Dear Sir/Madam,

I am writing to respond to your request. OUH can confirm that it holds the data that you requested.

<table>
<thead>
<tr>
<th>- Name of Trust</th>
<th>Oxford University Hospital/Nuffield Orthopaedic Centre</th>
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<tbody>
<tr>
<td>- Contact email address</td>
<td>Under s40 FOIA personal details are withheld (individuals have right to privacy)</td>
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<tr>
<td>- Contact phone number</td>
<td>Under s40 FOIA personal details are withheld (individuals have right to privacy)</td>
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1) Do you have a specific trust guideline for venous thromboembolism (VTE) prophylaxis in patients undergoing trauma & orthopaedic surgery?

| Yes |

The trust VTE protocol is based on the NICE CG92 guidelines.

- Emergency Department Patients

- ALL patients who are referred to the outpatient fracture clinic are to be assessed for VTE risk by the Emergency Department clinicians. A prescription of Dalteparin 5000 units for self administration once a day at 1800hrs and anti-embolism stockings should be considered in the following patient groups unless contraindications (see Appendix 3) are identified:

- Patients who have weight bearing restricted to less than the weight of the leg (less than touch weight bearing)

- Patient who are immobilised in a non removable lower limb splint / cast

- Reduced mobility for > 3 days

- It is the responsibility of the Emergency Department clinicians to implement the assessment, exclusion of contra-indications, prescription and training for self administration.

- Outpatients (New Patient Fracture Clinic)

- ALL adult patients with lower extremity injuries, when shown to the Outpatient clinic cubicles, will be given a VTE assessment sheet (see Appendix 4) and told to let the doctor know if any factors apply. This is a list of factors that represent either an increased risk or contra-indication to pharmacological VTE prophylaxis. It is expected that the principle factor determining the need for prophylaxis will involve a subjective assessment of mobility.

- The following patients require NO VTE prophylaxis:

- Patients less than 16 years old do not need to have a risk assessment performed. However consideration should be given to VTE prophylaxis in adolescent females on the oral contraceptive pill (British Society for Children's Orthopaedic Surgery (BSCOS) guidelines).

- Non-operatively treated upper limb injuries that do not result in reduced mobility for > 3 days

- All patients who have Trauma Orthopaedic Risk Factors (TORFs) should be considered for pharmacological and mechanical VTE prophylaxis.

- Patient who has weight bearing restricted to less than weight of leg (eg ≤ Touch Weight Bearing, TWB)
- Patient who is mobilised in a non-removable lower limb splint / cast
- Lower limb arthroplasty
- Anaesthetic and surgical time > 90 minutes
- Surgery involving pelvis or lower limb with a total anaesthetic and surgical time > 60 minutes
- Clinician’s decision making should also be influenced by considering other high risk groups.
- Reduced mobility for > 3 days
- Over 60 years
- Active cancer or cancer treatment
- Dehydration
- Known thrombophilias
- Obesity (BMI>30)
- Heart disease
- Metabolic disorder
- Endocrine disorder
- Respiratory disorder
- Active infection
- Active inflammatory condition
- Personal or 1st degree relative with history of VTE
- Hormone Replacement Therapy (HRT)
- Use of Oestrogen-containing contraceptive therapy
- Pregnancy or < 6 weeks post partum
- Varicose veins with phlebitis
- Acute surgical admission with inflammatory or intra-abdominal condition
- Critical care admission
- The clinician will document in the clinic letter the indication, type and duration for VTE prophylaxis. Treatment should be given for a minimum of 2 weeks and maximum 6 weeks. Unless contraindicated, patients identified at risk of VTE will be trained in the administration of Dalteparin and prescribed 5000 units subcutaneous once a day at 1800hrs. Consideration will be given to the additional use of anti-embolism stockings.
- For TCI ASAP and Day Case Booked patients, with TORFs and no contraindications (see Appendix 2+3), they should administer Dalteparin daily at 1800hrs, including the day before planned surgery.
- To facilitate the efficient administration of Dalteparin in Outpatients:
- Pfizer Dalteparin packs (containing sharps bin, patient information, patient self-administration instructions, patient self-administration
- instructional DVD held in Fracture clinic
- Outpatient Nursing staff trained in teaching patient self-administration using instructional DVD in Fracture Clinic
- Pre-printed fracture clinic prescription sheets for Dalteparin and analgesic packs
- For patients who do not require VTE prophylaxis the clinician will document in the clinic letter that "A VTE assessment has been performed and VTE prophylaxis is not required".

