INFECTIOUS DISEASES

Antimicrobial Treatment

This Trust operates Antimicrobial cycling. Please refer to the Empirial Antimicrobial Guidelines for hospitalised adults. It does not apply to oral medication or patients discharged from the ED.

Isolation

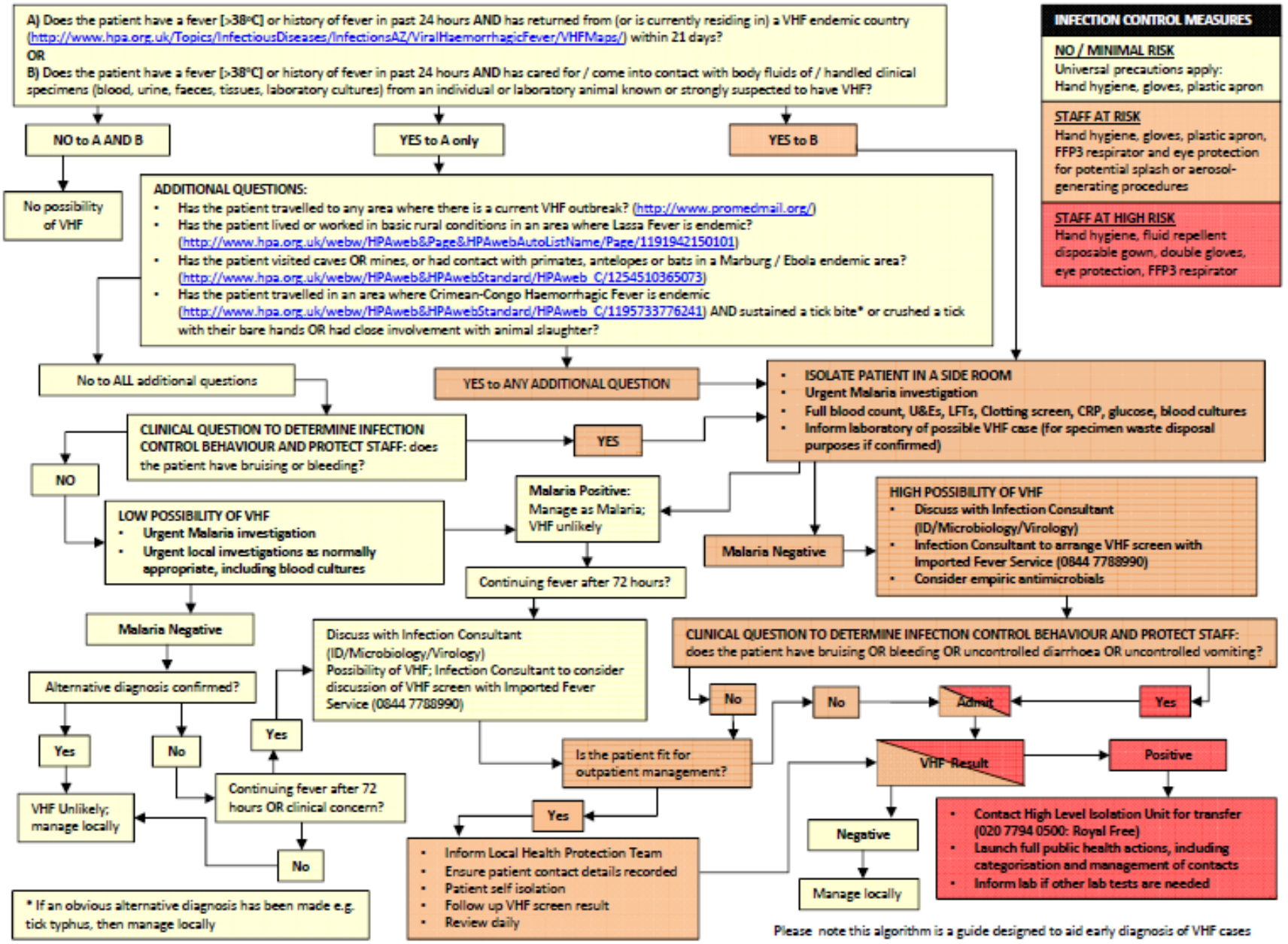
- **SARS and FLU EPIDEMICS:**
  Any patient presenting with respiratory symptoms, flu-like symptoms or diarrhoea and who has been in an affected area during the ten days prior to attending must be isolated and treated according to the current protocol held in ED. Vigilance is essential)

