American Society of Hematology Guidelines for Management of Venous Thromboembolism: Diagnosis of Venous Thromboembolism

Supplementary Material 1. Search Strategies

Recommendations 1-10: Diagnosis of Venous Thromboembolism

OVERVIEW	
Interface:	Ovid
Database:	Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) 1946 to Present
Date of Search:	May 9th, 2016
Study Types:	Systematic reviews; diagnostic test accuracy studies; randomized trials
Limits:	None

Search Strategy: search terms (number of results)

Any diagnostic intervention (CTPA, CUS, D-dimer, VQ):

1 ultrasonography/ or ultrasonography, doppler/ (77097)
2 (ultrasound$ or ultrason$ or sonograph$).mp. (365834)
3 or/1-2 (365834)
4 Fibrin Fibrinogen Degradation Products/ (7338)
5 (D-dimer or d dimer).mp. (7096)
6 (label$ adj2 (fibrogen or fibrinogen)).mp. (631)
7 4 or 5 or 6 (11390)
8 exp Cone-Beam Computed Tomography/ (5051)
9 Tomography, Spiral Computed/ (6878)
10 Tomography, X-Ray Computed/ (317079)
11 (compute* tomograph* or compute*-tomograph*).mp. (222821)
12 or/8-11 (431702)
13 exp Ventilation-Perfusion Ratio/ (5575)
14 (lung adj1 (ventilation or perfusion)).ti,ab,kw. (5817)
15 (lung adj ventilation adj scan).ti,ab,kw. (1)
16 (lung adj perfusion adj scan).ti,ab,kw. (146)
17 (lung adj1 scan).ti,ab,kw. (1081)
18 VQ scan.mp. (25)
19 13 or 14 or 15 or 16 or 17 or 18 (11400)
20 3 or 7 or 12 or 19 (773789)

VTE terms:

21 exp Thromboembolism/ or exp Venous Thromboembolism/ (47568)
22 exp Pulmonary Embolism/ (33893)
23 exp Venous Thrombosis/ (48320)
24 Thrombophlebitis/ (21375)
25 (DVT or VTE or PE).mp. (39840)
26 ((Pulmon$ or vein or venous or lung) adj (Emboli$ or thromb$)).mp. (92654)
27 (thrombus* or thrombotic* or thrombolic* or thromboemboli* or thrombos* or embol*).mp. (326912)
28 (((deep or thromb* or stasis) adj2 (vein* or venous)) or (blood flow stasis or blood clot)).mp. (67667)
29 or/21-28 (368661)

Diagnosis filter:

30 exp "Sensitivity and Specificity"/ (469183)
31 (sensitivity or specificity).tw. (809446)
32 (predictive adj3 value$).tw. (81055)

33 exp diagnostic errors/ (101771) 34 ((false adj positiv$) or (false adj negativ$)).tw. (62229) 35 (observer adj variation$).tw. (1026) 36 (roc adj curve$).tw. (18740) 37 (likelihood adj3 ratio$).tw. (11054) 38 likelihood functions/ (18752) 39 *Thromboembolism/di, ra, ri, us (798) 40 *Thrombophlebitis/di, ra, ri, us (3026) 41 *Venous Thrombosis/di, ra, ri, us (3030) 42 or/30-41 (1283612)
43 20 and 29 and 42 (8812) Annotation: Any diagnostic intervention AND VTE AND Diagnosis filter
Systematic review filter: 44 meta-analysis/ (65208) 45 meta-analysis as topic/ (14831) 46 (meta analy* or metanaly* or metaanaly*).ti,ab. (90932) 47 (reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab. (30721) 48 ((systematic* or evidence*) adj2 (review* or overview*)).ti,ab. (105255) 49 (search strategy or search criteria or systematic search or study selection or data extraction).ab. (33398) 50 (search* adj4 literature).ab. (37180) 51 (medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab. (119376) 52 ((pool* or combined) adj2 (data or trials or studies or results)).ab. (38566) 53 cochrane.jw. (12302) 54 or/44-53 (287349) 55 animals/ not humans/ (4203767) 56 exp Animals, Laboratory/ (770845) 57 exp Animal Experimentation/ (7910) 58 exp Models, Animal/ (464566) 59 exp Rodentia/ (2869455) 60 (rat or rats or mouse or mice).ti. (1189636) 61 or/55-60 (4963714) 62 54 not 61 (274387)
63 43 and 62 (254) 64 43 not 63 (8558)
Records Retrieved: Systematic review = 254 Other study design = 8558

