

Clinical trials of GCS

TrialResults-center www.trialresultscenter.org

1 thrombosis prevention

Trial	Treatments	Patients	Trials design and methods
GCS vs ???			
Schirai , 1985 n=126/126	-	-	
IPC + GCS vs control			
Turpie , 1989 n=NA follow-up: 14 days	graduated compression stockings plus intermittent pneumatic compression versus untreated control	potential neurosurgical patients	Parallel groups open
IPC + GCS vs GCS			
Goldhaber , 1995 n=164/166 follow-up: hospital stay	intermittent pneumatic compression (IPC) plus graduated compression stockings (GCS) versus standard compression stockings alone	patients undergoing coronary artery bypass without concomitant valve surgery or coronary endarterectomy	open
Fordyce , 1992 n=NA follow-up:	venous foot pump (A-V Impulse System) versus control	elective hip replacement	open
Rokito , 1996 n=NA follow-up:	TED stockings and thigh-length cuffs that provided sequential pneumatic compression to the calf and thigh versus bilateral thigh-high thrombosis embolic deterrent (TED) compression stockings (Kendall Company, MA).	neurosurgery	Parallel groups open
Turpie , 1989 n=NA follow-up: 14 days	graduated compression stockings plus intermittent pneumatic compression versus graduated compression stockings alone	neurosurgery	open
Wautrecht , 1996 n=NA	-	neurosurgery	open
Caprini , 1983 n=NA	-	general surgery	open

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Trial	Treatments	Patients	Trials design and methods
Lacut , 2005 n=151 follow-up: 1 days	elastic stockings combined with intermittent pneumatic compression versus elastic stockings alone	patients with a documented intracerebral hemorrhage	Parallel groups open
Pambianco , 1995 n=NA	-	stroke	open
IPC + GCS +LMWH vs GCS +LMWH			
Dickinson , 1998 n=23/21 follow-up: 1 month	sequential compression device +enoxaparin (+ GCS) versus enoxaparin (+GCS)	neurosurgery, patients with brain tumors	open
IPC + GCS vs LMWH			
Norgren , 1998 n=NA follow-up:	IPCD/FID + GCS versus LMWH	elective knee replacement	open
GCS vs no prophylaxis			
Barnes , 1978 n=10/8 follow-up:	graded-compression stockings versus nostockings	patients undergoing total hip replacement	parallel groups
*Inada , 1983 n=NA follow-up:	graduated compression stocking on one leg versus no GCS on the other leg serving as a control.	patients undergoing major surgery	
Rosengarten , 1970 n=NA	-	-	
*Ohlund , 1983 n=NA follow-up:	-	elective total hip arthroplasty	
*Wille-Jorgensen , 1989 n=NA follow-up:	regional anesthesia and graded compression stockings versus general anesthesia	elective hip arthroplasty	
*Tsapogas , 1971 n=51/44	-	-	
*Scurr , 1977 n=70/70 follow-up:	graduated static compression stockings on one leg versus other leg being used as a control	patients undergoing 65279;Abdominal surgery	open

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Trial	Treatments	Patients	Trials design and methods
Turner , 1984 n=104/92 follow-up:	graduated compression stockings versus not wear the stockings	patients undergoing Gynecologic surgery	parallel groups
Allan , 1983 n=97/103 follow-up:	graduated compression stockings versus control	patients undergoing Abdominal surgery	parallel groups
Turpie (GCS vs ctrl) , 1989 n=80/81 follow-up:	graduated compression stockings versus untreated control	patients undergoing Neurosurgery surgery	
Holford , 1976 n=48/47 follow-up:	Graded compression versus control	patients undergoing major operations	parallel groups
CLOTS , 2009 n=1256/1262 follow-up: 30 days	Thigh length graduated Compression Stockings versus no graduated Compression Stockings	Acute Stroke patients	Parallel groups open, blind assessor 3 countries
IPD or GCS vs no prophylaxis			
Turpie (IPD or GCS) , 1989	-	-	
n=78/81 follow-up:			
IPC + GCS vs UFH			
Niolaides , 1983 n=NA follow-up:	IPCD + GCS versus UFH	general surgery	open
Santori , 1994 n=67/65 follow-up:	IPC + GCS versus UFH	elective hip replacement	open
GCS + asp vs aspirin			
Muir , 2000 n=NA follow-up:	graded compression stockings versus standard care alone	stroke	Parallel groups open (blinded assessment)
Kierkegaard , 1993 n=NA follow-up:	Graduated compression stockings were randomly fitted to one leg versus the otherleg serving as a control	myocardial infraction or ACS	
GCS + dextran vs dextran			

