Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

Platelet transfusion for patients with cancer: American Society of Clinical Oncology clinical practice guideline update.

Bibliographic Source(s)

Schiffer CA, Bohlke K, Delaney M, Hume H, Magdalinski AJ, McCullough JJ, Omel JL, Rainey JM, Rebulla P, Rowley SD, Troner MB, Anderson KC. Platelet transfusion for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. J Clin Oncol. 2018 Jan 20;36(3):283-99. [130 references] PubMed

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Schiffer CA, Anderson KC, Bennett CL, Bernstein S, Elting LS, Goldsmith M, Goldstein M, Hume H, McCullough JJ, McIntyre RE, Powell BL, Rainey JM, Rowley SD, Rebulla P, Troner MB, Wagnon AH. Platelet transfusion for patients with cancer: clinical practice guidelines of the American Society of Clinical Oncology. J Clin Oncol. 2001 Mar 1;19(5):1519-38. [143 references].

This guideline meets NGC's 2013 (revised) inclusion criteria.

NEATS Assessment

National Guideline Clearinghouse (NGC) has assessed this guideline's adherence to standards of trustworthiness, derived from the Institute of Medicine's report Clinical Practice Guidelines We Can Trust.

= Poor = Fair = Good = Very Good = Excellent

Assessment	Standard of Trustworthiness
YES	Disclosure of Guideline Funding Source
	Disclosure and Management of Financial Conflict of Interests

	Guideline Development Group Composition
YES	Multidisciplinary Group
YES	Methodologist Involvement
▮▮▮▮▯	Patient and Public Perspectives
	Use of a Systematic Review of Evidence
▮▮▮▮▮	Search Strategy
▮▮▮▮▮	Study Selection
▮▮▮▮▮	Synthesis of Evidence
	Evidence Foundations for and Rating Strength of Recommendations
▮▮▮▮▮	Grading the Quality or Strength of Evidence
▮▮▮▮▮	Benefits and Harms of Recommendations
▮▮▮▮▮	Evidence Summary Supporting Recommendations
▮▮▮▮▮	Rating the Strength of Recommendations
▮▮▮▮▮	Specific and Unambiguous Articulation of Recommendations
▮▮▮▮▯	External Review
▮▮▮▮▮	Updating

Recommendations

Major Recommendations

Definitions for the rating of evidence (High, Intermediate, Low, Insufficient); types of recommendations (Evidence based, Formal consensus, Informal consensus, No recommendation); and strength of recommendations (Strong, Moderate, Weak) are provided at the end of the "Major Recommendations" field.

Clinical Question 1

How should platelets for transfusion be prepared?

Recommendation 1. Platelets for transfusion can be prepared either by separation of units of platelet concentrates (PCs) from whole blood using either the buffy coat (BC) or the platelet-rich plasma (PRP) method, which can be pooled before administration, or by apheresis from single donors. Comparative studies have shown that the post-transfusion increments, hemostatic benefit, and adverse effects are similar with any of these platelet products. Thus, in routine circumstances, they can be used interchangeably. In most centers, pooled PCs are less costly. Single-donor platelets from selected donors are necessary when histocompatible platelet transfusions are needed (Type of recommendation: evidence based; Evidence quality: high; Strength of recommendation: strong).

Clinical Question 2

In what circumstances should providers take steps to prevent Rhesus (Rh) alloimmunization resulting from platelet transfusion?

Recommendation 2. Prevention of RhD alloimmunization resulting from platelet transfusions to RhD-negative recipients can be achieved either through the exclusive use of platelet products collected from RhD-negative donors or via anti-D immunoprophylaxis. These approaches may be used for female children and female adults of child-bearing potential being treated with curative intent. However, because of the low rate of RhD alloimmunization in patients with cancer, these approaches need not be applied universally (Type of recommendation: evidence based; Evidence quality: intermediate; Strength of recommendation: moderate).

Clinical Question 3

In what circumstances should providers use leukoreduced blood products to prevent alloimmunization?

