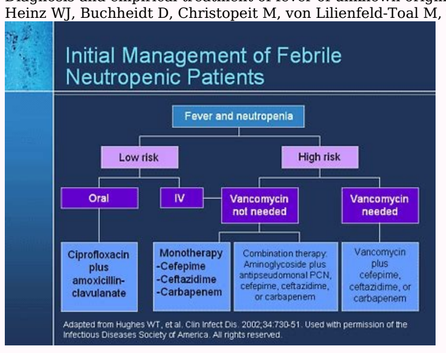


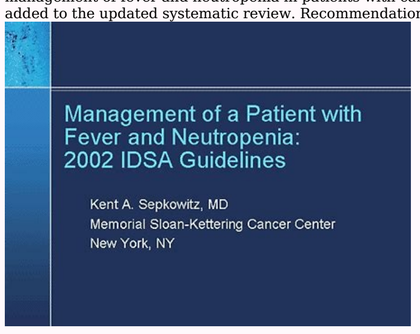
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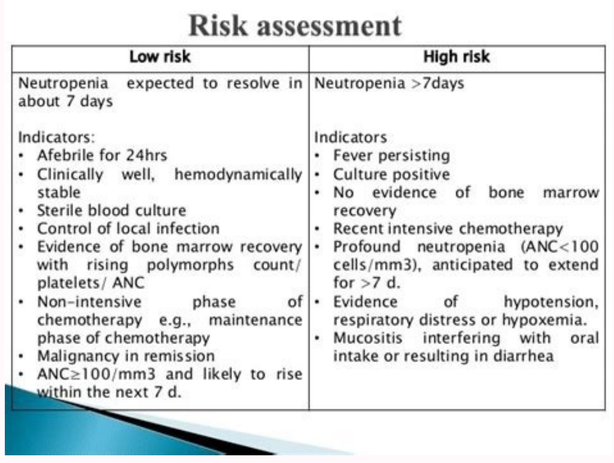
Diagnosis and empirical treatment of fever of unknown origin (FUO) in adult neutropenic patients: guidelines of the Infectious Diseases Working Party (AGIHO) of the German Society of Hematology and Medical Oncology (DGHO). answer sheet sample lahore board
Heinz WJ, Buchheidt D, Christopeit M, von Lilienfeld-Toal M, Cornely OA, Einsele H, Karthaus M, Link H, Mahlberg R, Neumann S, Ostermann H, Penack O, Ruhnke M, Sandherr M, Schiel X, Vehreschild JJ, Weissinger F, Maschmeyer G.



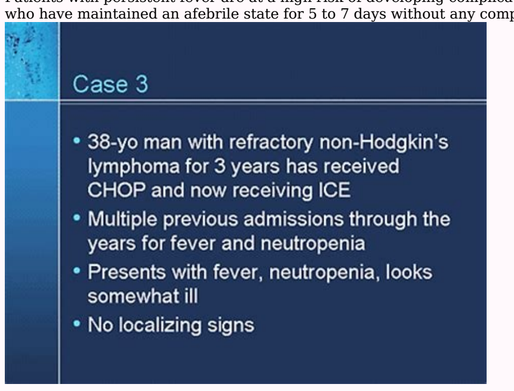
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Epub 2017 Aug 30. Ann Hematol. 2017. PMID: 28856437 Free PMC article. Review. Facebook Twitter LinkedIn Email Published , 5/1/2018 Randy A. Taplitz, Erin B. Kennedy, Eric J. Bow, Jennie Crews, Charise Gleason, Douglas K. Hawley, Amelia A. Langston, Loretta J. Nastoupil, Michelle Rajotte, Kenneth Rolston, Lynne Strasfeld, and Christopher R. Flowers Download This updated joint American Society of Clinical Oncology (ASCO)/Infectious Diseases Society of America (IDSA) guideline provides direction on outpatient management of fever and neutropenia in patients with cancer. Purpose To provide an updated joint ASCO/Infectious Diseases Society of American (IDSA) guideline on outpatient management of fever and neutropenia in patients with cancer. Methods ASCO and IDSA convened an Update Expert Panel and conducted a systematic review of relevant studies. The guideline recommendations were based on the review of evidence by the Expert Panel. Results Six new or updated meta-analyses and six new primary studies were added to the updated systematic review. Recommendation Clinical judgment is recommended when determining which patients are candidates for outpatient management, using clinical criteria or a validated tool such as the Multinational Association of Support Care in Cancer risk index.



