14 ID

INVESTIGATIONS

Blood Cultures

Benefit
- Dx septicaemia
- Rationalise ABx

Risk
- ***Low yield 9%***
- ***High false +ve 5%***
- Expensive
- Long turnaround
- Delay to ABx

Errors in BCs
- Technique eg < 10ml
- Number, Site, Sterility
- Interpretation of results

Indications
- Systemic sepsis
- PUO
- Indwelling source
- Immunocompromised
- ?Endocarditis

Lab tests

- ***ASOT***: ***S Pyogenes*** in RF, GN, Scarlet fever
- ***S. Pneumoniae urinary antigen***

INFECTION CONTROL

ED Measures

- Screening at entrance
- Seperate pathway if concern
- Isolation
- PPE
- Hand washing
- Special isolation facilities
- Screening surveillance

Standard Precautions
- Hand hygiene
- PPE with body fluid exposure
- Use/dispose sharps safely (incl safe injection practice)
- Routine environmental cleaning
- Clean/reprocess shared patient equipment
- Resp & cough etiquette
- Aseptic technique
- Handle/dispose of wast and used linen safely

Transmission Based Precautions

Can have a combination of A, C, D
- ***Airborne*** N95 of P2 mask, -ve pressure room
- ***Contact*** Gown & gloves
- ***Droplet*** Surgical Mask

5 Moments of Hand Hygiene

- BEFORE 1) touching pt 2) clean/aseptic procedures
- AFTER 3) body fluid exp 4) touching pt 5) surroundings

Body Fluid Exposure

Risk

(known +ve pt)
- HIV 0.3%
- HBV 30%
- HCV 3%

High Risk Mechanisms
- Hollow Needle
- Blood stained
- Mod blood on MM
- Deep

Management
- 1st Aid/Wash area
- ADT
- Consider PEP
- Counsel: ***safe sex, report fever, avoid pregnancy, don't donate blood***
- Documentation
- Bloods from source & patient

PEP

Only Hep B & HIV available
- Hep B – only if ***source HBsAG +ve***
  - ***HBIg*** if pt Anti-HBsAg & HBsAg –ve
  - ***Hep B vaccine*** within 2hrs

Disaster PPE

- A (bad chemicals); SCUBA, chem R gloves, gowns
- B (no chemicals); SCUBA, gloves
- C (precaution); gloves, air purifying resp
- D (standard); scrubs & gloves

Cellulitis

	Organism	1st Line Abx	Pen Allergy
Mild	***S Pyogenes*** & other ***strep*** (***S auerus*** less common unless penetrating)	***Flucloxacillin*** 500mg QID 5d[1]	|
Moderate		Same as mild[2]	| ***Clindamycin*** 450mg TDS
Severe		***Flucloxacillin*** 2g	***Clindamycin*** 600mg TDS or Vanc

Water Borne

Fresh/Brackish/Mud	***Aeromonas***	***Ciprofloxacin*** 500mg BD
Fish Tanks	***Mycobacterium***	***Doxycycline*** 100mg BD
Salt/Brackish	***Vibrio***	***Doxycycline*** 100mg BD[3]

[1]*Consider **phenoxymethylpenicillin** if concerns for s pyogenes eg fast spreading or ATSI*
[2]*Can try (no evidence) for **cephazolin** 2g OD + **probenecid** 1g 30min prior*
[3]*200mg stat dose, add **ceftriaxone** if severe*

SKIN INFECTIONS

Bites

- ***S aureus*** most common for all types of bites
- Humans = Bacteroides, eikenella corrodens
- Cats = pasteurella
- Dogs = C carnimorsus
- Bats = lyssavirus
- ABx
  - ***ADF*** 1 BD 5d
  - Pen all: ***Cipro & Clindamycin***
  - Severe: ***Timentin*** 3.1g
- High risk: ***puncture, delayed > 8hr, hand/feet/face, deep tissue, immunocompromised***

Through Shoe
- Think ***pseudomonas*** (loves rubber)
- ***Cipro*** 500mg BD

Necrotising Skin Infections

Types
- Polymicrobial or Monomicrobial: ***s. pyogenes***
- ***Clostridium*** aka gas gangrene
- Candida