Recommendation 3. The incidence of alloantibody-mediated refractoriness to platelet transfusion can be decreased in patients with acute myeloid leukemia (AML) receiving induction chemotherapy when both platelet and red blood cell (RBC) products are leukoreduced before transfusion. It is therefore appropriate to provide leukoreduced blood products to patients with AML from the time of diagnosis to ameliorate this important clinical problem. Although randomized trials have not been conducted in other patient groups, it is likely that alloimmunization can also be decreased in patients with other types of leukemia and in other patients with cancer who are receiving chemotherapy. There are fewer data in patients who are not receiving chemotherapy in the same time periods that the transfusions are being administered (e.g., aplastic anemia, myelodysplasia), although the consensus would favor its use in these patients as well. In the United States and in several other countries, the overwhelming majority of blood products are now leukoreduced at the time of blood collection and component preparation. Other advantages of prestorage leukoreduction include a substantial reduction in transfusion reactions and in transmission of cytomegalovirus (CMV) infection (Type of recommendation: evidence based; Evidence quality: high; Strength of recommendation: strong).

Clinical Question 4

Should platelet transfusions be given prophylactically or therapeutically?

Recommendation 4. Prophylactic platelet transfusion should be administered to patients with thrombocytopenia resulting from impaired bone marrow function to reduce the risk of hemorrhage when the platelet count falls below a predefined threshold level. This threshold level for transfusion varies according to the patient's diagnosis, clinical condition, and treatment modality (Type of recommendation: evidence based; Evidence quality: high; Strength of recommendation: strong).

Clinical Question 5

What is the appropriate threshold for prophylactic platelet transfusion in patients with hematologic malignancies?

Recommendation 5. The Panel recommends a threshold of $<10 \times 10^9$/L for prophylactic platelet transfusion in patients receiving therapy for hematologic malignancies. Transfusion at higher levels may be advisable in patients with signs of hemorrhage, high fever, hyperleukocytosis, rapid fall of platelet count, or coagulation abnormalities (e.g., acute promyelocytic leukemia) and in those undergoing invasive procedures or in circumstances in which platelet transfusions may not be readily available in case of emergencies, as might be the case for outpatients who live at a distance from the treatment center (Type of recommendation: evidence based; Evidence quality: high; Strength of recommendation: strong).

Clinical Question 6

What is the appropriate threshold for prophylactic platelet transfusion in the setting of hematopoietic cell transplantation (HSCT)?

Recommendation 6. The Panel recommends a threshold of <10 x 10^9/L for prophylactic platelet transfusion in adult and pediatric patients undergoing allogeneic HSCT. Prophylactic platelet transfusion may be administered at higher counts based on clinician judgment. In adult recipients of autologous HSCT, randomized trials have demonstrated similar rates of bleeding with decreased platelet usage when patients are transfused at the first sign of bleeding rather than prophylactically, and this approach may be used in experienced centers. This recommendation is not generalizable to pediatric patients (Type of recommendation: evidence based; Evidence quality: high; Strength of recommendation: moderate).

Clinical Question 7

Is there a role for prophylactic platelet transfusion in patients with chronic, stable, severe thrombocytopenia who are not receiving active treatment?

Recommendation 7. Patients with chronic, stable, severe thrombocytopenia, such as individuals with myelodysplasia or aplastic anemia, who are not receiving active treatment may be observed without prophylactic transfusion, reserving platelet transfusions for episodes of hemorrhage or during times of active treatment (Type of recommendation: informal consensus; Evidence quality: intermediate; Strength of recommendation: moderate).

Clinical Question 8

What is the appropriate threshold for prophylactic platelet transfusion in patients with solid tumors?

Recommendation 8. The risk of bleeding in patients with solid tumors during chemotherapy-induced thrombocytopenia is related to the depth and duration of the platelet nadir, although other factors contribute as well. The Panel recommends a threshold of <10 x 10^9/L for prophylactic platelet transfusion, based on extrapolation from studies in hematologic malignancies. Platelet transfusion at higher levels is appropriate in patients with active localized bleeding which can sometimes be seen in patients with necrotic tumors (Type of recommendation: informal consensus; Evidence quality: low; Strength of recommendation: moderate).

Clinical Question 9

At what platelet count can surgical or invasive procedures be performed?