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OVERVIEW	
Interface:	Ovid
Database:	Embase 1974 to 2016 Week 07
Date of Search:	May 9th, 2016
Study Types:	Systematic reviews; diagnostic test accuracy studies; randomized trials
Limits:	None

Search Strategy: search terms (number of results)

Any diagnostic intervention (CTPA, CUS, D-dimer, VQ):

1 ultrasonography/ or ultrasonography, doppler/ (195494)
2 (ultrasound$ or ultrason$ or sonograph$).mp. (479288)
3 1 or 2 (554916)
4 fibrin degradation product/ (3142)
5 D dimer/ (13156)
6 (D-dimer or d dimer).mp. (16014)
7 (label$ adj2 (fibrogen or fibrinogen)).mp. (557)
8 4 or 5 or 6 or 7 (18440)
9 exp cone beam computed tomography/ (8539)
10 spiral computer assisted tomography/ (10925)
11 computer assisted tomography/ (580883)
12 (compute* tomograph* or compute*-tomograph*).mp. (360312)
13 or/9-12 (744247)
14 exp lung scintiscanning/ (6764)
15 exp Ventilation-Perfusion Ratio/ (6101)
16 (lung adj1 (ventilation or perfusion)).ti,ab,kw. (7981)
17 (lung adj ventilation adj scan).ti,ab,kw. (3)
18 (lung adj perfusion adj scan).ti,ab,kw. (218)
19 (lung adj1 scan).ti,ab,kw. (1348)
20 VQ scan.mp. (105)
21 14 or 15 or 16 or 17 or 18 or 19 or 20 (18644)
22 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 (1239511)

VTE terms:

23 exp vein thrombosis/ (100825)
24 exp Venous Thromboembolism/ (111295)
25 exp 'lung embolism'/ (70029)
26 Thrombophlebitis/ (16025)
27 (PE or DVT or VTE).mp. (62340)
28 ((Pulmon$ or vein or venous or lung) adj (Emboli$ or thromb$)).mp. (166579)
29 (thrombus* or thrombotic* or thrombolic* or thromboemboli* or thrombos* or embol*).mp. (527773)
30 (((deep or thromb* or stasis) adj2 (vein* or venous)) or (blood flow stasis or blood clot)).mp. (158324)
31 or/23-30 (597688)

Diagnosis filter:

32 exp "sensitivity and specificity"/ (245520)
33 (sensitivity or specificity).tw. (958912)
34 (predictive adj3 value$).tw. (114518)
35 ((false adj positiv$) or (false adj negativ$)).tw. (77829)

36 (observer adj variation$).tw. (1345) 37 (roc adj curve$).tw. (33158) 38 (likelihood adj3 ratio$).tw. (14400) 39 *Diagnostic Accuracy/ (6352) 40 *Thromboembolism/di (2018) 41 *Thrombophlebitis/di (1624) 42 *Venous Thrombosis/di (926) 43 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 (1192770)
44 22 and 31 and 43 (8959) Annotation: Any diagnostic intervention AND VTE AND Diagnosis filter
Systematic review filter: 45 systematic review/ (105938) 46 meta-analysis/ (108354) 47 (meta analy* or metanaly* or metaanaly*).ti,ab. (119945) 48 (reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab. (35710) 49 ((systematic* or evidence*) adj2 (review* or overview*)).ti,ab. (129874) 50 (search strategy or search criteria or systematic search or study selection or data extraction).ab. (38947) 51 (search* adj4 literature).ab. (46763) 52 (medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab. (147674) 53 ((pool* or combined) adj2 (data or trials or studies or results)).ab. (49701) 54 cochrane.jw. (13184) 55 or/45-54 (384419) 56 animals/ not humans/ (1150971) 57 nonhuman/ (4742930) 58 exp Animal Experiment/ (1824805) 59 exp Experimental Animal/ (508398) 60 animal model/ (868145) 61 exp Rodent/ (3009466) 62 (rat or rats or mouse or mice).ti. (1283287) 63 56 or 57 or 58 or 59 or 60 or 61 or 62 (6713559) 64 55 not 63 (347559)
65 44 and 64 (367) 66 44 not 65 (8592)
Records Retrieved: Systematic review = 367 Other study design = 8592

