Neutropenic Fever\(^1\) Inpatient Adult Treatment
(Solid Tumors/Lymphoma/Myeloma)

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Note: This algorithm should not be used for patients receiving CAR cell therapy.

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**Patient presents with fever or develops fever at MD Anderson**

- Patient exhibits two or more of the qSOFA criteria?\(^2\)
  - Yes
    - See Adult Sepsis Management Algorithm and use Sepsis order set
  - No
    - See Neutropenic Fever Outpatient Treatment for Solid Tumor Patients Algorithm

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- Complete physical exam
- Start IV fluids
- CBC with differential and platelets, BMP, lactic acid
- Blood cultures (with a set collected from each lumen simultaneously if CVC present and 1 peripheral site); other cultures (e.g., sputum culture, urinalysis with culture and sensitivity) only if clinically indicated
- Chest x-ray or other tests as clinically indicated

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**Patient must meet all of the following criteria for outpatient treatment:**
- Solid tumor
- Able to tolerate oral medications
- Able to tolerate fluids
- Does not use PEG as primary route for nutrition and medications
- Temperature greater than or equal to 38.3°C
- ANC less than or equal to 1 K/microliter done within 24 hours
- No confirmed focus of infection
- Lives within 1 hour travel time of MDACC
- Has a 24 hour caregiver
- Has access to transportation and telephone at residence
- Not currently on antibiotics

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**Patient is considered low risk**
- 15 years old or older
- No quinolone allergy for oral regimens
- Patient is considered low risk
- No multi-resistant organism colonization

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**Does patient have pneumonia?**
- Yes
  - See Pneumonia in Adult Patients with Cancer Algorithm
- No
  - See Page 2 for Antibiotic Regimen

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\(^1\) ANC less than 1 K/microliter and temperature greater than or equal to 38.3°C or equal to 38°C for 1 hour or longer.

\(^2\) qSOFA criteria:
- Altered mental status
- Respiratory rate greater than or equal to 22 bpm
- Systolic blood pressure less than or equal to 100 mmHg

\(^3\) Patient must meet all of the following criteria for outpatient treatment:
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Consider the following when selecting antibiotics (antibiotics should be given within 2 hours):
- Recent culture and sensitivity results
- History of multi-drug resistant organism (MDRO)\(^1\) infection
- Suspected line infection\(^2\)
- Antibiotic history and prophylaxis
- Source of infection if identified
- Organ dysfunction
- Mucositis

\(\text{MDROs include:}\)
- Enterococcus resistant to vancomycin
- Staphylococcus aureus resistant to methicillin (oxacillin)
- Pneumococcus resistant to penicillin
- Stenotrophomonas maltophilia
- Any extended spectrum beta-lactamase (ESBL) producing gram negative bacilli
- Any carbapenem resistant gram negative bacilli
- All other gram negative bacilli, resistant to 3 of the 4 groups:
  - Cefazidine and/or cefepime
  - Piperacillin/tazobactam
  - Imipenem and/or meropenem
  - Ciprofloxacin or levofloxacin

\(\text{Chills, rigors with infusion through catheter, cellulitis or discharge around the line entry site}\)

\(\text{Gram negative coverage antibiotics may be infused via y-site with other antibiotics if compatible}\)

\(\text{Consider meropenem if patient has any of the following:}\)
- Non-IgE-mediated allergy to alternative agents
- Recent treatment (of at least 3 days duration) with cefepime or piperacillin/tazobactam within past 30 days
- Infection with ESBL organism
- Infection with organism only susceptible to carbapenem

\(\text{Antimicrobial Therapy Recommendations}\)

(Adjust doses for patients with renal/hepatic dysfunction)

- **Gram negative coverage antibiotics should be given first**\(^3\)
- **Neutropenic fever**\(^4\):
  - Cefepime 2 grams IV every 8 hours
  - If mucositis greater than or equal to grade 2, suspected intra-abdominal infection, or other indication for anaerobic coverage:
    - Add metronidazole 500 mg IV every 8 hours
  - If clinically suspected line infection\(^2\), bacteremia, skin/soft tissue infection, and/or MRSA colonization:
    - Add vancomycin 15 mg/kg (round to nearest 250 mg dose) IV every 12 hours
  - If history of MDRO\(^1\) infection:
    - Consider ID consult
    - Consider meropenem 1 gram IV every 8 hours if clinically appropriate\(^4\) in place of cefepime/metronidazole

- **Neutropenic fever**:
  - Aztreonam 2 grams IV every 8 hours (preferred) or Ciprofloxacin 400 mg IV every 8 hours if no quinolone prophylaxis or therapy in past 90 days
  - **Plus**: Vancomycin 15 mg/kg (round to nearest 250 mg dose) IV every 12 hours
  - If mucositis greater than or equal to grade 2, suspected intra-abdominal infection, or other indication for anaerobic coverage:
    - Add metronidazole 500 mg IV every 8 hours
  - If history of MDRO\(^1\) infection:
    - Consider ID consult

\(\text{Documented beta-lactam allergy (i.e., hives or anaphylaxis)?}\)

\(\text{No}\)

\(\text{Yes}\)

See Page 3 for re-assessment
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1Consider narrowing therapy based on cultures and sensitivities (e.g., discontinue vancomycin if no gram positive organisms are identified and patient does not have cellulitis).
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SUGGESTED READINGS


Continued on next page
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SUGGESTED READINGS - continued


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**SUGGESTED READINGS - continued**


This practice consensus algorithm is based on majority expert opinion of the Neutropenic Fever Work Group at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

Javier Adachi, MD  
Samuel L. Aitken, PharmD  
Alison Gulbis, PharmD  
Tami N. Johnson, PharmD  
Victor Mulanovich, MD†  
Joseph L. Nates, MD  
Christina Perez*  
Terry W. Rice, MD  
Kenneth V. Rolston, MD  
Frank P. Tverdek, PharmD  
George Viola, MD  
Sonal Yang, PharmD*

† Core Development Team Lead  
* Clinical Effectiveness Development Team