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Trial	Treatments	Patients	Trials design and methods
*Bergqvist , 1984 n=80/80 follow-up:	one leg encased in a graded compression stocking versus other leg unstockinged	patients undergoing Abdominal surgery	
Fredin , 1989 n=44/46 follow-up:	graded compression stockings + dextran versus dextran alone	patients undergoing THR surgery	parallel groups
GCS +IPC vs IPC			
Mellbring , 1986 n=NA follow-up:	graduated static compression + peroperative intermittent pneumatic calf compression versus peroperative intermittent pneumatic calf compression	patients undergoing major abdominal surgery	Factorial plan
Scurr (GCS+IPC vs IPC) , 1987 n=78/78 follow-up:	simultaneous use of graduated compression stockings and intermittent sequential pneumatic compression versus intermittent sequential pneumatic compression	patients undergoing Abdominal surgery	parallel groups
GCS vs LMWH			
Camporese , 2008 n=660/667 follow-up:	full-length graduated compression stocking for 7 days versus once-daily subcutaneous injection of LMWH (nadroparin, 3800 anti-Xa IU) for 7 days or 14 days	patients undergoing knee arthroscopy	Parallel groups open Italy
GCS + LMWH vs LMWH			
Kalodiki (GCS+LMWH vs LMWH) , 1996 n=NA follow-up:	enoxaparin (40 mg once daily) plus graduated elastic compression (TEDR stockings) for 8-12 days versus low molecular weight heparin: (enoxaparin 40 mg once daily)	patients having elective total hip replacement	Parallel groups
Knee length GCS vs Thigh length GCS			
Hui THR , 1996 n=18/22 follow-up:	Knee length GCS versus Thigh length GCS	Orthopaedic patients THR	parallel groups

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Trial	Treatments	Patients	Trials design and methods
Hui TKR , 1996 n=22/32 follow-up:	Knee length GCS versus Thigh length GCS	Orthopaedic patients TKR	parallel groups
William , 1996 n=NA follow-up:	Knee-length graduated compression stockings versus thigh-length graduated compression stoc	orthopaedic surgery	
Porteous , 1989 n=58/58 follow-up:	Knee length GCS versus Thigh length GCS	65279;General surgical patients	parallel groups
Williams , 1988 n=44/44 follow-up:	Knee length GCS versus Thigh length GCS	General surgical patients	parallel groups
Howard , 2004 n=99/195 follow-up:	Knee length GCS versus Thigh length GCS	Breast surgery, oncology, ENT, urology, vascular, neurosurgery. And gastrointestinal surgery	parallel groups
GCS vs UFH			
Fasting , 1985 n=NA follow-up:	graded compression stockings (TED stockings, Kendall Co.) versus low-dose heparin (Heparin Leo 5 000 I.U. subcutaneously twice daily)	elective major surgery	Parallel groups
Hansberry (vs UFH) , 1991 n=NA follow-up: 6 days	thromboembolic stockings versus heparin plus dihydroergotamine	patients undergoing a major urological operation	Parallel groups
Rasmussen (GCS vs UFH) , 1998 n=74/85 follow-up:	graduated compression stockings to the knee (TED stockings) versus subcutaneous heparin	patients (age more than 40 yrs) admitted for major abdominal surgery	Parallel groups open
GCS + UFH vs UFH			
*Rasmussen (adj) , 1988 n=NA follow-up:	subcutaneous heparin and graduated compression stockings to the knee (TED stockings), versus subcutaneous heparin	patients (age more than 40 yrs) admitted for major abdominal surgery	Parallel groups open
Torngren , 1980 n=NA	-	-	