OVERVIEW

Interface:	Cochrane Library
Database:	Cochrane Database of Systematic Reviews
Date of Search:	May 9th, 2016
Study Types:	Systematic reviews
Limits:	Publication date from 2006

Search Strategy: search terms (number of results)

Any diagnostic intervention (CTPA, CUS, D-dimer, VQ):

#1	MeSH descriptor: [Ultrasonography] this term only	940
#2	MeSH descriptor: [Ultrasonography, Doppler] this term only	542
#3	(ultrasound* or ultrason* or sonograph*)	24608
#4	#1 or #2 or #3	24608
#5	MeSH descriptor: [Ventilation-Perfusion Ratio] explode all trees	132
#6	(lung near/1 (ventilation or perfusion)):ti,ab,kw	1068
#7	(lung near ventilation near scan):ti,ab,kw	19
#8	(lung near perfusion near scan):ti,ab,kw	42
#9	(lung near/1 scan):ti,ab,kw	66
#10	(VQ scan)	11
#11	#5 or #6 or #7 or #8 or #9 or #10	1218
#12	MeSH descriptor: [Fibrin Fibrinogen Degradation Products] this term only	488
#13	(D-dimer or d dimer)	1190
#14	(label* near/2 (fibrogen or fibrinogen))	63
#15	#12 or #13 or #14	1400
#16	MeSH descriptor: [Tomography, X-Ray Computed] this term only	4171
#17	MeSH descriptor: [Cone-Beam Computed Tomography] explode all trees	139
#18	MeSH descriptor: [Tomography, Spiral Computed] this term only	215
#19	(compute* tomograph* or compute*-tomograph*)	13501
#20	(CT or CAT or CAPT):ti,ab	10276
#21	#16 or #17 or #18 or #19 or #20	18898
#22	#4 or #11 or #15 or 21	130946

VTE terms:

#23	MeSH descriptor: [Venous Thrombosis] explode all trees	2448
#24	MeSH descriptor: [Thromboembolism] explode all trees	1892
#25	MeSH descriptor: [Venous Thromboembolism] explode all trees	513
#26	MeSH descriptor: [Pulmonary Embolism] explode all trees	982
#27	MeSH descriptor: [Thrombophlebitis] this term only	1095
#28	(DVT or VTE or PE)	9108
#29	((Pulmon* or vein or venous or lung) near (Emboli* or thromb*))	9413
#30	(Thrombus* or thrombotic* or thrombolic* or thromboemboli* or thrombos* or embol*)	22668
#31	(((deep or thromb* or stasis) near/2 (vein* or venous)) or (blood flow stasis or blood clot))	8726
#32	#23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31	30977
#33	#22 and #32	7717

Diagnosis filter:

