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## **URGENT COMMUNICATION**

To:

HSS(MD)28/2001

Chief Executives of Health and Social Services Trusts  
(for onward dissemination to all Hospital Consultants)  
Medical Directors of Health and Social Services Trusts  
Nursing Directors of Health and Social Services Trusts

17<sup>th</sup> October 2001

Dear Colleague

### **DEALING WITH PATIENTS EXPOSED TO SUSPICIOUS SUBSTANCES**

Further to my letter of 11<sup>th</sup> October 2001 regarding Anthrax cases in Florida, USA, I am writing to advise you that there have been a number of reports of people in Northern Ireland being exposed to unknown suspicious substances or packages. This has understandably generated considerable public concern. The purpose of this letter is to advise you of the action required of Trusts and in particular of A&E Departments, who may present to hospital with a documented exposure to an unknown suspicious substance.

Anthrax is a bacterial infection caused by the organism *Bacillus anthracis*, human Anthrax is very rarely seen in Northern Ireland. Full details on Anthrax, including symptoms and signs are included in the document at Annexe 1. More detailed information is also available on the Public Health Laboratory's website at [www.phls.org.uk](http://www.phls.org.uk). I would like to emphasise that there have been no confirmed human cases of Anthrax in Northern Ireland since 1993 and no confirmed cases of Anthrax associated with any of these recent exposures. In addition, there is no evidence to suggest that the general public in Northern Ireland are at an increased risk of malicious Anthrax exposure related to the recent events in the USA.

Acute Hospital Trusts and in particular A&E Departments may well have to deal with patients who have either been exposed to a suspicious substance or package, had a documented exposure to confirmed Anthrax release or with symptoms and signs of Anthrax infection.

Full details of how to manage patients with a documented exposure and/or symptoms and signs of infection are included in the document at Annexe 1. It is important that all A&E staff urgently familiarise themselves with this guidance in relation to patients presenting at the A&E Department, other areas of the hospital or in primary care. Trusts should also inform their Consultant in Communicable Disease Control of any patients with confirmed exposure to suspicious substance.

Members of the public are understandably concerned about the potential for coming into contact with suspect substances or packages, in particular through the mail. The Department of Health, Social Services and Public Safety have issued a checklist for members of the public to use in relation to dealing with suspect mail or packages and this is included in Annexe 2 for your information.

It is likely that the situation in relation to exposure to suspect substances and/or packages and also in relation to Anthrax exposures will be updated on a daily basis. The lead Agency for communication and information in relation to these possible exposures in Northern Ireland is the Department of Health, Social Services and Public Safety and they can be contacted through the Press Office on 02890 520571. In addition, up to date information on Anthrax will be available at the Department's website at [www.dhsspsni.gov.uk](http://www.dhsspsni.gov.uk) and also at the Public Health Laboratory Service's website at [www.phls.org.uk](http://www.phls.org.uk).

Yours sincerely

***Dr HENRIETTA CAMPBELL***  
***Chief Medical Officer***

***MISS JUDITH HILL***  
***Chief Nursing Officer***

cc: Chief Executives of Boards  
Directors of Public Health of Boards  
Directors of Nursing of Boards

Annexe 1

**Department of Health Social Services and Public Safety**

**Interim Guidelines for Trust staff dealing with Patients  
Exposed to Anthrax**

These guidelines are intended for medical and nursing staff working in Accident & Emergency Departments. It is to guide clinical and public health action in the event of a deliberate release of anthrax. It is a summary of the guidance issued by the Public Health Laboratory Service. Other hospital clinicians should refer to the full document can be obtained from the PHLS web site [www.phls.org.uk](http://www.phls.org.uk)

In the event of a suspected exposure or cases of anthrax all details of patients should be collated and recorded for clinical and epidemiological follow up (ref 5.5)

## 1 Anthrax Background

Anthrax is an acute infection caused by the Gram-positive, spore forming, bacteria *Bacillus anthracis*. Anthrax naturally infects many species of grazing mammals such as sheep, cattle and goats, which are infected through ingestion of soil contaminated by *B. anthracis* spores.

### 1.1 Period of communicability

- Transmission of anthrax infection from person to person is highly unlikely.
- Contact with skin lesions can result in subsequent cutaneous infection.
- Airborne transmission from person to person does **not** occur.

