

# Schistosomiasis and UTI

N Kennedy

# Learning Outcomes

- Discuss epidemiology and control schisto
- Describe pathogenesis, presentation and treatment of schistosomiasis in children
- Recognise the non-specific nature of UTI presentation
- Describe diagnosis, investigation, treatment of UTIs in kids

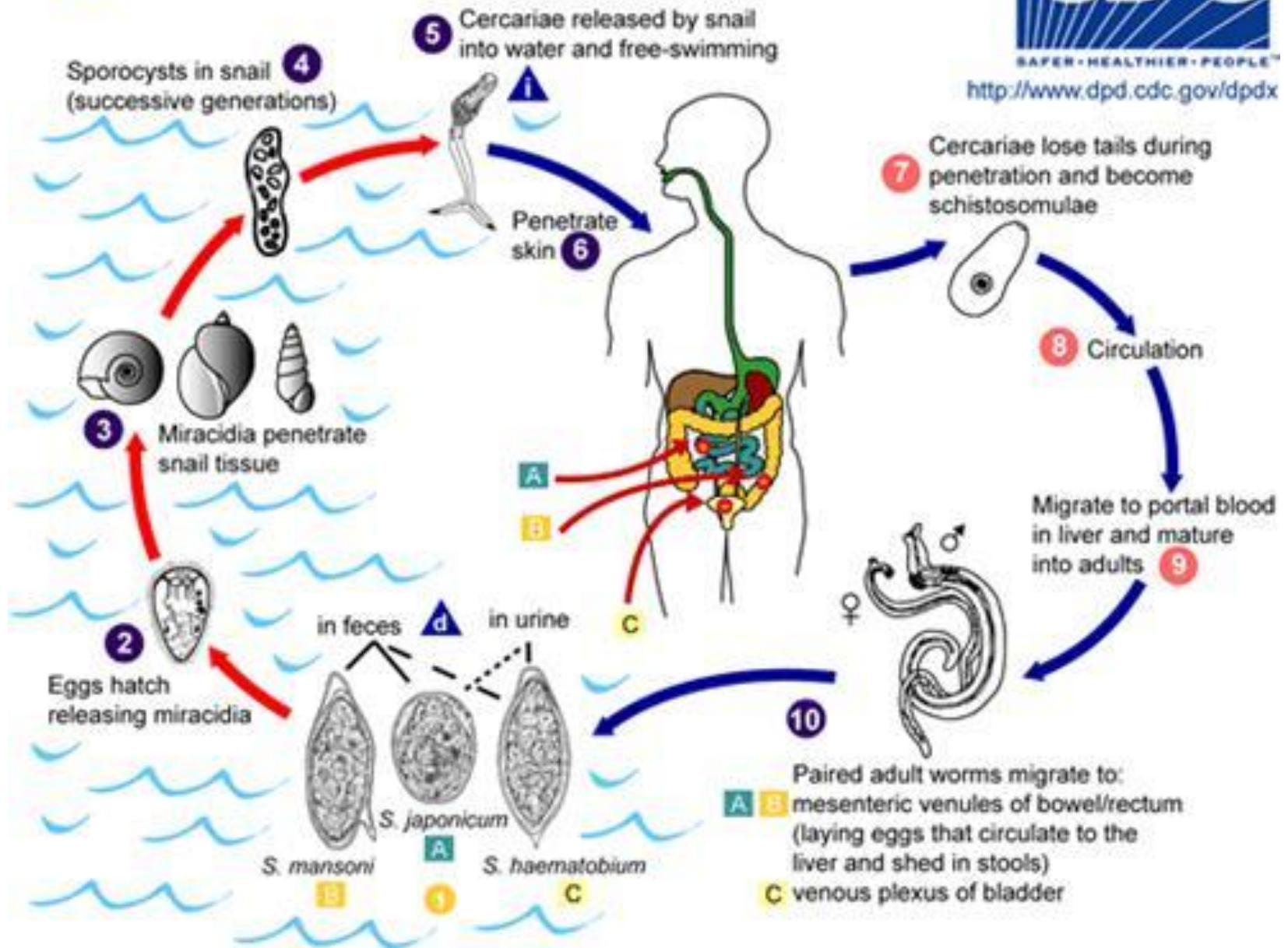
# Schisto for dummies...

