Infectious Diseases

- There is an on call SpR (in hours) and Consultant (out of hours) 24/7, contactable via switchboard.

- Nightingale 2 (ext 57107), City Campus is the Infectious Diseases ward. It has 13 beds, 7 of which are en-suite side-rooms and 5 of these have monitored negative pressure ventilation.

- Please see next page for specific Infections
- Other useful links are
  - Antibiotic website (http://nuhnet/diagnostics_clinical_support/antibiotics/Pages/home.aspx)
  - Infection Control website (http://nuhnet/diagnostics_clinical_support/infection_prevention_control/Pages/AZ.aspx)

- *'Guidelines referred to are registered with the Trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague or expert. Caution is advised when using guidelines after the review date.'*

- Contact for comments:

pradhib.venkatesan@nuh.nhs.uk or jaimie.coleman@nuh.nhs.uk

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Click on topic

Cellulitis

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Diagnosis

- Cellulitis is usually easy to diagnose, but in one US series a quarter of hospital admissions with 'cellulitis' had another diagnosis
- Beware of diagnosing 'bilateral cellulitis' with abnormal skin (e.g. varicose eczema) or normal skin (e.g. circulatory change)
- Specific questions for more serious infections :
  - Is the cellulitis rapidly progressive in extent within ≤ 24 hours?
  - Is there systemic upset with fever, shivers etc?
  - Is discoloration on the surface out of proportion to pain, tenderness and systemic upset, suggesting a deeper process?
  - Is there extensive blistering?

Investigations

- In addition to usual tests remember
  - Blood glucose
  - Swab of any lesion for M,C&S
- Remember fibrin is formed in infected tissues and infection therefore raises D-dimers

Management

See cellulitis guideline on EDIS protocols

- See Antibiotic Website for more antibiotic details (http://nuhnet/diagnostics_clinical_support/antibiotics/Pages/home.aspx)

Click below for detailed Cellulitis guideline

http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/2152.pdf

Encephalitis

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Examples of differential for Fever + Confusion ('encephalopathy')

	Extra-cranial	**Intra-cranial**
Non-infectious	Drugs Alcohol and toxins Metabolic upset Thyroid disease Hypoxia Hypoperfusion Urinary retention Constipation	Raised intra-cranial pressure Vascular events Epilepsy Psychiatric
Infectious	Any infection	Meningitis Encephalitis Abscess

(next)

Investigation of encephalopathy (1)

1) Looking for extra-cranial causes

- Beyond detailed history and examination
- Haematology
  - FBC, B12 & folate, clotting
- Biochemistry
  - U&Es, LFTs, Ca, PO_4, Glucose, TSH
  - Toxicology screen / Alcohol level?
  - ABG
- Microbiology
  - MSU, Blood cultures
- Imaging
  - CXR

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Investigation of encephalopathy (2)

1) Looking for intra-cranial causes

- In ED could request CT head, but will likely refer to physicians for neuro-investigations:
  - CT prior to LP
  - LP if safe
  - MRI for further detail
  - EEG
    - If need to distinguish organic from psychiatric
    - For sub-clinical seizure activity

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Treatment

- If strongly suspect encephalitis should ideally commence iv aciclovir 10 mg/kg tds within 6 hours of admission

- In a UK study of encephalitis HSV actually only accounted for 19% of all cases :
  - All infections 42%
  - Immune mediated 21%
  - Unknown 37%

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Meningitis

- Not all patients presenting with ‘suspected’ meningitis will have confirmed meningitis
- In a US study the eventual diagnoses for acute admissions with ‘suspected’ meningitis who were fully investigated were :
  - Not meningitis 75%
  - Viral meningitis 18%
  - Bacterial meningitis 7%
- Presentations and management can be divided into four groups

Group 1

- Focal neurology
- Definite papilloedema

- LP contra-indicated, urgent CT scan indicated
- Give empirical antibiotics
  - ceftriaxone 2g stat (then 2g bd) after blood cultures x2
  - See antibiotic website http://nuhnet/diagnostics_clinical_support/antibiotics/Pages/home.aspx

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Group 2

- Fulminant presentation ± purpuric rash ± coagulopathy ± low BP

- LP contra-indicated, CT may not change immediate management
- Give empirical antibiotics
  - ceftriaxone 2g stat (then 2g bd) after blood cultures x2
  - See antibiotic website http://nuhnet/diagnostics_clinical_support/antibiotics/Pages/home.aspx

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Group 3

- GCS < 13
- Convulsions
- Suspected sub-arachnoid haemorrhage
- Immunocompromised