### 1.2 Clinical features

Human anthrax can occur in three forms: inhalation/pulmonary, cutaneous or gastrointestinal, depending on the route of exposure, and details of these diseases are given below. It can be expected that any malicious or deliberate release of anthrax spores will involve aerosol exposure.

### 1.3 Incubation

- 1-7 days following cutaneous exposure.
- 1-6 days following inhalation exposure.
- 1-7 days following ingestion.

Clinicians should be aware of the possibility of cases of inhalation anthrax, and any previously healthy patient with the following clinical presentations should be immediately reported to the Consultant in Communicable Disease Control and to the duty doctor at CDSC NI (02890 236765 - 24 hour service).

- A severe, unexplained febrile illness or unexplained death from febrile illness.
- Severe sepsis or respiratory failure with a widened mediastinum.

- Severe sepsis with *Bacillus species* or gram-positive rods identified from clinical specimens into the blood or cerebrospinal fluid.

#### 1.4 Inhalation/pulmonary

- Non-specific prodrome of flu-like illness following inhalation of spores with fever, headache, myalgia and non-productive cough. Two to four days after initial symptoms, there is **abrupt onset of respiratory failure** and on chest X-ray a **widened mediastinum** is often present, suggestive of mediastinal lymphadenopathy and haemorrhagic mediastinitis. Note that a widened mediastinum may also be apparent in cases of TB due mediastinal lymphadenopathy.
- Gram-positive bacilli seen in blood cultures, usually after 2-3 days of onset of illness.
- Treatment may be successful in the prodromal stage, but by the time respiratory or bacteraemic symptoms develop, treatment may not arrest the disease before a fatal outcome.

#### 1.5 Cutaneous

- Local skin involvement after direct contact.
- Commonly seen on hands, forearms and head.
- Three days after exposure a raised, itchy, inflamed pimple appears followed by a papule that turns vesicular and then 2-6 days later a black eschar develops. Extensive oedema accompanies the lesion.
- Responds to oral antibiotics.
- Rarely may progress to bacteraemia or meningitis without treatment.

#### 1.6 Gastro-intestinal

- Rare.
- Characterised by severe abdominal pain, nausea and vomiting with watery or bloody diarrhoea.
- 2-3 days after onset bacteraemia may develop.
- Usually fatal if it progresses to bacteraemia.

#### 1.7 Mortality

Inhalation : approaching 100%

Cutaneous anthrax is usually curable with antibiotics.

Ingestion approaching 100%.

#### 1.8 Antimicrobial susceptibilities

Most naturally occurring anthrax strains are sensitive to penicillin which historically has been the preferred therapy for the treatment of anthrax.

Mutant strain used in warfare: ciprofloxacin

## **2 CLINICAL PROCEDURES**

### **2.1 Diagnosis and collection of samples**

Despite its reputation, anthrax is not contagious, and humans are not highly susceptible to the disease. Use of standard Universal Precautions (gloves, gowns and hand washing) in the laboratory reduces the risk of cutaneous anthrax to zero in the simple procedures outlined below. Infectious doses in the pulmonary or intestinal forms are high, and these have to be delivered in the correct size of particle.

### **2.2 Precautions for sampling**

#### **2.2.1 Biological Samples:**

The samples outlined below should be taken to confirm the diagnosis. These must be taken using Universal Precautions and with the utmost care to avoid inoculation injuries. The procedure for transporting samples to the laboratory are outlined in section 4.9. The receiving laboratory should be telephoned to expect arrival.

**Samples of the suspected agent:** should be sent to the Belfast City Hospital PHLS. Contact Dr Paul Rooney in BCH for information.

**Refer to DHSSPS guidance re handling suspicious mail 18th October 2001**

#### **2.2.2 Samples to be taken from acutely ill humans**

- Blood for culture.
- Nasal swabs (Dry)
- Sputum samples and swabs from cutaneous lesions.

#### **2.2.3 Samples to be taken from others who have or may have been exposed**

Depending on the scale of a release, it may be possible to obtain nasal swabs from people present within and adjacent in the exposed area at the time of release. This will assist confirmation of the release and designation of an exposed zone.

#### **2.2.4 Transport of samples**

Strict procedures should be followed for the transport of samples of suspected anthrax, both from the clinical environment to the laboratory, and from local laboratories onto the reference laboratory. These are outlined in section 3.6.