- 1-2 cm long flukes which inhabit human venous plexus
- Copulating worms → eggs +++
- Egg granulomas cause the serious damage
- 2 common types in Malawi
  - Haematobium
  - Mansoni

**i** = Infective Stage  
**d** = Diagnostic Stage



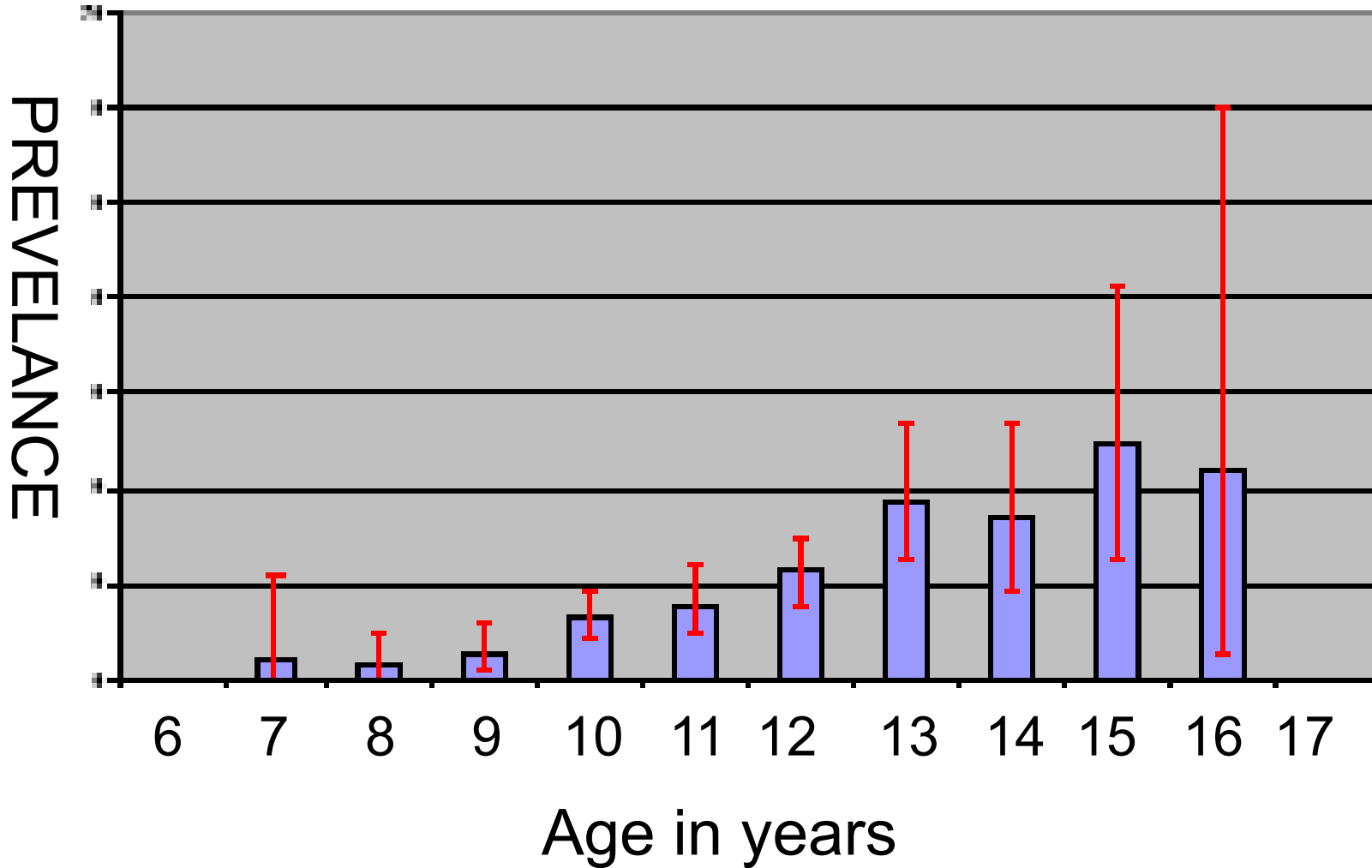
<http://www.dpd.cdc.gov/dpdx>



The problem is kids love water...



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# Schisto Prevalence (%) Malawi

	Northern Highland	Central Highland	Central low / lakeshore	South Highland	South low / lakeshore	Urban
Mansoni						
Haemat.						