- **VIRAL HAEMORRHAGIC DISEASE:**
  There has been a recent outbreak of Ebola in Guinea, Liberia and Sierra Leone. It is unlikely, but not impossible, that travellers could arrive in the UK while incubating the disease (incubation period 2 to 21 days). Suspect if symptoms of fever, headache, sore throat or general malaise within 21 days of visiting affected area (or caring for high risk person). The patient must be isolated and treated as per the HPA algorithm (see next page).

- **Isolation of other infections you may encounter in the ED:**
  - Diarrhoea and/or vomiting
  - Undiagnosed rashes & fevers as well as measles, rubella, mumps
  - Newly diagnosed or suspected “open” TB
  - Suspected Group A strep infection
  - Patients shredding antimicrobial resistant microorganisms: e.g. MRSA, GRE, aminoglycoside-resistant Gram-negative organisms
  - Inter-hospital transfers known to be colonised with resistant bacteria
  - Bronchiolitis
  - Chicken pox and shingles
  - This is not an exhaustive list – refer to *The Northern Ireland Regional Infection Prevention and Control Manual*. www.infectioncontrolmanual.co.ni

- *Use standard precautions for all patients – this includes good hand hygiene and use of protective clothing (e.g. gloves and aprons)*

VIRAL HAEMORRHAGIC FEVERS RISK ASSESSMENT (Version 2: 09.07.2014)



Please note this algorithm is a guide designed to aid early diagnosis of VHF cases

MENINGOCOCCAL DISEASE - ADULTS

Presentation

Can be divided into four groups:

- Meningococcal Septic Shock
- Meningitis
- Both of above
- Non-specific: arthralgia, rash, collapse or confusion/psychosis

The typical rash is non-blanching but there may be any or no rash!

Treatment

- ABC – O_2 NRRM
- Vigorous resuscitation with IV crystalloid + colloid

- Meningitis with typical rash
  = Benzylpenicillin 2.4g IV 4 hourly

- Meningitis without typical rash < 55 yrs old
  = cefotaxime 2g IV 6 hourly OR Ceftriaxone 2g IV 12 hourly
  Add Amoxicillin 2g IV 4 hourly if > 55 yrs, immunocompromised or pregnant

- Meningitis with clear history of anaphylaxis to penicillin/cephalosporin
  =chloramphenicol 25mg/kg IV 6 hourly + co-trimazole 1.44g IV 12 hourly if > 55 yrs old.

- Notify Anaesthetist and inpatient medical team

- Ensure that Public Health are notified (immediate family will need prophylaxis). Ciprofloxacin stat dose recommended.

TOXIC SHOCK SYNDROME

Organisms:	Gram positive bacteria - Usually Staphylococcal. Occasionally streptococcal
Presentation:	Fever >38.9 Hypotension Macular Rash (mucous membrane involvement) Diarrhoea Cardiovascular Collapse
Treatment:	supportive and high-dose flucloxacillin

SEPTIC SHOCK - SEE ALSO RESUSCITATION

Organisms:	Usually caused by pneumococci or gram negative organisms.
Presentation:	Focus of infection (may not be apparent initially) SIRS: Temp >38.3 or <36 HR >90 RR >20 WCC >12, 000or < 4,000 /mm3
Management:	Recognise early & seek advice Give oxygen 100% via NRRM Give N saline 1 litre rapidly and monitor response – (repeat further fluids if necessary) Check Blood Cultures Give empiric antibiotics (see Trust Policy) Catheterise bladder and measure urine output FBP, coag, ABG, U&E, glucose, lactate, CRP, LFT Perform ECG and CXR Refer to medical team for ADMISSION +/- ICU