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Trial	Treatments	Patients	Trials design and methods
Wille-Jorgensen , 1985 n=86/90 follow-up:	low-dose heparin treatment with graded compression stockings versus low-dose heparin treatment (5000 units twice daily subcutaneously)	patients undergoing Abdominal surgery	parallel groups
Wille-Jorgensen , 1991 n=83/83 follow-up:	low dose heparin and graded compression stockings versus low dose heparin	patients undergoing Abdominal surgery	parallel groups

More details and results :

- graduated compression stockings for thrombosis prevention in all type of patients at <http://www.trialresultscenter.org/go-Q158>
- mechanical devices for thromboprophylaxis for thrombosis prevention in all type of patients at <http://www.trialresultscenter.org/go-Q402>
- mechanical devices for thromboprophylaxis for thrombosis prevention in orthopaedic surgery at <http://www.trialresultscenter.org/go-Q465>
- mechanical devices for thromboprophylaxis for thrombosis prevention in general non orthopaedic surgery at <http://www.trialresultscenter.org/go-Q466>

References

Schirai, 1985:

Shirai N Study on prophylaxis of postoperative deep vein thrombosis Acta Scholae Medicinalis Universitatis in Gifu 1985, 33(6):1173-83

Turpie, 1989:

Turpie AG, Hirsh J, Gent M, Julian D, Johnson J Prevention of deep vein thrombosis in potential neurosurgical patients. A randomized trial comparing graduated compression stockings alone or graduated compression stockings plus intermittent pneumatic compression with control. Arch Intern Med 1989;149:679-81 [2645846]

Goldhaber, 1995:

Goldhaber SZ, Hirsch DR, MacDougall RC, Polak JF, Creager MA, Cohn LH Prevention of venous thrombosis after coronary artery bypass surgery (a randomized trial comparing two mechanical prophylaxis strategies). Am J Cardiol 1995 Nov 15;76:993-6 [7484878]

Fordyce, 1992:

Fordyce MJ, Ling RS A venous foot pump reduces thrombosis after total hip replacement. J Bone Joint Surg Br 1992 Jan;74:45-9 [1732264]

Rokito, 1996:

Rokito SE, Schwartz MC, Neuwirth MG Deep vein thrombosis after major reconstructive spinal surgery. Spine (Phila Pa 1976) 1996 Apr 1;21:853-8; discussion 859 [8779018]

Turpie, 1989:

Turpie AG, Hirsh J, Gent M, Julian D, Johnson J Prevention of deep vein thrombosis in potential neurosurgical patients. A randomized trial comparing graduated compression stockings alone or graduated compression stockings plus intermittent pneumatic compression with control. Arch Intern Med 1989 Mar;149:679-81 [2645846]

Wautrecht, 1996:

Wautrecht JC, Macquaire V, Vandesteene A, Daoud N, Golzarian J, Capel P. Prevention of deep vein thrombosis in neurosurgical patients with brain tumors: a controlled, randomized study comparing graded compression stockings alone and intermittent sequential compression. Correlation with pre- and postoperative fibrinolysis: preliminary results. International Angiology 1996, 15:5-10

Caprini, 1983:

Caprini JA, Chucker JL, Zuckerman L, Vagher JP, Franck CA, Cullen JE Thrombosis prophylaxis using external compression. Surg Gynecol Obstet 1983 May;156:599-604 [6845123]

Lacut, 2005:

Lacut K, Bressollette L, Le Gal G, Etienne E, De Tinteniak A, Renault A, Rouhart F, Besson G, Garcia JF, Mottier D, Oger E Prevention of venous thrombosis in patients with acute intracerebral hemorrhage. Neurology 2005 Sep 27;65:865-9 [16186525] 10.1212/01.wnl.0000176073.80532.a2

