Swedish Science Pioneers
Developing World Journal Series
Journal of Clinical Research & Governance
www.jcrg.sciencepub.se

Clinical Audit

An Integrated Assessment Proforma and Education Package Improves Thromboembolic Prophylaxis Prescription in Urological Patients

Natalia White, Shamil Mubarak, John M Henderson, Jonathan Pattinson, Jonathan Greenland

Wycombe General Hospital,Buckinghamshire Healthcare TrustHigh WycombeHP11 2TT

Correspondence

Natalia White
The Old Bakery
37 Riverside
Wilton
Wiltshire
SP2 0HW
Tel: 01722 336262
email:natalia.white@salisbury.nhs.uk

Keywords:

urology
audit
thrombosis
thromboprophylaxis
vte
dvt

Abstract

Purpose: The National Institute of Clinical Excellence (NICE) has published evidence-based guidance on assessing and reducing the risk of venous thromboembolism (VTE). Despite this, practice and compliance are variable. We report a complete audit cycle, which quantified compliance and then implemented measures to improve compliance to NICE guidelines in Wycombe Hospital (district general hospital, Oxfordshire) Urology Department.

Methods:The case-notes of 48 consecutively discharged inpatients were reviewed and 22 data items extracted. These included evidence of a VTE risk assessment having been completed, prescription of compression stockings and prescription of low molecular weight heparin. From these, the level of compliance with NICE guidelines was determined.

Results:Our initial audit revealed that only 10% of 48 patients had been both risk assessed and prescribed appropriate prophylaxis during their admission. Potential reasons for non-compliance were identified and targeted changes implemented. The three interventions were 1) a urology emergency admission clerking proforma with integrated thromboembolic risk assessment (UAP), 2) formal VTE education for doctors at monthly clinical governance meetings and 3) incorporation of thromboembolic prophylaxis training into junior doctor induction. Six months later, the casenotes of 49 patients were reviewed using identical methodology. The rate of full compliance had risen from 10% to 65%.

Conclusion: An integrated UAP form and education package improves VTE risk assessment and thromboembolic prophylaxis prescription in urological patients. The UAP may also be a useful tool for implementing future improvements to urological practice.

Introduction

Venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary embolus (PE), is a common and potentially fatal post-operative complication. Approximately 15-40% of patients undergoing major urological surgery without VTE prophylaxis develop a DVT post-operatively[1]. Often asymptomatic initially, a DVT can extend proximally and embolise to cause a PE, which accounts for 5-10% of hospital deaths in medicine and surgery each year[2,3]. Despite this, a UK survey in 2005 identified that fewer than 30% of inpatients at medium or high risk of developing venous thromboembolism were given prophylaxis[4].

Following this survey, in 2010, the National Institute of Clinical Excellence (NICE) published evidence-based guidance summarising the need for individual risk assessment and provision of thromboprophylaxis for all hospitalised patients (Table 1)[5]. In developing the final guidance, NICE systematically analysed numerous randomised controlled trials (RCTs), systematic reviews, clinical registries and cohort studies (too numerous to reference here) in order to develop evidence-based recommendations. It was noted that subclinical DVT and PE were common, whilst it was much rarer to encounter clinically detectable thromboembolism; the true incidence of all VTEs is still unknown. Therefore, assessment of VTE risk followed by active prevention was recommended as the most effective way to tackle the clinical problem of VTE.

According to the evidence quantitatively assessed by NICE, a list of risk factors for VTE was produced to facilitate stratification of risk in each patient (Table 2). During the process of guideline development, it was noted that bleeding risk should also be considered prior to offering pharmacological prophylaxis. Similarly, it is recommended that any contraindications to mechanical prophylaxis are identified before offering this treatment. Then to reduce VTE risk, NICE recommends the use of mechanical and pharmacological agents (See Table 1), including lower limb compression devices and low molecular weight heparins. Review of 146 RTCs conducted on patients undergoing abdominal or thoracic surgery found mechanical and pharmacological measures of prophylaxis to be effective with a low incidence of related clinically significant bleeding[5]. Other measures, including optimal mobilisation and hydration, were also highlighted as preventative strategies.

Healthcare trusts have subsequently developed individual strategies to address VTE prevention and clinical audit of concordance with

NICE guidelines and Trust policy is encouraged. This audit addressed guideline compliance among urology inpatients in a district general hospital. This cohort of patients includes a large number who undergo surgery (either open pelvic surgery or renal tract surgery), which adds to the pre-existing individual patient risk factors for developing a DVT or PE. As a study outcome, guideline compliance is a more appropriate measure for a smaller patient group than the incidence of clinically diagnosed DVT or PE. Therefore, the objectives of this audit were: (i) to assess compliance to VTE risk assessment, (ii) to assess the compliance to thromboembolic prophylaxis prescription and (iii) to identify and implement solutions.

