

Prevention of Venous Thromboembolism: Comparison of Sixth and Seventh ACCP Recommendations

The Sixth ACCP Consensus Conference on Antithrombotic Therapy

General Recommendations

1. We recommend that every hospital develop a formal strategy that addresses the prevention of thromboembolic complications. This should generally be in the form of a written thromboprophylaxis policy especially for high-risk groups.
2. For all patient groups, we do **not** recommend aspirin for prophylaxis, because other measures are more efficacious (Grade 1A).
3. In all patients having spinal puncture or epidural catheters placed for regional anesthesia or analgesia, we recommend that antithrombotic therapy or prophylaxis be used with caution (Grade 1C1).

General, Gynecologic, and Urologic Surgery

General Surgery

1. In low-risk general surgery patients who are undergoing minor procedures, are \leq 40 years of age, and have no additional risk factors, we recommend the use of no specific prophylaxis other than early ambulation (Grade 1C).
 2. Moderate-risk general surgery patients are those undergoing minor procedures but have additional thrombosis risk factors, those having nonmajor surgery between the ages of 40 and 60 years with no additional risk factors, or those undergoing major operations who are younger than 40 years with no additional clinical risk factors. We recommend prophylaxis with LDUH, LMWH, ES, or IPC (all grade 1A in comparison to no prophylaxis).
 3. Higher-risk general surgery patients are those having nonmajor surgery over the age of 60 years or with additional risk factors or patients undergoing major surgery over the age of 40 years or with additional risk factors. We recommend thrombosis prophylaxis with LDUH, LMWH, or IPC (all grade 1A in comparison to no prophylaxis).
- 3.1 In higher-risk general surgery patients with a greater than usual risk of bleeding, we recommend the use of

The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy: Evidence-Based Guidelines

General Recommendations

- 1.4.3. We recommend that mechanical methods of prophylaxis be used primarily in patients who are at high risk of bleeding or as an adjunct to anticoagulant-based prophylaxis (**Grade 2A**). We recommend that careful attention be directed toward ensuring the proper use of, and optimal compliance with, the mechanical device.
- 1.4.4. We recommend **against** the use of aspirin alone as prophylaxis against VTE or any patient group (**Grade 1A**).
- 1.4.5.1. For each of the antithrombotic agents, we recommend that clinicians consider the manufacturer's suggested dosing guidelines (**Grade 1C**).
- 1.4.5.2. We recommend consideration of renal impairment when deciding on doses of LMWH, fondaparinux, the direct thrombin inhibitors, and other antithrombotic drugs that are cleared by the kidneys, particularly in elderly patients and those who are at high risk for bleeding.
- 1.5.1. In all patients undergoing neuraxial anesthesia or analgesia, we recommend special caution when using anticoagulant prophylaxis.

2.0 General, Vascular, Gynecologic, and Urologic Surgery

2.1 General surgery

- 2.1.1. In low-risk general surgery patients who are undergoing a minor procedure, are \leq 40 years of age, and have no additional risk factors, we recommend **against** the use of specific prophylaxis other than early and persistent mobilization (**Grade 1C+**).
- 2.1.2. Moderate-risk general surgery patients are those patients undergoing a nonmajor procedure and are between the ages of 40 and 60 years or have additional risk factors, or those patients who are undergoing major operations and are $<$ 40 years of age with no additional risk factors. We recommend prophylaxis with LDUH, 5,000 U bid, or LMWH, \leq 3,400 U once daily (both **Grade 1A**).
- 2.1.3. Higher-risk general surgery patients are those undergoing non-major surgery and are $>$ 60 years of age or have additional risk factors, or patients undergoing major surgery who are $>$ 40 years of age or have additional risk factors. We recommend thromboprophylaxis with LDUH, 5,000 U tid, or LMWH, $>$ 3,400 U daily (both **Grade 1A**).
- 2.1.4. In high-risk general surgery patients with multiple risk factors, we recommend that pharmacologic methods (*i.e.*,