**2.25 Samples of the suspected agent:** should be sent to the Belfast City Hospital PHLS. Contact Dr Paul Rooney in BCH for information.  
Refer to DHSSPS guidance re handling suspicious mail 18th October 2001

### 3 Treatment

#### 3.1 Inhalation and ingestion

**Table 1: recommended treatment for inhalation and ingestion anthrax**

	Initial Therapy	Optional therapy if strain is proven susceptible	Duration
Adults	Ciprofloxacin 400mg iv every 12hr (change to oral 500mg bd when appropriate)	Penicillin G. 2.4g iv every 4hr (change to oral therapy when appropriate)	60 days
Children*	Ciprofloxacin 20-30mg/kg per day iv divided into 2 daily doses, not to exceed 1g per day (change to oral therapy when appropriate)	Age <12y: penicillin G 30mg/kg iv every 6hr Age ≥12y: penicillin G 2.4g iv every 4hr	60 days
Pregnancy*	Same as for non pregnant adult		

\*Ciprofloxacin is not licensed for use in children or pregnant women, so when considering therapy, the risk of disease must be balanced.

Note that cephalosporins are **ineffective** for the treatment of anthrax.

Where the diagnosis is suspected but not confirmed, it may be necessary to start empirical treatment to cover the possibility of anthrax. However, in these circumstances, it will also be necessary to treat concurrently for other causes of acute respiratory illness.

#### 3.2 Cutaneous

Treatment should be initiated with oral ciprofloxacin 500mg twice daily for 7 days. This can be changed to penicillin if the organism is found to be sensitive. Treatment may need to be continued for up to 60 days if there is suspicion of deliberate release in order to provide cover for inhalation anthrax, which may have been acquired concurrently.

### 4 Infection control practice

#### 4.1 *Decontamination of exposed persons*

In the event of a known exposure to anthrax spores, the risk for re-aerosolization from the clothing of those exposed is extremely low. However even a low numbers of spores could potentially lead to cutaneous infection in attending healthcare workers.

In situations where the threat of exposure to *B. anthracis* spores exists, cleansing of skin and potentially contaminated fomites such as clothing, personal possessions or environmental surfaces should be considered in order to reduce the risk of the cutaneous form of the disease. Decontamination of persons exposed to anthrax may include:

- Removal of contaminated clothing and possessions – it should be stored in labelled double plastic bags until exposure to anthrax has been ruled out.
- If anthrax is confirmed, all contaminated material must be incinerated or autoclaved.
- Minimal handling of clothing and fomites to avoid agitation.
- Instructing exposed persons to shower thoroughly with soap and water-appropriate facilities will be provided at the scene as necessary.
- Instructing attending personnel to wear appropriate barrier protection – Universal Precautions - when handling contaminated clothing and other fomites.

NOTE: in Northern Ireland the patients exposed to a hazard will usually have been decontaminated on scene by the NIFB. If this has not been done then NIFB will come to the A&E departments to decontaminate patients. Ideally this should be done outside the A&E department.

#### 4.2 **Isolation of patients**

- Standard Universal Precautions should be used for the care of patients infected with *B. anthracis* – gloves, gowns and hand washing.
- Single room placement for anthrax patients is **not** necessary.
- Airborne transmission does **not** occur.
- Skin lesions may be infectious, but requires direct skin contact.
- Standard Universal Precautions should be maintained when patients are moved.

#### 4.3 **Cleaning, disinfection & waste disposal**

Contaminated environmental surfaces should be cleaned with 0.5% hypochlorite solution (5,000ppm; equivalent to one part household bleach added to nine parts water).

#### 4.4 **Prophylactic treatment for persons exposed to anthrax spores**

In the event of a known exposure to anthrax spores, antibiotic prophylaxis should be initiated as soon as possible – as described in Table 2.

Prophylaxis should continue until *B. anthracis* exposure has been excluded. If exposure is confirmed, prophylaxis should continue for **60 days**. During this period, no special precautions are required for exposed persons, however they should receive an anthrax information sheet and be instructed to seek medical attention immediately in the event of any suspicious symptoms.