Recommendation 9. The Panel recommends a threshold of 40 x 10^9/L to 5 x 100^9/L for performing major invasive procedures in the absence of associated coagulation abnormalities. Certain procedures, such as bone marrow aspirations and biopsies, and insertion or removal of central venous catheters, can be performed safely at counts ≥20 x 10^9/L. There are sparse data, and no randomized trials, addressing the safety of other invasive procedures at much lower count levels. If platelet transfusions are administered before a procedure, it is critical that a posttransfusion platelet count be obtained to prove that the desired platelet count level has been reached. Platelet transfusions should also be available on short notice, in case intraoperative or postoperative bleeding occurs. For alloimmunized patients, histocompatible platelets must be available in these circumstances (Type of recommendation: evidence based; Evidence quality: low; Strength of recommendation: weak).

Clinical Question 10

When and how should patients be monitored for refractoriness to platelet transfusion?

Recommendation 10. Although there are no empirical data to suggest that monitoring and acting on the post–platelet-transfusion count decreases the incidence of hemorrhagic events, the Panel consensus is that platelet counts performed 10 to 60 minutes after transfusion should be obtained after all transfusions, when refractoriness is suspected. Because patients may have a poor increment to a single transfusion, yet have excellent platelet increments with subsequent transfusions, a diagnosis of refractoriness to platelet transfusion should be made only when at least two transfusions of ABO-compatible units, stored for <72 hours, result in poor increments, as defined in the supporting text of the recommendation (Type of recommendation: informal consensus; Evidence quality: insufficient; Strength of

recommendation: moderate).

Clinical Question 11

How should refractoriness to platelet transfusion be managed?

Recommendation 11. Alloimmunization is usually due to antibody against human leukocyte antigens (HLAs) and only rarely to platelet-specific antigens. Patients with alloimmune-refractory thrombocytopenia, as defined previously, are best managed with platelet transfusions from histocompatible donors matched for HLA-A and HLA-B antigens. Many blood suppliers have access to computerized lists of such donors. For patients (1) whose HLA type cannot be determined, (2) who have uncommon HLA types for whom suitable donors cannot be identified, or (3) who do not respond to HLA-matched platelets, histocompatible platelet donors can often be identified using platelet cross-matching techniques. In many patients, these two techniques are complementary (Type of recommendations: evidence based; Evidence quality: high; Strength of recommendation: strong).

Definitions

Guide for Rating Quality of Evidence

Rating for Strength of Evidence	Definition
High	High confidence that the available evidence reflects the true magnitude and direction of the net effect (i.e., balance of benefits versus harms) and that further research is very unlikely to change either the magnitude or direction of this net effect.
Intermediate	Moderate confidence that the available evidence reflects the true magnitude and direction of the net effect. Further research is unlikely to alter the direction of the net effect; however, it might alter the magnitude of the net effect.
Low	Low confidence that the available evidence reflects the true magnitude and direction of the net effect. Further research may change either the magnitude and/or direction this net effect.
Insufficient	Evidence is insufficient to discern the true magnitude and direction of the net effect. Further research may better inform the topic. The use of the consensus opinion of experts is reasonable to inform outcomes related to the topic.

Guide for Types of Recommendations

Type of Recommendation	Definition
Evidence based	There was sufficient evidence from published studies to inform a recommendation to guide clinical practice.
Formal consensus	The available evidence was deemed insufficient to inform a recommendation to guide clinical practice. Therefore, the Expert Panel used a formal consensus process to reach this recommendation, which is considered the best current guidance for practice. The Expert Panel may choose to provide a rating for the strength of the recommendation (i.e., "strong," "moderate," or "weak"). The results of the formal consensus process are summarized in the guideline and reported in the Data Supplement (see the "Availability of Companion Documents" field).
Informal Consensus	The available evidence was deemed insufficient to inform a recommendation to guide clinical practice. The recommendation is considered the best current guidance for practice, based on informal consensus of the Expert Panel. The Expert Panel agreed that a formal consensus process was not necessary for reasons described in the literature review and discussion. The Expert Panel may choose to provide a rating for the strength of the recommendation (i.e., "strong," "moderate," or "weak").
No recommendation	There is insufficient evidence, confidence, or agreement to provide a recommendation to guide clinical practice at this time. The Expert Panel deemed the available evidence as insufficient and concluded it was unlikely that a formal

Type of Recommendation	Definition
	consensus process would achieve the level of agreement needed for a recommendation.

