Neutropenic Fever\textsuperscript{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.

Patient presents with fever or develops fever at MD Anderson

Patient exhibits two or more of the qSOFA criteria\textsuperscript{2}?

Yes

See Adult Sepsis Management Algorithm and use Sepsis order set

No

Does patient meet outpatient therapy criteria\textsuperscript{3}?

Yes

See Neutropenic Fever Outpatient Treatment for Solid Tumor Patients Algorithm

No

Patient must meet all of the following criteria for outpatient treatment:

\begin{itemize}
  \item Solid tumor
  \item Able to tolerate oral medications
  \item Able to tolerate fluids
  \item Does not use PEG as primary route for nutrition and medications
  \item Temperature greater than or equal to 38.3\textdegree C
  \item ANC less than or equal to 1 K/microliter done within 24 hours
  \item No confirmed focus of infection
  \item Lives within 1 hour travel time of MDACC
  \item Has a 24 hour caregiver
  \item Has access to transportation and telephone at residence
  \item Not currently on antibiotics
  \item 15 years old or older
  \item No quinolone allergy for oral regimens
  \item Patient is considered low risk
  \item No multi-resistant organism colonization
\end{itemize}

\textsuperscript{1}ANC less than 1 K/microliter and temperature greater than or equal to 38.3\textdegree C or equal to 38\textdegree C for 1 hour or longer.

\textsuperscript{2}qSOFA criteria:

\begin{itemize}
  \item Altered mental status
  \item Respiratory rate greater than or equal to 22 bpm
  \item Systolic blood pressure less than or equal to 100 mmHg
\end{itemize}

\textsuperscript{3}Patient must meet all of the following criteria for outpatient treatment:

\begin{itemize}
  \item Solid tumor
  \item Able to tolerate oral medications
  \item Able to tolerate fluids
  \item Does not use PEG as primary route for nutrition and medications
  \item Temperature greater than or equal to 38.3\textdegree C
  \item ANC less than or equal to 1 K/microliter done within 24 hours
  \item No confirmed focus of infection
\end{itemize}
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

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### 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**:\(^4\)
- 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

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1. 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

2. Chills, rigors with infusion through catheter, cellulitis or discharge around the line entry site

3. Gram negative coverage antibiotics may be infused via y-site with other antibiotics if compatible

4. 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

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Approved by the Executive Committee of the Medical Staff on 06/27/2017
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1\textsuperscript{Consider narrowing therapy based on cultures and sensitivities (e.g., discontinue vancomycin if no gram positive organisms are identified and patient does not have cellulitis).}
SUGGESTED READINGS


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SUGGESTED READINGS - continued


Neutropenic Fever<sup>1</sup> Inpatient Adult Treatment
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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<sup>†</sup>
- Joseph L. Nates, MD
- Christina Perez<sup>‡</sup>
- Terry W. Rice, MD
- Kenneth V. Rolston, MD
- Frank P. Tverdek, PharmD
- George Viola, MD
- Sonal Yang, PharmD<sup>♦</sup>

<sup>†</sup> Core Development Team Lead
<sup>‡</sup> Clinical Effectiveness Development Team

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DEVELOPMENT CREDITS

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