**Inpatients**

- On admission ALL adult patients and adolescent females will have a VTE assessment performed on the Electronic Patient Record (EPR). Unless contraindicated any patient who is determined to be at risk will be started on pharmacological and mechanical VTE prophylaxis. Both pharmacological and mechanical methods will be prescribed on the Drug Chart by the admitting Doctor. If the Senior Nursing staff assess that mechanical VTE prophylaxis using TED stockings is inappropriate, they will be discontinued and the reason documented in the Nursing Notes.
- 5000 units Dalteparin subcutaneous once a day at 1800hrs will be used as the default pharmacological VTE prophylaxis in conjunction with anti-embolism stockings unless contraindications are identified (see Appendix 2+3).
- Based on advice from our haematology department screening for Heparin Induced Thrombocytopenia (HIT) is NOT required.
- Inpatients will be taught self-administration of Dalteparin using instructional DVDs and iPads.
- Inferior Vena Cava (IVC) Filters
- Under certain circumstances Trauma patients should be considered for IVC filters.
- Very high risk patients (eg patients with a previous VTE event or an active malignancy) where all methods of pharmacological and mechanical prophylaxis are contraindicated.
- High risk patients with existing proximal DVTs or PE.
- The IVC filter insertion should be arranged with the Interventional Radiologists and will require consent (13% complication rate: malposition, migration, insertion site thrombosis, difficulty removing device and occlusion). The filter should only remain in situ during the period of increased risk and should be removed within 3 months.

**Operating Theatre**

- Consideration should be given to using Flowtron boots in all adult trauma patients.

**Operation Notes**

- All trauma post-operative notes should clearly indicate:
- The need for chemical VTE prophylaxis
- The post-operative start time for chemical VTE prophylaxis
- NICE recommends that LMWH should be restarted 6–12 hours after
surgery. This is in-line with the Grade 1B (see Appendix 5) evidence ACCP recommendation. Due to the surgical concerns with regard to wound haematoma it would be reasonable to recommend a pragmatic approach of 12hrs post-surgery.

- The duration of chemical VTE prophylaxis

- **Discharge**
  - If prophylaxis is indicated it should be given for a minimum of 14 days.
  - The hospital pharmacy will be responsible for issuing the entire course of Dalteparin.

- **Unable / unwilling to self administer subcutaneous Dalteparin**
  - It is expected that the majority of patients will be able to self administer. There will be a proportion of patients who will require to be given Dalteparin.
  - Patients discharged to Community hospitals and Nursing homes will have access to trained Health Care Providers capable of SC administration.
  - Where possible a family member should be used following appropriate training.
  - The remaining patients will need the administration of Dalteparin arranged by a District or Practice nurse.
  - Alternative oral anticoagulants can be used. However, with the exception of warfarin, the prescribing physician, in consultation with the haematologists, would take responsibility for this decision as Rivaroxaban, Dabigatran and Apixaban are currently not licenced for use in orthopaedic trauma.

- **Injury Specific Groups**
  - **Cast Immobilised Non-operative Below Knee Injury**
  - NICE and ACCP recommendations differ with regard to the management of patients treated with cast immobilised of non-operative below knee injury.
  - **NICE recommendation 1.6.3**
    - Consider offering pharmacological VTE prophylaxis to patients with lower limb plaster casts after evaluating the risks (see section 1.1) and benefits based on clinical discussion with the patient. Offer LMWH (or UFH for patients with renal failure) until lower limb plaster cast removal.
  - **ACCP recommendation 3.0**
    - We suggest no prophylaxis rather than pharmacologic VTE prophylaxis in patients with isolated lower-leg injuries requiring leg immobilization (Grade 2C).
  - The ACCP 2012 recommendation of no prophylaxis in this group is based on Grade 2C evidence (Appendix 5) and therefore does not justify deviation from the NICE guidelines.

- **Head Injury Patients**
  - The decision regarding indication, time of initiation, duration and method of VTE prophylaxis will be the responsibility of the
neurosurgery team (see OUH Head Injury Guidelines).