Guide for Strength of Recommendations

Rating for Strength of Recommendation	Definition
Strong	There is high confidence that the recommendation reflects best practice. This is based on (1) strong evidence for a true net effect (e.g., benefits exceed harms); (2) consistent results, with no or minor exceptions; (3) minor or no concerns about study quality; and/or (4) the extent of Expert Panelists' agreement. Other compelling considerations (discussed in the guideline's literature review and analyses) may also warrant a strong recommendation.
Moderate	There is moderate confidence that the recommendation reflects best practice. This is based on (1) good evidence for a true net effect (e.g., benefits exceed harms); (2) consistent results, with minor and/or few exceptions; (3) minor and/or few concerns about study quality; and/or (4) the extent of Expert Panelists' agreement. Other compelling considerations (discussed in the guideline's literature review and analyses) may also warrant a moderate recommendation.
Weak	There is some confidence that the recommendation offers the best current guidance for practice. This is based on (1) limited evidence for a true net effect (e.g., benefits exceed harms); (2) consistent results, but with important exceptions; (3) concerns about study quality; and/or (4) the extent of Expert Panelists' agreement. Other considerations (discussed in the guideline's literature review and analyses) may also warrant a weak recommendation.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Cancer

Guideline Category

Assessment of Therapeutic Effectiveness

Management

Treatment

Clinical Specialty

Hematology

Internal Medicine

Oncology

Pathology

Intended Users

Physicians

Guideline Objective(s)

To provide updated recommendations regarding the use of platelet transfusion in people with cancer

Target Population

Adults and children (≥4 months of age) with hematologic malignancies, solid tumors, or hypoproliferative thrombocytopenia

Interventions and Practices Considered

Platelet transfusion therapy

- Platelet product preparation (platelet concentrates, single-donor apheresis platelets)
- Prevention of Rhesus (Rh) alloimmunization
- Leukoreduction
- Prophylactic platelet transfusion
- Monitoring for and managing refractoriness to platelet transfusions

Major Outcomes Considered

- Bleeding
- Alloimmunization
- Platelet refractoriness

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Guideline Update Development Process

Two 2015 systematic review-based guidelines by the AABB (formerly known as the American Association of Blood Banks) and the International Collaboration for Transfusion Medicine Guidelines (ICTMG) formed the starting point for the American Society of Clinical Oncology (ASCO) review (see the "Availability of Companion Documents" field). The AABB search included publications from 1946 to the first week of September 2014, and the ICTMG search included publications from 1946 to December 2013. For clinical questions that were addressed by either the AABB or the ICTMG, the ASCO search included publications from January 1, 2014, through October 26, 2016, using both PubMed and the Cochrane Library. For clinical questions not addressed by the AABB and the ICTMG (leukoreduction; patients with chronic, stable, severe thrombocytopenia; and patients with solid tumors) or that were partially addressed (invasive procedures), the ASCO search included publications from January 1, 2000, through October 26, 2016. The updated search was guided by the signals approach, which is designed to identify only new, potentially

practice-changing data—signals—that might translate into revised practice recommendations. The Methodology Supplement (see the "Availability of Companion Documents" field) provides additional information about the signals approach.

Articles were selected for inclusion in the systematic review of the evidence based on the following criteria:

Population: adults and children (≥4 months of age) with hematologic malignancies, solid tumors, or hypoproliferative thrombocytopenia
Intervention: prophylactic or therapeutic platelet transfusion
Outcomes: bleeding, alloimmunization, platelet refractoriness
Publication types: clinical practice guidelines, systematic reviews and meta-analyses, randomized controlled trials (RCTs), and observational studies

Articles were excluded from the systematic review if they were (1) meeting abstracts not subsequently published in peer-reviewed journals; (2) editorials, commentaries, letters, news articles, case reports, or narrative reviews; or (3) published in a non-English language.

Details of the searches are provided in the Data Supplement 2 (see the "Availability of Companion Documents" field).

