The Child with HIV and a Fever[1]

Author: **Andrew Riordan**

Amanda Williams

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1. Introduction

These guidelines refer to HIV infected children with a fever but with no other symptoms and signs. The commonest bacterial causes of fever in HIV infected children are bacteraemia, urinary tract infection (UTI) or pneumonia[1].

Children with HIV have a considerably increased risk of bacterial infections, even when treated with antiretroviral therapy. General principles are to give antibiotics earlier, in higher doses for longer courses.

2. HIV disease staging

The more severely immunosuppressed, the more likely the child with HIV will have minimal signs and serious pathology.

- Note the stage of the child's HIV disease.
- Look in medical notes or on results system for recent letters and CD4 count. A recent undetectable viral load indicates that adherence to antiretroviral therapy has been good.

The CD4 count or percentage indicating severe immune suppression is age dependent

Table 1: WHO classification of HIV-associated immunodeficiency in infants and children[2]

Classification of HIV-associated immunodeficiency	Age-related CD4 Values			
	< 12 months (% CD4)	12–35 Months (% CD4)	36–59 Months (% CD4)	> 5 years (absolute number/µl or % CD4)
None or not significant	> 35%	> 30%	> 25%	> 500
Mild	30–35%	25–30%	20–25%	350-499
Advanced	25–29%	20–24%	15-19%	200-349
Severe	< 25%	< 20%	< 15%	< 200 or < 15%

3. Medical history and clinical examination

- Take a detailed history of the acute illness in order to identify a focus of infection and guide treatment.
- Check past medical history from parents and refer to medical notes and letters as parents often find it difficult to reiterate history because of stigma and complexity.
- Record immunisation history (including travel vaccinations)

- Ask about travel history including malaria prophylaxis
- Ask about known TB contact
- Examine the child thoroughly.

If the child has had previous proven bacterial infection, there is a higher risk of recurrence of that infection.

4. Antiretroviral drugs

It is important to ensure that antiretroviral drugs have been given and tolerated while the child is unwell. HIV Viral Load may increase and resistance to drugs will develop if antiretroviral drugs are not given as prescribed.

4.1 **What medication is the child taking?**

- Has the child missed any doses? Record time of last dose
- Has the child vomited doses? If vomited within 1 hour of dose, repeat dose. If unable to take, or keep down medication, need to admit in hospital and give via nasogastric tube (NGT). Ondansetron (anti-emetic) can be given prior to dose in order to give best chance of tolerating medication.

Liquid medication is often large in volume – if not tolerating liquids with ondansetron, consider the use of crushed tablets. Check with pharmacist if tablets can be crushed**.**

5. Initial Investigations

Initial investigations should be guided by medical history and clinical examination findings. However, if no focus is identified:

5.1. Request the following blood tests

- Full blood count and differential (and malaria films if in malaria endemic region within last 12 months)
- CRP
- Blood cultures (good volume
- Urea and electrolytes
- Liver function tests
- Save serum
- CD4 count if no recent result available
- HIV Viral Load (not necessary acutely)

5.2. Other investigations

- If coryzal, send nasopharyngeal aspirate (NPA) for viral PCR– immunocompromised children with influenza are eligible for treatment with oseltamivir/ zanamavir[3]
- Viral and bacterial throat swabs
- Urinalysis (including nitrites and leucocytes) and microscopy and culture if indicated
- Chest radiograph
- Consider lumbar puncture if signs of meningitis (measure opening pressure, glucose, protein and send to microbiology for culture, microscopy for AFB, India Ink stain and cryptococcal antigen, viral PCR)

6. Treatment

6.1. Antibiotics

The child is unwell or toxic: Treatment with antibiotics should not be delayed pending investigation results. Start intravenous Ceftriaxone (80 mg/kg/day) or Cefotaxime 50mg/kg/dose qds

- The child is well: It may be acceptable to observe, pending investigations to identify source of fever and target therapy.

6.2. Possible causes of fever

Note: there are separate CHIVA guidelines for respiratory and gastrointestinal infections
http://chiva.org.uk/professionals/health/guidelines/complications/respirartory-illness.html
http://chiva.org.uk/professionals/health/guidelines/complications/gastroenteritis.html

6.2.1. Septicaemia

Mainly pneumococcal (or in children recently arrived from sub-Saharan Africa,

non-typhoid salmonella) – symptoms/signs may be masked.

If at all toxic or unwell; admit, investigations as above

Treat with IV Ceftriaxone (80 mg/kg/day) or Cefotaxime (50mg/kg/dose qds).

Add Flucloxacillin (25-50 mg/kg/dose qds) if any skin infection/abscess.

6.2.2 ENT infections

- Sinusitis: Take throat swabs – viral and bacterial. Treat with oral co-amoxiclav for 10 days and chase results.
- Cervical lymphadenitis. If mild treat with oral co-amoxiclav. If large may need IV antibiotics – (e.g. cefotaxime and flucloxacillin). If fluctuant request an urgent surgical opinion.

6.2.3. Skin infections and abscesses

Pus (if available) should be sent directly to the laboratory for culture.

Take viral, bacterial and fungal Swabs.

Treat with co-amoxiclav.

6.2.4. Oral infections

Look for Candida and/ or herpes simplex.

Take swabs – viral and bacterial.

Treat with oral fluconazole (3-4 mg/kg/day) and/or oral aciclovir.

If child is having difficulty swallowing, consider endoscopy and biopsy for oesophagitis.

6.2.5. Urinary tract infection (UTI)

Collect urine sample (method of collection depends on age of child – clean catch, catheter specimen, Supra-Pubic Aspiration)

Urinalysis, including leucocytes and nitrites

Send urine culture

Treat with co-amoxiclav.

6.2.6. **Meningitis**

Cross reference NICE meningitis guidelines[4]

Consider TB meningitis, cryptococcal meningitis and discuss with HIV specialist paediatrician

Concealed sites of infection:
Consider other occult sites of infection: bone/joints/abdomen/disseminated systemic infection (MAI/CMV/measles with no rash, etc).

Further investigations may be required.

Discuss with an HIV paediatrician if fever does not respond to initial treatment.

Oral Candidiasis

- If prescribing oral/IV antibiotics, warn child/carers to look out for oral candidiasis.
- If this develops, treat with Miconazole Oral gel.

If treatment to control candidiasis fails, give Fluconazole (2-3 mg/kg/day OD, just whilst on antibiotics).

7. References

1. Mofenson LM, Brady MT, Danner SP, Dominguez KL, Hazra R, Handelsman E, Havens P, Nesheim S, Read JS, Serchuck L, Van Dyke R. Guidelines for the Prevention and Treatment of Opportunistic Infections among HIV-exposed and HIV-infected children. MMWR recommendations and reports [Internet]. 2009 [cited 2011 Nov 4]; 58(RR-11): 1-166. Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5811a1.htm

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3. HPA guidance on use of antiviral agents for the treatment and prophylaxis of influenza, 2011-12 [cited 2012 Feb 17]. Available from: http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317131466016

4. National Institute of Clinical Excellence (NICE). Bacterial meningitis and meningococcal septicaemia: management of bacterial meningitis and meningococcal meningitis in children and young people younger than 16 years old in primary and secondary care [Internet]. 2010 [revised 2010 September]; CG 102. Available from: http://www.nice.org.uk/nicemedia/live/13027/49339/49339.pdf