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**Appendix:**

**1 - What is the most optimal VTE prophylaxis in patients with multiple orthopaedic injuries?**

**Search Terms:**

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((Prevention and Control [MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent\*[Title/Abstract]) OR (prophylaxis[tw])) AND (Polytrauma OR "Fractures, Multiple"[Mesh] OR (Multiple Fracture) OR (multiple orthopedic injur\*) OR (multiple orthopaedic injur\*))

**Total: 274 results.**

***Inclusion Criteria:***

* Cohorts including (high energy trauma, orthopedic injuries or poly trauma)
* At least one chemoprophylactic agent described
* Venous thromboembolism rates reported
* Primary research and systematic reviews
* English articles

***Exclusion Criteria:***

* Narrative review articles
* Not in English.

**2 - What is the optimal VTE prophylaxis for polytrauma patients with both fractures and visceral injuries?**

**Search Terms:**

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions(R) <1946 to June 04, 2021>

(exp Venous Thromboembolism/pc [Prevention & Control] (4761)

((prevent\* or prophyla\*) adj2 (thromboembolism or thrombosis or embolism)).mp. (9267)

or/1-2 (12765)

[VTE] exp Multiple Trauma/ (13111)

(polytrauma\* or multiple trauma\* or multiple injur\*).mp. (20284)

exp Fractures, Bone/ (190439)

fracture\*.mp. (322921)

exp Abdominal Injuries/ (20700)

exp Craniocerebral Trauma/ (163712)

(visceral injur\* or visceral trauma\* or abdominal injur\* or abdominal trauma\* or head injur\* or head trauma\* or brain injur\* or brain trauma\*).mp. (141575)

(organ\* adj1 (injur\* or trauma\*)).mp. (6980)

4 or 5 or ((6 or 7) and (8 or 9 or 10 or 11)) (50333)

[polytrauma or fracture with visceral/head injury],3 and 12 (93)

**Total: 93 results.**

***Inclusion Criteria:***

* Orthopaedic trauma, fractures with concomitant visceral injuries (brain, thoracic, abdominal, pelvic)
* Thromboprophylaxis described
* Venous thromboembolism rates reported
* Bleeding rates reported

***Exclusion Criteria:***

* Personal opinion articles
* Not in English.

**3 - What is the best way to determine acute blood loss and predict operative blood loss in trauma patients with orthopaedic injuries?**

**Search Terms:**

*(((bleed[Title/Abstract]) OR (bleeding[Title/Abstract])) AND (trauma)) AND (risk stratification)*

**Total: 46 results.**

***Inclusion Criteria:***

* English articles
* Trauma or orthopedic patients
* Evaluated risk of systemic bleeding

***Exclusion Criteria:***

* Not in English.

**4 - What is the optimal management of patients on antiplatelet and/or anticoagulation presenting with acute lower extremity trauma and needing surgery?**

**Search Terms:**

(("Disease Management"[Mesh] OR "Disease Management" OR "Therapeutics"[Mesh] OR Therapeutics OR Therapy OR Treatment OR management)) AND ("Wounds and Injuries"[Mesh] OR (Injuries, Wounds) OR Injuries OR injury OR trauma) AND ("Lower Extremity"[Mesh] OR (Lower Extremity) OR (Lower Limb)) AND acute AND (((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure))) AND (((("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh]) OR ( "LMWH"[tw] OR "low molecular weight heparin "[tw] OR "aspirin"[tw] OR "antithrombotics"[tw] OR "antiplatelet"[tw] OR " Vitamin K antagonists" [tw] OR "Factor Xa Inhibitors" [tw] OR "Adenosine diphosphate receptor antagonist"[tw] or "ADP receptor antagonist"[tw] or "Cyclooxygenase Inhibitor"[tw] or "Prostaglandine"[tw] or "Prostacycline"[tw] or "Glycoprotein IIb/IIIa antagonist"[tw] or "Glycoprotein IIb/IIIa inhibitor"[tw] or "Heparinoids"[tw] or "Fibrinolytic"[tw] or "Thrombin inhibitors"[tw] )) OR (Adenosin-diphosphate ADP receptor antagonist)))

**Total: 124 results.**

***Inclusion Criteria:***

* English articles
* Trauma or orthopedic patients

***Exclusion Criteria:***

* Not in English.