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| <p>mechanical prophylaxis with ES or IPC, at least initially (Grade 1C).</p> <p>4. In very-high-risk general surgery patients with multiple risk factors, we recommend that effective pharmacologic methods (LDUH or LMWH) be combined with ES or IPC (Grade 1C based on small studies and on extrapolation of data from other patient groups).</p> <p>5. In selected very-high-risk general surgery patients, we recommend that clinicians consider post discharge LMWH or perioperative warfarin (INR 2.0 to 3.0) (Grade 2C).</p> | <p>LDUH, tid, or LMWH, >3,400 U daily) be combined with the use of GCS and/or IPC (Grade 1C+).</p> <p>2.1.5. In general surgery patients with a high risk of bleeding, we recommend the use of mechanical prophylaxis with properly fitted GCS or IPC, at least initially until the bleeding risk decreases (Grade 1A).</p> <p>2.1.6. In selected high-risk general surgery patients, including those who have undergone major cancer surgery, we suggest post-hospital discharge prophylaxis with LMWH (Grade 2A).</p> |
| <p>Gynecologic Surgery</p> <p>1. For gynecologic surgery patients undergoing brief procedures for benign disease, we recommend early mobilization alone (Grade 1C).</p> <p>2. We recommend that patients having major gynecologic surgery for benign disease, without additional risk factors, receive twice daily LDUH (Grade 1A). Alternatives include once daily LMWH or IPC, started just before surgery and continued for at least several days postoperatively (Grade 1C1).</p> <p>3. For patients undergoing extensive surgery for malignancy, we recommend routine prophylaxis with three daily doses of LDUH (Grade 1A). Alternative considerations include the combination of LDUH plus mechanical prophylaxis with ES or IPC, or higher doses of LMWH, since these options may provide additional protection (Grade 1C).</p> | <p>2.2 Vascular surgery</p> <p>2.2.1. In patients undergoing vascular surgery who do not have additional thromboembolic risk factors, we suggest that clinicians not routinely use thromboprophylaxis (Grade 2B).</p> <p>2.2.2. For patients undergoing major vascular surgical procedures who have additional thromboembolic risk factors, we recommend prophylaxis with LDUH or LMWH (Grade 1C+).</p> <p>2.3 Gynecologic surgery</p> <p>2.3.1. For gynecologic surgery patients undergoing brief procedures of ≤ 30 min for benign disease, we recommend against the use of specific prophylaxis other than early and persistent mobilization (Grade 1C+).</p> <p>2.3.2. For patients undergoing laparoscopic gynecologic procedures, in whom additional VTE risk factors are present, we recommend the use of thromboprophylaxis with one or more of the following: LDUH, LMWH, IPC, or GCS (all Grade 1C).</p> <p>2.3.3. We recommend that thromboprophylaxis be used in all major gynecologic surgery patients (Grade 1A).</p> <p>2.3.4. For patients undergoing major gynecologic surgery for benign disease, without additional risk factors, we recommend LDUH, 5,000 U bid (Grade 1A). Alternatives include once-daily prophylaxis with LMWH, >3,400 U/d (Grade 1C+), or IPC started just before surgery and used continuously while the patient is not ambulating. (Grade 1B).</p> <p>2.3.5. For patients undergoing extensive surgery for malignancy, and for patients with additional VTE risk factors, we recommend routine prophylaxis with LDUH, 5,000 U tid (Grade 1A), or higher doses of LMWH (<i>i.e.</i>, >3,400 U/d) [Grade 1A]. Alternative considerations include IPC alone continued until hospital discharge (Grade 1A), or a combination of LDUH or LMWH plus mechanical prophylaxis with GCS or IPC (all Grade 1C).</p> <p>2.3.6. For patients undergoing major gynecologic procedures, we suggest that prophylaxis continue until discharge from the hospital (Grade 1C). For patients who are at particularly high risk, including those who have undergone cancer surgery and who are >60 years of age or have previously experienced a VTE, we suggest continuing prophylaxis for 2 to 4 weeks after hospital discharge (Grade 2C).</p> |
| <p>Urologic Surgery</p> <p>1. In patients undergoing transurethral or other low-risk</p> | <p>2.4 Urologic surgery</p> <p>2.4.1. In patients undergoing transurethral or other low-risk</p> |

