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Standard Treatment Workflow (STW)

URINARY TRACT INFECTIONS

ICD-11-GC08

TYPES OF UTI

UNCOMPLICATED UTI

Infection confined to urinary bladder in afebrile patients

- At least 3 symptoms - dysuria, frequency, urgency, suprapubic pain

OR

- If less than three symptoms:
  - Dipstick +ve for leukocyte esterase and nitrite **OR**
  - >10 WBC /HPF in centrifuged sample **OR**
  - Urine culture with 10^5/ml colony count in mid stream urine culture

COMPLICATED UTI/PYELONEPHRITIS

Infection extending beyond bladder or associated with systemic illness.

- Fever
- Flank pain
- Features of sepsis- chills, rigors, hemodynamic instability
- Costovertebral angle tenderness
- Perineal pain and tenderness

WHEN NOT TO DO URINE CULTURE

All uncomplicated UTIs
Asymtomatic urinary catheters

HIGH RISK GROUP FOR COMPLICATED UTI

UTI in presence of:

- Stones
- Urinary tract obstruction
- Congenital anomalies of urinary tract
- Immunosuppression/ immunocompromised individual
- Pregnant individuals
- Chronic kidney disease
- Recent urological instrumentation/procedure

RED FLAG SIGNS

- Fever > 100°F
- Chill and rigors
- Tachycardia
- Tachypnea
- Hypotension
- Costovertebral tenderness
- Obtundation

MANAGEMENT

PRIMARY CARE/SECONDARY CARE

HISTORY

- Confirm diagnosis
- Exclude complicated UTI
- Look out for high risk groups

EXAMINATION

- Temperature
- Blood pressure, Pulse
- Respiratory rate
- Renal Angle/costovertebral tenderness
- Perineal tenderness
- Look for red flag signs

TREATMENT

- Nitrofurantoin 100 mg PO BD for 5 - 7 days
- Trimethoprim sulphamethoxazole DS PO tablet BD for 3 -5 days
- Fosfomycin 3 gm single dose, either empty stomach after dinner and passing urine
- Norfloxacin 400 BD or Levofloxacin 250 BD PO for 5 days

SYMPTOMATIC TREATMENT

- Drink Plenty of water
- Urine alkalizer recommended eg citrate based solutions
- Avoid if patient on nitrofurantoin
- Phenazopyridine 200mg tid for 2 days
- Paracetamol for pain

WHEN TO REFER

- Complicated UTI
- Presence of red flag signs
- Recurrent UTI
- UTI after recent instrumentation

TERTIARY LEVEL

- Send for culture
- Imaging necessary
- Urology services if obstruction
- Rx
  - Complicated UTI
  - Pregnancy UTI
  - Prostatitis
  - Recurrent UTI
  - Non-resolving UTI

COMPLICATED UTI

Empiric Therapy:

- Urine c/s
- Blood culture

Option 1

- Initial dose of a parenteral agent
- Gentamicin 5mg/kg IV/IM one dose OR Amikacin 15 mg/kg IM/IV one dose followed by
- Cefuriximе 500 PO every 12 hr

OR

- Trimethoprim Sulfamethoxazole 800-160 mg every 12 hr

OR

- Ciprofloxacin 500 PO every 12 hr
- Levofloxacin 750 mg PO daily

Option 2

- Ceftriaxone 1-2 gm IV daily
- Cefoperazone Sulbactam 2-4 gm IV daily
- Piperacillin Tazobactam 4.5 gm IV every 8 hr

- Duration of treatment 7-14 days
- Adjust as per culture sensitivity report and local sensitivity patterns

PREGNANCY UTI

- Screening urine culture in first antenatal visit
- Asymptomatic bacteriuria/ Uncomplicated UTI:
  - Nitrofurantoin 100 mg PO BD for 5 days

OR

- Amox/Clav 625 PO TDS or Cephalexin 500 mg PO QID

OR

- TMP/SMX DS Tab PO BD for 5 days

- Repeat urine culture after treatment not essential
- Recurrent UTI antibiotic prophylaxis till term
  - Nitrofurantoin 50 mg or Cephalexin 250 mg at bed time

CAUTI

- Do not perform urine analysis/culture in asymptomatic patients
- Remove urinary catheters as soon as possible
- Replace latex coated every 3-4 weeks or Silicone catheter every 12 weeks
- Symptomatic CAUTI: features of Complicated UTI
  - Change catheter
  - Rx as complicated UTI
- No role of routine antibiotic prophylaxis for prevention

PROSTATITIS

- UTI symptoms+ pelvic pain/ fever
- Digital rectal exam- tender prostate
- Urine culture
- Empirical treatment similar to complicatead UTI
- Adjust treatment as per culture report
- Duration of treatment 2-4 weeks
- Urology evaluation desirable

RECURRENT UTI

- Uncomplicated RUTI

Post coital voiding and post coital antibiotic

Single dose cephalexin 250/ Co-trimoxazole (400/80) /Nitrofurantoin 100 mg

LONG TERM PROPHYLAXIS

- Low dose nitrofurantoin 50 mgX 6 months
- Single strength Septran SS/ Co-trimoxazole (400/80) x 6 months
- Cephalexin 250mg
- Vaginal estrogen cream in post menopausal

Complicated RUTI

- Urology referral
- Cystoscopy
- Urodynamics

ASYMPTOMATIC BACTERIURIA

- No symptoms of UTI and Urine culture with > 100000 CFU/ml
- No treatment required
- Treatment indicated
  - Pregnancy
  - Planned urological procedure

CHILDREN

SYMPTOMS

- Neonates and Infants < 1yr- Fever,vomiting, diarrhoea, jaundice, Poor urinary stream
  - Older children same as adults

TREATMENT

- Infants <3months as upper UTI (PN) with IV antibiotics
- Older children

- Upper UTI- IV antibiotics gentamicin, amikacin, ceftriaxone
- Lower UTI- oral cefixime, ofloxacin, ciprofloxacin, amoxyclav
- Duration of Rx
  - Upper UTI- 10-14 days
  - Lower UTI 7-10 days

REFER

- Upper UTI(PN), infants with UTI, recurrent UTI
- Bowel bladder Dysfunction and known CAKUT OR VUR
- Further imaging- DMSA+/- MCUG if abnormal USG, recurrent UTI

ABBREVIATIONS

CAKUT: Congenital Anomalies of the Kidney and Urinary Tract)
CAUTI: Catheter-Associated Urinary Tract Infection
DMSA: Dimercaptosuccinic Acid
HPF: High-Power Field
MCUG: Micturating Cystourethrogram
USG: Ultrasonography
VUR: Vesicoureteral Reflux
WBC: White Blood Cells

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UTI IS A CLINICAL DIAGNOSIS - DO NOT CULTURE ROUTINELY

This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (**stw.icmr.org.in**) for more information.
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