Table 1: VTE prevention guidelines for surgical inpatients from NICE

1	Document VTE risk assessment for all patients on admission
2	Identify contraindications to mechanical or pharmacological prophylaxis
3	If at risk, offer suitable mechanical prophylaxis (unless contraindicated). Choose any one of: • antiembolism stockings (thigh or knee -high) • foot impulse devices • intermittent pneumatic compression devices
4	If at risk, offer suitable pharmacological prophylaxis (unless contraindicated). Choose any one of: • Fondapinux sodium • Low molecular weight heparin (LMWH) • Unfractionated heparin (UFH)
5	Avoid dehydration and encourage mobilisation where possible
6	Provide patient information
7	Ensure the correct use of prophylaxis
8	Identify adverse effects resulting from prophylaxis

Adapted from NICE Clinical Guideline 92: Venous thromboembolism: reducing the risk[5].

Table 2: Risk factors for VTE in surgical patients

1	Active cancer or cancer treatment
2	Acute surgical admission with inflammatory or intra-abdominal condition
3	Age > 60 years
4	Critical care admission
5	Dehydration
6	Expected to have significant reduction in mobility
7	Hip or knee replacement surgery (including within last 6 weeks)
8	Known thrombophilias
9	Obesity (BMI > 30 kg/m^2)
10	One or more significant medical comorbidities
11	Personal history or first degree relative with history of VTE
12	Total anaesthetic plus surgical time of > 90 minutes (or > 60 minutes if surgery involves the pelvis or lower limb)
13	Use of hormone replacement therapy
14	Use of oestrogen-containing contraceptive therapy
15	Varicose veins with phlebitis

Adapted from NICE Clinical Guideline 92: Venous thromboembolism: reducing the risk (Chapter 5)[5].

Methods

Cycle-1:

As a retrospective audit, we examined the notes of 50 adult inpatients consecutively discharged from the Urology Ward at Wycombe Hospital (district general hospital in Oxfordshire) over 2 months (February to March 2011). A sample size of 50 was calculated using the Raosoft online sample size calculator (www.raosoft.com/samplesize.html) based on a population size of 300 (urology admissions per year), 90% confidence level, 10% error and 30% response distribution based upon the 2005 UK survey[4]. Data were obtained from the electronic and paper case-notes. Patients were excluded from data collection if: (i) their hospital stay lasted less than 24 hours (e.g. patients attending for trial without catheter clinics who were not formally admitted, or patients attending for daycase procedures for which the trust uses separate guidelines); or (ii) they were under the care of a non-urological team. During the first cycle, there were 2 exclusions (due to duplication and patient under care of non-urological team), leaving a total sample of 48 patients. Twenty-two different variables were extracted using a standardised audit proforma (Appendix 1).

Documented evidence of a VTE risk assessment was recorded as either present or absent. The outcome of the risk assessment (or, where no risk assessment was present, the outcome of a retrospective assessment completed using the information available in the clinical notes) was also recorded. This outcome determined the VTE prophylaxis that should have been prescribed, which was compared to the prophylaxis that had actually been prescribed. Each inpatient stay was then graded as: (1) Fully compliant; (2) Partially compliant; or (3) Non compliant with NICE guidelines (Table 3).

Statistical analysis:

Data was tabulated and calculations performed using Microsoft Office Excel 2011 (Microsoft, Redmond, Washington). All discrete variables were analysed using Pearson's Chi-squared test, with statistical significance being set at $p < 0.05$.

Interventions:

After evaluation of the results, three targeted interventions were made. These were:

1) An integrated urology emergency admission clerking proforma (UAP), containing a VTE risk assessment form and guidance (Appendix 2);
2) Education of doctors at clinical governance, including a presentation and multidisciplinary team discussion of what constituted 'routine' prophylaxis for urology patients with subsequent creation of a poster to display this information (Appendix 3); and
3) Incorporation of formal thromboembolic prophylaxis training into junior doctor induction, by way of written material.

Cycle-2:
After 6 months (after a new rotation of junior doctors had received induction), between September and October 2011, a re-audit was performed using identical methodology to Cycle-1. After an exclusion (duplication), the total sample consisted of 49 patients in Cycle-2.