In addition, psychosocial and logistic considerations are outlined within the guideline. The panel continued to endorse consensus recommendations from the previous version of this guideline that patients with febrile neutropenia receive initial doses of empirical antibacterial therapy within 1 hour of triage and be monitored for ≥ 4 hours before discharge. An oral fluoroquinolone plus amoxicillin/clavulanate (or clindamycin, if penicillin allergic) is recommended as empirical outpatient therapy, unless fluoroquinolone prophylaxis was used before fever developed.
Patients who do not defervesce after 2 to 3 days of an initial, empirical, broad-spectrum antibiotic regimen should be re-evaluated and considered as candidates for inpatient treatment. Additional information is available at www.asco.org/supportive-care-guidelines and www.asco.org/guidelineswiki. For more information, please visit the ASCO website.
Febrile neutropenia (FN) is a serious complication of cancer chemotherapy that can lead to delays in treatment and necessary dose reductions of chemotherapy, which compromise treatment efficacy.

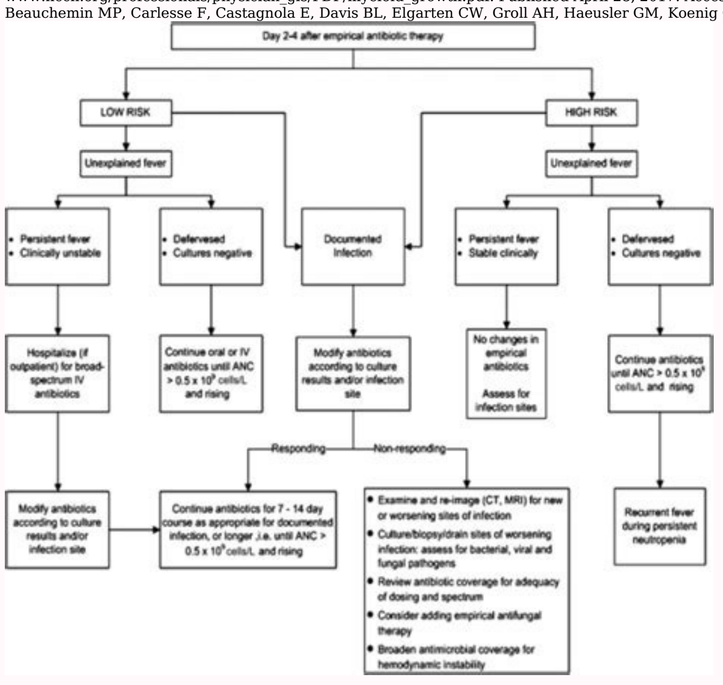


Approximately 1% of patients with cancer receiving chemotherapy develop FN, which contributes to morbidity and mortality, and imposes substantial burdens on healthcare resource use for management of this affected population.1Neutropenia is characterized by a reduction in neutrophils below normal counts, usually occurring within 7 to 12 days following cancer chemotherapy.2 It is diagnosed with a blood test that confirms an absolute neutrophil count (ANC) of less than 500 cells per microliter following cytotoxic chemotherapy, or by an ANC expected to decrease to less than 500 cells per microliter within 48 hours. Due to reduced levels of neutrophils in circulation, patients with neutropenia may have an impaired ability to fight infections.3 Hence, even a minor infection for patients with neutropenia may become very serious. english speaking course free download pdf It is crucial to monitor patients for signs and symptoms of infection, which may present as fever, chills, or sweats.
