Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

hpsc

Infection Control Precautions during the Clinical Management of Injecting Drug Users with Possible, Probable or Confirmed Anthrax

(Adapted from guidance developed by Health Protection Scotland and HPA London)

General information on anthrax

Anthrax is a rare and very serious bacterial infection caused by the organism Bacillus anthracis. The disease occurs most often in wild and domestic animals in Asia, Africa and parts of Europe; humans are rarely infected. The organism can exist as spores that allow survival in the environment, e.g. in soil, for many years.

An outbreak of anthrax among drug users occurred in Scotland between December 2009 and December 2010, during which time cases were also confirmed in England. A number of drug users died from the infection which was thought to have been transmitted through contamination of heroin with anthrax spores. Drug users may become infected through injecting, inhaling or snorting contaminated drugs. To date, no cases have been identified in Ireland.

If anthrax infection is suspected discuss the case immediately with the Consultant Medical Microbiologist and notify immediately to the local Department of Public Health as a possible case.

Routes of transmission of anthrax

It is extremely rare for anthrax to be spread from person-to-person. Airborne transmission from one person to another does not occur.

- **Injection with contaminated heroin:** Drug users may become infected with anthrax where heroin, or the cutting agent mixed with heroin, has been contaminated with anthrax spores.
- **Inhalation**: Inhalation anthrax is caused by breathing in anthrax spores, usually in industrial processes such as the tanning of animal skins, and processing of wool or bones from abroad. It may also be possible to become infected through the lungs by smoking or snorting contaminated drugs. Person-to-person spread of inhalation anthrax does not occur.
- **Direct contact:** Transmission of cutaneous anthrax generally occurs through direct contact with the skins or tissues of infected animals. Person-to-person spread of cutaneous anthrax is extremely rare. Transmission of cutaneous anthrax has not been recorded in this current outbreak.
- **Ingestion**: Intestinal anthrax is very rare, but occurs from swallowing spores in contaminated meat from and animal which has died from anthrax.

Infection Control Precautions

In general, Standard Infection Control Precautions will apply. However, because the organism forms spores, additional precautions are required in the discarding of waste, human tissue(s) and items contaminated with blood and body fluid. As always with Standard Infection Control Precautions, all cuts and abrasions should be covered with water proof dressings.

Ambulance Services

- Standard infection control precautions are sufficient and should be used when transporting suspected cases of anthrax
- Particular attention should be paid to body fluid spills which should be managed by the usual methods for cleaning and decontamination of any body fluid spills. This should be done promptly and thoroughly, because organisms which remain on surfaces may form spores which are infectious
- As is usual practice, personal protective equipment should be used in situations where there is potential for splashes and inoculation injuries. Any incidents should be reported immediately

Inpatient accommodation (patient placement)

- Single room placement for anthrax transmission is not necessary. Airborne transmission from person-to-person does not occur
- A patient may require isolation for other clinical reasons

Personal Protective Equipment (PPE) for HCWS

- Avoid all contact with blood and body fluids by the use of PPE, e.g. gloves and apron (a visor if there is a risk of splash)
- In addition, wear gloves and aprons when handling the patient's personal clothing and effects
- There is no need for health care workers outside theatre to wear masks. In theatre, standard surgical masks should be used
- On removal of PPE, wash hands with liquid soap and water – this is necessary because of the risk of contamination by B. anthracis spores

Patient Clothing

- Wearing gloves and plastic apron put the patient's clothing in a sealed plastic bag and place in the patient's locker until the destruction of clothing or removal by patient's relatives. **(NB if clothing is to be removed by the patients relatives it MUST be provided for them in sealed alginate bags, with written instructions as to the potential risks, the appropriate cleaning methodology, and strict instruction that if they ultimately opt for disposal it MUST be via hospital waste).**
- If there is obvious powder contamination, contact the microbiologist for further health protection advice
- If the patient's clothing is visibly contaminated with blood or body fluids, standard washing may not remove the remote risk of spores and the advice would be to have the clothing incinerated or autoclaved. In such instances, with the patient's permission discard as Clinical Waste (Yellow stream waste)
- For minimally or non-contaminated clothing, advise the patient's relatives to launder the patient's clothes separately from other people's items in a washing machine at the hottest cycle possible – and to wash their hands afterwards
- Any potentially contaminated substance found on the patient, e.g. their personal heroin supply, should be sealed in a plastic bag to prevent environmental and personal contamination (HCW to wear PPE). Local policies in relation to disposal of drugs and paraphernalia should be followed.

Hand hygiene

Hand hygiene must be performed after removing all PPE and:

- Before touching a patient
- Before clean/aseptic procedures
- After body fluid exposure risk
- After touching a patient
- After touching the patient's surroundings
- Hands should be washed with soap and water after contact with the patient, the patient's immediate environment, or after removal of PPE. Alcohol hand rub may be used at other times if hands are visibly clean

Waste generated in healthcare

- Sharps and all waste contaminated by blood and body fluids from these patients is to be discarded as Clinical Waste (Yellow Stream) and incinerated.

- Although anthrax is a category 3 pathogen, the above additional precautions are deemed necessary, i.e. incineration or autoclaving
- Ambulant patients may use the normal toilet facilities as their urine and faeces will not be contaminated. All bodily waste from bed-bound patients should be collected and disposed of as clinical waste. Liquid waste should be solidified using gelling granules before disposal.

