

**State of Kuwait  
Ministry of Health  
Infection Control Directorate**

**Infection Control Protocol for the  
Management of Anthrax Cases in  
Health Care settings**

2002

## **Introduction:**

Anthrax is a bacterial infectious disease primarily affecting herbivores such as sheep, cattle and horses. This disease is caused by gram positive bacilli called bacterium bacillus anthracis. This bacterium is capable of spore formations that are extremely resistant to the normal environmental conditions and can survive dormant for many years. Human infection with anthrax usually occurs when people come into direct contact with infected animals or contaminated animal products such as wool, bones and hides.

Bacterium Bacillus anthracis can be used as critical biological weapon in bioterrorism act, and it is classified by the U.S public health authorities as category A agent (high priority agent).

## **Types**

### **1. Inhalational Anthrax**

It is rare disease, usually affects special group (e.g. wool sorters, goatskin workers, tannery workers)

Infection occurs after inhaling Bacillus anthracis spores.

As a biological weapon Anthrax is used in the aerosol form, and because of the mild and non specific symptoms of the disease early in the course (symptoms of upper respiratory tract infection). The patient will be in a late stage by the time diagnosis is made. At this stage treatment will be very difficult (mortality rate 97%).

### **2. Cutaneous Anthrax**

It is the most common type, accounting for approximately 95% of cases. Veterinarians and people handling infected animals are at most risk of developing cutaneous anthrax. Cutaneous anthrax occurs when the bacterium enters a cut or abrasion in the skin.

Skin infection begins as a pruritic macule or papule which progresses to vesicle in 1-2 days, 2-6 days alter this vesicle enlarges forming a painless necrotic ulcer with a characteristic black centre. This lesion affects mostly the exposed areas of the skin such as face, neck, forearms or hands.

Untreated cutaneous anthrax infection can spread to the blood stream via the lymphatic system causing septicemia. Fatality rate is approximately 20% of untreated cases, and less than 1% of treated cases.

### **3. Gastrointestinal Anthrax**

The intestinal form of anthrax usually occurs following ingestion of contaminated meat. This disease is usually rare and more difficult to identify, it trends to occur in explosive outbreaks. It is characterized by an acute inflammation of the intestinal tract, symptoms include abdominal distress, nausea, vomiting and fever.

Fatality rate is approximately 25-60%.

### **Treatment**

Early identification of the disease is necessary to achieve successful treatment. The recommended treatment is a course of antibiotic. Ciprofloxacin and Doxycycline are the antibiotics of choice. They can be used also for post exposure prophylaxis. A 60days course of antibiotic is recommended to prevent inhalational anthrax. Wide spread use of antibiotics enhances resistance formation, fluoroquinolones (ciprofloxacin) resistance is not yet common in these organisms, so it is recommended to use doxycycline in order to preserve the effectiveness, side effect profile history of reaction and resistance pattern in healthcare setting should be taken into consideration when selecting the antibiotics.

### **Infection Control Measures:**

Cross infection from one person to another is very rare and not yet recorded. Notify infection control staff and preventive health department in your hospital as soon as you receive and exposed case.

#### ***1. Isolation of cases:-***

- ◆ Contact and standard precautions should be adopted.
- ◆ Private room is not required.

#### ***2. Nasal swab for exposed persons:-***

- ◆ Nasal swab is not routinely recommended but it can be useful to assess the exposure circumstances (place and time) if were known.

#### ***3. Environmental sampling of the hospital is not recommended.***

#### ***4. Patient decontamination:-***

The patient should be decontaminated before arrival to the hospital according to public health department recommendations.

- ◆ On arrival to the hospital patient should take a shower with copious quantities of soap and water.
- ◆ Patient clothes should be handled cautiously and placed in double plastic bag for sterilization or incineration.
- ◆ Personal belongings such as hand watch should be washed first then decontaminated. A disinfectant with sporocidal effect is recommended, such as hypochlorite solution in 0.5% concentration (1 part bleach in 10 parts water).

**5. Staff caring for the patients:-**

- ◆ Staff should wear gloves, masks and gowns.
- ◆ Antibiotic prophylaxis is not recommended for staff.

**6. Environmental decontamination:-**

- ◆ Clean the area with copious quantities with soap and hot water and then dry.
- ◆ Disinfect the area using 0.5% hypochlorite solution and leave for 15-20 minutes, then wipe it with clean water and leave it to dry.
- ◆ All used cleaning materials (mops and towels) should be directly sent to the cleaning company washing machines for washing and disinfection.
- ◆ All instruments and items used for patient's care should be placed in double plastic bags and labeled biohazard and sent to CSSD.
- ◆ Bed sheets and linens should be bagged and placed in the heat soluble plastic bags and sent for laundry.

**7. Laboratory precautions:-**

- ◆ Hospital microbiology laboratory should be informed before sending any lab specimens.
- ◆ All specimens should be placed in tightly closed double plastic bags then transferred to the lab in completely sealed box, labeled clearly with biohazard sign.
- ◆ Porters carrying specimens should wear gloves, and should be instructed to handle the specimens safely.
- ◆ Lab personnel should follow their lab safety instructions when handling the specimens.
- ◆ All instruments used for processing anthrax specimens should be placed in tightly closed double plastic bags and sent for sterilization in a completely sealed box.

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