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| <p>urologic procedures, we recommend that no specific prophylaxis other than prompt ambulation be used (Grade 1C).</p> <p>2. For patients with major, open urologic procedures, we recommend routine prophylaxis with LDUH, ES, IPC, or LMWH (all grade 1B in comparison to no prophylaxis).</p> <p>3. For patients at the highest risk, we recommend combining ES plus or minus IPC, with LDUH or LMWH (Grade 1C).</p> | <p>urologic procedures, we recommend against the use of specific prophylaxis other than early and persistent mobilization (Grade 1C).</p> <p>2.4.2. For patients undergoing major, open urologic procedures, we recommend routine prophylaxis with LDUH twice daily or three times daily (Grade 1A). Acceptable alternatives include prophylaxis with IPC and/or GCS (Grade 1B) or LMWH (Grade 1C+).</p> <p>2.4.3. For urologic surgery patients who are actively bleeding or are at very high risk for bleeding, we recommend the use of mechanical prophylaxis with GCS and/or IPC at least until the bleeding risk decreases (Grade 1C+).</p> <p>2.4.4. For patients with multiple risk factors, we recommend combining GCS and/or IPC with LDUH or LMWH (Grade 1C+).</p> |
| <p>Major Orthopedic Surgery</p> <p>Elective Hip Replacement</p> <p>1. For patients undergoing elective THR surgery, we recommend either SC LMWH therapy (started 12 h before surgery, 12 to 24 h after surgery, or 4–6 h after surgery at half the usual high-risk dose and then continuing with the usual high-risk dose the following day), or adjusted-dose warfarin (INR target 5 2.5, range 2.0 to 3.0; started preoperatively or immediately after surgery) (all grade 1A).</p> <p>2. Adjusted-dose heparin therapy (started preoperatively) is an acceptable but more complex alternative (Grade 2A).</p> <p>3. Adjuvant prophylaxis with ES or IPC may provide additional efficacy (Grade 2C).</p> <p>4. Although other agents such as LDUH, aspirin, dextran, and IPC alone may reduce the overall incidence of VTE, they are less effective, and we do not recommend that these options be used.</p> | <p>2.5 Laparoscopic surgery</p> <p>2.5.1. We recommend against routine thromboprophylaxis in these patients, other than aggressive mobilization (Grade 1A).</p> <p>2.5.2. For patients undergoing laparoscopic procedures and who have additional thromboembolic risk factors, we recommend the use of thromboprophylaxis with one or more of the following: LDUH, LMWH, IPC, or GCS (Grade 1C+).</p> <p>3.0 Orthopedic Surgery</p> <p>3.1 Elective hip arthroplasty</p> <p>3.1.1. For patients undergoing elective THR, we recommend the routine use of one of the following three anticoagulants: (1) LMWH (at a usual high-risk dose, started 12 h before surgery or 12 to 24 h after surgery, or 4 to 6 h after surgery at half the usual high-risk dose and then increasing to the usual high-risk dose the following day); (2) fondaparinux, (2.5 mg started 6 to 8 h after surgery) or (3) adjusted-dose VKA started preoperatively or the evening after surgery (INR target, 2.5; INR range, 2.0 to 3.0) [all Grade 1A]. <i>Underlying values and preferences.</i> We have not recommended the use of fondaparinux over LMWH and VKA, or the use of LMWH over VKA, because we place a relatively low value on the prevention of venographic thrombosis and a relatively high value on minimizing bleeding complications.</p> <p>3.1.2. We recommend against the use of aspirin, dextran, LDUH, GCS, IPC, or VFP as the only method of thromboprophylaxis in these patients (Grade 1A).</p> |
| <p>Elective Knee Replacement</p> <p>1. For patients undergoing elective TKR surgery, we recommend either LMWH or adjusted-dose warfarin (Grade 1A).</p> <p>2. Optimal use of IPC is an alternative option (Grade 1B recommendation because of the few trials and small sample sizes).</p> <p>3. LDUH is not recommended (Grade 1C1).</p> | <p>3.2 Elective knee arthroplasty</p> <p>3.2.1. For patients undergoing elective TKA, we recommend routine thromboprophylaxis using LMWH (at the usual high-risk dose), fondaparinux, or adjusted-dose VKA (target INR, 2.5; INR range, 2.0 to 3.0) [all Grade 1A]. <i>Underlying values and preferences.</i> We have not recommended fondaparinux over LMWH and VKA, or LMWH over VKA, because we place a relatively low value on the prevention of venographic thrombosis and a relatively high value on minimizing bleeding complications.</p> |