Additional precautions in theatres

- See below for guidance on decontamination of spillages of blood and body fluids
- Standard Infection Control Precautions apply to the decontamination of equipment
- All waste generated is to be discarded as Clinical Waste (Yellow Stream) and incinerated
- To avoid contamination of the laundry, single use theatre gowns should be used during operations by the scrub team
- No additional PPE is required other than for Standard Precautions to prevent personal exposure to blood and body fluids

Equipment

- Standard Infection Control Precautions apply
- Reusable equipment must be decontaminated between each patient Refer to local policy and manufacturer's instructions

Cleaning of the environment

- Standard Infection Control Precautions apply
- Environmental cleaning should be carried out as per local policy
- Additional precaution: the terminal clean should include decontamination with **1,000 ppm available chlorine (av cl)**

Decontamination of blood and body fluid spillages

NB. These precautions are higher than standard precautions in terms of the concentration of disinfectant and contact time.

Wearing PPE throughout decontaminate all spills as soon as they occur; discard waste as Clinical Waste (Yellow stream)

For blood spills:

- Use disinfectant containing **10,000 ppm av cl** direct on the spillage. CONTACT TIME 10 minutes

For vomit, faeces, sputum:

- Treat as blood spillage if visible blood present Use disinfectant containing **10,000 ppm av cl** direct on the spillage (absorb spillage with disposable paper towels first if large spillage). CONTACT TIME 10 minutes

For urine:

- Absorb spillage with disposable towels first; place the towels in a Clinical Waste bag, then apply disinfectant containing **10,000 ppm av cl** to the affected area. CONTACT TIME 10 minutes

Potentially, the greatest risk of contamination within the hospital environment (but not exclusively) would occur from unrecognised anthrax cases in drug users. Such cases may present without prior antimicrobial treatment and may have bleeding into the brain (with intracranial bleeding/subarachnoid) and possibly bleeding from the GI tract, wounds and other orifices etc., or disseminated intravascular coagulation (DIC). In such cases their blood and body fluids are most likely to contain vegetative organisms so the infection control precautions to deal with spillages must be particularly robust in this scenario.

NB: This advice should be brought to the attention of the relevant staff in all clinical areas, particularly in Emergency Medicine Departments, operating theatres and Intensive Care.

Linen

- Any linen, grossly contaminated with blood or body fluid, should be discarded as Clinical Waste (Yellow Stream)
- Non-visibly, or minimally contaminated linen, should be classified as infected, placed in alginate bag and secondary plastic bag before placement in appropriate laundry hamper
- Always wash hands after handling linen/clothing

Uniforms / Staff clothing

- PPE must be used to avoid contamination of uniforms/clothing with blood and body fluids
- If contamination of staff uniform/clothing with blood or body fluid occurs, discard uniform as Clinical Waste
- Use of Theatre Greens/Blues and other staff uniforms (including laboratory coats) does not remove the need for PPE

Crockery and Cutlery

- Standard Infection Control Precautions apply Disposable crockery and cutlery is not required

Visitors

- Normal visiting is permitted.

Handling specimens of blood and body fluids

- Standard Infection Control Precautions apply when taking and handling specimens. That is, wearing personal protective equipment (PPE) sufficient to prevent exposure to blood or body fluids, e.g. gloves, plastic apron, and a visor if there is a risk of splash
- Microbiology laboratories must handle all specimens in Containment Level 3 (CL3) if anthrax is suspected. Therefore, all specimens sent from patients with possible, probable or confirmed anthrax should be labelled "Dangerous Specimen" or "High Risk" and state "anthrax risk"
- Specimens must not be sent to the laboratory via a pneumatic transport system
- The laboratory should be informed in advance of the specimens arriving in the laboratory

Specific Guidelines for Blood Science Laboratories

- Note that blood/body fluid samples from anthrax patients in clinical chemistry and haematology etc can be handled according to the standard procedures that should already be in place to prevent the acquisition of blood borne viruses. However, the utmost care should be taken to prevent inoculation injury and any splashes/spillages must be promptly and effectively dealt with i.e. **10,000ppm av cl** for 10 minutes.
- Any glass slides/sharps generated should either be incinerated or autoclaved (prior to disposal). Blood or body fluid samples sent to blood sciences from confirmed cases must be autoclaved prior to incineration. It is suggested that locally, the microbiology laboratory should liaise with its colleagues in blood sciences re - possible, probable and confirmed cases. Samples from possible/probable cases should be held by each lab until known to be either confirmed or not, and then they should be disposed of appropriately. If this approach is not possible, then all samples from possible, probable or confirmed should be autoclaved prior to incineration.

Needlestick injuries and body fluid exposures

- Follow normal procedure for management of needlestick injuries (see the EMI Toolkit). In addition consult with on-call microbiologist to assess any possible anthrax risk

Last offices/Last Rites

- As always wear PPE to prevent contamination with blood or body fluid
- Hygienic preparation: clean the deceased as normal
- The body MUST be placed in a leak proof body bag
- Viewing bodies after death, and the patient has left the ward, **should only be permitted after risk assessment by a consultant microbiologist**
- The mortuary staff and undertaker should be informed
- **Embalming** of bodies should **not be undertaken**
- Cremation is the preferred method for disposal of the deceased. Alternative to cremation is a lead lined coffin

Post Mortems

- Post mortems should be performed in a CL 3 facility.

- Further guidance is available on post mortem procedures. This may be accessed via the Royal College Pathologists website (members only) or via the Health Protection Scotland website at http://www.documents.hps.scot.nhs.uk/giz/