- **Spinal Patients**
- Post operative Dalteparin must be authorised by the Spinal Team prior to commencement. This will be documented in the operation or medical notes. The duration of VTE prophylaxis should also be documented. In the absence of written documentation please consult with Spinal surgeons prior to administration.
- VTE prophylaxis will continue until
  - Stated in operation note
  - or
  - No significant reduced mobility
  - or
  - On going additional risk factor resolved
  - or
  - Further clinical review

  **Bilateral Non Weight Bearing**
  - VTE prophylaxis to be administered until TORFs no longer apply, up to 6 weeks
  - **Pelvic and Acetabular Fixation**
    - 5 weeks
  - **Femoral and Tibial Nails**
    - 5 weeks
  - **Hip arthroplasty (total or hemi) and proximal femur fixation**
    - 5 weeks
  - **Open Reduction and Internal Fixation (ORIF) lower extremity fractures (below the hip)**
    - Cover non weight bearing period documented in the operation note, up to maximum 6 weeks.

- **Arthroscopy**
  - Elective – prophylaxis only needed if risk factor identified
  - Acute – 2-5 weeks prophylaxis required
  - **ACL reconstruction**
  - Duration of VTE prophylaxis will be documented in operation note

- **Long Distance Travel**
  - This is a frequent area of concern within fracture clinic and has been reviewed as a separate entity in the 2012 ACCP guidelines. The evidence and statistics behind these recommendations are included in Appendix 6.
ACCP Recommendations

6.1.1. For long-distance travelers at increased risk of VTE (including previous VTE, recent surgery or trauma, active malignancy, pregnancy, estrogen use, advanced age, limited mobility, severe obesity, or known thrombophilic disorder), we suggest frequent ambulation, calf muscle exercise or sitting in an aisle seat if feasible (Grade 2C).

6.1.2. For long-distance travelers at increased risk of VTE (including previous VTE, recent surgery or trauma, active malignancy, pregnancy, estrogen use, advanced age, limited mobility, severe obesity, or known thrombophilic disorder), we suggest use of properly fitted, below-knee GCS providing 15 to 30 mm Hg of pressure at the ankle stockings during travel (Grade 2C). For all other long-distance travelers, we suggest against the use of GCS (Grade 2C).

6.1.3. For long-distance travelers, we suggest against the use of aspirin or anticoagulants to prevent VTE (Grade 2C)

Glossary

- VTE – Venous Thrombo Embolism
- DVT – Deep Vein Thrombosis
- TORFs – Trauma Orthopaedic Risk Factors
- TCI ASAP – To Come In As Soon As possible
- ORIF – Open Reduction and Internal Fixation
- HRBGs – High Risk Bleeding Groups
- HIT – Heparin Induced Thrombocytopenia

Appendix 1 – ACCP Guidelines 2012 (with links)

Evidence-Based Management of Anticoagulant Therapy

- This slide set presents several recommendations related to the general management of anticoagulant therapy. Specifically, it covers initiation, maintenance, dosing, drug interactions, bleeding, and organization of care, offering guidance for many common anticoagulation-related management problems.

Prevention of Venous Thromboembolism in Nonsurgical Patients

- This slide set presents several recommendations regarding the decisions in prophylaxis in nonsurgical patients, taking into consideration risk factors for both thrombosis and bleeding, clinical context, and patients’ values and preferences. These recommendations incorporate perspectives in bleeding disorders, critical care, preventive medicine, methodology, and cost effectiveness.

Prevention of Venous Thromboembolism in Nonorthopedic Surgical Patients

- This slide set presents several recommendations regarding optimal thromboprophylaxis in nonorthopedic surgical patients and considers the risks of venous thromboembolism and bleeding complications, as well as the values and preferences of individual patients.

Prevention of Venous Thromboembolism in Orthopedic Surgery
Patients

- This slide set presents several recommendations regarding the optimal strategies for thromboprophylaxis after major orthopedic surgery, including pharmacologic and mechanical approaches, to reduce patient-important outcomes, such as pulmonary embolism and symptomatic DVT.

The Perioperative Management of Antithrombotic Therapy

- This slide set presents several recommendations to simplify patient management and minimize adverse clinical outcomes for perioperative antithrombotic management based on risk assessment for thromboembolism and bleeding.