Other signs and symptoms of infection for patients with FN are provided in Table 1.2Neutropenia may be accompanied by fever originating from an underlying infection. Fever may be the sole indicator of an underlying infection in patients with chemotherapy-induced neutropenia; other signs and symptoms of inflammation may be absent.4 Patients with neutropenia thus must be assessed for risk of severe infection immediately at presentation of fever. FN is defined by an oral temperature greater than 101ºF from a single reading or an oral temperature of at least 100.4ºF sustained over a 1-hour period or reported from 2 consecutive readings in a 2-hour period.1,4Initial Physical AssessmentsPatients presenting with FN undergo initial physical assessments for potential infection. The patient's risk of developing an infection-related complication must be determined so that appropriate early management can begin. Because patients with FN may have minimal or absent symptoms of bacterial infections, detection requires close examination of the most commonly infected sites. Patients with FN are initially investigated for infection on sites of previous procedures or catheters, as well as on or in the skin, alimentary tract, oropharynx, gastrointestinal tract, lungs, genitourinary region, and respiratory system. Chest radiography may be indicated if there are any signs and symptoms of respiratory infection; this is to rule out pneumonia, which can progress rapidly in patients with FN.4,5 »The patient's detailed medical history should be evaluated, including new site-specific symptoms, recent antibiotic treatment, surgical history, and underlying comorbid conditions. Additionally, patient history should be analyzed for past positive microbiology records, specifically the presence of antibiotic-resistant organisms or bacteremia. edmentum mastery test answers algebra 2 Cultures should be obtained from suspected sites of infection for appropriate microbiological testing prior to empirical antimicrobial therapy. Urinalysis and sputum and stool cultures may be necessary in patients with suspected infection in the associated sites.4,5Laboratory tests, including complete blood cell counts with differential leukocyte and platelet counts, are needed to determine ANC and severity of neutropenia. At least 2 sets of blood cultures are recommended, 1 from a central venous catheter and 1 from a peripheral vein. However, if no central venous catheter is available, 2 sets of cultures may be taken from separate venipunctures for the detection of bloodstream pathogens. Renal and liver function are routinely investigated during the initial assessment for serum creatinine levels, blood urea nitrogen, electrolytes, hepatic transaminase enzymes, and total bilirubin to plan supportive care and appropriate treatment.4,5Risk Stratification for Patients With FNPatients presenting with FN undergo initial risk assessment for serious complications of infection, including mortality, to determine appropriate treatment. The Infectious Diseases Society of America (IDSA), National Comprehensive Cancer Network (NCCN), and European Society of Medical Oncology (ESMO) outline the classification of risk for patients with FN. Depending on the level of risk determined, management of patients may vary in the administration of treatment (oral or intravenous), duration of therapy, and treatment setting (outpatient or hospital).4Patients are classified into risk categories based on clinical criteria, including the duration of neutropenia, ANC measure, presence of comorbidities, renal and hepatic insufficiencies, medication usage, and history of FN. Additional factors that increase the risk of complications for patients with FN following cancer chemotherapy are summarized in Table 2.1 The Multinational Association of Supportive Care in Cancer (MASCC) index is a formal method for defining risk stratification, which is incorporated into the initial risk evaluation. The MASCC index assigns values to patient age, history, outpatient or inpatient status, clinical signs, severity of fever and neutropenia, and presence of medical comorbidities; the summation of those values determines risk classification.Patients with FN are characterized as having a low risk of complications if the patient has good performance status and few medical comorbid conditions, presents with adequate hepatic function and renal function, and the neutropenia's duration is expected to be less than 7 days. Patients are stratified into a low-risk category with an MASCC Risk Index score of at least 21. 