Risk Factors
- DM
- PVD
- CKD
- HIV
- ETOH excess
- Malignancy
- Recent surgery
- Liver disease
- Odontogenic infection
- Local trauma/bite
- Transplant
- Immunosuppressed

Clinical
- Pain out of proportion
- Crepitus
- Blistering of skin
- Systemic toxicity

Management
- Seek & Treat ie debride
- ***Meropenam*** 1g TDS + ***Vancomycin*** + ***Clindamycin*** 600mg TDS
- IVIG if ***s pyogenes***
- ***HBOT***

BLOOD CULTURES

- false +ve 50%

Minimising Spurious Results
- 4 sets at different sites
- 20-40ml per bottle

Other Culture Bottles
- Fungal
- Mycobacterial
- Fastidious micro organsims (HACEK)

Interpretation
- # +ve bottles
- Organisms: ***S Auerus, S Pneumoniae, Enterobacteriacea, Pseudomonas*** = ***not contaminant***
- Time to positivity

HIV

CD4 Count

> 500 Normal	200-499 Compromised	***< 200 x10^6 High risk infection***

NB Viral load (HIV-1 RNA) helpful in monitoring therapy & prognosis

AIDS defining Illnesses
- PJP
- TB (resp, CNS)
- CMV retinopathy
- Cerebral toxoplasmosis
- HIV Encephalopathy
- Kaposi's sarcoma (resp, CNS)
- Cryptococcal meningitis

Related Disease
- Resp most common: ***PJP, TB, Kaposi***
- Neuro 2nd most common
- Cerebral lymphoma

SEPSIS

qSOFA

- ***Mortality*** predictor in sepsis
- **≥ 2 of ALOC, SBP ≤ 100mmHg, RR > 22 BPM**

Management

- Seek & Treat Cause ie ***source control, ABx within 1hr***
- A I&V to protect soiling & maximise oxygenation
- B O_2
- C Aim for MAP ≥ 65, ↓ lactate
  Fluids 20ml/kg bolus, limit 2-3L
  Early vasopressor support
  - 1st ***Noradrenaline*** 2-20mcg/min
  - 2nd ***Metaraminol*** 20mg/100ml 5-20ml/hr
- Ix – Septics screen should not delay ABx > 1hr

Empirical ABx

Adults
- ***Flucloxacillin*** 2g + ***Gentamicin*** 4-6mg/kg
- Pen all: ***Cephazolin*** 2g + ***Gent***
- Pen ana: ***Vancomycin*** 25mg/kg + ***Gent***
- Tropical: ***Meropenam*** 1g

Kids

< 2m ***cefotaxime*** 50mg/kg + ***amoxycillin*** ± 50mg/kg ***Aciclovir***
> 2m ***cefotaxime*** 50mg/kg + ***gent*** 4-6mg/kg
Pen ana: ***Cipro*** 10mg/kg
Meningitis: ***Dex*** 0.15mg/kg

Vancomycin
- Load ***25mg/kg TBW max 3g (kids 10mg/kg)***
- Maintenance: BD if CrCl > 40 ml/min
- Measure trough & adjust dosing

Other
- ***Dexamethasone*** 10mg *in fluid & pressor resistant shock*
- Blood products incl ***albumin*** if low
- Vent 6-8ml/kg
- FASTHUG

Studies

Common Themes
- no change in outcome for 'usual care' vs EGDT
- support early identification & treatment

ARISE	***ProCESS***	***ProMISE***
- 2014	- 2014	- 2015
- Australasian	- US	- UK
- n = 1,591	- n = 1,341	- n = 1260
- Lower mortality	- 3 arms	- 2 arms

Rochester Criteria for Febrile Infants

- 0-60days old/No to all = < 1% risk bacteraemia

1. Well looking
2. No Source infection
3. Full term
4. No prior illness
5. FBC normal
6. Other labs normal (urine, faeces)

RETURNED TRAVELLER

Overview

- Common sx: fever, resp, diarrhoea, eosinophilia, skin
- Malaria most common cause of death
- Diarrhoea most common presentation
- Older travellers often related to co-morbidities not travel
- COD: Trauma, PE, Infection
- Resp illness mostly viral URTI/allergy, rarely TB

Assessment

- Destination: season, rural, duration, sick contacts, country
  - West Africa (ebola), Middle East (MERS)
- Medical Tx already done
- High risk activities: drugs, tattoos, sexual, trauma, assault, swimming, animal/insect contact
- Prophylaxis: malaria, vaccinations, precautions eg nets