**Note: References in #5 are same as in document**

**5 - Concerning VTE risk, which surgeries can be considered major and which surgeries can be considered non-major in orthopaedic trauma?**

**Search Terms:**

((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((((risk[MeSH Terms]) OR (risk[Title/Abstract])) OR (incidence[Title/Abstract])) OR (probability[Title/Abstract]))) AND (((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)))) AND ((trauma[Title/Abstract]) OR (trauma surgery[Title/Abstract]) OR (trauma procedure\*[Title/Abstract]) OR (traumatic[Title/Abstract]) OR (trauma injur\*[Title/Abstract]) OR (traum\*[Title/Abstract]))

**Total: 228 results.**

***Inclusion Criteria:***

* Reported rate of VTE
* Orthopedic patients undergoing surgical procedure
* English article

***Exclusion Criteria:***

* Did not report rate of VTE
* Non-orthopedic patients
* Did not undergo surgery.

**Notes:**

*Lower extremity surgery has significant VTE risk and can be considered major*

* In current clinical practice, orthopedic surgeons are more likely to use chemical anticoagulation in isolated lower extremity injuries167.
	+ 76% recommended chemical DVT prophylaxis in foot/ankle fractures,
	+ 86% for tibia fractures, and >95% for all other lower extremity fractures.
* Caprini score > 10 predicts increased risk for VTE, and includes 5 points for lower extremity fracture, elective arthroplasty, or polytrauma166.
* AHRQ guidelines for VTE prophylaxis define major orthopedic surgery as TKA, THA, and hip fracture surgery, and recommend chemical prophylaxis for these operations168.
* Combined mechanical and pharmacologic prophylaxis reduces rate of DVT after arthroplasty RR 0.48174.
* Symptomatic VTE occurs in 2-3% of patients after elective arthroplasty, and may occur in 40-80% of patients without appropriate anticoagulation164.
* In hip arthroplasty and hip fracture surgery patients without DVT prophylaxis, rate of symptomatic DVT was 4.5% and PE was 0.6%165.
* LMWH reduces risk of overall DVT in patients with isolated tibia or distal lower leg fracture163. However, was not shown to reduce rate of clinically important VTE (defined by location and size).
* Mobility after orthopaedic procedures is also a factor. Those who are immobile are at higher risk.

*Upper extremity surgery, lower extremity arthroscopy, and surgery distal to the ankle in patients with isolated injuries can be considered non-major with regard to VTE risk*

* In current clinical practice, orthopedic surgeons are much less likely to use chemical anticoagulation in isolated upper extremity injuries167.
	+ 38% of orthopedic surgeons give Chemical DVT prophylaxis in patients with isolated upper extremity fracture.
* In a large database study risk of DVT in patients with upper extremity surgery was 0.2%, 30/11,373169.
* Chest guidelines recommend no chemical VTE prophylaxis after knee arthroscopy, due to low rate of DVT and equivalent risk of bleeding complications172.
	+ 10 symptomatic DVT out of 921 patients in Cochrane meta-analysis171.
* Rate of DVT after elective foot and ankle surgery is < 1 %. Higher rates were seen in patients after total ankle arthroplasty (3.9%), however there was only a 0.06% rate of PE after total ankle arthroplasty170.

**6 - Is routine VTE prophylaxis indicated in patients with a single lower extremity fracture who do not require surgery?**

**Search Terms:**

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((("Lower Extremity"[Mesh]) OR ("lower extremity\*"[Title/Abstract]) OR ("lower limb\*"[Title/Abstract])) AND ((fracture, bone[MeSH Terms]) OR (fracture[Title/Abstract]) OR (bone fracture[Title/Abstract]) OR (broken bone[Title/Abstract]))) AND ((non-operative[Title/Abstract]) OR ("nonoperative"[Title/Abstract]) OR ("non-operative management"[Title/Abstract]) OR ("nonoperative management"[Title/Abstract]) OR ("non-surgical"[Title/Abstract]) OR ("non surgical"[Title/Abstract]) OR (casting[tw]) OR ("cast"[tw]) OR ("walker boot"[tw]) OR (immobilization[tw]))

**Total: 33 results.**

***Inclusion Criteria:***

* Single Lower-extremity fractures not requiring surgical management
* At least one chemoprophylactic agent described
* Venous thromboembolism rates reported
* Primary research
* English articles

***Exclusion Criteria:***

* Lower-extremity fractures requiring surgical management
* Case Reports
* Narrative review articles
* Not in English.

