PRE and POST EXPOSURE PROPHYLAXIS

- The decision to offer post exposure prophylaxis after a deliberate or accidental release should be taken after a risk assessment of the likelihood and extent of exposure has been made. If a deliberate release occurs, advice about the use of prophylaxis will be provided. Groups likely to need prophylaxis include persons exposed at the incident scene (including first responders and handlers of contaminated clothing) and, for smallpox and pneumonic plague, contacts of cases, laboratory workers and others.
- For exposure outside the context of deliberate release (eg accidental exposure during laboratory work;, follow local occupational health protocols (including those on exposure to HBV, HCV & HIV) on reporting, care provision, counselling & follow up, & seek expert advice
- Current recommendations are shown in the table below. They may change, and you should check them (via the HPA deliberate release home page at http://www.hpa.org.uk), and check drug dosages, contraindications and interactions in the BNF before prescribing
- The table shows the drug/s of first choice, second choice, and alternatives for use when the drug of first choice cannot be prescribed because of allergy or other contraindication, is not available, or for use (eg amoxicillin for anthrax) when the organism is known to be sensitive to the drug. Except where specified, antibiotic prophylaxis should begin, if possiible, within 24 hours of exposure
- Ciprofloxacin is not licensed for use in children or in pregnant women. There have been no formal studies of the use of ciprofloxacin in pregnancy, but it is unlikely to be associated with a high risk of abnormalities of foetal development. There is some evidence that the use of fluoroquinolones in children (including via breast feeding) may be associated with tendinitis and arthropathy. The risk of adverse effects of ciprofloxacin must be weighed against the risk of developing an infectious disease with significant morbidity and mortality. Doxycycline has adverse effects in children (deposition in growing bones & teeth, causing staining and, occasionally, dental hypoplasia), and should be used in children < 12 years and in pregnancy only when no alternative antibacterial can be given, & when the risk of infection outweighs the risk of adverse effects. If given ciprofloxacin or doxycycline, lactating mothers should stop breast feeding.

  For patient information sheets, patient group directives, & additional information on ciprofloxacin & doxycycline: http://www.doh.gov.uk/

Disease/Agent	Pre-exposure vaccine	Post exposure prophylaxis Adults	Duration	Post exposure prophylaxis Children
Anthrax	Available for those at occupational risk e.g. work with animal hides, laboratory work. 5 dose course (0, 3 and 6 weeks, 6 and 12 months)	Ciprofloxacin 500 mg orally bd or Doxycycline 100mg orally bd or Ciprofloxacin 10-15mg/kg orally bd or Doxycycline 2.5mg/kg orally bdif organism shown to be sensitive Amoxicillin 500mg orally tds	60 days or 28 days*	Ciprofloxacin 10-15mg/kg orally bd or if organism shown to be sensitive Doxycycline 2.5mg/kg orally bd or Amoxicillin 25mg/kg orally tds
		Anthrax vaccine may be available, and used post-exposure in combination with antibiotics in selected cases (e.g. first responders in incident 'hot zone). *If anthrax vaccine is used, or a full course of vaccine has been completed previously, antibiotic prophylaxis is reduced to 28days		
Botulism	Toxoid vaccine for research workers		Not indicated	Ciprofloxacin 10-15mg/kg orally bd or Doxycycline 2.5mg/kg orally bd
Glanders and melioidosis	No	Doxycycline100mg orally bd and Ciprofloxacin 500mg orally bd Pregnancy: use Ciprofloxacin	7 days	Doxycycline 2.5mg/kg orally bd and Ciprofloxacin 10-15mg/kg orally bd
Plague	Sub unit vaccines in development but not yet evaluated in humans	Ciprofloxacin 500mg orally bd or Doxycycline 100mg orally bd	7 days	Ciprofloxacin 10-15mg/kg orally bd or Doxycycline 2.5mg/kg orally bd
		Health care & laboratory workers should continue therapy until 7 days after last known exposure		
Smallpox	Vaccinia vaccine - has been given to key workers	Vaccine given immediately or very soon after exposure reduces the severity of infection		
Tularemia	Vaccine has been given to selected laboratory workers	Ciprofloxacin 500mg orally bd or Doxycycline 100mg bd orally	14 days	Doxycycline 2.5mg/kg orally bd and Ciprofloxacin 10-15mg/kg orally bd
		Vaccine gives incomplete protection: antibiotics required after known laboratory exposure		
Viral haemorrhagic fever	No though various vaccines in development	Ribavarin and active follow up for 21 days for any health care or laboratory worker with high risk exposure(e.g. needlestick injury, or skin, eye or mucous membrane contact with blood or body fluids to a known source of Lassa fever virus or arena virus, or to a VHF or uncertain aetiology		