Incubation Periods

7-10 days	7-30 days	1 - > 6 months
Dengue	*Malaria*	*Schistosomiasis*
Rickettsia		*Strongyloides*
Yellow Fever	*Rickettsia*	*Filariasis*
Zika	*Typhoid*	*Viral hepatitis*
	Leptospirosis	
Ebola	*Amoebia*	
Meningococcal	*Giardiasis*	
Japanese B encephalitis	*Lassa*	
	Hep A	

Investigations

FBC

- Anaemia — malaria, typhoid
- Neutropenia — typhoid
- Haemolysis — ebola
- Eosinophilia — parasites
- ↓ Plt — malaria, ebola, dengue, leptospirosis

Thick & Thin Fims

- Malaria: Req12h for 48hrs to be sure

Coags

- Prolonged PT — hepatitis
- DIC — malaria

UECs

- Malaria — ↓ Glc, AKI
- ↑ LFTs — Hepatitis, TB, Amoeba, Weil's disease

Disease Identification

- Thick & Thin films: Malaria
- PCR: Zika
- PCR & ELISA: Dengue, Chikungunya
- ELISA: Ross River
- Serology: HIV, Hepatitis

Other

- BC
- Urine
- Cxr
- Stool
- Sputum

Fever

- ***Malaria***
- Enteric (***typhoid***)
- Rickettsial
- Dengue
- Viral haemorrhagic fever

Typhoid (salmonella)

- Bradycardia relative to fever
- Rose spots

Mosquito Born Illness

Dr. McYz

- ***Malaria***
- ***Chikungunya***
- ***Zika***
- ***Dengue***
- ***Yellow fever***
- ***Ross River fever***

Other Mosquito Born Illnesses

- ***Dengue***: classic vs haemorrhagic (< 10yo), supportive
  - fine morbilliform rash
- ***Zika***: microcephaly in pregnancy & GBS
- ***Chikungunya***: fever & arthralgia, supportive
- ***Ross river***: rash, fever, arthritis

Malaria (Plasmodium)

Species

P falciparum, vivax, ovale, malariae, knowlesi

- ***Falciparum***: most virulent & resistant (esp **chloroquine**)
- ***Knowlesi***: also virulent, esp SE Asia
- ***Vivax***: splenomegaly ± rupture (also *r.* to ***chloroquine***)
- ***Malariae***: nephrotic syndrome

Signs & Symptoms

- Classic triad: ***fever, splenomegaly, thrombocytopenia***
- Other effects: cerebral, AKI, APO, anaemia, ↓BSL

Management

- Prophylaxis: ***Doxycycline*** 100mg OD
- Uncomplicated: ***Artemether*** + ***Lumefantrine*** 20/120mg or ***Quinine*** 600mg + ***doxycycline*** 100mg
- Severe: ***Artesunate*** 2.4mg/kg or if unavailable or ***Quinine*** 20mg/kg over 4hr → 10mg/kg

Diarrhoea

- ***Giardia*** if > 5 days + sulphurous belching
- ***Parasites*** if > 14 days

Pathogens

- ****E coli***
- ****Clostridium***
- ***Giardia***
- ****Shigella***
- ***Vibrio***
- ***Rotavirus***
- ****Salmonella***

**cause dysentry*

Investigations

- Stool mcs/ocp
- BC if ***salmonella***
- FBC shows eosinophilia (esp if > 15%)

Management

- Supportive
- Abx as a single large dose ↓ Sx by 1.5 days
  - ***Norfloxacin*** 800mg or ***Metronidazole*** (giardia)

Protozoal Infections

- ***Schistosomiasis***, praziquantel
- ***Hook/round worm***, pyrantel embonate
- ***Strongyloides***, abendazole
- ***Pinworm***, pyrantel embonate
- ***Tapeworm***, praziquantel
- ***Hydatid***

Common Exotic Syndromes

- Typhoid: Brady with fever, constipation, ↓WCC, rose spots
- Hep A: 5 wk GIT sx, jaundice, dark urine
- Dengue: Myalgia, arthralgia, conj ini, ↓ plt
- Malaria: anaemia, fevers/chills
- Leptospirosis: Himalayas, jaundice, meningitis, renal failure