Table 2: Recommended prophylaxis after exposure to *B. anthracis*

**Note: A&E departments should give enough prophylaxis for 3 days treatment. The patient should attend their own family doctor for further treatment which should continue until exposure to anthrax is confirmed or not. If confirmed prophylaxis should continue as in para 4.4 above.**

Antimicrobial agent	Adults	Children
<b>Oral Fluoroquinolones</b> Ciprofloxacin	500mg bd	20-30mg per kg of body mass daily, divided into two doses – as a guide 10kg: 125mg bd 20kg: 250mg bd 30kg: 375mg bd 40kg: as for adult
<b>If fluoroquinolones are not available or are contraindicated</b> Doxycycline	100mg bd	5mg per kg body mass per day divided into two doses

Paediatric use of fluoroquinolones and tetracyclines can be associated with adverse effects that must be weighed against the risk of developing a serious disease.

If *B. anthracis* exposure is confirmed, the organism must be tested for penicillin susceptibility. If susceptible, exposed children may be treated with oral amoxicillin 40mg per kg of body mass per day divided with doses 8 hourly (not to exceed 500mg, three times daily).

### Immunisation

In certain circumstances, in addition to antimicrobial prophylaxis, post-exposure immunisation may also be indicated. This consists of 5 doses of vaccine at 0, 3 and 6 weeks, then at 6 months and 1 year after exposure. With vaccination, post-exposure antibiotic prophylaxis can be reduced to **4 weeks**. Advice on the use of vaccine **must** be obtained from CDSC NI (02890 263765).

## 4.5 Contacts of cases

There is no need to provide antibiotic prophylaxis or immunisation to contacts of patients unless there is concern that they were also exposed to the initial release.

#### 4.6 Protection of frontline workers

This includes all emergency staff involved in management at the scene of a release, as well as those involved in treating patients with anthrax.

#### 4.7 Protective clothing

Following an overt release of anthrax spores, the area affected by primary aerosolisation will depend on the time and place of release. This **exposed zone** (see section 4) presents a high risk of infection, and anyone entering it should wear full protective equipment such as Type 3 high efficacy air filter masks with Class A suits, conferring full biological protection.

Healthcare workers will not normally be asked to enter this zone, however it is possible that they may be called to treat casualties, for example if an explosive device has accompanied the release of biological agent. In this case the full protective clothing should be worn.

Exposed persons will normally be moved from the exposed zone, through decontamination, and into a place of safety (see section 4.3.1) for medical assessment and administration of prophylactic treatment. Those involved in decontamination, and others who have any contact with contaminated clothing and fomites should observe standard Universal Precautions - gloves, gowns and hand washing. **Emergency staff who attend exposed persons after decontamination has been completed do not need to take any special precautions.**

For healthcare workers involved in the management of hospitalised patients with all forms of anthrax, Universal Precautions provide sufficient protection, and mortuary staff should use similar barrier protection. More sophisticated countermeasures for airborne protection such as high-efficacy air filter masks airborne protection are **not** required.

#### 4.8 Antibiotic prophylaxis and immunisation

Frontline workers entering the **exposed zone** should be offered antibiotic prophylaxis as in Table 2, and in addition, should be offered a course of vaccination at 0, 3 and 6 weeks then at 6 months and 1 year following exposure, subject to availability.

Prophylactic treatment may also be considered for frontline workers involved in other activities including:

- Decontamination of exposed persons.

- Handling exposed persons.
  - Management of patients or disposal of bodies infected with anthrax.
- Decisions about whom should receive prophylaxis should be taken on an individual basis according to duration and degree of potential exposure, and taking into account the availability and side effects of prophylactic treatments.

#### 4.9 Transportation of samples with suspicion of *B. anthracis*

The following procedures should be adopted for the transport of all specimens, and also all cultures for confirmation. These apply within hospitals and laboratories as well as for specimens sent to the reference laboratory. This also applies to samples sent from Health Centres.

- Every effort should be made to avoid external contamination of specimen containers during specimen collection.
- The primary container (bijoux or similar) should be screwed tight, labelled and placed in an intact plastic bag.
- A 'High Risk' label should be affixed to both specimen and request form. The latter should include any other relevant information and include adequate clinical details to indicate level of suspicion.
- Under no circumstances should the request form be placed in the same bag as the specimen.
- The bag should be sealed, using tape or heat sealer. Pins, staples and metal clips should not be used. A separate bag should be used for each specimen.
- Each specimen must then be placed in a leak-proof secondary container with sufficient absorbent material to absorb all the contents should leakage occur.
- Each specimen must be packaged individually - ie. three specimens, three separate packages.
- The secondary container should be externally disinfected - eg. by wiping with 10% hypochlorite (100,000ppm).

