ABSTRACT

Purpose
To provide current recommendations about the prophylaxis and treatment of venous thromboembolism (VTE) in patients with cancer.

Methods
PubMed and the Cochrane Library were searched for randomized controlled trials, systematic reviews, meta-analyses, and clinical practice guidelines from November 2012 through July 2014. An update committee reviewed the identified abstracts.

Results
Of the 53 publications identified and reviewed, none prompted a change in the 2013 recommendations.

Recommendations
Most hospitalized patients with active cancer require thromboprophylaxis throughout hospitalization. Routine thromboprophylaxis is not recommended for patients with cancer in the outpatient setting. It may be considered for selected high-risk patients. Patients with multiple myeloma receiving antiangiogenesis agents with chemotherapy and/or dexamethasone should receive prophylaxis with either low–molecular weight heparin (LMWH) or low-dose aspirin. Patients undergoing major surgery should receive prophylaxis starting before surgery and continuing for at least 7 to 10 days. Extending prophylaxis up to 4 weeks should be considered in those undergoing major abdominal or pelvic surgery with high-risk features. LMWH is recommended for the initial 5 to 10 days of treatment for deep vein thrombosis and pulmonary embolism as well as for long-term secondary prophylaxis (at least 6 months). Use of novel oral anticoagulants is not currently recommended for patients with malignancy and VTE because of limited data in patients with cancer. Anticoagulation should not be used to extend survival of patients with cancer in the absence of other indications. Patients with cancer should be periodically assessed for VTE risk. Oncology professionals should educate patients about the signs and symptoms of VTE.

INTRODUCTION
The goal of this 2014 guideline update is to provide oncologists and other clinicians with current recommendations regarding the prevention and treatment of venous thromboembolism (VTE) in patients with cancer. The American Society of Clinical Oncology (ASCO) first published an evidence-based clinical practice guideline on VTE in patients with cancer in 2007, with an updated guideline published in 2013. The current 2014 update assesses whether the 2013 recommendations remain valid. A complete list of previous recommendations is available at www.asco.org/guidelines/vte and in Data Supplement 1.
THE BOTTOM LINE

Venous Thromboembolism Prophylaxis and Treatment in Patients with Cancer: American Society of Clinical Oncology Clinical Practice Guideline Update

Interventions
- Pharmacologic anticoagulation

Target Audience
- Medical oncologists, surgical oncologists, hospitalists, oncology nurses

Key Recommendations
- Most hospitalized patients with active cancer require thromboprophylaxis throughout hospitalization. Data are inadequate to support routine thromboprophylaxis in patients admitted for minor procedures or short chemotherapy infusion.
- Routine thromboprophylaxis is not recommended for ambulatory patients with cancer. It may be considered for highly select high-risk patients.
- Patients with multiple myeloma receiving antiangiogenesis agents with chemotherapy and/or dexamethasone should receive prophylaxis with either low–molecular weight heparin (LMWH) or low-dose aspirin to prevent venous thromboembolism (VTE).
- Patients undergoing major cancer surgery should receive prophylaxis starting before surgery and continuing for at least 7 to 10 days.
- Extending postoperative prophylaxis up to 4 weeks should be considered in those undergoing major abdominal or pelvic surgery with high-risk features.
- LMWH is recommended for the initial 5 to 10 days of treatment of established deep vein thrombosis and pulmonary embolism as well as for long-term secondary prophylaxis for at least 6 months.
- Use of novel oral anticoagulants is not currently recommended for patients with malignancy and VTE.
- Anticoagulation should not be used to extend survival of patients with cancer in the absence of other indications.
- Patients with cancer should be periodically assessed for VTE risk.
- Oncology professionals should educate patients about the signs and symptoms of VTE.

Methods
- An update committee was convened to determine whether previous recommendations remain valid based on an updated review of evidence from the medical literature.

Additional Information
- This guideline is published in Journal of Clinical Oncology. Data Supplements, including evidence tables, and clinical tools and resources can be found at www.asco.org/guidelines/vte.
**Guideline Disclaimer**

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This is the most recent information as of the publication date. For the most recent information, or to submit new evidence, please visit [www.asco.org/guidelines/vte](http://www.asco.org/guidelines/vte) and the ASCO guidelines wiki at [www.asco.org/guidelineswiki](http://www.asco.org/guidelineswiki).

**Guideline and Conflicts of Interest**

The update committee was assembled in accordance with the ASCO Conflict of Interest Management Procedures for Clinical Practice Guidelines (summarized at [http://www.asco.org/rwc](http://www.asco.org/rwc)). Members of the committee completed the ASCO disclosure form, which requires disclosure of financial and other interests that are relevant to the subject matter of the guideline, 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 relationships, consulting arrangements, stock ownership, honoraria, research funding, and expert testimony. In accordance with these procedures, the majority of the members of the committee did not disclose any such relationships.

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**RESULTS**

The search yielded 53 publications. After careful review of the identified publications, the update committee concluded that there were no results that would change the 2013 guideline recommendations. A bibliography of the results of the updated literature search is provided in Data Supplement 2.

**RECOMMENDATIONS**

The 2014 recommendations are listed in the Bottom Line Box. These recommendations are consistent with the previous (2013) recommendations.

ASCO believes that cancer clinical trials are vital to inform medical decisions and improve cancer care and that all patients should have the opportunity to participate.

**ADDITIONAL RESOURCES**

More information, including Data and Methodology Supplements, slide sets, and clinical tools and resources, is available at [www.asco.org/guidelines/vte](http://www.asco.org/guidelines/vte). Patient information is available at [www.cancer.net](http://www.cancer.net). Visit [www.asco.org/guidelineswiki](http://www.asco.org/guidelineswiki) to provide comments on the guideline or to submit new evidence.

**AUTHORS’ DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST**

Disclosures provided by the authors are available with this article at [www.jco.org](http://www.jco.org).

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Administrative support: Kari Bohlke

Manuscript writing: All authors

Final approval of manuscript: All authors
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Venous Thromboembolism Prophylaxis and Treatment in Patients With Cancer: American Society of Clinical Oncology Clinical Practice Guideline Update 2014

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Abbreviations: ASCO, American Society of Clinical Oncology; PGIN, Practice Guidelines Implementation Network.
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