Number of Source Documents

A total of 24 more recent publications met the eligibility criteria and form the evidence base for the updated guideline recommendations: three clinical practice guidelines, eight systematic reviews, and 13 observational studies.

See Data Supplement 3 (see the "Availability of Companion Documents" field) for Quality of Reporting of Meta-analyses (QUOROM) Diagrams showing exclusions and inclusions of publications identified for the systematic review.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Guide for Rating Quality of Evidence

Rating for Strength of Evidence	Definition
High	High confidence that the available evidence reflects the true magnitude and direction of the net effect (i.e., balance of benefits versus harms) and that further research is very unlikely to change either the magnitude or direction of this net effect.
Intermediate	Moderate confidence that the available evidence reflects the true magnitude and direction of the net effect. Further research is unlikely to alter the direction of the net effect; however, it might alter the magnitude of the net effect.
Low	Low confidence that the available evidence reflects the true magnitude and direction of the net effect. Further research may change either the magnitude and/or direction this net effect.
Insufficient	Evidence is insufficient to discern the true magnitude and direction of the net effect. Further research may better inform the topic. The use of the consensus opinion of experts is reasonable to inform outcomes related to the topic.

Guide for Rating of Potential for Bias

Rating of Potential for Bias	Definitions for Rating Potential for Risk of Bias in Randomized Controlled Trials
Low risk	No major features in the study that risk biased results, and none of the limitations are thought to decrease the validity of the conclusions. The study avoids problems such as failure to apply true randomization, selection of a population unrepresentative of the target patients, high dropout rates, and no intention-to-treat analysis; and key study features are described clearly (including the population, setting, interventions, comparison groups, measurement of outcomes, and reasons for dropouts).
Intermediate	The study is susceptible to some bias, but flaws are not sufficient to invalidate the results. Enough of the items introduce some uncertainty about the validity of the conclusions. The study does not meet all the criteria required for a rating of good quality, but no flaw is likely to cause major bias. The study may be missing information, making it difficult to assess limitations and potential problems.
High risk	There are significant flaws that imply biases of various types that may invalidate the results. Several of the items introduce serious uncertainty about the validity of the conclusions. The study has serious errors in design, analysis, or reporting; large amounts of missing information; or discrepancies in reporting.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Data Extraction

Literature search results were reviewed and deemed appropriate for full text review by one American Society of Clinical Oncology (ASCO) staff reviewer in consultation with the Expert Panel Co-Chairs. Data were extracted by one staff reviewer and subsequently checked for accuracy through an audit of the data by another ASCO staff member. Disagreements were resolved through discussion and consultation with the Co-Chairs if necessary. Evidence tables are provided in Data Supplement 1 (see the "Availability of Companion Documents" field).

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Guideline Update Development Process

This systematic review-based guideline product was developed by an Expert Panel with multidisciplinary and patient representation and by the American Society of Clinical Oncology (ASCO) guidelines staff with health research methodology experience (see online Appendix Table A1 in the original guideline document). The Expert Panel met via teleconference and corresponded through e-mail. Based on the consideration of the evidence, the authors were asked to contribute to the development of the guideline, provide critical review, and finalize the guideline recommendations.

The guideline recommendations were crafted, in part, using the Guidelines into Decision Support methodology. In addition, a guideline implementation review was conducted. Ratings for the type and strength of recommendation and the quality of the evidence are provided with each recommendation.

These ratings are described in the "Rating Scheme for the Strength of the Recommendations" field.

Rating Scheme for the Strength of the Recommendations

Guide for Types of Recommendations

Type of Recommendation	Definition
Evidence based	There was sufficient evidence from published studies to inform a recommendation to guide clinical practice.
Formal consensus	The available evidence was deemed insufficient to inform a recommendation to guide clinical practice. Therefore, the Expert Panel used a formal consensus process to reach this recommendation, which is considered the best current guidance for practice. The Expert Panel may choose to provide a rating for the strength of the recommendation (i.e., "strong," "moderate," or "weak"). The results of the formal consensus process are summarized in the guideline and reported in the Data Supplement (see the "Availability of Companion Documents" field).
Informal Consensus	The available evidence was deemed insufficient to inform a recommendation to guide clinical practice. The recommendation is considered the best current guidance for practice, based on informal consensus of the Expert Panel. The Expert Panel agreed that a formal consensus process was not necessary for reasons described in the literature review and discussion. The Expert Panel may choose to provide a rating for the strength of the recommendation (i.e., "strong," "moderate," or "weak").
No recommendation	There is insufficient evidence, confidence, or agreement to provide a recommendation to guide clinical practice at this time. The Expert Panel deemed the available evidence as insufficient and concluded it was unlikely that a formal consensus process would achieve the level of agreement needed for a recommendation.