If a patient presents with an unusual or unexplained or illness it is essential that further appropriate specialist clinical advice is sought regarding the diagnosis AND The Public Health Department at your local NHS Board is notified to investigate whether the patient has been exposed to an agent, which is causing the illness.

For further specialist advice contact:

Health Protection Scotland (HPS)

Health Protection Scotland

Tel: 0141 300 1100 or 'out of hours' 0141 211 3600
and
The Consultant in Public Health Medicine (CPHM) at your local NHS board

NHS boards

HPS	**Tel: 0141 300 1100**	out of hours	**0141 211 3600**
Ayrshire and Arran	**Tel: 01292 885 876**	out of hours	**01563 521 133**
Borders	**Tel: 01896 825 560**	out of hours	**01896 826 000**
Dumfries and Galloway	**Tel: 01387 272 724**	out of hours	**01387 246 246**
Fife	**Tel: 01592 226 435**	out of hours	**01592 643 355**
Forth Valley	**Tel: 01786 463 031**	out of hours	**01786 434 000**
Grampian	**Tel: 01224 558 520**	out of hours	**0845 456 6000**
Greater Glasgow & Clyde	**Tel: 0141 201 4917**	out of hours	**0141 211 3600**
Highland	**Tel: 01463 704 886**	out of hours	**01463 704 000**
Lanarkshire	**Tel: 01698 206 326**	out of hours	**01236 748 748**
Lothian	**Tel: 0131 536 9192**	out of hours	**0131 242 7444**
Orkney	**Tel: 01856 888 270**	out of hours	**01856 888 000**
Shetland	**Tel: 01595 743 340**	out of hours	**01595 743 000**
Tayside	**Tel: 01382 596 976**	out of hours	**01382 660 111**
Western Isles	**Tel: 01851 702 997**	out of hours	**01851 704 704**

National Poisons Information Service Tel. 0844 892 0111
Advice & information on the clinical management of poisoning.

TOXBASE (http://www.toxbase.org)
Clinical toxicology database of the UK NPIS.
Registration required; free to NHS users.

Further information on assays is available from NPIS or
www.assayfinder.co.uk

Health Protection Scotland

NHS National Services Scotland

Biological Agents

Clinical Action Guide

Exposures, Diagnosis and Management

Chemical
Biological
Radiological
Nuclear

Microbiological Testing

- Always use standard universal precautions when taking any specimen.
- Use additional PPE appropriate to the transmission risk and the task if the aetiology is uncertain.
- Seek expert advice if unsure of the specimens to collect or the PPE to use.
- Telephone microbiology lab in advance to let them know to expect specimens.
- If possible, take specimens for bacterial culture before administering antibiotics. If antibiotics have been given this should be mentioned on the request form.
- Take at least 4 sets of blood cultures (2 sets from each of two venepuncture sites at least one hour apart).
- Avoid contamination of outside of container during collection of specimen and ensure container lid is fastened securely.
- Label all specimens with name, hospital number, date and time.
- Label all specimens **'high risk'** or **'danger of infection'** (or as local protocol).
- Place each specimen in a separate bag. (i.e. three specimens in three separate specimen bags). Seal bags with tape and **not** with staples clips or pins – it endangers lab staff who open the bags.
- Fill in request forms fully and accurately, specifying the possible diagnosis and giving as much clinical information as possible. Put the request form in a separate plastic bag; never in the same bag as a specimen. The specimen bag and the bag containing the request form should then be taped together.
- Transport specimens to local microbiology laboratory as soon as possible using locally agreed protocol for high-risk samples.
- The table below show the specimens that are important in the laboratory diagnosis of high consequence pathogens – but it is not exhaustive. If you suspect that a patient has any of these illnesses, you should discuss the case with a senior and a Consultant Microbiologist.