- Urgent CT prior to LP
- Give empirical antibiotics
  - ceftriaxone 2g stat after blood cultures x2
  - See antibiotic website http://nuhnet/diagnostics_clinical_support/antibiotics/Pages/home.aspx

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Group 4

- If none of above

- Possible to do LP, with no need for prior CT
- Could defer antibiotics till LP result available (may be viral or not meningitis at all)

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Investigations

- If empirical antibiotics are given first, an LP should ideally be performed within 3 hours to maximise microbiological yield
- Other investigations include
  - For Meningococcus
    - Blood PCR : sensitivity > 90%
    - Bacterial T/S specifically asking for meningococcus
  - Enterovirus
    - Stool PCR : sensitivity 96%
    - Viral T/S specifically asking for enterovirus

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HIV

Known HIV patients

- Patients may be under Sexual Health or Infectious Diseases (see NotIS)
- Please phone relevant specialty, both are on call 24/7
- Anti-retroviral drugs should not be stopped unless directed by HIV specialist
- Anti-retroviral drug interactions available on www.hiv-druginteractions.org

Undiagnosed HIV patients

- Pointers to early immunocompromise
- Opportunistic infections
- Want to do an HIV test?

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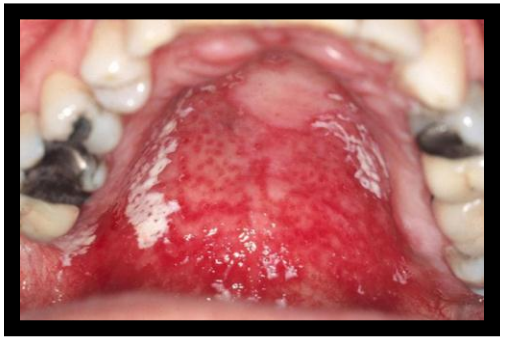
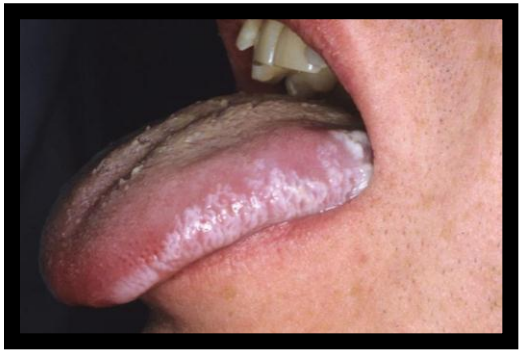
Pointers to early immunocompromise

- Oral / oesophageal thrush
- Persistent diarrhoea
- Weight loss
- Skin problems
- HZV in a young person
- Lymphadenopathy
- Unexplained recurrent infections
- Abnormal results
  - Thrombocytopaenia, anaemia
  - (Raised ESR)

Oral thrush



Oral hairy leukoplakia



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Opportunistic infections

Differential diagnoses for urgent acute presentations *include*

- Respiratory : request CXR, ABG and refer
  - Pneumocystis pneumonia (PCP): click below for detailed guideline
    http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/2150.pdf
  - TB : click below for detailed guideline
    http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/2154.pdf
  - Bacterial pneumonia
- CNS : request CT head and refer
  - Meningitis e.g. cryptococcal meningitis : click below for guideline
    http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/2147.pdf
  - Encephalitis e.g. toxoplasma encephalitis : click below for guideline
    http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/2153.pdf
- Eye : refer to Eye Casualty
  - CMV retinitis

- If HIV is diagnosed the patient must be referred onto the Infectious Diseases Ward.

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Want to do an HIV test?

Indications

- High prevalence groups (UK 2011 data)
  - Men who have sex with men — 47 per 1,000
  - Black Africans — 25-50 per 1,000
  - IV drug users — 12 per 1,000
- Clinical indicators
  - HIV → Immunocompromise → early features
    → opportunistic infections
    → Direct pathology → attributable diseases
    → Co-acquisition → Sexually transmitted infections, HBV, HCV

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HIV attributable diseases

- Aseptic meningitis / encephalitis
- Guillain-Barre Syndrome
- Myelitis
- Peripheral neuropathy
- Dementia in young person
- Lymphadenopathy of unknown cause
- Chronic parotitis
- Mononucleosis like syndrome
- PUO

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HIV test

- Require verbal consent
- Ideally discussion should be confidential without others present
- Early diagnosis saves lives
- Having a test which proves negative should not affect insurance
- NotIS request code is HIV
- Require clotted blood (red or yellow top)
- The laboratory will chase up location of patient / requestor if test proves positive
- If patient is discharged before result is through require GP / patient contact details to be on NotIS