CELLULITIS - LOWER LEG

Organisms:	*Usually streptococcal* Occasionally staphylococcal More rarely may involve gram negative organisms if complicating a significant wound May be polymicrobial if occurring in patients with diabetic foot disease
Risk Factors:	*Athlete's foot (recurrent disease)* Lymphoedema Varicose eczema Obesity Diagnosis Malaise and fever
Presentation:	Progressive painful swelling and erythema Usually unilateral but can be bilateral
Differential:	Lower leg eczema – itchy, non tender Acute oedema/blisters – usually bilateral Chronic lymphoedema – usually bilateral, well DVT – see earlier section on DVT Peripheral vascular disease – delayed CRT Compartment syndrome – sharply localised and extreme tenderness Vasculitis – usually bilateral, mainly anterior shin Necrotising fasciitis – severe pain, toxic

Investigation: FBP, ASOT(if present>10days), Blood cultures (if Temp >38.5)
U&E, LFTs if unwell and Streptococcal Toxic Shock Syndrome suspected

Treatment: Admission rarely required unless severe, antibiotic resistant or co-morbidity
Ceftriaxone via HDT for 48 hours if non-responding to oral antibiotics or severe at presentation
Affected areas should be elevated if possible
Failed treatment with above -seek senior advice
Consider admission to Obs ward for overnight Abx and senior review if concerned about patient
Avoid NSAIDs (associated with higher incidence of Necrotising Fasciitis)

Refer suspected Necrotising Fasciitis to surgeons immediately: ill septic patient, rapidly progressive skin change and severe pain are all pointers to this diagnosis

MANAGEMENT OF SUSPECTED INFECTIVE GASTROENTERITIS

This applies to all adult patients with non-specific vomiting and/or diarrhoea. C Difficile Toxin should be checked and if positive (or has been positive within 12 weeks of presentation) must be isolated according to Trust Protocol.

1. Assessment should take place in the isolation room unless definitely not a gastroenteritis case (e.g. vomiting due to mi)
2. The patient should have a full doctor's assessment to exclude surgical/non-infective cause for symptoms (i.e. pancreatitis, obstruction etc).
3. Faeces should be sent to lab urgently for C/S if possible
4. If a surgical cause for the illness is excluded the patient's state of hydration should be assessed (including U&E) *and*
5. Re-hydration using dioralyte or IV fluids as tolerated.

Patient can be discharged if

- tolerating oral fluids,
- mobile,
- passing urine
- suitable home circumstances

give infection precaution advice if discharging (if employed in food -handling refer to GP)

IMMUNISATION ENQUIRIES AND INFECTION EXPOSURE (SEE ALSO NEEDLESTICK INJURIES, TETANUS)

Don't guess the answer - You must check the Green Book ("Immunisation against Infectious Diseases" 2006) every time.

Post Vaccination Problems

Usually affect children and may present to the Emergency Department or helpline. Specific guidelines are given in the Green Book and in the BNF.

Requests for emergency immunisation

Patients may present to the Emergency Department or phone on helpline. Check green book and get senior advice
(e.g. Rabies, Hep B, usually from travellers or Varicella Zoster following exposure during pregnancy).

Urgent active +/- passive immunisation may be required. Blood titres may need to be taken.
Northern Ireland's Public Health Supplies are accessed via the on-call microbiologist at BCH.