Clinical specimens • Important for laboratory confirmation of diagnosis, collect routinely. • Helpful for laboratory confirmation of diagnosis, if available • Helpful for exclusion of an important differential diagnosis	Infection								
	Anthrax	Botulism	Glanders	Melioidosis	Plague	Tularaemia	Smallpox	VHF	Unusual illness
Hazard group of organism	3	2	3	3	3	3	4	4	
Label all specimen and containers and all request forms 'danger of infection'	yes	yes	yes	yes	yes	yes	SEEK EXPERT ADVICE IMMEDIATELY DIAGNOSIS SUSPECTED	SEEK EXPERT ADVICE IMMEDIATELY DIAGNOSIS SUSPECTED	yes
Blood cultures	●		●	●	●	●			●
Swab/aspirate of any skin lesion for MC&S	●		●	●	●	●			●
Nasal swab (dry swab not in transport medium) for MC&S	●								
Sputum for MC&S	●		●	●	●	●			●
Paired sera (10mls of clotted blood acutely and 14 days post onset)	●	●	●	●		●			●
Additional 20 mls acute serum and further sample >21 days post onset									
EDTA blood sample (5 X 4ml) on admission	●				●	●			●
Throat & nasal swab together or throat washings									●
Urine (> 20mls; 'clean catch' in sterile container) for culture	●		●	●	●	●			●
Faeces (at least 10G in sterile container)	●	●							
Vomitus/gastric washings/gut contents(at least 10G in sterile container)	●	●				●			
Bronchoalveolar lavage (in sterile container)	●	●	●	●	●	●			●
Urine for legionella and pneumococcal antigens			●	●	●	●			●
Rapid test for influenza and RSV (on NPA/throat washings)	●				●	●			●
Sputum for ZN stain and AAFBs (if clinically appropriate)	●		●	●	●	●			●
Pleural fluid (in sterile container)	●			●	●				
CSF (in sterile container)	●				●				●

Specimens from other normally sterile sites may be useful for laboratory diagnosis including pleural fluid, pus, and tissue from debridement. If in doubt, seek advice from Consultant Microbiologist or Infectious Disease Physician

Current treatment recommendations are shown in the table below. They may change, you should check with an expert and check drug dosages, contraindications and interactions in the BNF before prescribing