#34	MeSH descriptor: [Sensitivity and Specificity] explode all trees	17846

#35 (sensitivity or specificity) 59020 #36 (predictive adj3 value$) 157 #37 MeSH descriptor: [Diagnostic Errors] explode all trees 2854 #38 (false adj positiv*) or (false adj negativ*) 202 #39 (observer adj variation*) 263 #40 (roc adj curve*) 43 #41 (likelihood adj3 ratio*) 638 #42 MeSH descriptor: [Likelihood Functions] explode all trees 393 #43 MeSH descriptor: [Thromboembolism] explode all trees and with qualifier(s): [Diagnosis - DI, Radiography - RA, Radionuclide imaging - RI, Ultrasonography - US] 229 #44 MeSH descriptor: [Thrombophlebitis] explode all trees and with qualifier(s): [Diagnosis - DI, Radiography - RA, Radionuclide imaging - RI, Ultrasonography - US] 260 #45 MeSH descriptor: [Venous Thrombosis] explode all trees and with qualifier(s): [Diagnosis - DI, Radiography - RA, Radionuclide imaging - RI, Ultrasonography - US] 537 #46 #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 67078
#47 #33 and #46 Publication Year from 2006 to 2016 1935 Annotation: Any diagnostic intervention AND VTE AND Diagnosis filter
All Results (1935) Cochrane Reviews (1443) Review (1206) Protocol Other Reviews (87) Trials (342) Methods Studies (2) Technology Assessments (1) Economic Evaluations (48) Cochrane Groups (12)
Records Retrieved: 1294 Cochrane reviews: 1206 Other reviews: 87 Technology Assessments: 1

Supplementary Material 2. Evidence profiles for low-risk and high-risk patients with suspected upper extremity deep vein thrombosis

D-Dimer

Table S1. D-dimer test accuracy in a low and high prevalence population

Click link for interactive summary of findings (iSoF) table.

Patient or population: Patients with suspected upper extremity deep vein thrombosis
Setting: Inpatient and outpatient
Pooled sensitivity: 0.96 (95% CI: 0.87 to 0.99) | **Pooled specificity:** 0.47 (95% CI: 0.43 to 0.52)

Test result	Number of results per 1,000 patients tested (95% CI)		Number of participants (studies)	Quality of the Evidence (GRADE)
	Prevalence 10%[1]	Prevalence 40%[1,2]		
True positives (patients with upper extremity DVT)	**96** (87 to 99)	**385** (348 to 396	482 (3)	⊕⊕⊕◯ **Moderate** [a,b,]
False negatives (patients incorrectly classified as not having upper extremity DVT)	**4** (1 to 13)	**15** (4 to 52)		
True negatives (patients without upper extremity DVT)	**425** (384 to 467)	**284** (256 to 312)	482 (3)	⊕⊕⊕◯ **Moderate** [a,b,]
False positives (patients incorrectly classified as having upper extremity DVT)	**475** (433 to 516)	**316** (286 to 344)		
Inconclusive test results	Not reported			
Complications arising from the diagnostic test	Not reported			

CI: Confidence interval

[1] Constans J et al. ThrombHaemost. 2008; 99(1):202-7.

[2] Kleinjan A et al. Annals of Internal Medicine 2014; 160:451-457.

Explanations

a. Not downgraded for risk of bias, although few studies had unclear information on the standard reference test

b. Downgraded for imprecision; small number of patients included in studies.

Duplex Ultrasound

Table S2. Duplex ultrasound test accuracy in a low and high prevalence population

Click link for interactive summary of findings (iSoF) table.

Patient or population: Patients with suspected upper extremity deep vein thrombosis
New test: Duplex ultrasound
Setting: Inpatient and outpatient
Pooled sensitivity: 0.87 (95% CI: 0.73 to 0.94) | **Pooled specificity:** 0.85 (95% CI: 0.72 to 0.93)

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Test result	Number of results per 1,000 patients tested (95% CI)		Number of participants (studies)	Quality of the Evidence (GRADE)
	Prevalence 10%[1]	Prevalence 40%[1,2]		
True positives (patients with upper extremity DVT)	**87** (73 to 95)	**349** (292 to 378)	465 (7)	⊕⊕⊕◯ **Moderate** [a,b,]
False negatives (patients incorrectly classified as not having upper extremity DVT)	**13** (5 to 27)	**51** (22 to 108)		
True negatives (patients without upper extremity DVT)	**764** (646 to 833)	**509** (431 to 556)	465 (7)	⊕⊕⊕◯ **Moderate** [a,b,]
False positives (patients incorrectly classified as having upper extremity DVT)	**136** (67 to 254)	**91** (44 to 169)		
Inconclusive test results	Not reported			
Complications arising from the diagnostic test	Not reported			

CI: Confidence interval

[1] Constans J et al. ThrombHaemost. 2008 Jan;99(1):202-7.