Needlestick and blood borne virus risk injuries (return)

For Non-NUH staff use the protocol on EDIS

Non-Occupation BBV risk

Contact Microbiology if only concerned about hepatitis viruses

Contact Infectious Diseases if concerned about HIV as well

Contact Sexual Health if in fact dealing with suspected, unprotected sexual exposure to HIV

Refer to risk calculator

Needlestick risk calculator

HIV status of source	Type of exposure	Route of exposure
3 Known positive	**3** Exposure to blood or other high risk material	**3** Percutaneous injury Broken skin contamination Mucous membrane
2 Strongly suspected	**2** Visibly blood stained low risk material	
1 Low risk group	**1** Low risk materials (urine, vomit, saliva)	**1** Other type of exposure

Multiply the scores in each column and refer to table

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High risk materials

The following are regarded as "**High Risk**" materials;

- Blood
- Vaginal secretions
- Human Breast milk
- Peritoneal Fluid
- Pericardial fluid
- Unfixed tissues & organs
- Amniotic fluid
- Semen
- Cerebrospinal fluid
- Pleural fluid
- Synovial fluid
- Saliva associated with dentistry

"Low risk" materials are:

- Urine
- Saliva
- Vomit
- Faeces
- If any of these are visibly blood stained then they should be regarded as "**High Risk**".

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Needlestick risk scores

Risk status	Multiplied score	HIV PEP
HIGH	**12-27**	**Recommended**
LOW	**1-11**	**Not recommended**

PEP should be given as soon as possible after exposure and ideally within 1 hour of exposure, and generally not if more than 72 hours after exposure.

Refer to Infectious Diseases to discuss risk assessment and follow up.

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Returned travellers

Differential diagnosis:

Always think of

- Malaria
- Typhoid

Think

- 'Head to toe' for organ specific infections

Then, could it be a multi-system upset? e.g.

- Dengue fever
- Leptospirosis
- Rickettsial infection

Investigations

- Simple things first
- FBC, Malaria parasites (EDTA)
- U&Es, LFTS, CRP, Clotting, Glucose
- Blood cultures x2
- CXR
- Others as indicated

Phoning Infectious Diseases

- If sick phone early
- Otherwise phone with basic results

Click links for more detailed guidelines

Malaria http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/1890.pdf

Typhoid http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/2155.pdf

Travellers diarrhoea http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/2156.pdf

Returned travellers http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/2151.pdf

Tuberculosis

(return)

Pulmonary TB

If suspected require:

- N95 / FFP2 masks

- Isolate in a side room, especially if patient is sputum productive
- If transferred to City Campus contact Infectious Diseases
- If placed in sideroom at QMC contact Respiratory Medicine at NCH

Extra-pulmonary TB

- May be suspected in patients from high endemicity areas
- Contact Infectious Diseases if need advice

Tuberculosis guideline : click below

http://nuhnet/nuh_documents/Guidelines/Cancer%20and%20Associated%20Specialties/Infectious%20Diseases/2154.pdf

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UTIs

Bacteriuria	Nitrite +ve **or** Leucocyte esterase +ve	Nitrite +ve or MSU culture +ve **and** Leucocyte esterase +ve or >40 WBCs in MSU		Nitrite +ve
+ Inflammation				Leucocyte esterase +ve
+ Symptoms	Present	Present	Absent	Uncertain in a confused/ elderly patient
= Diagnosis	**Might be UTI**	**UTI**	**Asymptomatic bacteriuria**	**In the absence of another diagnosis, might treat as UTI, but review diagnosis with MSU and other results**

See footnotes

For antibiotic choices see Antibiotic Website

(http://nuhnet/diagnostics_clinical_support/antibiotics/Pages/home.aspx)

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1) In ambulant females, aged 15 - 65 yrs, in a general practice study

- Nitrite +ve plus leucocyte esterase +ve → 84% sensitive, 98.3% specific for positive MSU
- Positive likelihood ratio = 49.4, therefore urinalysis is useful

2) In hospital admissions, including mainly elderly patients

- Nitrite +ve plus leucocyte esterase +ve → 90.6% sensitive, 55.8% specific for positive MSU
- Positive likelihood ratio = 2, therefore uncertain in ruling in a diagnosis of UTI, better at ruling out a UTI
- And either nitrite +ve or leucocyte esterase +ve →

  Positive likelihood ratio = 1.2 to 1.3

3) MSU samples and forms must be correctly labelled and written for sample to be analysed

4) Diagnosis of UTI still depends on symptoms