Tetanus Prophylaxis

Table 30.1 Immunisation recommendations for clean and tetanus-prone wounds

IMMUNISATION STATUS	CLEAN WOUND	TETANUS-PRONE WOUND	
	Vaccine	Vaccine	Human tetanus immunoglobulin
Fully immunised, i.e. has received a total of five doses of vaccine at appropriate intervals	None required	None required	Only if high risk (see p 379)
Primary immunisation complete, boosters incomplete but up to date	None required (unless next dose due soon and convenient to give now)	None required (unless next dose due soon and convenient to give now)	Only if high risk (see p 379)
Primary immunisation incomplete or boosters not up to date	A reinforcing dose of vaccine and further doses as required to complete the recommended schedule (to ensure future immunity)	A reinforcing dose of vaccine and further doses as required to complete the recommended schedule (to ensure future immunity)	Yes: one dose of human tetanus immunoglobulin in a different site
Not immunised or immunisation status not known or uncertain	An immediate dose of vaccine followed, if records confirm the need, by completion of a full five-dose course to ensure future immunity	An immediate dose of vaccine followed, if records confirm the need, by completion of a full five-dose course to ensure future immunity	Yes: one dose of human tetanus immunoglobulin in a different site

Tetanus-prone wounds include:

- wounds or burns that require surgical intervention that is delayed for more than six hours
- wounds or burns that show a significant degree of devitalised tissue or a puncture-type injury, particularly where there has been contact with soil or manure
- wounds containing foreign bodies
- compound fractures
- wounds or burns in patients who have systemic sepsis.

Management:
Prevention is key – clean and debride wound
Vaccine +/- immunoglobulin as in table above.
Antibiotics as required

MANAGING SUSPECTED EXPOSURE TO HIV AND HEPATITIS VIRUSES

Each case of suspected Blood Borne Virus (BBV) exposure is different – judgement and experience are essential. Contact an experienced Emergency Department doctor or the Occupational Health nurse for advice.

The commonest scenarios that you will encounter will be:

- **Healthcare workers** – usually after needlestick injury. ALL should be followed up by OCCUPATIONAL HEALTH. Follow the Trust Sharps Injuries Policy found on the intranet.
- **Other occupational exposure** – eg police, council workers("binmen" etc) who should all be followed up at their employer's Occupational Health Department or GP to refer to GUM for follow-up.
- **General Public** – eg children playing with needles (iv drug abuse is common in this area), people who have sustained bites and scratches. All should be followed up by their GP who should receive a detailed discharge letter from you.

Step One: Immediate Action

- First aid measure: wash wound well and encourage free bleeding, irrigate affected mucous membrane with water
- Reporting: Sharps injury should be reported to the person in charge / line manager. Within normal working hours it should then be reported via telephone to Occupational Health. Outside normal working hours the health care professional will report to the ED after risk assessment has been completed at source.

Step Two: Risk Assessment – information gathering

- Risk Assessment: risk assessment of the source patient (if known) must be carried out as soon as possible, ideally within 30 minutes of the incident. This should be carried out by a clinician with clinical responsibility for the patient (inpatient team or GP if in community) – NOT the ED staff.

1. Assess the risk of the Source patient:

The donor is classified as high risk if he/she is in one of the following categories -

- known seropositive Hepatitis or HIV
- history of IV drug abuse
- homosexual, bisexual or sex industry worker
- from an endemic area (e.g. South East Asia - hepatitis B, parts of the African Continent - HIV)
- sexual contact with a high risk person

2. Assess the risk of the fluid or tissue

The following contaminating fluids or tissue are classified as high risk-

- blood or any blood-stained fluid
- breast milk, amniotic fluid, vaginal secretions or semen
- peritoneal, pericardial or pleural fluid
- synovial fluid or CSF
- saliva in association with dentistry
- any tissue (unless already “fixed”)

3. Assess the risk of the exposure

The following types of exposure are classified as high risk -

- needlestick or other percutaneous exposure (3 in 1,000 for HIV)
- exposure to broken skin
- mucous membrane (<1 in 1,000 for HIV)

4. Recipient factors

Previous immunisation status
Known Hep B Vaccine non-responder

5. Unknown source

If there has been a significant exposure and a source patient cannot be identified, risk assessment should be on an individual basis. This will be decided by a consideration of the circumstances of the exposure, and the epidemiological likelihood of BBV in the source. In the vast majority of such exposures, it would be difficult to justify the use of HIV PEP. (UK Health Departments, 2004).

