Emergency Department Guideline
Fever in the Renal Transplant Patient

Inclusion criteria:
- Patient with renal transplant and:
  - Measured or reported fever (≥38.0°C/100.4°F) OR
  - Hypothermia (<36.0°C/96.8°F) without reasonable environmental cause

Triage considerations:
- NO rectal temperature measurements or PR medications in these patients
- ESI triage level 2
  - Triage level 1 and immediate placement in resuscitation room if altered mental status, significant VS abnormalities, other clinical concern
- Full set of vitals including blood pressure
- Acetaminophen if current fever and none given in 4 hours
  - NO ibuprofen for renal transplant patients
- Room immediately if at all possible; avoid waiting room exposure
- Goal is for all patients who meet sepsis or septic shock criteria to receive IV antibiotics within 60 minutes of arrival

Laboratory studies:
- In ALL patients:
  - Obtain IV access or access indwelling line in all patients
  - Blood culture from each port of indwelling line
    - Obtain peripheral culture x 1 on patients with lines, if possible, but do not delay antibiotics
  - Single peripheral blood culture if no line
  - CBC with diff
  - Renal function panel
  - C-Reactive Protein
  - EBV PCR (not culture or serology)
  - CMV PCR
  - BK virus PCR
  - Adenovirus PCR
  - Respiratory virus panel (if respiratory symptoms)
  - UA/UC from clean catch or catheter
    - If h/o recent urologic surgery or difficult catheterization, discuss with urology or nephrology prior to catheterization

This UMMC Guideline addresses only key points of care for the specific population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Guideline does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure or course of action.
This UMMCH Guideline addresses only key points of care for the specific population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Guideline does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure or course of action.

Fever in the Renal Transplant Patient
November 2015
Division of Pediatric Emergency Medicine

- Discuss with nephrology if patient is unable to provide timely clean catch and family refuses cath or cath attempt fails

- In patients who are significantly ill-appearing:
  - Coagulation studies: INR, PTT, fibrinogen, D-dimer
  - iStat CG8
  - Lactate
  - Procalcitonin

- In patients with abdominal pain or vomiting:
  - Hepatic panel
  - Amylase
  - Lipase

- In patients with diarrhea:
  - Stool culture (SSCE)
  - C. Diff. culture and toxin
  - Stool adenovirus PCR

Imaging:
- CXR if respiratory symptoms
- Renal transplant US if pain over graft site, acute increase in creatinine, or other concerns
- AXR or other appropriate imaging if abdominal pain

Medications/interventions:
- **Goal is for all patients who require antibiotics to receive their first dose of IV antibiotic within 60 minutes of arrival.** Well appearing patients with normal vital signs may not need antibiotics (see below).
- Severely ill-appearing or toxic patients and those who meet *septic shock* criteria (sepsis plus evidence of cardiovascular dysfunction, including mottled skin, delayed or flash cap refill, altered mental status, decreased urine output, or hypotension):
  - Supportive care for sepsis as needed
    - Obtain 2 points of IV access if possible
    - IV NS Bolus 20 ml/kg rapid push x 3 if needed to support circulation
    - Additional circulatory support per sepsis guideline
  - IV antibiotics as soon as possible (attempt to obtain urine culture before antibiotics, but do not delay):
    - **Vancomycin** 15 mg/kg IV AND
      - **Cefepime** 50 mg/kg IV OR
      - **Meropenem** 20 mg/kg IV for penicillin or cephalosporin allergy
- Patients who meet *sepsis/SIRS* criteria but not *septic shock* criteria (fever plus tachycardia, tachypnea, leukopenia OR leukocytosis):
  - Prompt antibiotics (attempt to obtain urine culture before antibiotics but avoid delays longer than 60 minutes)
    - **Vancomycin** 15 mg/kg IV AND
      - **Ceftazidime** 50 mg/kg IV OR
      - **Meropenem** 20 mg/kg IV for penicillin or cephalosporin allergy
- Well-appearing patients with fever but no vital sign abnormalities:
This UMMC Guideline addresses only key points of care for the specific population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Guideline does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure or course of action.

Fever in the Renal Transplant Patient
November 2015
Division of Pediatric Emergency Medicine

- Hold antibiotics pending labs and discussion with nephrology attending or fellow
  - Acetaminophen (Tylenol) prn fever
    - 15 mg/kg PO/IV; no PR acetaminophen

Consultations:
- Nephrology
- Pulmonology for potential bronchoscopy (if patient is ≤ 6 months post-transplant and has abnormal CXR; call may be made by ED staff or by nephrology)

Reassessments:
- Continuous cardiorespiratory monitoring with pulse ox for ill-appearing patients
- VS with BP q1h for other patients

Differential diagnosis:
- Sepsis/septic shock
- Pneumonia
- UTI
- Line infection
- Viral illness
- Transplant rejection

Discharge or Admission criteria:
- PICU
  - Intubated patient
  - Vital sign instability
  - Sepsis/septic shock requiring significant resuscitation
- Inpatient floor
  - Most patients, particularly if:
    - Acute kidney injury (creatinine increased over baseline) or other electrolyte abnormalities
    - Concern for respiratory compromise
    - Poor PO intake
    - Meets sepsis criteria
    - Neutropenia (ANC<500)
    - Leukocytosis
    - Abnormal CXR
    - Clinical diagnosis of pyelonephritis
    - Suspicion for meningitis or encephalitis
    - Concern about family’s ability to follow up (e.g. long distance to travel)
- Discharge home
  - Well-appearing
  - Tolerating PO intake
  - No ongoing fluid losses or concern for dehydration
  - Reliable family with transportation and access to close (usually 1 day) follow-up
  - Agreement of nephrology consultant
Quality measures:

- First dose if IV antibiotics within 60 minutes if given
- Blood and urine cultures prior to antibiotics