Diagnosis of DVT

- This slide set presents several recommendations for diagnosis of first DVT, including a combined use of pretest probability assessment, D-dimer, and ultrasound.

Antithrombotic Therapy for Venous Thromboembolic Diseases

- This slide set presents several recommendations regarding general antithrombotic therapy for VTE, highlighting the strong recommendations that apply to most patients and the weak recommendations that are sensitive to differences among patients, including their preferences.

Treatment and Prevention of Heparin-Induced Thrombocytopenia

- This slide set presents several recommendations regarding heparin-induced thrombocytopenia and the primary efficacy outcome measures of interest, including new thrombosis, limb amputation, and major bleeding and death due to thrombosis or bleeding.

Antithrombotic Therapy in Atrial Fibrillation

- This slide set presents several recommendations regarding atrial fibrillation based on net clinical benefit for patients at varying levels of stroke risk and in a number of common clinical scenarios.

Antithrombotic and Thrombolytic Therapy for Valves

- This slide set presents several recommendations based on the optimal balance of thrombotic and hemorrhagic risk for antithrombotic therapy in valvular disease.

Antithrombotic and Thrombolytic Therapy for Ischemic Stroke

- This slide set presents several recommendations on the use of antithrombotic therapy in patients with stroke or transient ischemic attack.

The Primary and Secondary Prevention of Cardiovascular Disease

- This slide set presents several recommendations focusing on long-term administration of antithrombotic drugs designed for primary and secondary prevention of cardiovascular disease, including two new antiplatelet therapies (ticagrelor and prasugrel).

Antithrombotic Therapy in Peripheral Artery Disease

- This slide set presents several recommendations regarding antithrombotic drug therapies for primary and secondary prevention of cardiovascular disease as well as for the relief of lower-extremity
symptoms and critical ischemia in patients with peripheral arterial disease (PAD). The slide set highlights single antiplatelet therapy for primary and secondary prevention of cardiovascular events in most patients with asymptomatic PAD, symptomatic PAD, and asymptomatic carotid stenosis.

- **Venous Thromboembolism, Thrombophilia, Antithrombotic Therapy, and Pregnancy**

  This slide set presents several recommendations focusing on the management of venous thromboembolism and thrombophilia. It discusses the use of antithrombotic agents during pregnancy and the associated challenges because of the potential for both fetal and maternal complications.

- **Antithrombotic Therapy in Neonates and Children**

  This slide set presents several recommendations focusing on the monitoring to specific target ranges for both unfractionated and low-molecular-weight heparins in neonates and children. It acknowledges the on-going need for dedicated clinical trials that demonstrate the differences in the pharmacokinetics, dose responses, and monitoring tests for anticoagulation therapy in children compared with adults.

- **Appendix 2 - High Risk Bleeding Groups (HRBGs)**

  - It is the clinicians responsibility to determine if the presence of any of these
  - Active bleeding
  - Acquired bleeding disorder (eg liver failure)
  - use of anticoagulants known to increase risk of bleeding (such as warfarin with INR >2)
  - Acute stroke
  - Thrombocytopenia (<75)
  - Uncontrolled hypertension > 230/120 mmHg
  - Untreated inherited bleeding disorders
  - Neurosurgery, spinal surgery or eye surgery
  - Other procedures with high bleeding risk
  - Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours
  - Lumbar puncture/epidural/spinal anaesthesia within the previous four hours

- **Appendix 3**

  - **Contraindications to Anti-Embolisms Stockings**
  - Peripheral neuropathy
  - Peripheral vascular disease
  - Gross oedema
- Leg deformity
- Acute stroke (use IPC devices)
- Some diabetics will not be appropriate for anti-embolism stockings

- **Contraindications to Dalteparin**
  - See High Risk Bleeding Groups (Appendix 1)
  - Heparin Induced Thrombocytopenia
  - Hyperkalaemia
  - Hepatic impairment
  - Renal impairment (consider unfractionated heparin and dose reduction if Creatinine Clearance