[2] Kleinjan A et al. Annals of Internal Medicine 2014; 160:451-457.

Explanations

a. Not downgraded for risk of bias, though few studies had unclear information on standard reference test

b. One study (Haire 1993) had wide confidence interval for sensitivity and specificity, not overlapping with other studies. In consideration of the inconsistency and imprecision, we downgraded by one level.

Supplementary Material 3. Excluded Studies

Reasons for Exclusions:

Ineligible study design (not RCT, prospective study, cohort study, case control, cross sectional study)	3
Inappropriate population (not evaluating upper extremity DVT)	5
Ineligible intervention (not test of interest)	5
Inappropriate outcome (unable to calculate complete test accuracy)	11

Constans, J., Salmi, L., et al. "A Clinical Prediction Score for Upper Extremity Deep Venous Thrombosis." *Thrombosis and Haemostasis*, Schattauer GmbH, 24 Nov. 2017, https://www.thieme-connect.com/products/ejournals/html/10.1160/TH07-08-0485.

Crowley, A.L., et al. "Venous Thrombosis in Patients with Short- and Long-Term Central Venous Catheter–Associated Staphylococcus Aureus Bacteremia*." *Critical Care Medicine*, vol. 36, no. 2, 2008, pp. 385–390., doi:10.1097/01.ccm.0b013e3181611f914.

Chao, A., Yung, W., Robinson, J., Chong, P., Crozier, J. "Duplex Ultrasonography in the Detection of Superficial and Deep Venous Thrombosis of the Upper Limb – An Analysis of 34 Patients." *The Journal of Vascular Technology*, vol 25, no. 1, 2001, pp 27-30.

Delluc, Aurelien, and Philip S Wells. "Low Failure Rate Reported of Diagnosis Algorithm for Suspected Upper Extremity Deep Vein Thrombosis." *Evidence Based Medicine*, vol. 19, no. 5, 2014, pp. 189–189., doi:10.1136/ebmed-2014-110025.

Falk, Rl, and Df Smith. "Thrombosis of Upper Extremity Thoracic Inlet Veins: Diagnosis with Duplex Doppler Sonography." *American Journal of Roentgenology*, vol. 149, no. 4, 1987, pp. 677–682., doi:10.2214/ajr.149.4.677.

Fischer, M., et al. "Katheterinduzierte Thrombosen - Duplexsonographische Untersuchungen Zu Häufigkeit Und Ausmaß." *Ultraschall in Der Medizin*, vol. 15, no. 06, 1994, pp. 304–307., doi:10.1055/s-2007-1003969.

Giess, Catherine S., et al. "Clinical Experience With Upper Extremity Venous Sonography in a High-Risk Cancer Population." *Journal of Ultrasound in Medicine*, vol. 21, no. 12, 2002, pp. 1365–1370., doi:10.7863/jum.2002.21.12.1365.

Grassi, C J, and J F Polak. "Axillary and Subclavian Venous Thrombosis: Follow-up Evaluation with Color Doppler Flow US and Venography." *Radiology*, vol. 175, no. 3, 1990, pp. 651–654., doi:10.1148/radiology.175.3.2188295.

Hill, Stephen L., et al. "Selective Use of the Duplex Scan in Diagnosis of Deep Venous Thrombosis." *The American Journal of Surgery*, vol. 170, no. 2, 1995, pp. 201–205., doi:10.1016/s0002-9610(99)80286-4.

Karabay, O, et al. "Upper Extremity Deep Vein Thrombosis: Clinical and Treatment Characteristics." *Journal of International Medical Research*, vol. 32, no. 4, 2004, pp. 429–435., doi:10.1177/147323000403200413.

Kassem, Tamer W. "Upper Limb DVT after Hemodialysis AVF Creation: Role of CT Venography." *The Egyptian Journal of Radiology and Nuclear Medicine*, vol. 47, no. 3, 2016, pp. 897–902., doi:10.1016/j.ejrnm.2016.05.011.

Kazmers, Andris, et al. "Duplex Examination of the Inferior Vena Cava." *The American Surgeon*, vol. 66, no. 10, pp. 986-989.