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| <p>Hip Fracture Surgery</p> <p>1. For patients undergoing hip fracture surgery, we recommend either LMWH or adjusted-dose warfarin prophylaxis (Grade 1B because the available data are limited).</p> <p>2. The use of LDUH may be an alternative option, but this is a grade 2B recommendation based on the very limited available data.</p> <p>3. We do not recommend the use of aspirin alone because it is less efficacious than other approaches (Grade 2A).</p> <p>Other Prophylaxis Issues for Major Orthopedic Surgery</p> <p>1. The optimal duration of anticoagulant prophylaxis after THR or TKR surgery is uncertain, although at least 7 to 10 days of prophylaxis is recommended (Grade 1A).</p> <p>2. Extended out-of-hospital LMWH prophylaxis (beyond 7 to 10 days after surgery) may reduce the incidence of clinically important thromboembolic events, and we recommend this approach at least for high-risk patients (Grade 2A because of uncertainty regarding cost-effectiveness).</p> <p>3. We do not recommend routine duplex ultrasonography screening at the time of hospital discharge or during outpatient follow-up in asymptomatic THR or TKR patients (Grade 1A).</p> | <p>3.2.2. The optimal use of IPC is an alternative option to anticoagulant prophylaxis (Grade 1B).</p> <p>3.2.3. We recommend against the use of any of the following as sole methods of thromboprophylaxis: aspirin (Grade 1A); LDUH (Grade 1A); or VFP (Grade 1B).</p> <p>3.3 Knee arthroscopy</p> <p>3.3.1. We suggest clinicians do not use routine thromboprophylaxis in these patients, other than early mobilization (Grade 2B).</p> <p>3.3.2. For patients undergoing arthroscopic knee surgery who are at a higher than usual risk, based on preexisting VTE risk factors or following a prolonged or complicated procedure, we suggest thromboprophylaxis with LMWH (Grade 2B).</p> <p>3.4 Hip fracture surgery</p> <p>3.4.1. For patients undergoing HFS, we recommend the routine use of fondaparinux (Grade 1A), LMWH at the usual high-risk dose (Grade 1C+), adjusted-dose VKA (target INR, 2.5; INR range, 2.0 to 3.0) [Grade 2B], or LDUH (Grade 1B).</p> <p>3.4.2. We recommend against the use of aspirin alone (Grade 1A).</p> <p>3.4.3. If surgery will likely be delayed, we recommend that prophylaxis with either LDUH or LMWH be initiated during the time between hospital admission and surgery (Grade 1C).</p> <p>3.4.4. We recommend mechanical prophylaxis if anticoagulant prophylaxis is contraindicated because of a high risk of bleeding (Grade 1C+).</p> <p>3.5 Other prophylaxis issues in major orthopedic surgery</p> <p>3.5.1. For major orthopedic surgical procedures, we recommend that a decision about the timing of the initiation of pharmacologic prophylaxis be based on the efficacy-to-bleeding tradeoffs for that particular agent (Grade 1A). For LMWH, there are only small differences between starting preoperatively or postoperatively, and both options are acceptable (Grade 1A).</p> <p>3.5.2. We recommend against the routine use of DUS screening at the time of hospital discharge in asymptomatic patients following major orthopedic surgery (Grade 1A).</p> <p>3.5.3.1. We recommend that patients undergoing THR, TKA, or HFS receive thromboprophylaxis with LMWH (using a high-risk dose), fondaparinux (2.5 mg daily), or a VKA (target INR, 2.5; INR range, 2.0 to 3.0) for at least 10 days (Grade 1A).</p> <p>3.5.3.2. We recommend that patients undergoing THR or HFS be given extended prophylaxis for up to 28 to 35 days after surgery (Grade 1A). The recommended options for THR include LMWH (Grade 1A), a VKA (Grade 1A), or fondaparinux (Grade 1C+). The recommended options following HFS are fondaparinux (Grade 1A), LMWH (Grade 1C+), or a VKA (Grade 1C+).</p> <p>3.6 Elective spine surgery</p> |