	Signs and Symptoms	Treatment	Transmission	Infection control
Anthrax	**Inhalation: -fever -drenching sweats - muscle aches - non productive cough - chest pain - fatigue - headache -confusion -nausea vomiting** possibly 1-2 days improvement then rapid respiratory failure and shock. Meningitis may develop. Widened mediastinum on chest x- ray. 100% fatality if untreated. **Gastro-intestinal: -acute abdomen - severe abdominal pain - nausea & vomiting - bloody diarrhoea - sepsis & shock . High mortality even with treatment** **Cutaneous:** Intense itching followed by painless papular lesion then vesicular lesion developing into an eschar over 2 – 6 days. Extensive local swelling and systemic malaise.	**Seek expert advice** **Systemic Treatment** **Adult :Ciprofloxacin** 400mg IV bd (first line Tx) Or **Doxycycline** 100mg IV bd With 1 or 2 additional antibiotics (rifampicin, clindamycin, penicillin or amoxicillin imipenem) **Child : Ciprofloxacin** 10-15 mg/kg IV bd, not exceeding 1G /day Or **Doxycycline** if at least 8yrs and 45kg: 100mg IV bd; if less than 8yrs and < 45kg or less than 8 years: 2.2mg/kg IV bd) plus 1 or 2 additional antibiotics.	Inhalation & GI: Incubation period**:** 1- 7 days but range can be < 24 hours - 60 days **Transmission**: Inhalation or ingestion of *B anthracis* spores Inhalation and GI: no person to person spread **Cutaneous: Incubation period:** 1- 12 days but can be up to 60 days **Transmission**: Cutaneous - direct contact with lesion	Inhalation requires **standard precautions** and nursing in a side room Cutaneous requires **Standard precautions**
Botulism	**- afebrile -difficulty seeing, speaking or swallowing - intermittent ptosis - facial weakness - dysphonia -dysphagia -dysarthria - diplopia - mild papillary dilation** Generally normal mental status and no change in sensory awareness. **Late signs & symptoms:** **-neck weakness - descending weakness loss of gag reflex and tendon reflexes - autonomic disturbance - respiratory failure (may be the first sign if rapid onset)**	**Seek expert advice** **Supportive care** **Trivalent equine antitoxin**- ID physician will give advice on administration. Antibiotics penicillin metronidazole indicated for wound botulism only	No person to person transmission	**Standard precautions**
Plague	Clinical features are dependent on route of exposure **Bubonic plague : fever - swollen & very painful lymph node (bubos- usually unilateral) -hpotension -confusion** (can progress to pneumonic or septicaemic plague if untreated) **Pneumonic plague : - sudden onset high fever - chills - sweat - vomiting -diarrhoea - cough - increasing dyspnoea -watery sputum or haemoptysis - headache - severe malaise - chest pain** **Septicaemic plague: -** most often from untreated bubonic or pneumonic plague **-fever - chills -sweats -gram negative shock -purpura/peripheral gangrene -DIC**	**Seek expert advice** Early treatment essential Adult : Gentamycin: **at standard doses for severe sepsis according to local protocol** OR Streptomycin **1G IM bd or if front line drugs unavailable** Ciprofloxacin **400 mg IV bd** Child: Gentamycin **as above** or Streptomycin **7.5mg/kg IM bd or if unavailable** Ciprofloxacin **15mg/kg IV bd** For milder cases use oral Ciprofloxacin For plague meningitis: add Chloramphenicol **25mg/kg IV qid**	**Bubonic: Incubation 2-8 days.** No person to person transmission **Pneumonic: Incubation period 2-4 days.** Person to person transmission by droplet aerosol **Septicaemic: Incubation period 1-8 days** No person to person spread	Pneumonic requires barrier nursing in side room or cubicle. **Standard and respiratory precautions** Consider prophylaxis for staff
Glanders & Meloidosis	**Pulmonary : : - fever -chills – malaise -headache -myalgia - productive cough - dyspnoea -chest pain - respiratory distress CXR- multifocal consolidation (effusion in glanders) lung abcess** **Septicaemia : (systemic symptoms) - fever - chills -malaise -headache -myalgia -shock - multiple abscesses liver kidney and spleen - multiple organ failure** Septicaemic spread leads to formation of metastatic foci- abscesses form throughout the body. The disease may be rapidly fatal.	**Seek expert advice** **Ceftazidine** IV 120mg/kg/day (usual adult dose 2g IV tid) OR **Meropenem** 50mg/kg/day (usual adult dose 1gm IV tid) **OR Imipenem** 50mg/kg/day (usual adult dose 1gm IV tid) **OR** For oral treatment of mild cases or oral eradication of severe disease (20 weeks treatment in total) **Doxycycline** 4mg/Kg/day + **Co trimoxazole** 40/8mg/kg/day or particularly children and pregnant women**, Co-amoxiclav** expressed as amoxicillin 60mg/ /kg/day.	**Incubation period** Low risk of person to person transmission	**Nurse in standard isolation side room** **Standard precautions**