**7 - Is routine VTE prophylaxis indicated in patients with immobilization of the lower extremity (e.g., casting) without surgery?**

**Search Terms:**

(risk OR incidence or prevalence) AND (cast immobilization OR cast OR plaster cast OR leg-cast OR (extremity and cast)) AND (VTE OR VT OR venous thrombosis OR thrombosis OR venous thromboembolism).

**Total 211 results on 31-08-2021.**

**Databases Searched:** Pubmed

Study type: RCTs

Language: English

***Inclusion Criteria:***

* Clinical studies with any level of evidence
* Published in peer-reviewed journals in English
* Investigated the role of thrombopropylaxis on venous thromboembolism (VTE) incidence after lower-extremity immobilization/treatment.

***Exclusion Criteria:***

* Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions were excluded.

**8 - Does the duration of immobilization of patients with lower extremity injuries influence the choice of VTE prophylaxis?**

**Search Terms:**

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent\*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Immobilization"[Mesh] OR Immobilization OR "Restraint, Physical"[Mesh] OR (Restraint, Physical)) AND ("Lower Extremity"[Mesh] OR (Lower Extremity) OR (Lower Limb)) AND ("Wounds and Injuries"[Mesh] OR (Injuries, Wounds) OR Injuries OR trauma)

**Total results: 99**

***Inclusion Criteria:***

* Clinical and preclinical studies with any level of evidence
* Published in peer-reviewed journals in English,
* Extremity Injury.

***Exclusion Criteria:***

* Studies not written in English.

**9 - What is the most optimal VTE prophylaxis for patients undergoing internal fixation of a hip fracture?**

**Search Terms:**

((("Venous Thromboembolism"[MeSH Terms] OR "VTE"[Text Word] OR "thromboemboli\*"[Text Word]) AND (((("Hip fractures"[MeSH Terms]) OR ("fractured hip"[Text Word])) OR (“proximal femur fracture"[Text Word])))) AND ((("prevention and control"[MeSH Subheading]) OR (prophyla\*[Text Word])) OR (prevention[Text Word]))) AND (("Fracture Fixation, Internal"[MeSH Terms]) OR ("fracture repair"[Text Word]))

("fracture fixation, internal"[MeSH Terms] OR "fracture repair"[Text Word]) AND ("Hip fractures"[MeSH Terms] OR "fractured hip"[Text Word] OR "proximal femur fracture"[Text Word]) AND ("Venous Thromboembolism"[MeSH Terms] OR "VTE"[Text Word] OR "thromboemboli\*"[Text Word]) AND ("prevention and control"[MeSH Subheading] OR "prophyla\*"[Text Word] OR "prevention"[Text Word] OR "thromboprophyla\*"[Text Word])

**Databases Searched:** Pubmed, EMBASE, Cochrane Library

**Filters:**

Results by Year: 1990-Present (All Articles)

Results by Year: Pre-1990 (Only RCTs)

Language: English

**Total: 84 results.**

***Inclusion Criteria:***

* Both clinical and preclinical studies with any level of evidence
* Published in peer-reviewed journals in English,
* Investigated the role of venouthromboembolism (VTE) prophylaxis after internal fixation of a hip fracutre.

***Exclusion Criteria:***

* We excluded studies in which data was not accessible or missing,
* Those without an available full-text article.
* Duplicates and studies with poor scientific methodology as per risk of bias assessment.
* Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions.