Table 3: Method applied in this audit for grading inpatient stays according to their level of compliance with NICE guidelines on VTE prevention

	Method	Description
1	Fully compliant	Documented evidence of a VTE risk assessment having been performed AND the appropriate prophylaxis prescribed
2	Partially compliant	Appropriate prophylaxis prescribed BUT NO documented evidence of a VTE risk assessment having been performed
3	Non compliant	NO appropriate prophylaxis prescribed (inappropriate type, dose, frequency or duration of prophylaxis, or prophylaxis erroneously omitted)

Using data gathered on the standardised audit proforma (Appendix 1) each inpatient stay was graded according to the criteria in this table. Taken from Buckinghamshire Healthcare NHS Trust Guideline, 2010[6].

Results

Forty-eight urology patients were audited in Cycle-1 and, following interventions, 49 patients audited in Cycle-2. The demographics and presenting complaints of the patients sampled in each cycle were not substantially different across the 2 groups (Table 4; Figure 1). There were a larger proportion of emergency admissions in Cycle-2 and slightly fewer operations performed in Cycle-2, but the difference was not statistically significant. There were 20 admissions with a known urological cancer in Cycle-1, in comparison to 12 patients with a known urological cancer in Cycle-2; the biggest difference was in the rate of prostate cancer diagnoses between the 2 cycles. The mean number of risk factors for VTE in Cycle-1 was 2.2 (range: 0–6), and in Cycle-2 was 2.0 (range: 0–4).

Cycle-1:
Full compliance with NICE guidelines was achieved in only 10% of the 48 admissions audited in Cycle-1 (Figure 2). Twenty-one percent The underlying reason(s) for the two significant areas of non-compliance were identified in order to target our interventions. Elective admissions were far more likely to be VTE risk assessed than emergency admissions because the clinical staff performing 'pre-assessment' prior to elective operations had been asked to complete a pre-assessment booklet containing a VTE risk assessment table. The first intervention was therefore an integrated urology emergency admission clerking proforma (UAP), containing a VTE risk assessment form, to be used for all emergency admissions (Appendix 2).
All patients in Cycle-1 undergoing major cancer surgery had been non-compliant because they were not prescribed a full 28 days of prophylaxis as per NICE guidelines. This section of NICE guidance was relatively new and therefore less well known. The second intervention was therefore education of doctors at clinical governance to highlight the NICE guidelines and creation of a poster displaying suitable 'routine' prophylaxis for each patient group, as agreed at a multidisciplinary team meeting (Appendix 3). Finally, to address the maintenance of interventions 1 and 2, formal guidance and thromboembolic prophylaxis training was incorporated into junior doctor induction as a third intervention.

Cycle-2:
At re-audit 6 months later, full compliance with NICE guidelines had improved to 65% (from 10% in Cycle-1; Figure 2). The percentage of inpatient admissions that were partially or fully compliant with NICE guidelines had risen to 83%. Emergency admissions were no longer significantly less likely to have been VTE risk assessed (p=0.59), with 87% of elective admissions and 73% of emergency admissions having been risk assessed in Cycle-2. All patients undergoing major cancer surgery in Cycle-2 had been risk assessed and received appropriate thromboprophylaxis for a full 28 days, as per guidelines.

were partially compliant, with suitable prophylaxis prescribed but no documented VTE risk assessment. However the majority (69%) of admissions did not have suitable prophylaxis prescribed despite the presence of risk factors for VTE.
To identify specific areas for improvement, the data from Cycle-1 were analysed by variable. Most demographic variables (including patient age, gender, length of stay, and consultant) did not show a significant association with guideline compliance on Chi-squared testing, although there was a trend towards greater levels of guideline compliance with increasing length of hospital stay. However, elective admissions were significantly more likely than emergency admissions to have been VTE risk assessed (85% and 6% respectively were risk assessed; after Chi-squared analysis p<0.05; Table 5). Furthermore, patients undergoing major surgery for urological cancer were significantly less likely than the remaining patient sample to have been prescribed guideline-compliant thromboprophylaxis (0% and 35% respectively; after Chi-squared analysis p=0.047; see Table 5).