Smallpox	**Prodromal period :** **- severe acute fever - rigors - malaise -vomiting - headache -backache** After 2-4 days skin lesions appear and progress synchronously from macules to papules to vesicles to pustules, mostly on face, neck palms soles and subsequently progress to trunk (see differential diagnosis sheet in information pack)	**Seek expert advice** Supportive therapy, fluid replacement and antibiotics for secondary infection **Cidoovir** and **adefovir** may be of some therapeutic effect but toxic and difficult to administer	**Incubation period 12 – 14 days (range 7 – 17 days)** Person to person spread by airborne droplet nuclei or contact with skin lesions	**Standard precautions** plus use of N95 mask and protective gowns and eye goggles **Negative pressure room until scabs fall off in 3-4 weeks**
Tularemia	Deliberate release most likely to result in pneumonic tularemia although other forms are possible. Clinical presentation dependant on route of exposure. **ulceroglandular oculoglandular or oropharyngeal** tularaemia will all present with general malaise -fever -headache -myalgia chills .Specific to: **ulceroglandular:** local lymphadenopathy- glands tender painful and may be fluctuant- tender papule/ulcer at site of inoculation **oculoglandular:** unilateral painful red eye – eye exudates- corneal ulcer- tender swollen periaucular lymph nodes **oropharyngeal:** sore throat – exudates – tender swollen cervical lymph nodes – pharyngeal/tonsillar ulcer - stomatitis **Infection will persist for weeks or months if untreated or may progress to Pneumonic or Septicaemic tularemia** **Pneumonic : -Fevers -chills -headache - myalgia -sore throat - dry cough – pleuritic chest pain - dyspnoea can progress to respiratory failure** **Septicaemic : - Fever -chills -headache - myalgia -abdominal pain - nausea - diarrhoea - vomiting -confusion -altered consiousness - coma – septic shock – DIC –haemorrhage, ARDS**	**Seek expert advice** **Adult: Gentamicin** (first choice) 7 mg/kg once daily or **Streptomycin** I G IM bd or **Ciprofloxacine** 400mg IV bd Child: Gentamicin **2.5mg/kg IV/IM tid or** Streptomycin **7.5mg/kg IM bd** **Ciprofloxacin** 10-15mg/kg IV bd Check levels of gentamicin /streptomycin ; change to oral when appropriate 400mg IV bd	**Incubation period 2-5 days (up to 21 days)** No person to person transmission – contact with infected ticks/animals	**Standard precautions**
VHF	**Lassa :** many cases mild mortality 1% **-Slow onset of febrile prodrome –severe prostration –sore throat - pharyngeal exudates - facial oedema -vomiting & diarrhoea –bleeding in severe cases in second week - pleural effusion -ascites -encephalopathy** **Ebola/Marburg :** mortality 30 – 90% **Abrupt onset of febrile prodrome -diarrhoea (sometimes bloody) - vomiting -dehydration -maulopapular rash day 3 – 8 - bleeding -hiccups -sleepinness - delirium -coma -reslessness -multiorgan failure** **Congo Crimean HF:** mortality 30 – 50% **Abrupt onset of febrile prodrome - vomiting & diarrhoea - abdominal pain -soar throat - reddened eyes -sleepy lethargic -facial oedema -petechial rash -palatal petechiae - bleeding on day 4 – 5 in 75% of cases - hepatomegaly - CNS –(neck stiffness agitation coma in 20% of cases)**	**Mainly supportive** **Ribavarin effective for the treatment of Lassa Congo Crimean but not Marburg Ebola of flaviviruses** **Minimise invasive procedures avoid antiplatelet drugs and IM injections.** **Treat secondary infections**	**Lassa – 3 – 21 days** **Ebola/Marburg 2-21 days** **Congo Crimean HF 1 – 12 days** **All have : Very High risk of person to person by percutaneous or mucotaneous exposure to blood or body fluids**	**Immediate isolation** **Standard Contact and Airborne**