**10 - What is the optimal VTE prophylaxis for patients undergoing arthroplasty (hemiarthroplasty or total hip arthroplasty) for patients with hip fracture?**

**Search Terms:**

VTE prophylaxis, anticoagulation, hip fracture, hemiarthroplasty, total hip arthroplasty

**Databases searched:** Pubmed, Cochrane database

**Filters:**

Results by Year: 1990-Present (All Articles)

Results by Year: Pre-1990 (Only RCTs)

Language: English

***Inclusion Criteria:***

* Both clinical and preclinical studies with any level of evidence
* Published in peer-reviewed journals in English,
* Investigated the role of anticoagulation on hip fractures treated with hemiarthroplasty on venous thromboembolism (VTE) including timing and specific protocol.

***Exclusion Criteria:***

* We excluded studies in which data was not accessible or missing, or those without an available full-text article.
* We also excluded duplicates and studies with poor scientific methodology as per risk of bias assessment.
* Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions were excluded.

**11 - Is routine VTE prophylaxis required for patients with fragility fracture of the pelvis or lower extremity?**

**Search Terms:**

(((Pelvic Fragility fracture OR Fragility fractured pelvis OR Lower extremity Fragility fracture OR Hip fragility fracture OR "Hip Fractures"[Mesh] OR Femoral fragility fracture OR "Femoral Fractures"[Mesh] OR Tibial fragility fracture OR "Tibial Fractures"[Mesh] OR Hip OR "Hip"[Mesh] OR Acetabulum OR "Acetabulum"[Mesh] OR Proximal Femur OR Lower Limb OR "Lower Extremity"[Mesh] OR Lower extremity OR Femur OR "Femur"[Mesh] OR Distal femur OR Knee OR "Knee"[Mesh] OR Tibia OR "Tibia"[Mesh] OR Tibia plateau OR Tibia Plafond OR Pilon OR Fragility OR Osteoporotic OR "Osteoporotic Fractures"[Mesh]) AND (VTE OR venous thromboembolism OR "Venous Thromboembolism"[Mesh] OR pulmonary embolism OR "Pulmonary Embolism"[Mesh] PE OR blood clot OR "Thrombosis"[Mesh] OR thrombosis)) AND (Routine Prophylaxis OR Prophylactic treatment OR preventative VTE treatment OR anti-clotting OR antithrombotic OR anti-thrombotic OR anticoagulation OR anti-coagulation OR heparin OR LMWH OR low molecular weight heparin OR low-molecular-weight heparin OR "Heparin"[Mesh] OR "Heparin, Low-Molecular-Weight"[Mesh] OR "Dalteparin"[Mesh] OR dalteparin OR fragmin OR "Enoxaparin"[Mesh] OR enoxaparin OR lovenox OR "Nadroparin"[Mesh] OR nadroparin OR fraxiparin OR "Tinzaparin"[Mesh] OR tinzaparin OR innohep OR low dose unfractionated heparin OR low-dose unfractionated heparin OR lduh OR "Factor Xa Inhibitors"[Mesh] OR direct factor xa inhibitor OR apixaban OR Novel Oral Anti-Coagulant OR NOAC OR Direct Oral Anti-Coagulant OR DOAC OR Eliquis OR betrixaban OR bevyxxa OR edoxaban OR savaysa OR rivaroxaban OR "Rivaroxaban"[Mesh] OR Indirect factor xa inhibitors OR fondaparinux OR fondaparin OR arixtra OR direct thrombin inhibitors OR dabigatran OR Pradaxa OR ximelagatran OR exanta OR vitamin k antagonists OR vka OR warfarin OR "Warfarin"[Mesh] OR coumadin OR aspirin OR "Aspirin"[Mesh] OR salicylate)) AND ("No treatment" OR Nontreatment OR "treatment absence" OR Control OR "Control Groups"[Mesh] OR Placebo OR "Placebos"[Mesh]) (((1990:3000/12/12[pdat]) AND (english[Filter])) OR (("randomized controlled trial"[pt] OR "controlled clinical trial"[pt] OR randomized[tiab] OR placebo[tiab] OR "clinical trials as topic"[mesh: noexp] OR randomly[tiab] OR randomised[tiab] OR randomization[tiab] OR randomisation[tiab] OR trial[ti])) NOT ("animals"[mh] NOT "humans"[mh]))

**Total: 2,638 results**

***Inclusion Criteria:***

* English articles
* Articles evaluating VTE after low energy lower extremity fractures

***Exclusion Criteria:***

* Studies not written in English
* Studies evaluating hip fractures
* Studies evaluating lower extremity immobilization in a cast.