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Haemat.	7.4	2.0	9.5	3.2	23.2	3.4



# Schisto Prevalence (%) Malawi

	Northern Highland	Central Highland	Central low / lakeshore	South Highland	South low / lakeshore	Urban
Mansoni	0	0	0	1.3	0	0
Haemat.	7.4	2.0	9.5	3.2	23.2	3.4

# Case 1

- 7 year old  
Chimwemwe
- Lives in Mbayani
- 2 day history of red  
urine, dysuria
- On exam, temp 37.5,  
abdo NAD
- MPS ++
- ΔΔ?



# Schisto Haematobium

- Adult worms in vesical plexus
- Eggs → bladder lesions
- ‘pseudopapillomota’ → haematuria
- Granuloma near ureteric orifice → hydronephrosis
- Late effects = bladder carcinoma
- Early treatment → resolution of obstructive lesion, ↓ Ca risk

# Can I make a $\Delta$ with 'likodzo'?

- 67% sensitive, 80% specific for schisto
- In low prevalence area:
  - Positive pred value 24%
  - Negative pred value 96%
- In high prevalence area:
  - PPV = 49%
  - NPV = 89%



# Case 2

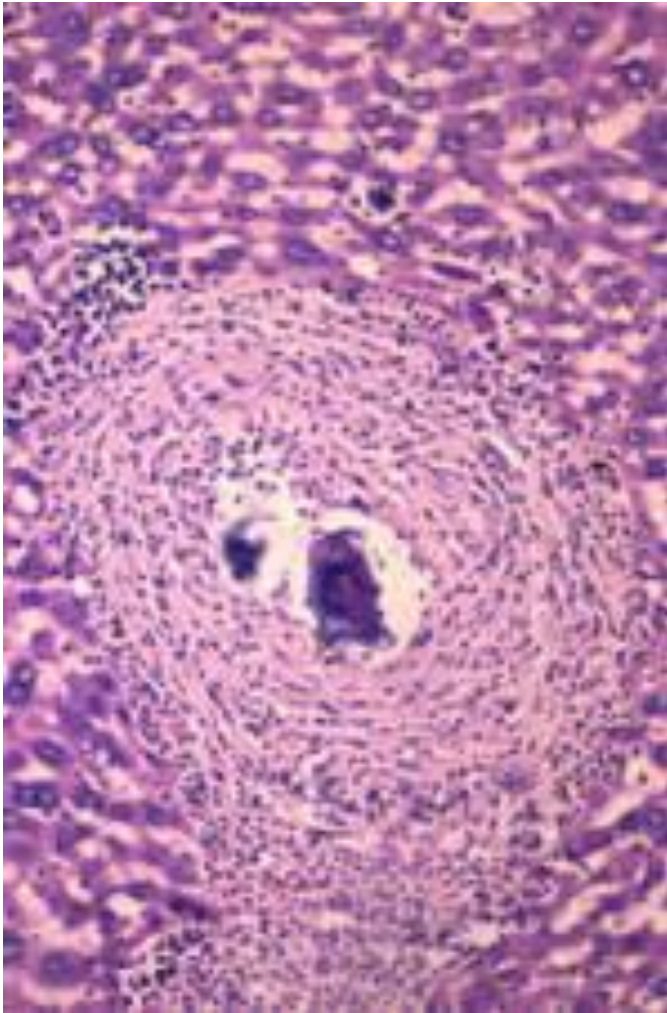
- 12 year old Wongani
- 2 weeks abdo swelling
- Unwell x 1 year
- Periph oedema +
- Anaemia ++
- Ascites +++++
- ? Big liver / spleen
- $\Delta\Delta?$



# Schisto Mansoni

- Adult worms in mesenteric veins
- Egg granulomas cause papillomata in bowel → GI bleeding / diarrhoea / dysentery
- Eggs in portal veins → periportal 'clay pipe' fibrosis → portal hypertension (but not cirrhosis in early stage) →

# Clay-Pipe fibrosis



# Schisto Mansoni

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  1. Hepatosplenomegaly
  2. GI varices
  3. Ascites in late stage



# Vague Schisto...

- Does it cause anaemia?
  - Probably contributes if Fe deficient
- Does it cause learning problems / fatigue / poor growth / debility?
  - Fairly good evidence for S Japonicum
  - ?? S Haematobium - unclear