Guide for Strength of Recommendations

Rating for Strength of Recommendation	Definition
Strong	There is high confidence that the recommendation reflects best practice. This is based on (1) strong evidence for a true net effect (e.g., benefits exceed harms); (2) consistent results, with no or minor exceptions; (3) minor or no concerns about study quality; and/or (4) the extent of Expert Panelists' agreement. Other compelling considerations (discussed in the guideline's literature review and analyses) may also warrant a strong recommendation.
Moderate	There is moderate confidence that the recommendation reflects best practice. This is based on (1) good evidence for a true net effect (e.g., benefits exceed harms); (2) consistent results, with minor and/or few exceptions; (3) minor and/or few concerns about study quality; and/or (4) the extent of Expert Panelists' agreement. Other compelling considerations (discussed in the guideline's literature review and analyses) may also warrant a moderate recommendation.
Weak	There is some confidence that the recommendation offers the best current guidance for practice. This is based on (1) limited evidence for a true net effect (e.g., benefits exceed harms); (2) consistent results, but with important exceptions; (3) concerns about study quality; and/or (4) the extent of Expert Panelists' agreement. Other considerations (discussed in the guideline's literature review and analyses) may also warrant a weak recommendation.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Members of the Expert Panel were responsible for reviewing and approving the penultimate version of the guideline, which was then circulated for external review and submitted to *Journal of Clinical Oncology* (JCO) for editorial review and consideration for publication. All American Society of Clinical Oncology (ASCO) guidelines are reviewed and approved by the Expert Panel and the ASCO Clinical Practice Guidelines Committee before publication.

The ASCO Clinical Practice Guideline Committee (CPGC) approved this guideline on July 20, 2017.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Prevention and appropriate treatment of bleeding in patients with treatment-related thrombocytopenia and of alloimmunization
- Avoiding overuse of platelet transfusions by identifying patients who are most likely to benefit
- The incidence of alloantibody-mediated refractoriness to platelet transfusion can be decreased in patients with acute myeloid leukemia (AML) receiving induction chemotherapy when both platelet and red blood cell (RBC) products are leukoreduced before transfusion. Other advantages of prestorage leukoreduction include a substantial reduction in transfusion reactions and in transmission of cytomegalovirus (CMV) infection.
- The transfusion of human leukocyte antigens (HLA)-matched platelets results in adequate increments in approximately 50% to 60% of transfusion events.

Refer to the "Literature review update and analysis" sections of the original guideline document for a detailed discussion of the potential benefits of each recommendation.

Potential Harms

- Febrile and allergic reactions
- Transfusion-related acute lung injury
- Hypersensitivity reactions to plasma components
- Fluid overload
- Transfusion-transmitted infection
- Hemolysis

- Graft-versus-host disease
- Bleeding
- Alloimmunization

Refer to the "Literature review update and analysis" sections of the original guideline document for a detailed discussion of the potential harms of each recommendation.

Contraindications

Contraindications

- Platelet transfusion is rarely needed in hemodynamically stable patients with increased platelet destruction such as autoimmune or drug-associated immune thrombocytopenia and is relatively contraindicated in patients with thrombotic thrombocytopenic purpura because of concerns about the risk of precipitating thrombosis.
- Routine irradiation is not suggested for patients with acute leukemia receiving standard therapies or for patients with acquired immune deficiency syndrome (AIDS) or solid tumors.