98821521253.pdf Low-risk patients are initially treated with oral or intravenous empiric therapy.4,5Patients with FN are classified as having a high risk of complications if they present with profound neutropenia marked by an ANC less than 100 cells per microliter following chemotherapy, and if the duration of neutropenia is anticipated to last longer than 7 days. In addition, high-risk patients may have clinically relevant comorbidities such as hypotension, pneumonia, new onset of abdominal pain, renal or hepatic insufficiency, or neurological changes. Patients are also stratified into the high-risk category if they present with a MASCC Risk Index score of less than 21. Patients with FN at high risk of serious complications are treated with intravenous empiric antibiotic therapy in the inpatient setting.1,4,5Treatment Guidelines for FNEvidence-based guidelines for the management of patients with FN in clinical practice have been developed by the IDSA, NCCN, and ESMO.Patients with FN with high risk of complications should be initiated with empiric antibiotics administered intravenously in the hospital setting. Clinical practice guidelines from the IDSA recommend initial antibiotic monotherapy including an antipseudomonal beta-lactam (ie, cefepime), a carbapenem (ie, meropenem, imipenem, or cilastatin), or piperacillin-tazobactam. Patients who are afebrile and develop signs and symptoms of infection should also be treated empirically with the same regimen as high-risk patients. Initial treatment with vancomycin and other antibiotics effective against gram-positive cocci are not recommended as standard empirical antibiotic treatment for patients with FN. However, these agents may be considered in modifications of initial treatment as additional therapy for patient-based needs, such as suspicion of catheter-related infection, skin or soft-tissue infection, pneumonia, hemostatic instability, or antibiotic resistance.4,5The IDSA guidelines recommend therapy modifications for patients with a positive blood culture with a risk of infection with antibiotic-resistant organisms. If methicillin-resistant Staphylococcus aureus is suspected, the initial antibiotic regimen can be modified to include vancomycin, daptomycin, or linezolid. Suspicion of vancomycin-resistant enterococcus calls for the addition of linezolid or daptomycin. If extended-spectrum beta-lactamase—producing gram-negative bacteria is suspected, patients may benefit from the early use of carbapenem. The addition of polymyxin-colistin or tigecycline to the early treatment is appropriate if the presence of Klebsiella pneumoniae carbapenemase-producing bacteria is suspected. boucles_violettes_script_software.pdf Patients allergic to penicillin may be given cephalosporin, but either ciprofloxacin and clindamycin or aztreonam and vancomycin are recommended in cases of immediate hypersensitivity.4Patients with FN at low risk of complications may be initially treated with empirical antibiotics administered orally or intravenously in the inpatient setting. Patients meeting select criteria of clinical stability and adequate gastrointestinal absorption may be eligible for treatment switch from intravenous to oral administration of antibiotics. Recommended treatment for low-risk patients includes combination oral antibiotic therapy with ciprofloxacin and amoxicillin-clavulanate. Other orally administered regimens commonly used in clinical practice are monotherapy with levofloxacin or ciprofloxacin and combination with ciprofloxacin and clindamycin. If a patient is being treated for FN with fluoroquinolone prophylaxis, a fluoroquinolone cannot be used as an initial empiric therapy. fantasy football draft cheat sheet Additionally, selected patients who are at low risk for complications and have family support and appropriate culture status may be eligible for transitioning treatment with intravenous or oral empiric therapy to the outpatient setting. Patients who continue to present with fever and worsening signs and symptoms of infection are to remain in hospital rather than being discharged.1,4,5Empiric antifungal therapy is not recommended for routine use in low-risk patients. vuruwadekejuji.pdf Initiation of empiric antifungal therapy is recommended for patients who continue to have persistent fever of unidentified cause following 4 to 7 days of antibiotic treatment, and who present with neutropenia that is expected to last more than 7 days. In patients with FN who are already receiving anti-mold prophylaxis, the switch to an agent in a different antifungal class should be considered. However, there are insufficient data to determine which antifungal agent is most appropriate.4Assessment of Therapeutic Response The assessment of response and duration of therapy outlined by clinical practice guidelines for the management of FN recommend daily patient reviews following administration of empiric therapy to determine needs for subsequent management. Daily assessments include laboratory tests and cultures for infection, fever trends, and toxicity of treatment. Treatment is necessary until the patient is afebrile for at least 48 hours, clinically stable with resolution of neutropenia (ANC of at least 500 cells per microliter), and has negative blood cultures.4,5 For patients with documented » infections, the duration of treatment is decided by the organism and site of infection, and treatment should continue until resolution of neutropenia.4If a patient is clinically unstable, such as if they present with persistent fever, signs of infection, or positive blood cultures, a broad-coverage antibiotic therapy should be considered.