# Strange Schisto...

- Katayama fever
  - Heavy exposure in non-immune (traveller)
- Cor Pulmonale / pulmonary Hypertension
  - eggs get into lungs
- Spinal cord compression
  - ectopic worm in paravertebral plexus
  - reversible if diagnosed and treated early
- Nephrotic syndrome
  - may be reversible
- Chronic Salmonella infection (?true for Malawi)

# Schisto Diagnosis + Treatment

- Presumptive in high prevalence areas
- Urine dip for blood / micro for ova
- Stool 'Kato-Katz' thick smear
- Serology
- Eosinophilia
- Imaging – USS – Liver / spleen / KUB
- Praziquantel 40 mg/kg
  - S/E dizziness / GI disturbance



# Schisto Control (the basics)

- Treat egg-excretors:
  - Mass treatment of school children
  - Re-infection common
  - Resistance may become problematical
- Stop exposure:
  - Better sanitation
  - Swimming pools
- *Prevalence falling significantly in Malawi*

# Case 3

- 3 month old child
- No weight gain for 6 weeks
- Occasional vomit
- On examination:
  - Temp 38.1
  - Chest / abdo / CNS NAD
- $\Delta\Delta$  ?

# Case 3

- 3 month old child
- No weight gain for 6 weeks
- Occasional vomit
- On examination:
  - Temp 38.1
  - Chest / abdo / CNS NAD
- Urine > 100 white cells /hpf
- Culture: E Coli > 10<sup>5</sup>
- Rx: iv gentamicin- regained weight

# UTI in babies / infants

- NON SPECIFIC presentation
- Vomiting
- Fever
- Diarrhoea
- Failure to thrive / poor weight gain
- Jaundice

# Case 4

- 5 year old girl
- Dysuria, wetting for 1 week
- On examination:
  - Systemically well
  - Abdomen: NAD
  - Ext genitalia: vulval + perineal erythema



# Case 4

- 5 year old girl
- Dysuria, wetting for 1 week
- On examination:
  - Systemically well
  - Abdomen: NAD
  - Ext genitalia: vulval + perineal erythema
- $\Delta\Delta$  = UTI / threadworms / vulvovaginitis
- Urine: 30 cells / hpf
- Rx: PO CTX – symptoms resolved 2 days

# UTI older children

- More specific symptoms:
  - Dysuria
  - Frequency
  - Wetting / secondary enuresis
  - Abdominal pain
  - Loin tenderness
- Difficult to distinguish *lower vs upper* UTI on clinical grounds (upper = sicker)

# Who gets UTI?

- Under 1 year, M = F
- Over 1 year F >>> M
- Malnourished children:
  - 37% of severe PEM in Ethiopian study
- Children predisposed to UTI:
  - Vesico-ureteric reflux (VUR)
  - Obstructive lesions:
    - Posterior urethral valves, PUJ obstruction etc
  - Bladder dysfunction – neurogenic / spina bifida etc

# What bacteria?

- E Coli > 80%
- Klebsiella
- Proteus
- Strep faecalis
- Pseudomonas
- Staph aureus

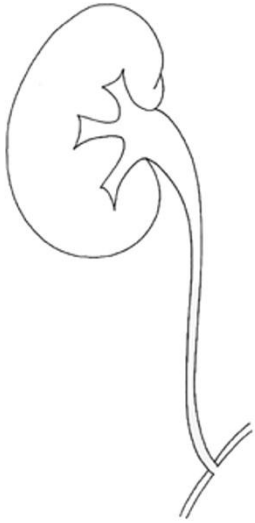
# Vesico Ureteric Reflux

- Present in ~30% of those with genuine UTI
  - Significance in African children unclear
- Often familial
- Predisposes to UTI
- Associated with renal scarring:
  - 50% with significant VUR have scars
  - Nearly 100% with scars have / had VUR
- Most children outgrow it