Qualifying Statements

Qualifying Statements

- The Clinical Practice Guidelines and other guidance published herein are provided by the American Society of Clinical Oncology, Inc. (ASCO) to assist providers in clinical decision making. The information herein should not be relied upon as being complete or accurate, nor should it be considered as inclusive of all proper treatments or methods of care or as a statement of the standard of care. With the rapid development of scientific knowledge, new evidence may emerge between the time information is developed and when it is published or read. The information is not continually updated and may not reflect the most recent evidence. The information addresses only the topics specifically identified therein and is not applicable to other interventions, diseases, or stages of diseases. This information does not mandate any particular course of medical care. Further, the information is not intended to substitute for the independent professional judgment of the treating provider, as the information does not account for individual variation among patients. Recommendations reflect high, moderate, or low confidence that the recommendation reflects the net effect of a given course of action. The use of words like "must," "must not," "should," and "should not" indicates that a course of action is recommended or not recommended for either most or many patients, but there is latitude for the treating physician to select other courses of action in individual cases. In all cases, the selected course of action should be considered by the treating provider in the context of treating the individual patient. Use of the information is voluntary. ASCO provides this information on an "as is" basis and makes no warranty, express or implied, regarding the information. ASCO specifically disclaims any warranties of merchantability or fitness for a particular use or purpose. ASCO assumes no responsibility for any injury or damage to persons or property arising out of or related to any use of this information, or for any errors or omissions.
- See the "Patient and Clinician Communication," "Health Disparities," "Multiple Chronic Conditions" and "Limitation of the Research and Future Directions" sections in the original guideline document for additional qualifying information.

Implementation of the Guideline

Description of Implementation Strategy

American Society of Clinical Oncology (ASCO) guidelines are developed for implementation across health settings. Implementation requires increasing awareness of the guideline recommendations among front-line practitioners, patients, and caregivers and providing adequate services in the face of limited resources. The guideline Bottom Line Box was designed to facilitate the implementation of recommendations. This guideline will be distributed widely through the ASCO Practice Guideline Implementation Network. ASCO guidelines are posted on the ASCO Web site and are most often published in *Journal of Clinical Oncology* and *Journal of Oncology Practice*.

For additional information on the ASCO implementation strategy, see the ASCO Web site .

Implementation Tools

Patient Resources

Pocket Guide/Reference Cards

Quick Reference Guides/Physician Guides

Slide Presentation

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

Schiffer CA, Bohlke K, Delaney M, Hume H, Magdalinski AJ, McCullough JJ, Omel JL, Rainey JM, Rebulla P, Rowley SD, Troner MB, Anderson KC. Platelet transfusion for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. J Clin Oncol. 2018 Jan 20;36(3):283-99. [130 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2018 Jan 20

Guideline Developer(s)

American Society of Clinical Oncology - Medical Specialty Society

Source(s) of Funding

American Society of Clinical Oncology

Guideline Committee

Platelet Transfusion for Patients with Cancer: American Society of Clinical Oncology Clinical Practice Guideline Update Expert Panel

Composition of Group That Authored the Guideline

Expert Panel Members: Charles A. Schiffer (*Co-chair*), Karmanos Cancer Institute, Wayne State University School of Medicine, Detroit, MI; Kenneth C. Anderson, MD (*Co-chair*), Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA; Meghan Delaney, DO, MPH, University of Washington, Seattle Children's Hospital, Seattle, WA; Heather Hume, MD, CHU Sainte-Justine, University of Montreal, Quebec, Canada; Anthony J. Magdalinski, DO (*Practice Guideline Implementation Network [PGIN] representative*), Alliance Cancer Specialists, Sellersville, PA; Jeffrey J. McCullough, MD, University of Minnesota, Minneapolis, MN; James L. Omel, MD (*Patient representative*), Grand Island, NE; John M. Rainey, MD, University Health Center, Lafayette, LA; Paolo Rebulla, MD, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy; Scott D. Rowley, MD, Hackensack University Medical Center, Hackensack, NJ; Michael B. Troner, MD, Miami Cancer Institute, Miami, FL; Kari Bohlke, ScD (*American Society of Clinical Oncology [ASCO] Staff*)