Patients with persistent fever are at a high risk of developing complications and need prompt consultation from an infectious diseases physician. If high fever persists for more than 4 to 6 days, then empiric antifungal therapy may be necessary. Treatment with antibiotics can be discontinued in patients with an ANC of less than 500 cells per microliter who have maintained an afebrile state for 5 to 7 days without any complications.



High-risk patients, such as those with acute leukemia and those who have recently had high-dose cytotoxic chemotherapy, may require treatment with antibiotics for up to 10 days or until the resolution of neutropenia.1,4,5Prophylaxis for FNThe recommended initial treatment for patients who are considered high risk for complications of FN, and who are expected to have an extended period of profound neutropenia lasting longer than 7 days defined by no more than 100 cells per microliter, is fluoroquinolone prophylaxis. Both ciprofloxacin and levofloxacin are recommended to treat patients at high risk for FN; however, levofloxacin is the preferred agent for patients with an increased risk of Streptococcus-mediated oral mucositis.4,5 The IDSA guidelines do not recommend treatment with prophylaxis in low-risk patients, nor do they recommend the addition of an antibiotic against gram-positive infections with prophylaxis.4,5Patients who are considered high risk for invasive fungal infection, such as candidiasis from allogeneic hematopoietic stem cell transplant or from intensive remission induction or salvage-induction chemotherapy for acute leukemia, are strongly recommended to be initiated on antifungal prophylaxis with fluconazole, itraconazole, voriconazole, posaconazole, micafungin, or caspofungin. Patients who are considered high risk for aspergillus are aged 13 years or older, and/or are undergoing intensive chemotherapy for acute myeloid leukemia or myelodysplastic syndrome are strongly recommended to initiate posaconazole for prophylaxis. Low-risk patients are not required to have antifungal prophylaxis.4Prophylaxis with Granulocyte Colony-Stimulating FactorGranulocyte colony-stimulating factor (G-CSF)—filgrastim, filgrastim-sndz, tbo-filgrastim, or pegfilgrastim—is indicated for the prevention of chemotherapy-induced neutropenia in patients with nonmyeloid malignancies.5 As a prophylactic treatment, G-CSF is used to reduce infection in patients with nonmyeloid malignancies who are undergoing myelosuppressive chemotherapy associated with severe FN. friendly letter format middle school Treatment with a G-CSF reduces the time to neutrophil recovery and decreases the duration of FN.6The NCCN recommends that patients with solid and nonmyeloid malignancies are evaluated for risk factors of chemotherapy-induced FN prior to the first cycle of chemotherapy.7 The intensity of the chemotherapy regimen administered is associated with the severity of neutropenia. Patients are assessed for factors including disease type, chemotherapy regimen, treatment intent, and patient risk factors that may lead to the development of FN (Table 37).1,7 Patients who are at low risk of developing FN (<10%) and patients who do not present with risk factors should not initiate prophylaxis with G-CSF. Patients with intermediate risk for FN (10%-20%) need to be evaluated for additional patient risk factors, which are summarized in Table 3.7 After assessment, patients who present with at least 1 of these risk factors for FN is recommended for treatment with a G-CSF. Prophylaxis with G-CSF is initiated in patients who are at high risk for FN (>20%) to reduce the risks of FN, hospitalization, and intravenous antibiotic use during the course of treatment.7ConclusionAs cytotoxic chemotherapy-induced FN may lead to serious complications of infection and mortality, initiating antimicrobial therapy is recommended for this patient population. Before initiating antibiotic therapy, it is crucial to perform a risk assessment to determine whether the therapy should be oral or intravenous, inpatient or outpatient, and patient needs for the duration of therapy. full unblocked movies 24 Risk assessment also plays a key role in determining whether G-CSF should be initiated for primary prophylaxis. Guidelines suggest that G-CSF may be needed to boost the immune system of high-risk patients, but G-CSF should initially be avoided in low-risk patients. In cases of intermediate risk, additional patient risk factors need to be weighed. References1. Klastersky J, de Naurois J, Rolston K, et al; ESMO Guidelines Committee.

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