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| <p>Neurosurgery</p> <p>1. We recommend the use of IPC with or without ES in patients undergoing intracranial neurosurgery (Grade 1A).</p> <p>2. LDUH or postoperative LMWH are acceptable alternatives (Grade 2A because of concerns about clinically important intracranial hemorrhage).</p> <p>3. The combination of physical (ES or IPC) and pharmacologic (LMWH or LDUH) prophylaxis modalities may be more effective than either modality alone in high-risk patients (Grade 1B).</p> <p>Trauma</p> <p>1. Trauma patients with an identifiable risk factor for thromboembolism should receive prophylaxis if possible. If there is no contraindication, we recommend that clinicians use LMWH, starting treatment as soon as it is considered safe to do so (Grade 1A).</p> <p>2. We recommend that initial prophylaxis with a mechanical modality (ES and/or IPC) be used if LMWH prophylaxis will be delayed or is contraindicated because of concerns about the patient's risk of bleeding (Grade 1C).</p> <p>3. In patients at high risk for thromboembolism who have received suboptimal prophylaxis, consideration should be given to screening with duplex ultrasound (Grade 1C).</p> <p>4. We recommend that IVC filter insertion be used if proximal DVT is demonstrated and anticoagulation is contraindicated (Grade 1C1). We do not recommend the use of IVC filter insertion for primary prophylaxis (Grade</p> | <p>3.6.1. For spinal surgery patients with no additional risk factors, we recommend against the routine use of any thromboprophylaxis modality, apart from early and persistent mobilization (Grade 1C).</p> <p>3.6.2. We recommend that some form of prophylaxis be used in patients undergoing spinal surgery who exhibit additional risk factors such as advanced age, known malignancy, presence of a neurologic deficit, previous VTE, or an anterior surgical approach (Grade 1B).</p> <p>3.6.3. For patients with additional risk factors, we recommend any of the following prophylaxis options: postoperative LDUH alone (Grade 1C+); postoperative LMWH alone (Grade 1B); or perioperative IPC alone (Grade 1B). Other considerations include perioperative GCS alone (Grade 2B), or perioperative IPC combined with GCS (Grade 2C). In patients with multiple risk factors for VTE, we recommend combining LDUH or LMWH with GCS and/or IPC (Grade 1C+).</p> <p>3.7 Isolated lower extremity injuries</p> <p>3.7.1. We suggest that clinicians not use thromboprophylaxis routinely in patients with isolated lower extremity injuries (Grade 2A).</p> <p>4.0 Neurosurgery</p> <p>4.0.1. We recommend that thromboprophylaxis be routinely used in patients undergoing major neurosurgery (Grade 1A).</p> <p>4.0.2. We recommend the use of IPC with or without GCS in patients undergoing intracranial neurosurgery (Grade 1A).</p> <p>4.0.3. Acceptable alternatives to the above options are prophylaxis with LDUH (Grade 2B) or postoperative LMWH (Grade 2A).</p> <p>4.0.4. We suggest the combination of mechanical prophylaxis (<i>i.e.</i>, GCS and/or IPC) and pharmacologic prophylaxis (<i>i.e.</i>, LDUH or LMWH) in high-risk neurosurgery patients (Grade 2B).</p> <p>5.0 Trauma, Spinal Cord Injury, Burns</p> <p>5.1 Trauma</p> <p>5.1.1. We recommend that all trauma patients with at least one risk factor for VTE receive thromboprophylaxis, if possible (Grade 1A).</p> <p>5.1.2. In the absence of a major contraindication, we recommend that clinicians use LMWH prophylaxis starting as soon as it is considered safe to do so (Grade 1A).</p> <p>5.1.3. We recommend that mechanical prophylaxis with IPC, or possibly with GCS alone, be used if LMWH prophylaxis is delayed or if it is currently contraindicated due to active bleeding or a high risk for hemorrhage (Grade 1B).</p> <p>5.1.4. We recommend DUS screening in patients who are at high risk for VTE (<i>e.g.</i>, the presence of a SCI, lower extremity or pelvic fracture, major head injury, or an indwelling femoral venous line), and who have received suboptimal prophylaxis or no prophylaxis (Grade 1C).</p> |