#### 4.10 Samples sent within hospitals and laboratories

- Secondary containers should be placed in a good quality box, which is well taped up and clearly labelled "Pathological Specimen – Open only in Laboratory".
- Specimens should be transported by hand by a responsible person using the above packaging. Vacuum-tube systems should **not** be used for transportation of specimens within hospitals or laboratories.
- Extra care should be taken to ensure that laboratory records are kept to a high standard.

## 5 Case Definition

## 5.1 Suspected cases

Any previously healthy patient with the following clinical presentations should be immediately reported to the Consultant in Communicable Disease Control.

A severe, unexplained febrile illness or unexplained death from febrile illness.

- Severe sepsis or respiratory failure with a widened mediastinum.
- Severe sepsis with *Bacillus species* or gram-positive rods identified from clinical specimens into the blood or cerebrospinal fluid.

If anthrax is suspected, microbiological specimens should be sent to the reference laboratory, and consideration should be given to initiating empirical treatment pending results. Obviously the level of suspicion of anthrax depends on local circumstances at the time – in the event of a known or suspected deliberate release the threshold for making a diagnosis of anthrax should be lower.

As discussed in section 3.3, clinical microbiology laboratories should also be alert to the possibility of anthrax. The PHLS recommends that all sterile site *Bacillus* isolates should be carefully evaluated, and if suspicious, and/or if the clinical syndrome is suggestive of anthrax, they should be immediately referred to reference laboratory.

## 5.2 Confirmed case

A case that clinically fits the criteria for suspected anthrax, and in addition, definitive positive results are obtained on one or more pathological specimens by the reference laboratory.

## 5.3 Definitive diagnosis in the reference laboratory

The definitive test for *B. anthracis* is polymerase chain reaction (PCR). This test can be applied to cultures sent from local laboratories, in which case results will be available in 3 hours from receipt of specimen. It can also be applied to isolates and other clinical samples, but this will normally require overnight culture at the reference laboratory, so the result will take 24 hours.

## 5.4 Procedure for handling exposed persons

Depending on the site and method of release, anthrax spores may be dispersed over a wide area. Expert advice will be provided to define an **exposed zone** in time and space. All individuals who have been present in the exposed zone need to be identified. In the event of an overt release, some of them will still be at the scene when emergency services respond to the incident. This group will be decontaminated and then referred to health workers at a nearby **place of safety** for assessment and prophylaxis (this will be a clinical area just outside the exposed zone and within the cordon that will be established at the scene of the incident). Others will have left the scene before emergency services arrive and will be identified later when they approach GPs and A+E departments after details of the incident have been made public. Procedures need to ensure that these individuals are appropriately decontaminated, receive prophylaxis, and have their details collected for follow up.

**Follow up of exposed persons**

After an overt release, a basic set of personal details needs to be collected from all persons present in the exposed zone.

**5.5 Case finding**

If cases of anthrax arise and a covert release is suspected, health services should be contacted to determine whether other possible cases have presented.

# Executive Information Service

Department of Health, Social Services and Public Safety

17 October 2001

## GUIDANCE FROM DHSSPS ABOUT HANDLING SUSPICIOUS MAIL

### **DHSSPS today issued the following guidelines:**

1. Do not shake or empty the contents of any suspicious envelope or package.
2. PLACE the envelope or package in a plastic bag or some other type of container to prevent leakage of contents.
3. If you do not have any container, then COVER the envelope or package with anything (e.g. clothing, paper, waste paper bin etc) and do not remove this cover.
4. DO NOT try to CLEAN UP or vacuum the powder. COVER the spilled contents immediately with anything (clothing, paper, waste paper bin etc) and DO NOT remove the cover.
5. Then LEAVE the room and CLOSE the door, or section off the area to prevent others from entering.
6. WASH your hands with **soap and water** to prevent spreading the powder to your face.
7. What to do next....

If you are at HOME, then report the incident to the emergency services.

If you are at WORK, then report the incident to the emergency services and notify Head of Security or your line manager.

8. List all the people who were in the room or the area when this suspicious letter or package was recognised. Give this list to both the police and the public health authorities for follow-up investigations and advice.