Step Three: Risk Assessment – Determining Overall Risk

You now have a picture of the relative overall risk. Unfortunately there are no hard and fast guidelines but some situations - e.g. percutaneous needlestick with a cannula which had been placed in a HIV positive patient's vein - are clearly very high risk compared to others. Try to place the patient into either 'very high risk', 'moderate risk' or 'low risk'.

Discuss all patients with the ED consultant / Occupational Heath unless clearly high risk requiring immediate treatment. In general most exposure is not of sufficient risk of HIV to warrant post-exposure prophylaxis (PEP). There is however a significant risk of hepatitis.

The clinician in charge of the source patient should consent the patient and obtain blood to test for blood borne virus using the consent form Annex B in the Trust Policy.

Occupational Health / ED if OOH, should obtain 4mls clotted blood sample to send to virology in RVH marked "recipient blood for storage"

High Risk □	Known HIV patient give PEP within one hour, and contact Occupational Health / ED. **Specialist advice can be obtained from the Regional Genito-urinary Medicine Consultants for high-risk incidents, through switchboard at the Royal Victoria Hospital Belfast on 028 90240503.**
Moderate risk □	Some risk factors may have been identified e.g. lived or travelled in HIV endemic area – Urgent discussion with Occupational Health/ Emergency Medicine Consultant.
Low risk □	No risk factors identified – routine management

Step Four: Treatment

1. HIV prophylaxis

- Give recipient post-exposure prophylaxis starter pack, which is kept in the ED. *The recipient should take the first dose immediately*
- Obtain sample from recipient for baseline HIV analysis
- Refer to Occupational Health/GP

2. Hepatitis-B prophylaxis

HBV status of person exposed	**Significant exposure**			**Non-significant exposure**	
	HBsAg positive source	**Unknown source**	**HBsAg negative source**	**Continued risk**	**No further risk**
≤ 1 dose HB vaccine pre-exposure	Accelerated course of HB vaccine* HBIG x 1	Accelerated course of HB vaccine *	Initiate course of HB vaccine	Initiate course of HB vaccine	No HBV prophylaxis Reassure
≥ 2 doses HB vaccine pre-exposure (anti-HBs not known)	One dose of HB vaccine followed by second dose one month later	One dose of HB vaccine	Finish course of HB vaccine	Finish course of HB vaccine	No HBV prophylaxis Reassure
Known responder to HB vaccine (anti-HBs > 10 miU/ml)	Consider booster dose of HB vaccine	Consider booster dose of HB vaccine	Consider booster dose of HB vaccine	Consider booster dose of HB vaccine	No HBV prophylaxis Reassure
Known non-responder to HB vaccine (anti-HBs <10 miU/ml 2-4 months post-immunisation)	HBIG x 1 Consider booster dose of HB vaccine	HBIG x 1 Consider booster dose of HB vaccine	No HBIG Consider booster dose of HB vaccine	No HBIG Consider booster dose of HB vaccine	No prophylaxis. Reassure

3. For exposure to Hepatitis-C etc

- Obtain sample from recipient for baseline analysis
- Refer to Occupational Health/GP

POST EXPOSURE PROPHYLAXIS AFTER SEXUAL EXPOSURE

You may be asked for PEPSE by a patient who is concerned about infection after risky sexual behaviour. It is important first to determine the risk of exposure to HIV/HEP B. The Trust has developed a policy along with the GUM department in Causeway Hospital for the assessment and management of these patients. Prescribe PEPSE as per this policy. All patients should be referred to GUM for follow-up.