Kerr, Thomas M., et al. "Upper Extremity Venous Thrombosis Diagnosed by Duplex Scanning." *The American Journal of Surgery*, vol. 160, no. 2, 1990, pp. 202–206., doi:10.1016/s0002-9610(05)80307-1.

Knudson, G J, et al. "Color Doppler Sonographic Imaging in the Assessment of Upper-Extremity Deep Venous Thrombosis." *American Journal of Roentgenology*, vol. 154, no. 2, 1990, pp. 399–403., doi:10.2214/ajr.154.2.2136963.

Kröger, K., et al. "Colour Doppler Sonographic Diagnosis of Upper Limb Venous Thromboses." *Clinical Science*, vol. 94, no. 6, 1998, pp. 657–661., doi:10.1042/cs0940657.

Lacapra, S., et al. "The Use of Thrombus Precursor Protein, D-Dimer, Prothrombin Fragment 1.2, and Thrombin Antithrombin in the Exclusion of Proximal Deep Vein Thrombosis and Pulmonary Embolism." *Blood Coagulation and Fibrinolysis*, vol. 11, no. 4, 2000, pp. 371–377., doi:10.1097/00001721-200006000-00009.

Massoure, P.l., et al. "Thromboses Veineuses Profondes Des Membres Supérieurs." *Journal Des Maladies Vasculaires*, vol. 25, no. 4, 2000, doi:10.1016/s0248-8663(00)87661-4.

Ong, B, et al. "Peripherally Inserted Central Catheters and Upper Extremity Deep Vein Thrombosis." *Australasian Radiology*, vol. 50, no. 5, 2006, pp. 451–454., doi:10.1111/j.1440-1673.2006.01623.x.

Tan, M., et al. "High Percentage of Non-Diagnostic Compression Ultrasonography Results and the Diagnosis of Ipsilateral Recurrent Proximal Deep Vein Thrombosis." *Journal of Thrombosis and Haemostasis*, 2010, doi:10.1111/j.1538-7933.2010.03758.x.

Van Es, Nick, et al. "A Clinical Decision Rule and D-Dimer Testing to Rule out Upper Extremity Deep Vein Thrombosis in High-Risk Patients." *Thrombosis Research*, vol. 148, 2016, pp. 59–62., doi:10.1016/j.thromres.2016.10.019.

Wang, SY. "The Diagnosis and Therapy of Acute Upper Limbs Deep Venous." *Zhongua Yi Xue Hui Beijing*, vol. 5, no. 90, 5 Jan. 2010, pp. 38–41.

Weaver., et al. "Limited B-Mode Venous Imaging versus Complete Color-Flow Duplex Venous Scanning for Detection of Proximal Deep Venous Thrombosis." *Journal of Vascular Surgery*, vol. 22, no. 5, 1995, pp. 553–557., doi:10.1016/s0741-5214(95)70037-4.

Yao, S.t., et al. "Detection Of Proximal-Vein Thrombosis By Doppler Ultrasound Flow-Detection Method." *The Lancet*, vol. 299, no. 7740, 1972, pp. 1–4., doi:10.1016/s0140-6736(72)90001-3.

Zontisch, T. "CT-Phlebographie Eine Neue Methde Zur Diagnostik Von Venenthrombosen an Der Oberen Und Unteren Extremitat." *Der Radiologe*, vol. 38, 1998, pp. 586–590.

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Supplementary Material 4. Risk of bias assessment for individual studies.

Low: low risk of bias introduced by study methods
High: high risk of bias introduced by study methods
Unclear: unclear risk of bias due to insufficient data reported to permit a judgment

Whiting PF, Rutjes AWS, Westwood ME, Mallett S, Deeks JJ, Reitsma JB, Leeflang MMG,Sterne JAC,Bossuyt PMM:QUADAS-2: a revised tool for the quality assessment of diagnostic accuracystudies.Ann Intern Med2011,155(8):529-536.