**12 - Should VTE prophylaxis be administered to patients with a hip fracture who do not undergo surgery?**

**Search Terms:**

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent\*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Hip Fractures"[Mesh] OR (Hip Fracture)) AND ("non-operative management" OR "nonoperative management" OR NOM OR non-operative OR nonoperative OR nonsurgical OR non-surgical OR noninvasive OR non-invasive OR stable OR nondisplaced) ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ("Hip Fractures"[Mesh] OR (Hip Fracture)) AND ("non-operative management" OR "nonoperative management" OR NOM OR non-operative OR nonoperative OR nonsurgical OR non-surgical OR noninvasive OR non-invasive OR stable OR nondisplaced)

**Total: 28 results**

***Inclusion Criteria:***

* English articles
* Articles evaluating VTE after hip fractures

***Exclusion Criteria:***

* Not written in English.

**13 - Is routine VTE prophylaxis needed for patients undergoing osteotomy around the knee?**

**Search Terms:**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Database** | **Search term** | **Results** |
| 1 | Medline | (VTE OR "venous thromboembolism").ti,ab | 23790 |
| 2 | Medline | "VENOUS THROMBOEMBOLISM"/ | 12044 |
| 3 | Medline | (1 OR 2) | 25927 |
| 4 | Medline | (knee).ti,ab | 149058 |
| 5 | Medline | KNEE/ | 14866 |
| 6 | Medline | (4 OR 5) | 153811 |
| 7 | Medline | (osteotomy).ti,ab | 29808 |
| 8 | Medline | OSTEOTOMY/ | 31004 |
| 9 | Medline | (7 OR 8) | 43026 |
| 10 | Medline | (3 AND 6 AND 9) | 4 |
| 11 | Embase | (VTE OR "venous thromboembolism").ti,ab | 40271 |
| 12 | Embase | "VENOUS THROMBOEMBOLISM"/ OR "DEEP VEIN THROMBOSIS"/ OR "LOWER EXTREMITY DEEP VEIN THROMBOSIS"/ OR "VENOUS THROMBOSIS"/ | 110663 |
| 13 | Embase | (11 OR 12) | 118632 |
| 14 | Embase | (knee).ti,ab | 193332 |
| 15 | Embase | KNEE/ | 67374 |
| 16 | Embase | (14 OR 15) | 205784 |
| 17 | Embase | (osteotomy).ti,ab | 33607 |
| 18 | Embase | OSTEOTOMY/ OR "FEMUR OSTEOTOMY"/ | 36236 |
| 19 | Embase | (17 OR 18) | 49089 |
| 20 | Embase | (13 AND 16 AND 19) | 115 |
| 21 | PubMed | (VTE OR "venous thromboembolism").ti,ab | 26967 |
| 22 | PubMed | (knee).ti,ab | 183124 |
| 23 | PubMed | (osteotomy).ti,ab | 47733 |
| 24 | PubMed | (21 AND 22 AND 23) | 6 |

**14 - Is routine VTE prophylaxis required for patients with isolated patellar fracture who may or may not require surgery?**

**Search Terms:**

(("patella"[MeSH] OR "patella" OR "patellas" OR "patellae") OR ("patellar"[MeSH Terms] OR "patellar")) AND ("fracture" OR "fractural" OR "fractures" OR "fractures, bone"[MeSH Terms] OR ("fractures" AND "bone" ) OR "bone fractures" OR "fractured" OR "fracturing" ) AND ("VTE" OR ("venous thromboembolism"[MeSH Terms] OR ("venous" AND "thromboembolism") OR "venous thromboembolism" ) OR ("thromboembolic" OR "thromboembolism"[MeSH Terms] OR "thromboembolism" OR "thromboembolisms" OR "thromboembolization" ) OR ("venous thrombosis"[MeSH Terms] OR ("venous" AND "thrombosis" ) OR "venous thrombosis" ) OR ("thrombose" OR "thrombosing" OR "thrombosis"[MeSH Terms] OR "thrombosis" OR "thrombosed" OR "thromboses" ) OR ("thrombosis"[MeSH Terms] OR "thrombosis" OR "thrombotic" OR "thrombotically" OR "thrombotics" ) OR "DVT" )