- **Appendix 4**

- **TRAUMA VTE OUTPATIENT QUESTIONNAIRE**
  - Please let the doctor know if any of these factors apply to you:
  - Over 60 years
  - Heart disease
  - High blood pressure
  - Stroke
  - Active infection
  - Lung problems
  - Hormone problems
  - Renal (kidney) problems
  - Cancer
  - Any other significant medical problems
  - Family history of blood clots in the legs or lungs
  - Hormone Replacement Therapy (HRT)
  - Contraceptive pill
  - Pregnant
  - Less than 6 weeks following child birth
  - Varicose veins
  - Blood abnormalities or bleeding disorders
  - Warfarin or any other blood thinning drugs
ACCP 2012 — Strength of the Recommendations Grading System

Grade of Recommendation Benefit vs Risk and Burdens Methodologic Strength of Supporting Evidence Implications

- Strong recommendation, high-quality evidence (1A) Benefits clearly outweigh risk and burdens or vice versa. Consistent evidence from randomized controlled trials without important limitations or exceptionally strong evidence from observational studies. Recommendation can apply to most patients in most circumstances. Further research is very unlikely to change our confidence in the estimate of effect.

- Strong recommendation, moderate-quality evidence (1B) Benefits clearly outweigh risk and burdens or vice versa. Evidence from randomized controlled trials with important limitations (inconsistent results, methodologic flaws, indirect or imprecise) or very strong evidence from observational studies. Recommendation can apply to most patients in most circumstances. Higher-quality research may well have an important impact on our confidence in the estimate of effect and may change the estimate.

- Strong recommendation, low- or very-low-quality evidence (1C) Benefits clearly outweigh risk and burdens or vice versa. Evidence for at least one critical outcome from observational studies, case series, or randomized controlled trials, with serious flaws or indirect evidence. Recommendation can apply to most patients in many circumstances. Higher-quality research is likely to have an important impact on our confidence in the estimate of effect and may well change the estimate.

- Weak recommendation, high-quality evidence (2A) Benefits closely balanced with risks and burden. Consistent evidence from randomized controlled trials without important limitations or exceptionally strong evidence from observational studies. The best action may differ depending on circumstances or patient or societal values. Further research is very unlikely to change our confidence in the estimate of effect.

- Weak recommendation, moderate-quality evidence (2B) Benefits closely balanced with risks and burden. Evidence from randomized controlled trials with important limitations (inconsistent results, methodologic flaws, indirect or imprecise) or very strong evidence from observational studies. Best action may differ depending on circumstances or patient or societal values. Higher-quality research may well have an important impact on our confidence in the estimate of effect and may change the estimate.
- Weak recommendation, low- or very-low-quality evidence (2C)
Uncertainty in the estimates of benefits, risks, and burden; benefits, risk, and burden may be closely balanced. Evidence for at least one critical outcome from observational studies, case series, or randomized controlled trials, with serious flaws or indirect evidence. Other alternatives may be equally reasonable. Higher-quality research is likely to have an important impact on our confidence in the estimate of effect and may well change the estimate.

- Appendix 6

- ACCP Review of VTE risk with Long-Distance Travel

- Prolonged air travel results in a very small absolute incidence of VTE. A systematic review and meta-analysis of 14 studies (11 case-control, two cohort, and one case-crossover) of risk for VTE in travelers demonstrated a pooled RR of 2.8 (95% CI, 2.2-3.7). A dose-response relationship was identified, with an 18% higher risk of VTE for each 2-h increase in travel duration.122,123 However, the overall absolute incidence of a symptomatic VTE in the month following a flight > 4 h is 1 in 4,600 flights,124 with a reported incidence of asymptomatic VTE on arrival from a trip ranging from 0% to 1.5%.123 The incidence varies by the type and duration of travel and by individual risk factors.125-127 Thrombosis risk also appears to be increased for travel by car, bus, or train.128-130

- The association between air travel and VTE is strongest for flights > 8 to 10 h125-128,131-133 and is increased in the presence of VTE risk factors such as recent surgery.123 For those on flights > 4 h, immobility during the flight and window seating (especially for obese persons) also increase the risk of VTE.134 Especially tall or short passengers may have an increased risk.130 There is no definitive evidence that dehydration, travel in economy class, and drinking alcoholic beverages on the flight are related to VTE risk.