Duplex Ultrasound

Study	Patient Selection	Index Test	Reference Standard	Flow and Timing
Baarslag, 2002	Low	Low	Low	Low
Baxter, 1991	Low	Low	Low	Low
Haire, 1991	Low	Low	Low	Low
Koskoy, 1995	Low	Low	Low	Low
Kleinjan, 2014	Low	Low	Low	Low
Prandoni, 1997	Low	Low	Low	Low
Sottiurai, 1982	Low	low	high	Low
Sartori, 2015	Low	Low	Low	Low

D-dimer

Study	Patient Selection	Index Test	Reference Standard	Flow and Timing
Kleinjan, 2014	Low	Low	Low	High
Merminod, 2005	Low	Low	Low	Low
Sartori, 2015	Low	Low	Low	Low

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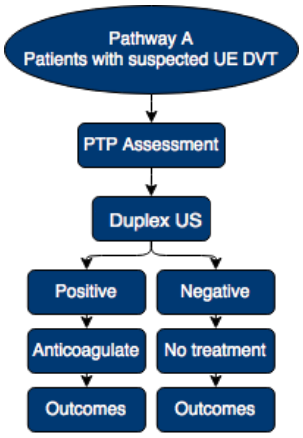
Supplementary Material 5. Diagnostic Pathways Assessed for Upper Extremity DVT

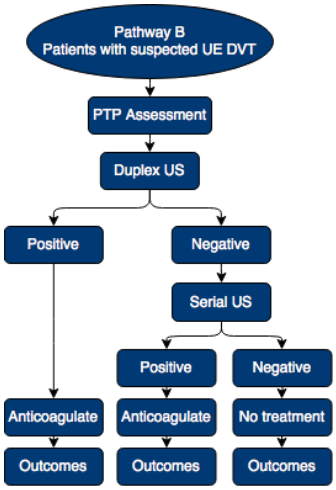
a. Duplex US

- Positive duplex US → anticoagulate
- Negative duplex US → no treatment



b. Duplex US

- Positive duplex US → anticoagulate
- Negative duplex US → serial US
    - Positive serial US → anticoagulate
    - Negative serial US → no treatment



c. Duplex US

- Positive duplex US → anticoagulate
- Negative duplex US → D-dimer
    - Positive D-dimer → anticoagulate
    - Negative D-dimer → no treatment

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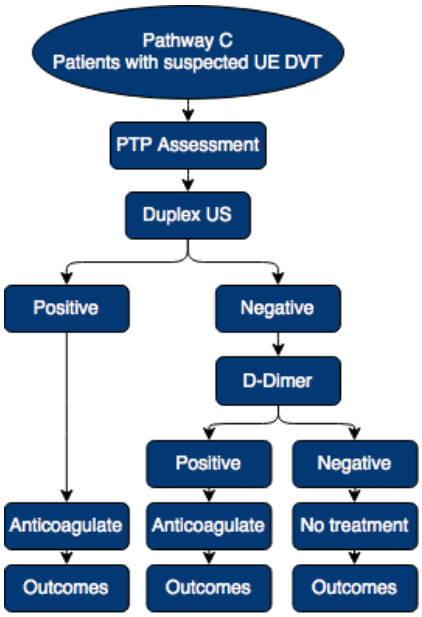
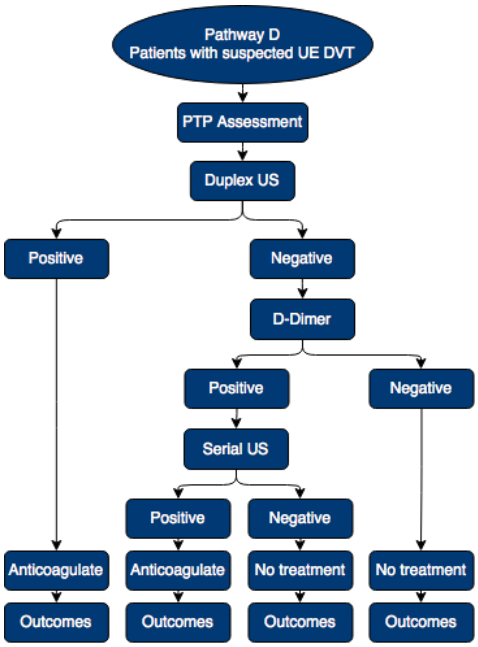