**Total: 48 results**

***Inclusion Criteria:***

* Surgical or medical management of patellar fracture
* Isolated patellar fracture
* Venous thromboembolism rates reported
* Cohort studies, review papers, and metanalyses included
* English articles

***Exclusion Criteria:***

* Multiple trauma/fractures
* Case studies
* Studies not available in English.

**15 - Does WALANT for tibia/fibula fracture fixation have an increased risk of VTE events?**

**Search Terms:**

'WALANT'/exp OR 'local anesthetic') AND ('venous thromboembolism'/exp OR 'thromboembolic')

**Total: 280 search results (years 1990-2021)**

**Databases Searched:** Pubmed

Date of search: 28.6.2021

**Filters:**

Results by Year: 1990-Present (All Articles)

Results by Year: Pre-1990 (Only RCTs)

Language: English

***Inclusion Criteria:***

* Confirmation of tibia/fibula fracture fixation
* Confirmation of Local anesthetic and absence of Tourniquet
* Published in peer-reviewed journals in English.

***Exclusion Criteria:***

* We excluded Patients < 18 year
* Conference papers; proceedings; editorials; commentaries; book chapters; technical papers; image quality-, and phantom studies
* Unavailable full-text manuscripts.

**16 - Should patients undergoing** **h****ardware removal of lower extremity require routine VTE prophylaxis?**

**Search Terms:**

((Routine Venous Thromboembolism Prophylaxis OR Prophylaxis or Prophylactic treatment or preventative VTE treatment OR anti-clotting OR antithrombotic OR anti-thrombotic OR anticoagulation OR anti-coagulation OR heparin OR lwwh OR low molecular weight heparin OR low-molecular-weight heparin OR "Heparin"[Mesh] OR "Heparin, Low-Molecular-Weight"[Mesh] OR "Dalteparin"[Mesh] OR dalteparin OR fragmin OR "Enoxaparin"[Mesh] OR enoxaparin OR lovenox OR "Nadroparin"[Mesh] OR nadroparin OR fraxiparin OR "Tinzaparin"[Mesh] OR tinzaparin OR "bemiparin" [Supplementary Concept] OR innohep OR low dose unfractionated heparin OR low-dose unfractionated heparin OR lduh OR "Factor Xa Inhibitors"[Mesh] OR direct factor xa inhibitor OR apixaban OR Eliquis OR betrixaban OR bevyxxa OR edoxaban OR savaysa OR rivaroxaban OR "Rivaroxaban"[Mesh] OR xarelto OR Indirect factor xa inhibitors OR fondaparinux OR fondaparin OR arixtra OR direct thrombin inhibitors OR dabigatran OR pradaxa OR ximelagatran OR exanta OR vitamin k antagonists OR vka OR warfarin OR "Warfarin"[Mesh] OR coumadin OR aspirin OR "Aspirin"[Mesh] OR salicylate AND (1990:2021[pdat])) AND (("Lower Extremity"[Mesh]) OR "Bones of Lower Extremity"[Mesh] OR Extremity Bones, Lower OR Lower Extremity Bones OR Extremities, Lower OR Lower Extremities OR Lower Limb OR Limb, Lower OR Limbs, Lower OR Lower Limbs OR Membrum inferius OR Extremity, Lower AND (1990:2022[pdat]))) AND (hardware removal OR surgical hardware removal\* OR removal of hardware OR removal orthopedic hardware OR Screw\* Removal OR Plate\* Removal OR Wire\* Removal OR pins Removal OR pin Removal OR rods Removal OR rod Removal OR nail\* Removal OR Spinal fixation device\* Removal OR Fracture fixation Removal OR Ilizarov devic\* Removal OR "Device Removal"[Mesh] OR Fixator, Internal OR Fixators, Internal OR Internal Fixator OR Fixation Devices, Internal OR Device, Internal Fixation OR Devices, Internal Fixation OR Fixation Device, Internal OR Internal Fixation Device OR Internal Fixation Devices OR "Internal Fixators"[Mesh] AND (1990:2021[pdat]))) Filters: English, from 1990 - 2021