- Most individuals with travel-associated VTE have one or more known risk factors for thrombosis, including previous VTE, recent surgery or trauma, active malignancy, pregnancy, estrogen use, advanced age, limited mobility, severe obesity, or a thrombophilic disorder.129,130,132,135-140 Among healthy volunteers, coagulation activation observed after an 8-h flight was greater in carriers of factor V Leiden and in women taking oral contraceptives.141 Case-control studies have reported an increased risk of VTE in travelers who have thrombophilia and use oral contraceptives.130,136

- We identified a Cochrane review142 of nine RCTs of thromboprophylaxis in long-distance air travelers (Tables S24, S25). All but one of these trials was conducted by a single group of investigators.140,143-150 Trials enrolled a mix of low- and increased-risk subjects based on risk factors for VTE, and most studies included persons taking flights of > 7 h. Asymptomatic DVT detected by screening ultrasound examination was the primary end point. All of the trials have methodologic limitations that compromise their interpretation. Further, the UK General Medical Council’s Fitness to Practice Panel judged that these papers included coauthors who had not approved the papers and erased the principal investigator from the register of the General Medical Council.151 Regardless, as there was no evidence presented suggesting falsification of data, we include discussion of these trials in this article.
A meta-analysis of the above trials found that among nine randomized trials, the use of various brands of below-knee GCS (providing 15-30 mm Hg compression at the ankle) reduced the rate of asymptomatic DVT detected by screening from 3.6% (47 of 1,323 control subjects) to 0.2% (three of 1,314 stocking users) (RR, 0.10; 95% CI, 0.04-0.25); absolute estimated effects in a low-risk population were 4.5 fewer symptomatic DVT per 10,000 (95% CI, from four fewer to five fewer) and 24 fewer PE per 1,000,000 (95% CI, from 20 fewer to 26 fewer), and in a high-risk population, 16.2 fewer symptomatic DVT per 10,000 (95% CI, from 14 fewer to 17.5 fewer) and 87 fewer PE per 1,000,000 (95% CI, from 76 fewer to 94 fewer) (Table 20, Table S26). Among eight trials that reported superficial thrombophlebitis as an end point, results failed to show or exclude a beneficial or detrimental effect of stockings (RR, 0.45; 95% CI, 0.18-1.13). Stockings reduced postflight leg edema in six trials in which this outcome was assessed; however, lack of blinding and use of unvalidated measures of edema reduce confidence in this result.

In a small study of high-dose enoxaparin (1 mg/kg), administered once 2 to 4 h before travel lasting 7 to 8 h, vs aspirin, one dose daily for 3 days starting 12 h before the beginning of the flight, vs control, there were zero of 82, three of 84, and four of 83 asymptomatic DVT in the three groups, respectively, but no symptomatic DVT or PE events in any group, although follow-up ended after the subjects left the airport.

In summary, symptomatic VTE is rare in passengers returning from long flights. Travelers at increased risk of VTE, defined as persons with previous VTE, thrombophilic disorders, severe obesity, recently active cancer, or recent major surgery, who are traveling on flights > 6 h, may want to consider reducing their risk of VTE by frequent ambulation or sitting in an aisle seat if feasible and avoiding dehydration, although these measures have not been assessed in clinical trials. Light compression stockings appear to have a protective effect in reducing asymptomatic DVT in travelers, are inexpensive, and are unlikely to cause harm. Until further, methodologically appropriate studies are available, decisions regarding pharmacologic thromboprophylaxis for travelers who are considered to be at particularly high risk for VTE must be made on an individual basis, considering that adverse effects may outweigh any benefit.

Recommendations

- **6.1.1. For long-distance travelers at increased risk of VTE** (including previous VTE, recent surgery or trauma, active malignancy, pregnancy, estrogen use, advanced age, limited mobility, severe obesity, or known thrombophilic disorder), we suggest frequent ambulation, calf muscle exercise or sitting in an aisle seat if feasible (Grade 2C).

- **6.1.2. For long-distance travelers at increased risk of VTE** (including previous VTE, recent surgery or trauma, active malignancy, pregnancy, estrogen use, advanced age, limited mobility, severe obesity, or known thrombophilic disorder), we suggest use of properly fitted, below-knee GCS providing 15 to 30 mm Hg of pressure at the ankle stockings during travel (Grade 2C). For all other long-distance travelers, we suggest against the use of GCS (Grade 2C).

- **6.1.3. For long-distance travelers**, we suggest against the use of aspirin or anticoagulants to prevent VTE (Grade 2C).