management –Category A waste
- Equipment & Environmental cleaning – initial cleaning by staff/HPV/ Post HPV cleaning by Cleaning staff
- Linen management – Category A waste
- Waste management – Category A waste

NCEC National Clinical Guideline No. 30 IPC – Vol 1

What is M-pox?

- **Rare, but sometimes life-threatening zoonotic infection**
- Endemic in west and central Africa
- Caused by Monkey pox virus (which is an orthopoxvirus)
- Specific animal reservoir unknown, but likely small mammals
- Can spread from infected animals to humans and person-to-person
- Respiratory secretions
- Skin-to-skin contact with infected body fluids (e.g., fluid from vesicles and pustules)
- Fomites (e.g., shared towels, contaminated bedding)

What are the symptoms of M-pox?

Classic lesions

- Firm, deep-seated, well circumscribed, painful, itchy, sometimes umbilicated
- Lesions in different phases of development seen side-by-side
- Rash either scattered or diffuse; sometimes limited to one body site and mucosal area (e.g., ano-genital region or lips/face)

- M- pox symptoms can appear in two stages, however, some people may only have a rash

Initial symptoms

- The first stage usually begins with:
  - Sudden onset of fever (higher than 38.5)
  - Chills, followed by a bad headache
  - Swollen glands (in the neck, under the arms, in the groin)
  - Exhaustion
- There may also be muscle ache, backache, cough and runny nose, and gastrointestinal symptoms (vomiting and diarrhoea)
- Not everyone with M-Pox has these initial symptoms

Rash

- 1 to 3 days after the fever starts, an itchy rash appears
- It may first appear on the face and spread to other parts of the body
- The rash generally is only seen on the face, palms of the hands, soles of the feet and occasionally in the mouth
- The rash starts like pimples, that grow and turn into sores. Scabs then form, which eventually drop off
- Following sexual contact, the rash can also be found in the genitals and around the anus, and may not spread elsewhere
- Rash in the ano-genital area, or complications of the rash such as rectal pain, may be the main symptom
- Some people may have only a small number of lesions
- The images in the next slide show the different stages of the M-pox rash

Examples of M-pox Rashes







Pictures- Courtesy of UK Health Security Agency

Patient placement for M-Pox

- Negative pressure room with an ante-room and en-suite bathroom
- Patient room door closed always
- Signage on the door

Standard and transmission-based precautions

- Hand Hygiene
- Case by case review
- Point of Care Risk Assessment and selection of PPE
- Airborne and Contact precautions
- Level 1 PPE
  - Fluid resistant Long sleeved gown
  - FFP2 Mask (Fit tested)
  - Face shield/Goggles
  - Gloves

Management of visitors

- Risk assessment on each case
- Restrict visitors on the ward/Unit
- Communication/Hospital/Media
- Clear Signage

Sharps management

- Safe use and disposal
- Sharp usage if absolutely necessary
- Category B waste
- Temporary closure mechanism in place
- Close when ¾ bin full

Equipment & Environment -

Cleaning & Decontamination

- Terminal cleaning with a Chlorine based disinfectant (e.g.Tristel Fuse)
- Leave all equipment used in the room for UVC
- UVC decontamination
- IPC Review and approval

Linen management

- ¾ bag filled
- Secured with ties
- Dispose appropriately
- **Dispose of linen in the patient's room**, in appropriate waste bag, not to be carried by H&CW
- When handling soiled linen, use Level 1 PPE

M-pox waste can be treated as Category B. (Appendix 5 NCEC 2023)

Waste management

- ¾ bag filled
- Secured with ties
- Dispose appropriately

As per HSE guidance M-pox is classified as Category B waste and therefore does not require autoclaving and can be disposed using the hospital waste management stream.


thank you!

References:

1. Department of Health (DOH) (2023). *National Clinical Guideline No. 30 – Infection Prevention and Control Volume 1 & 2*. Department of Health, Ireland : National Clinical Effectiveness Committee Ireland. Available at: https://www.gov.ie/en/publication/a057e-infection-prevention-and-control-ipc/ (Accessed 26th November 2024)

2. European Centre for Disease Prevention and Control (ECDC) (2019). *Health emergency preparedness for imported cases of high-consequence infectious diseases*. Available at: https://www.ecdc.europa.eu/sites/default/files/documents/Health-emergency-preparedness-imported-cases-of-high-consequence-infectious-diseases.pdf (Accessed 26th November 2024)

3. Health Protection Surveillance Centre (HPSC) (2024). *Infection Prevention and Control Guidance for the management of suspected/confirmed High Consequence Infectious Diseases (HCIDs) in Acute Healthcare settings*. Health Service Executive : Antimicrobial Resistance and Infection Control Team. Available at: https://www.hpsc.ie/a-z/hcid/guidance/Updated%20HCID%20IPC%20Guidance%2017.10.2024.pdf (Accessed 26th November 2024).

4. Licina, A. and Silvers, A. (2021). Use of powered air-purifying respirator (PAPR) as part of protective equipment against SARS-CoV-2-a narrative review and critical appraisal of evidence. *American Journal of Infection Control*, 49(4), 492-499. https://doi.org/10.1016/j.ajic.2020.11.009.

5. Occupational Safety and Health Administration (OSHA) (n.d.). *Identifying Hazard Control Options: The Hierarchy of Controls*. United States Department of Labor : Occupational Safety and Health Administration. Available at: *https://www.osha.gov/sites/default/files/Hierarchy_of_Controls_02.01.23_form_508_2.pdf* (Accessed 26th November 2024).

References:

6. Poller, B., Tunbridge, A., Hall, S., Beadsworth, M., Jacobs, M., Peters, E., Schmid, M. L., Sykes, A., Poran, V., Gent, N., Evans, C., & Crook, B. (2018). A unified personal protective equipment ensemble for clinical response to possible high consequence infectious diseases: A consensus document on behalf of the HCID programme. *Journal of Infection*, *77*(6), 496-502. https://doi.org/10.1016/j.jinf.2018.08.016

7. United Kingdom Health Security Agency (UKHSA) (2023). *High-consequence infectious diseases (HCID)*. Available at: https://www.gov.uk/guidance/high-consequence-infectious-diseases-hcid#definition-of-hcid (Accessed 26th November 2024)

8. United Nations International Children's Emergency Fund (UNICEF) (2021). *Ebola Virus Disease: Personal Protective Equipment, UNICEF Specifications Note February 2021*. Available at: https://www.unicef.org/supply/media/7221/file/ebola-PPE-specifications-Feb-2021.pdf (Accessed 26th November 2024)

9. World Health Organization (WHO) (2018). *Preferred Product Characteristics for Personal Protective Equipment for the Health Worker on the Frontline Responding to Viral Hemorrhagic Fevers in Tropical Climates*. Available at: https://iris.who.int/bitstream/handle/10665/272691/9789241514156-eng.pdf?sequence=1 (Accessed 26th November 2024)