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| <p>1C).</p> <p>Acute SCI</p> <ol style="list-style-type: none"> 1. In patients with acute SCI, we recommend prophylaxis with LMWH (Grade 1B). 2. LDUH, ES, and IPC appear to be relatively ineffective when used alone, and we do not recommend these modalities (Grade 1C). 3. ES and IPC might have benefit if used in combination with LMWH or LDUH or if anticoagulants are contraindicated early after injury (Grade 2B). 4. In the rehabilitation phase of acute SCI, we recommend the continuation of LMWH therapy or conversion to full-dose oral anticoagulation (INR target 2.5, range 2.0 to 3.0) (Grade 1C). <p>Medical Conditions</p> <p>Acute MI</p> <ol style="list-style-type: none"> 1. We recommend that most patients with acute MI receive prophylactic or therapeutic anticoagulant therapy with SC LDUH or IV heparin (Grade 1A). <p>Ischemic Stroke</p> <ol style="list-style-type: none"> 1. For patients with ischemic stroke and impaired mobility, we recommend the routine use of LDUH, LMWH, or the heparinoid, danaparoid (all grade 1A). 2. If anticoagulant prophylaxis is contraindicated, we recommend mechanical prophylaxis with ES or IPC (Grade 1C1). <p>Other Medical Conditions</p> <ol style="list-style-type: none"> 1. In general medical patients with risk factors for VTE (including cancer, bedrest, heart failure, severe lung disease), we recommend LDUH or LWMH (Grade 1A). | <ol style="list-style-type: none"> 5.1.5. We recommend against the use of IVCFs as primary prophylaxis in trauma patients (Grade 1C). 5.1.6. We recommend the continuation of thromboprophylaxis until hospital discharge, including the period of inpatient rehabilitation (Grade 1C+). We suggest continuing prophylaxis after hospital discharge with LMWH or a VKA (target INR, 2.5; INR range, 2.0 to 3.0) in patients with major impaired mobility (Grade 2C). <p>5.2 Acute SCI</p> <ol style="list-style-type: none"> 5.2.1. We recommend that thromboprophylaxis be provided for all patients with acute SCIs (Grade 1A). 5.2.2. We recommend against the use of LDUH, GCS, or IPC as single prophylaxis modalities (Grade 1A). 5.2.3. In patients with acute SCI, we recommend prophylaxis with LMWH, to be commenced once primary hemostasis is evident (Grade 1B). We suggest the combined use of IPC and either LDUH (Grade 2B) or LWMH (Grade 2C) as alternatives to LMWH. 5.2.4. We recommend the use of IPC and/or GCS when anticoagulant prophylaxis is contraindicated early after injury (Grade 1C+). 5.2.5. We recommend against the use of an IVCF as primary prophylaxis against PE (Grade 1C). 5.2.6. During the rehabilitation phase following acute SCI, we recommend the continuation of LMWH prophylaxis or conversion to an oral VKA (INR target, 2.5; INR range, 2.0 to 3.0) [Grade 1C]. <p>5.3 Burns</p> <ol style="list-style-type: none"> 5.3.1. We recommend that burn patients with additional risk factors for VTE, including one or more of the following: advanced age, morbid obesity, extensive or lower extremity burns, concomitant lower extremity trauma, use of a femoral venous catheter, and/or prolonged immobility, receive thromboprophylaxis, if possible (Grade 1C+). 5.3.2. If there are no contraindications, we recommend the use of either LDUH or LMWH, starting as soon as it is considered safe to do so (Grade 1C+). <p>6.0 Medical conditions</p> <ol style="list-style-type: none"> 6.0.1. In acutely ill medical patients who have been admitted to the hospital with congestive heart failure or severe respiratory disease, or who are confined to bed and have one or more additional risk factors, including active cancer, previous VTE, sepsis, acute neurologic disease, or inflammatory bowel disease, we recommend prophylaxis with LDUH (Grade 1A) or LMWH (Grade 1A). 6.0.2. In medical patients with risk factors for VTE, and in whom there is a contraindication to anticoagulant prophylaxis, we recommend the use of mechanical prophylaxis with GCS or IPC (Grade 1C+). <p>7.0 Cancer patients</p> <ol style="list-style-type: none"> 7.0.1. We recommend that cancer patients undergoing surgical procedures receive prophylaxis that is appropriate for their current risk state (Grade 1A). Refer to the recommendations in the relevant surgical subsections. |
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7.0.2. We recommend that hospitalized cancer patients who are bedridden with an acute medical illness receive prophylaxis that is appropriate for their current risk state (**Grade 1A**). Refer to the recommendations in the section dealing with medical patients.