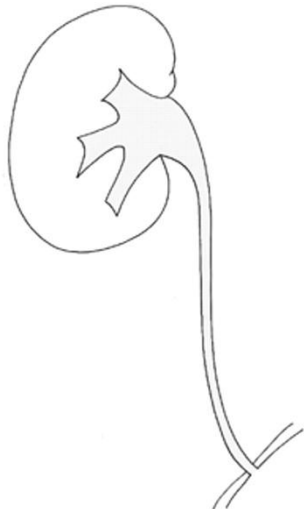
# VUR – Investigation

- Micturating cysto-urethrogram

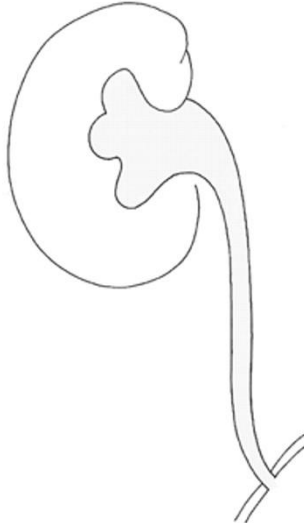
**GRADE I**



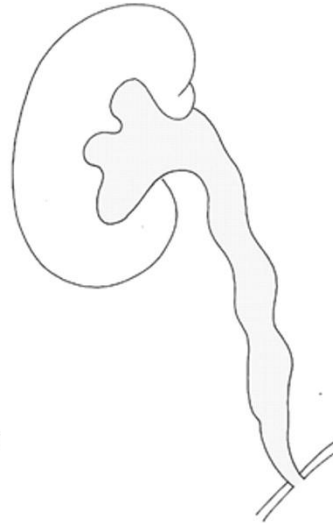
**GRADE II**



**GRADE III**



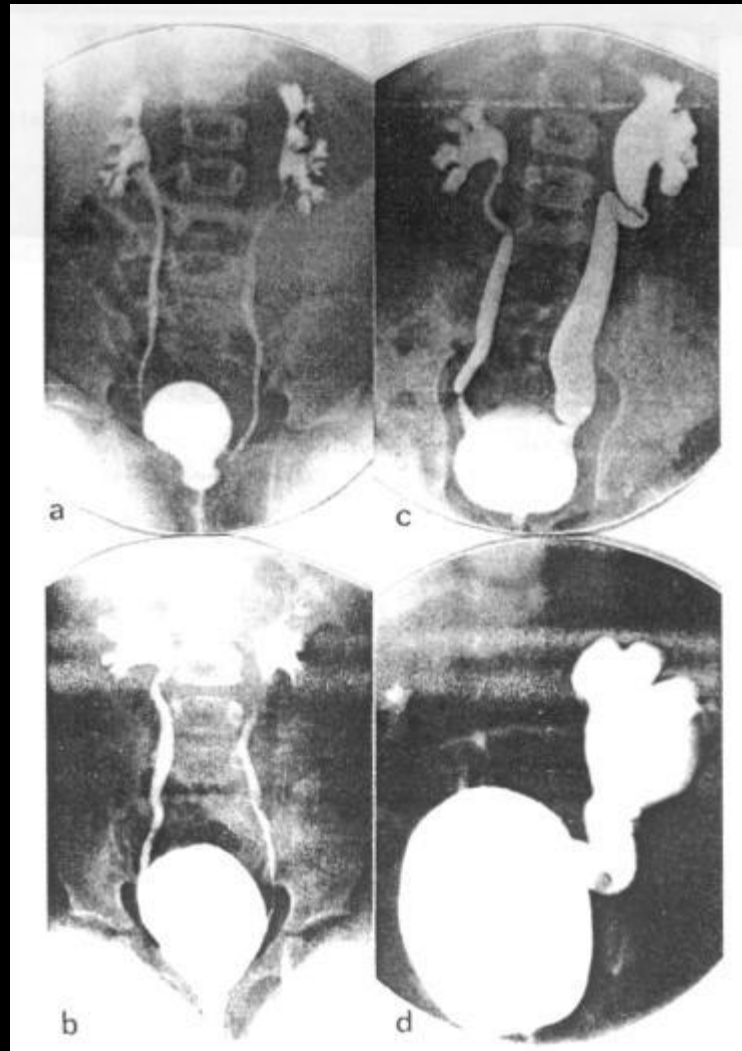