Pambianco, 1995:

Pambianco G, Orchard T, Landau P Deep vein thrombosis: prevention in stroke patients during rehabilitation. Arch Phys Med Rehabil 1995 Apr;76:324-30 [7717832]

Dickinson, 1998:

Dickinson LD, Miller LD, Patel CP, Gupta SK Enoxaparin increases the incidence of postoperative intracranial hemorrhage when initiated preoperatively for deep venous thrombosis prophylaxis in patients with brain tumors. Neurosurgery 1998 Nov;43:1074-81 [9802851]

Norgren, 1998:

Norgren L, Toksvig-Larsen S, Magyar G, Lindstrand A, Albrechtsson U Prevention of deep vein thrombosis in knee arthroplasty. Preliminary results from a randomized controlled study of low molecular weight heparin vs foot pump compression. Int Angiol 1998 Jun;17:93-6 [9754896]

Barnes, 1978:

Barnes RW, Brand RA, Clarke W, Hartley N, Hoak JC Efficacy of graded-compression antiembolism stockings in patients undergoing total hip arthroplasty. Clin Orthop Relat Res 1978;:61-7 [679555]

***Inada, 1983:**

Inada K, Shirai N, Hayashi M, Matsumoto K, Hirose M Postoperative deep venous thrombosis in Japan. Incidence and prophylaxis. Am J Surg 1983;145:775-9 [6859416]

Rosengarten, 1970:

Rosengarten DS, Laird J, Jeyasingh K, Martin P The failure of compression stockings (Tubigrip) to prevent deep venous thrombosis after operation. Br J Surg 1970;57:296-9 [5437927]

***Ohlund, 1983:**

Ohlund C, Fransson SG, Starck SA Calf compression for prevention of thromboembolism following hip surgery. Acta Orthop Scand 1983;54:896-9 [6367345]

***Wille-Jorgensen, 1989:**

Wille-Jorgensen P, Christensen SW, Bjerg-Nielsen A, Stadeager C, Kjaer L Prevention of thromboembolism following elective hip surgery. The value of regional anesthesia and graded compression stockings. Clin Orthop Relat Res 1989;:163-7 [2791385]

***Tsapogas, 1971:**

Tsapogas MJ, Goussous H, Peabody RA, Karmody AM, Eckert C Postoperative venous thrombosis and the effectiveness of prophylactic measures. Arch Surg 1971;103:561-7 [[5117008](#)]

***Scurr, 1977:**

Scurr JH, Ibrahim SZ, Faber RG, Le Quesne LP The efficacy of graduated compression stockings in the prevention of deep vein thrombosis. Br J Surg 1977;64:371-3 [[861482](#)]

Turner, 1984:

Turner GM, Cole SE, Brooks JH The efficacy of graduated compression stockings in the prevention of deep vein thrombosis after major gynaecological surgery. Br J Obstet Gynaecol 1984;91:588-91 [[6733063](#)]

Allan, 1983:

Allan A, Williams JT, Bolton JP, Le Quesne LP The use of graduated compression stockings in the prevention of postoperative deep vein thrombosis. Br J Surg 1983;70:172-4 [[6338992](#)]

Turpie (GCS vs ctrl), 1989:

Turpie AG, Hirsh J, Gent M, Julian D, Johnson J Prevention of deep vein thrombosis in potential neurosurgical patients. A randomized trial comparing graduated compression stockings alone or graduated compression stockings plus intermittent pneumatic compression with control. Arch Intern Med 1989;149:679-81 [[2645846](#)]

Holford, 1976:

Holford CP Graded compression for preventing deep venous thrombosis. Br Med J 1976;2:969-70 [[788855](#)]

CLOTS, 2009:

Dennis M, Sandercock PA, Reid J, Graham C, Murray G, Venables G, Rudd A, Bowler G Effectiveness of thigh-length graduated compression stockings to reduce the risk of deep vein thrombosis after stroke (CLOTS trial 1): a multicentre, randomised controlled trial. Lancet 2009;373:1958-65 [[19477503](#)] [10.1016/S0140-6736\(09\)60941-7](#)

Turpie (IPD or GCS), 1989:

Niolaides, 1983:

Niolaides AN, Miles C, Hoare M, Jury P, Helms E, Venniker R Intermittent sequential pneumatic compression of the legs and thromboembolism-deterrent stockings in the prevention of postoperative deep venous thrombosis. Surgery 1983 Jul;94:21-5 [[6857507](#)]

Santori, 1994:

Santori FS, Vitullo A, Stopponi M, Santori N, Ghera S Prophylaxis against deep-vein thrombosis in total hip replacement. Comparison of heparin and foot impulse pump. J Bone Joint Surg Br 1994 Jul;76:579-83 [[8027144](#)]

Muir, 2000:

Muir KW, Watt A, Baxter G, Grosset DG, Lees KR Randomized trial of graded compression stockings for prevention of deep-vein thrombosis after acute stroke. QJM 2000;93:359-64 [[10873185](#)]

Kierkegaard, 1993:

Kierkegaard A, Norgren L Graduated compression stockings in the prevention of deep vein thrombosis in patients with acute myocardial infarction. Eur Heart J 1993;14:1365-8 [[8262083](#)]

***Bergqvist, 1984:**

Bergqvist D, Lindblad B The thromboprophylactic effect of graded elastic compression stockings in combination with dextran 70. Arch Surg 1984;119:1329-31 [[6208877](#)]

Fredin, 1989:

Fredin H, Bergqvist D, Cederholm C, Lindblad B, Nyman U Thromboprophylaxis in hip arthroplasty. Dextran with graded compression or preoperative dextran compared in 150 patients. *Acta Orthop Scand* 1989;60:678-81 [[2483018](#)]

Mellbring, 1986:

Mellbring G, Palmr K Prophylaxis of deep vein thrombosis after major abdominal surgery. Comparison between dihydroergotamine-heparin and intermittent pneumatic calf compression and evaluation of added graduated static compression. *Acta Chir Scand* 1986;152:597-600 [[3544626](#)]

Scurr (GCS+IPC vs IPC), 1987:

Scurr JH, Coleridge-Smith PD, Hasty JH Regimen for improved effectiveness of intermittent pneumatic compression in deep venous thrombosis prophylaxis. *Surgery* 1987;102:816-20 [[3672322](#)]

Camporese, 2008:

Camporese G, Bernardi E, Prandoni P, Noventa F, Verlato F, Simioni P, Ntita K, Salmistraro G, Frangos C, Rossi F, Cordova R, Franz F, Zucchetta P, Kontothanassis D, Andreozzi GM Low-molecular-weight heparin versus compression stockings for thromboprophylaxis after knee arthroscopy: a randomized trial. *Ann Intern Med* 2008;149:73-82 [[18626046](#)]

Kalodiki (GCS+LMWH vs LMWH), 1996:

Kalodiki EP, Hoppensteadt DA, Nicolaidis AN, Fareed J, Gill K, Regan F, al-Kutoubi A, Cunningham DA, Birch R, Harris N, Hunt D, Johnson J, Marx C Deep venous thrombosis prophylaxis with low molecular weight heparin and elastic compression in patients having total hip replacement. A randomised controlled trial. *Int Angiol* 1996;15:162-8 [[8803642](#)]

Hui THR, 1996:

Hui AC, Heras-Palou C, Dunn I, Triffitt PD, Crozier A, Imeson J, Gregg PJ Graded compression stockings for prevention of deep-vein thrombosis after hip and knee replacement. *J Bone Joint Surg Br* 1996;78:550-4 [[8682818](#)]

Hui TKR, 1996:

Hui AC, Heras-Palou C, Dunn I, Triffitt PD, Crozier A, Imeson J, Gregg PJ Graded compression stockings for prevention of deep-vein thrombosis after hip and knee replacement. *J Bone Joint Surg Br* 1996;78:550-4 [[8682818](#)]

William, 1996:

Williams AM, Davies PR, Sweetnam DI, Harper G, Pusey R, Lightowler CD Knee-length versus thigh-length graduated compression stockings in the prevention of deep vein thrombosis. *Br J Surg* 1996;83:1553 [[9014671](#)]

Porteous, 1989:

Porteous MJ, Nicholson EA, Morris LT, James R, Negus D Thigh length versus knee length stockings in the prevention of deep vein thrombosis. *Br J Surg* 1989;76:296-7 [[2720328](#)]

Williams, 1988:

Williams JT, Palfrey SM Cost effectiveness and efficacy of below knee against above knee graduated compression stockings in the prevention of deep vein thrombosis. *Phlebologie* 1988;41:809-11 [[3150063](#)]

Howard, 2004:

Howard A, Zaccagnini D, Ellis M, Williams A, Davies AH, Greenhalgh RM Randomized clinical trial of low molecular weight heparin with thigh-length or knee-length antiembolism stockings for patients undergoing surgery. *Br J Surg* 2004;91:842-7 [[15227689](#)]

Fasting, 1985:

Fasting H, Andersen K, Kraemmer Nielsen H, Husted SE, Koopmann HD, Simonsen O, Husegaard HC, Vestergaard Madsen J, Pedersen TK Prevention of postoperative deep venous thrombosis. Low-dose heparin versus graded pressure stockings. Acta Chir Scand 1985;151:245-8 [3892994]

Hansberry (vs UFH), 1991:

Hansberry KL, Thompson IM Jr, Bauman J, Deppe S, Rodriguez FR A prospective comparison of thromboembolic stockings, external sequential pneumatic compression stockings and heparin sodium/dihydroergotamine mesylate for the prevention of thromboembolic complications in urological surgery. J Urol 1991;145:1205-8 [2033693]

Rasmussen (GCS vs UFH), 1998:

Rasmussen A, Hansen PT, Lindholt J, Poulsen TD, Toftdahl DB, Gram J, Toftgaard C, Jespersen J Venous thrombosis after abdominal surgery. A comparison between subcutaneous heparin and antithrombotic stockings, or both. J Med 1988;19:193-201 [2972790]

***Rasmussen (adj), 1988:**

Rasmussen A, Hansen PT, Lindholt J, Poulsen TD, Toftdahl DB, Gram J, Toftgaard C, Jespersen J Venous thrombosis after abdominal surgery. A comparison between subcutaneous heparin and antithrombotic stockings, or both. J Med 1988;19:193-201 [2972790]

Torngren, 1980:

Wille-Jorgensen, 1985:

Wille-Jrgensen P, Thorup J, Fischer A, Holst-Christensen J, Flamsholt R Heparin with and without graded compression stockings in the prevention of thromboembolic complications of major abdominal surgery: a randomized trial. Br J Surg 1985;72:579-81 [4016545]

Wille-Jorgensen, 1991:

Wille-Jrgensen P, Hauch O, Dimo B, Christensen SW, Jensen R, Hansen B Prophylaxis of deep venous thrombosis after acute abdominal operation. Surg Gynecol Obstet 1991;172:44-8 [1702235]

2 coronary artery disease

Trial	Treatments	Patients	Trials design and methods
GCSF Granulocyte-Colony Stimulating Factor vs placebo			
Seiler ongoing [NCT00886509] n=NA follow-up: 6 months	Subcutaneous Administration of Pegylated Granulocyte-Colony Stimulating Factor versus placebo	patients with stable coronary artery disease treatable by PCI	Parallel groups double blind

More details and results :

- cell-based therapies for coronary artery disease in all type of patients at <http://www.trialresultscenter.org/go-Q300>

References

Seiler, :

ongoing trial NCT00886509

Entry terms: UFH