d. Duplex US
- Positive duplex US → anticoagulate
- Negative duplex US → D-dimer
    - Positive D-dimer → serial US
        - Positive serial US → anticoagulate
        - Negative serial US → no treatment
    - Negative D-dimer → no treatment



e. D-dimer
- Positive D-dimer → anticoagulate
- Negative D-dimer → no treatment

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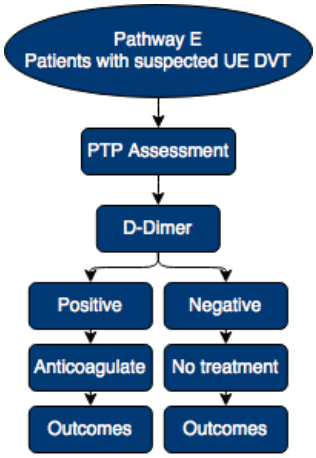
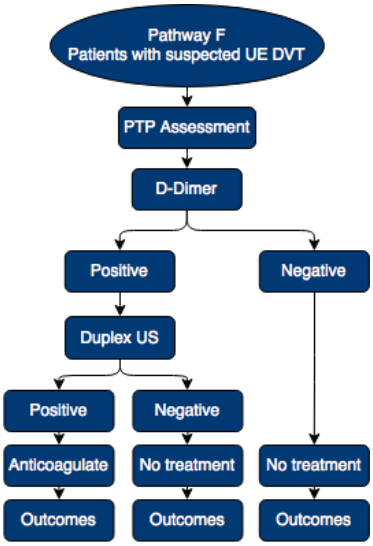


f. D-dimer

- Positive D-dimer → duplex US
    - Positive duplex US → anticoagulate
    - Negative duplex US → no treatment
- Negative D-dimer → no treatment



g. D-dimer

- Positive D-dimer → duplex US
    - Positive duplex US → anticoagulate
    - Negative duplex US → serial US
        - Positive serial US → anticoagulate
        - Negative serial US → no treatment
- Negative D-dimer → no treatment

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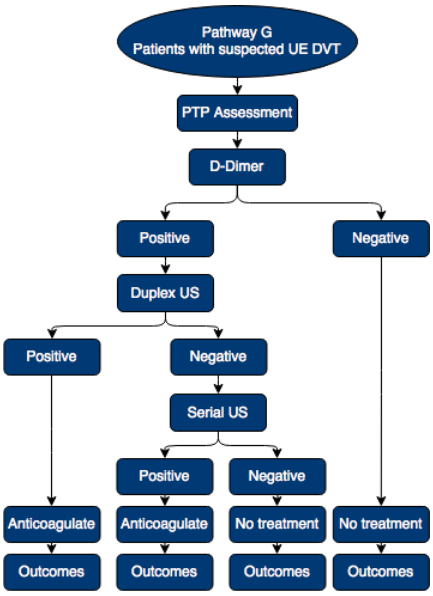
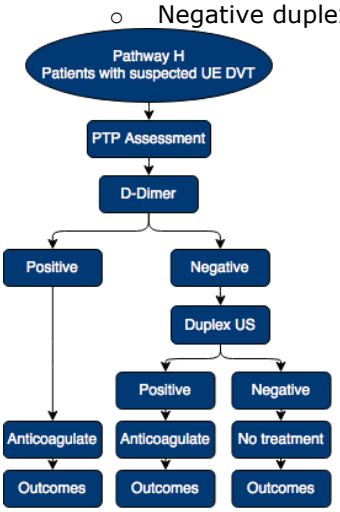


h. D-dimer

- Positive D-dimer → anticoagulate
- Negative D-dimer → duplex US
    - Positive duplex US → anticoagulate
    - Negative duplex US → no treatment



Note: in the algorithms, watchful waiting will follow negative tests unless stated otherwise.

Legend	
DVT	deep vein thrombosis
PTP	pretest probability
US	ultrasound