**GRADE IV**



**GRADE V**



# Micturating CystoUrethroGram



# To diagnose a UTI you need:

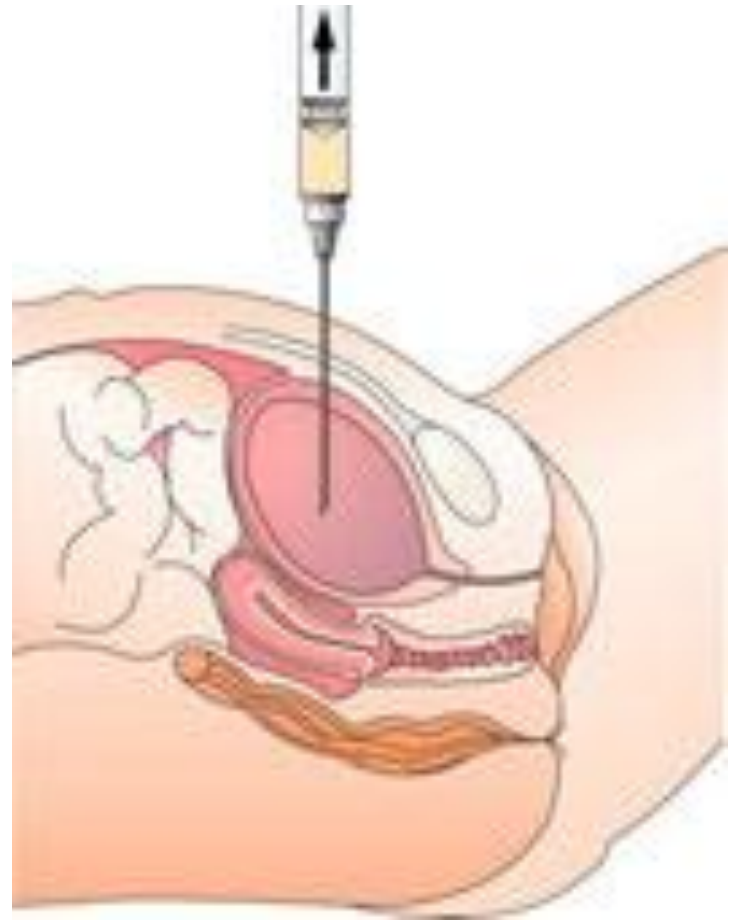
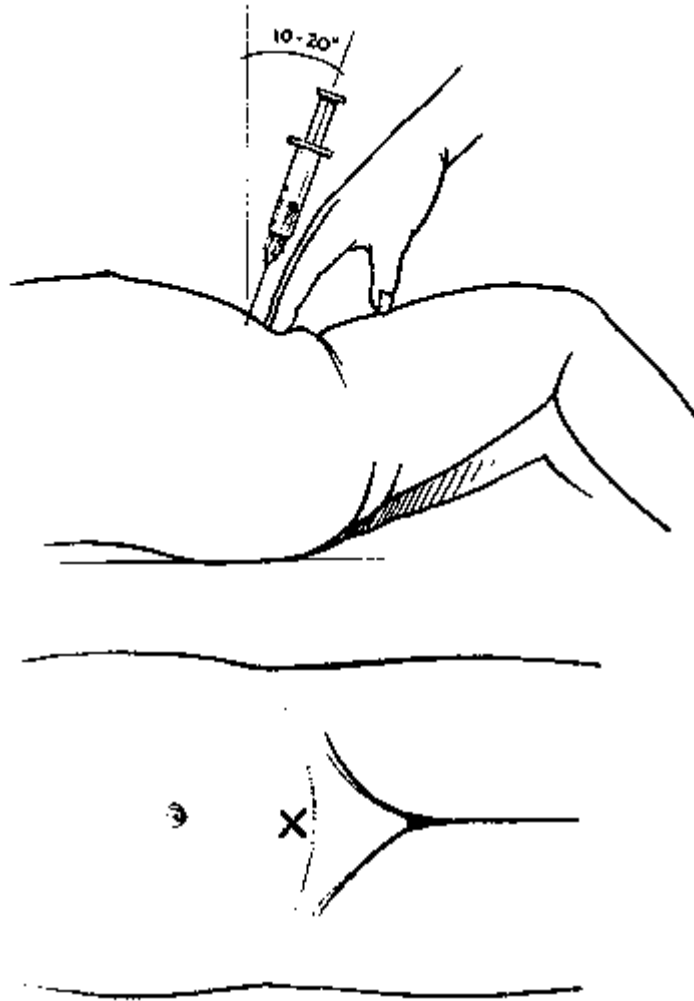
- SOMEONE TO THINK OF IT AND ASK FOR A SAMPLE
- Clean catch specimen
- Suprapubic aspirate
- Microscopy  $> 5$  cells/hpf
- Culture if possible  $> 10^5$