7.0.3. We suggest that clinicians not routinely use prophylaxis to try to prevent thrombosis related to long-term indwelling CVCs in cancer patients (**Grade 2B**). Specifically, we suggest that clinicians **not** use LMWH (**Grade 2B**), and we recommend **against** the use of fixed-dose warfarin (**Grade 1B**) for this indication.

8.0 Critical care

8.1. We recommend that, on admission to a critical care unit, all patients be assessed for their risk of VTE. Accordingly, most patients should receive thromboprophylaxis (**Grade 1A**).

8.2. For patients who are at high risk for bleeding, we recommend mechanical prophylaxis with GCS and/or IPC until the bleeding risk decreases (**Grade 1C+**).

8.3. For ICU patients who are at moderate risk for VTE (e.g., medically ill or postoperative patients), we recommend using LDUH or LMWH prophylaxis (**Grade 1A**).

8.4. For patients who are at higher risk, such as that following major trauma or orthopedic surgery, we recommend LMWH prophylaxis (**Grade 1A**).

9.0 Long distance travel

9.1. We recommend the following general measures for long-distance travelers (i.e., flights of > 6 h duration): avoidance of constrictive clothing around the lower extremities or waist; avoidance of dehydration; and frequent calf muscle stretching (**Grade 1C**).

9.2. For long-distance travelers with additional risk factors for VTE, we recommend the general strategies listed above. If active prophylaxis is considered, because of the perceived increased risk of venous thrombosis, we suggest the use of properly fitted, below-knee GCS providing 15 to 30 mm Hg of pressure at the ankle (**Grade 2B**), or a single prophylactic dose of LMWH injected prior to departure (**Grade 2B**).

9.3. We recommend **against** the use of aspirin for VTE prevention associated with travel (**Grade 1B**).