

## APPENDIX

### Extended diagnostic observation unit pre-admission criteria for acute pyelonephritis/urinary tract infection

#### Inclusion criteria

1. Haemodynamically stable
2. Lactate < 4.0 mmol/L or falling trend
3. Age < 70 years

#### Exclusion criteria

1. Septic patients/unstable vital signs or lactate > 4.0 mmol/L or rising trend
2. Ballotable enlarged kidney/pyuria/pyonephrosis/perinephric abscess/obstructive case, e.g. calculi
3. Acute renal failure: serum creatinine > 200 µmol/L
4. Renal transplant/immunocompromised/single kidney/known structure defect, e.g. polycystic kidney disease, vesicoureteral reflux, duplex ureter, stricture, neurogenic bladder
5. Multiple comorbidities or multiple acute medical illnesses, poorly controlled diabetes mellitus, chronic obstructive pulmonary disease, malignancy
6. Pregnant
7. Social issues

#### Emergency department interventions

1. Full blood count, renal panel including bicarbonate level, lactate
2. Urine analysis, urine culture and sensitivity, blood culture and sensitivity
3. Intravenous normal saline 2–3 L over 1–2 hours
4. Intravenous ceftriaxone 2 g stat (intravenous ciprofloxacin if there is a known allergy to penicillin). Consider one dose of gentamicin (5 mg/kg) if previously treated and still symptomatic
5. Oral paracetamol 1 g stat
6. Intravenous metoclopramide 10 mg if vomiting

#### Emergency department observation unit interventions

1. Vital signs four-hourly unless specified
2. Intravenous Ringer's lactate solution 500 mL four-hourly
3. Replace potassium
4. Intravenous ceftriaxone 1 g twice a day (BD)  
Consider one dose of gentamicin (5 mg/kg) if previously treated and still symptomatic
5. Oral paracetamol 1 g six-hourly
6. Intravenous metoclopramide 10 mg eight-hourly if vomiting
7. Renal ultrasonography if indicated clinically (ballotable/enlarged kidney, pyuria, increasing loin pain)
8. Repeat renal panel and lactate if indicated
9. Trace urine and blood culture and sensitivity

#### Discharge criteria

1. Vital signs stable
2. Able to retain feeds (patient with low-grade fever may still be discharged if eating well and decreasing loin pain)
3. Oral ciprofloxacin 500 mg BD for one week (for pyelonephritis). Avoid use of ciprofloxacin in uncomplicated lower urinary tract infections
4. Oral nitrofurantoin 100 mg BD for five days or trimethoprim/sulfamethoxazole two tabs BD for three days or cefuroxime/cephalexin/co-amoxiclav for 3–7 days for lower urinary tract infections (tailor according to culture sensitivity if ready)
5. Emergency department observation unit staff nurse to trace blood or urine cultures and sensitivities the next day if results are not ready on discharge
6. Appointment at primary healthcare centre in five days for a repeat renal panel and urine culture

#### Admission criteria

1. Patient turns septic or unwell
2. Unstable vital signs
3. Deteriorating renal function or rising lactate or rising white blood cell count > 20 × 10<sup>9</sup>/L
4. Persistent vomiting or unable to tolerate oral feeds
5. Increasing loin pain, pyuria or ballotable/enlarged kidneys