**Total: 685 results**

***Inclusion Criteria:***

* Discussion of implant removal from lower limb
* Discussion of venous thromboembolism
* Discussion of venous thromboembolism prophylaxis
* English articles

***Exclusion Criteria:***

* Not in English
* No mention of venous thromboembolism.

**17 - Should patients undergoing hardware removal of upper extremity require routine VTE prophylaxis?**

**Search Terms:**

((Venous Thromboembolism Prophylaxis OR preventative VTE treatment OR anti-clotting OR antithrombotic OR anti-thrombotic OR anticoagulation OR anti-coagulation OR heparin OR lwwh OR low molecular weight heparin OR low-molecular-weight heparin OR "Heparin"[Mesh] OR "Heparin, Low-Molecular-Weight"[Mesh] OR "Dalteparin"[Mesh] OR dalteparin OR fragmin OR "Enoxaparin"[Mesh] OR enoxaparin OR lovenox OR "Nadroparin"[Mesh] OR nadroparin OR fraxiparin OR "Tinzaparin"[Mesh] OR tinzaparin OR "bemiparin" [Supplementary Concept] OR innohep OR low dose unfractionated heparin OR low-dose unfractionated heparin OR lduh OR "Factor Xa Inhibitors"[Mesh] OR direct factor xa inhibitor OR apixaban OR Eliquis OR betrixaban OR bevyxxa OR edoxaban OR savaysa OR rivaroxaban OR "Rivaroxaban"[Mesh] OR xarelto OR Indirect factor xa inhibitors OR fondaparinux OR fondaparin OR arixtra OR direct thrombin inhibitors OR dabigatran OR pradaxa OR ximelagatran OR exanta OR vitamin k antagonists OR vka OR warfarin OR "Warfarin"[Mesh] OR coumadin OR aspirin OR "Aspirin"[Mesh] OR salicylate OR "Acenocoumarol"[Mesh] AND (english[Filter])) AND (Upper Extremity Bone OR Upper Extremity Bones OR Upper Extremity OR Upper Extremity OR ("Bones of Upper Extremity"[Mesh]) OR "Upper Extremity"[Mesh] OR Upper Limb OR Upper Limbs OR Membrum superius OR Shoulder OR "Shoulder"[Mesh] OR "Clavicle"[Mesh] OR Collar bone OR "Scapula"[Mesh] OR "Glenoid Cavity"[Mesh] OR Fossa, Glenoid OR "Humerus"[Mesh] OR "Humeral Head"[Mesh] OR "Arm Bones"[Mesh] OR Axilla Elbow OR "Elbow"[Mesh] AND (english[Filter]))) AND (hardware removal OR surgical hardware removal\* OR removal of hardware OR removal orthopedic hardware OR "Device Removal"[Mesh] OR Screw\* Removal OR Plate\* Removal OR Wire\* Removal OR pins Removal OR pin Removal OR rods Removal OR rod Removal OR nail\* Removal OR Spinal fixation device\* Removal OR Fracture fixation Removal OR Ilizarov device\* Removal OR Fixator, Internal OR Fixators, Internal OR Internal Fixator OR Fixation Devices, Internal OR Device, Internal Fixation OR Devices, Internal Fixation OR Fixation Device, Internal OR Internal Fixation Device OR Internal Fixation Devices OR "Internal Fixators"[Mesh] AND (english[Filter])) Filters: English, from 1990 - 2021

**Total: 37 results**

***Inclusion Criteria:***

* Discussion of implant removal from upper limb
* Discussion of venous thromboembolism
* Discussion of venous thromboembolism prophylaxis
* English articles

***Exclusion Criteria:***

* Not in English
* No mention of venous thromboembolism.