Financial Disclosures/Conflicts of Interest

Guideline and Conflicts of Interest

The Expert Panel was assembled in accordance with American Society of Clinical Oncology's (ASCO's) Conflict of Interest Policy Implementation for Clinical Practice Guidelines ("Policy," summarized at https://www.asco.org/about-asco/legal/conflict-interest). All members of the Expert Panel completed ASCO's disclosure form, which requires disclosure of financial and other interests, including relationships with commercial entities that are reasonably likely to experience direct regulatory or commercial impact as a result of promulgation of the guideline. Categories for disclosure include employment; leadership; stock or other ownership; honoraria, consulting or advisory role; speaker's bureau; research funding; patents, royalties, other intellectual property; expert testimony; travel, accommodations, expenses; and other relationships. In accordance with the Policy, the majority of the members of the Expert Panel did not disclose any relationships constituting a conflict under the Policy.

Authors' Disclosures and Potential Conflicts of Interest

The following represents disclosure information provided by authors of the guideline. All relationships are considered compensated. Relationships are self-held unless noted. I = Immediate Family Member, Inst = My Institution. Relationships may not relate to the subject matter of this manuscript. For more information about ASCO's conflict of interest policy, please refer to https://www.asco.org/about-asco/legal/conflict-interest or ascopubs.org/jco/site/ifc .

Charles A. Schiffer: Consulting or Advisory Role: Celgene, TEVA Pharmaceuticals Industries, Pfizer, Takeda Pharmaceuticals, Ambit BioSciences, Pharmacyclics, Juno Therapeutics, Astellas Pharma, Curis; Research Funding: Bristol-Myers Squibb (Inst), Celgene (Inst), ARIAD Pharmaceuticals (Inst), Novartis (Inst), Micromedic (Inst)

Kari Bohlke: No relationship to disclose

Meghan Delaney: Consulting or Advisory Role: Janssen Pharmaceuticals; Speakers' Bureau: University of Cincinnati/RedMedEd; Patents, Royalties, Other Intellectual Property: Pending patent (Inst); Expert Testimony: Favros

Heather Hume: No relationship to disclose

Anthony J. Magdalinski: No relationship to disclose

Jeffrey J. McCullough: Stock or Other Ownership: Several companies; Honoraria: Fresenius Kabi, Haemonetics; Consulting or Advisory Role: Terumo BCT; Travel, Accommodations, Expenses: Terumo BCT

James L. Omel: Honoraria: Takeda Pharmaceuticals; Travel, Accommodations, Expenses: Takeda Pharmaceuticals

John M. Rainey: No relationship to disclose

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Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Schiffer CA, Anderson KC, Bennett CL, Bernstein S, Elting LS, Goldsmith M, Goldstein M, Hume H, McCullough JJ, McIntyre RE, Powell BL, Rainey JM, Rowley SD, Rebulla P, Troner MB, Wagnon AH. Platelet transfusion for patients with cancer: clinical practice guidelines of the American Society of Clinical Oncology. J Clin Oncol. 2001 Mar 1;19(5):1519-38. [143 references].

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the Journal of Clinical Oncology Web site .

Availability of Companion Documents

The following are available:

Platelet transfusion for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. Methodology supplement. Alexandria (VA): American Society of Clinical Oncology (ASCO); 2018. 18 p. Available from the Journal of Clinical Oncology Web site .

Platelet transfusion for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. Data supplement. Alexandria (VA): American Society of Clinical Oncology (ASCO); 2018. 17 p. Available from the Journal of Clinical Oncology Web site .

Platelet transfusion for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. Slide set. Alexandria (VA): American Society of Clinical Oncology (ASCO); 2018. 22 p. Available in PDF and PowerPoint from the American Society of Clinical Oncology (ASCO) Web site.

Platelet transfusion for patients with cancer: American Society of Clinical Oncology clinical practice guideline update. Summary of recommendations table. Alexandria (VA): American Society of Clinical Oncology (ASCO); 2018. 4 p. Available from the ASCO Web site .

Patient Resources

The following is available:

- Thrombocytopenia. Patient information. [internet]. Alexandria (VA): American Society of Clinical Oncology (ASCO); 2018 Jan. Available from the Cancer.Net Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This summary was completed by ECRI on May 25, 2001. It was verified by the guideline developer as of September 7, 2001. This summary was updated by ECRI Institute on May 23, 2018. The guideline developer agreed to not review the content.

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