Clever doctor





# Suprapubic aspirate

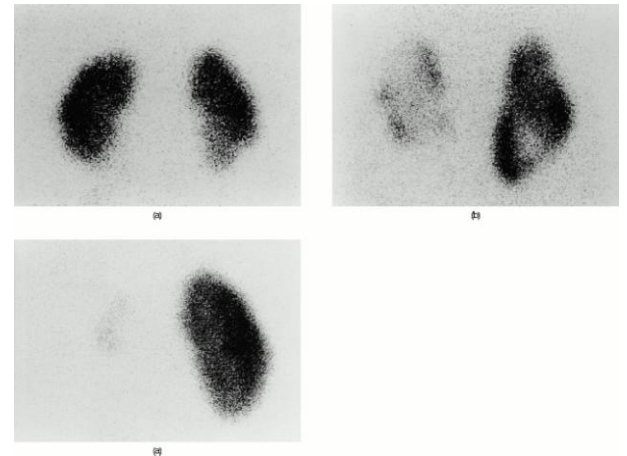


# Examining a child with UTI

- Look for predisposing factors / evidence renal damage such as.....
- BP
- Abdominal / renal masses
- External genitalia (recto-vaginal fistula)
- Back – spinal problems
- Lower limb neurology - reflexes

# Investigating a child with UTI

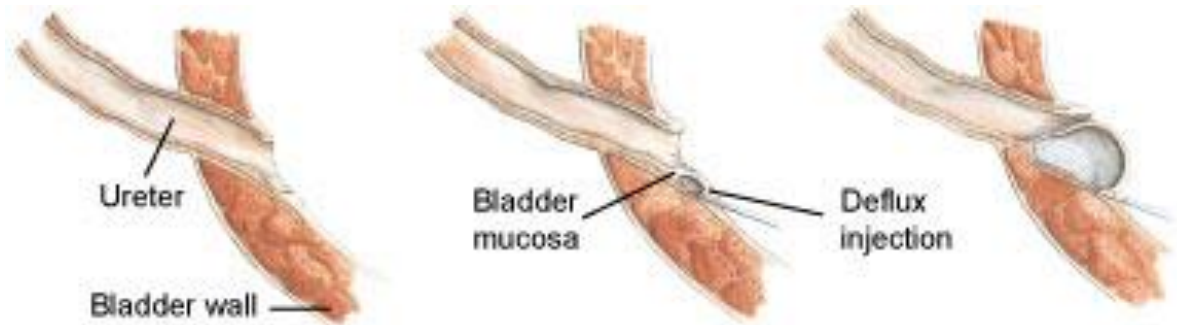
- Look for predisposing factors / evidence renal damage
  - Much debated topic
  - USS for obstruction / anatomy
  - IVU for duplex / obstruction
  - DMSA / USS for scarring
  - MCUG for reflux
- 
- WHO recommends investigate:
    - All males  $> 1$
    - All recurrent UTI
    - = USS +/- IVU in Malawi



# VUR – treatment

- Medical:
  - wait for them to outgrow it
  - prophylactic antibiotic daily

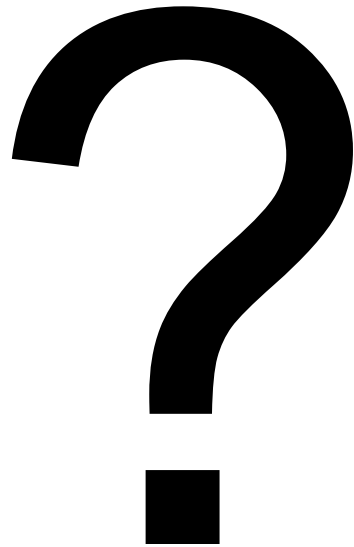
- Surgical:
  - STING
  - Reimplant



# Treating UTI in Malawi

- If < 1, systemically sick, loin pain etc:
  - IM Gent or Ceftriaxone
- If older / not too sick:
  - PO Cotrimox, amoxil, cefalexin
- If you think VUR (recurrent UTI):
  - Consider prophylaxis (cotrimoxazole)

Mafunso alipo?



# You need to know.....

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