Table 4: A comparison of the patient demographics between Cycle-1 and Cycle-2 of the audit

	Cycle-1	Cycle-2
Number of patients audited	48	49
Mean patient age	66 years (19-89 years)	69 years (20 - 92 years)
Patient gender	85% Male 15% Female	84% Male 16% Female
Mean length of inpatient stay	5.4 days (1 – 41 days)	3.8 days (1 – 17 days)
Admission pathway	69% Elective 31% Emergency	47% Elective 53% Emergency
Mean number of VTE risk factors present	2.2 (Range: 0 – 6)	2.0 (Range: 0 – 4)
Patients having an operation during admission	73%	59%

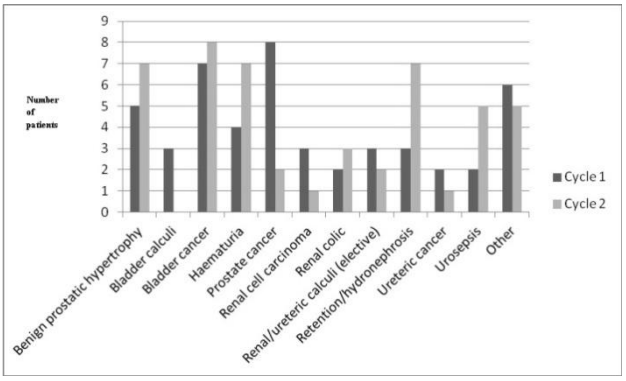

Figure 1: A comparison of the urological diagnoses of patients in Cycle-1 vs Cycle-2 of the audit
(The category 'Other' encompasses problems that were present in one patient (or none) per Cycle, such as phimosis, renal infarct, urinary frequency or incontinence, peritoneal cancer, non-specific abdominal pain, urethral stricture and post-operative bowel perforation.)

Table 5: Breakdown of Cycle-1 results for elective versus emergency admissions and major cancer surgery patients versus all other patients

	Elective admissions	**Emergency admissions**
n	32	16
No. with VTE risk assessment completed	27	1
No. with correct prophylaxis prescribed	7	8
No. fully compliant with NICE guideline 92	5	0
	Major surgery for urological cancer	**All other patients**
n	10	38
No. with VTE risk assessment completed	9	19
No. with correct prophylaxis prescribed	0	15
No. fully compliant with NICE guideline 92	0	5

Elective admissions were significantly more likely than emergency admissions to have been VTE risk assessed (84% and 6% respectively; p = 0.00084, Chi-squared). Patients undergoing major surgery for urological cancer were significantly less likely than other patients to have received the correct prophylaxis (0% and 35% respectively; p = 0.047, Chi-squared)

Discussion

Venous thromboembolism is a common and potentially fatal post-operative complication, but one with the potential to be prevented with the use of appropriate prophylaxis. In 2010 NICE published evidence-based guideline summarising the need for individual risk assessment before the use of simple, mechanical and pharmacological prophylaxis for VTE prevention. It is therefore important to devise robust mechanisms by which all hospital inpatients are assessed for VTE risk and prescribed thromboprophylaxis to avoid the morbidity and mortality associated with VTE.

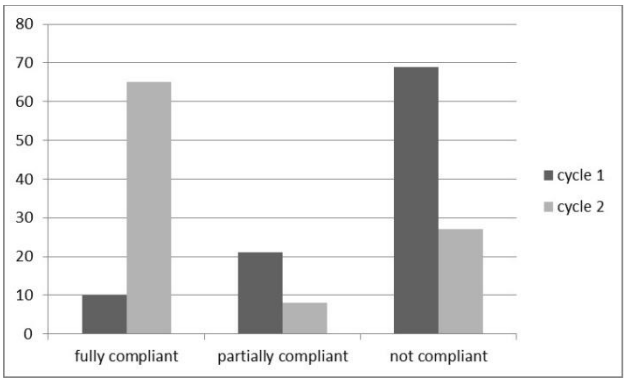

Figure 2: Comparison of the percentage of cases fully compliant, partially compliant and not compliant with the NICE guidelines on VTE prevention for Cycle-1 versus Cycle-2 of the audit
(Fully compliant = Documented evidence of a VTE risk assessment having been performed AND the appropriate prophylaxis prescribed; partially compliant = Appropriate prophylaxis prescribed BUT NO documented evidence of a VTE risk assessment having been performed; non compliant = NO appropriate prophylaxis prescribed (inappropriate type, dose, frequency or duration of prophylaxis, or prophylaxis erroneously omitted)[5]. n=48 in Cycle-1, n=49 in Cycle-2.)

This complete audit cycle sampled a spectrum of urology inpatients in a district general hospital. Across the entire sample there was an average of 2 risk factors for VTE per patient. In prevention of thromboembolism, it is vital that each of these patients is carefully risk assessed and prescribed adequate thromboprophylaxis. This audit investigated compliance with NICE guidelines on VTE prevention in this patient group.

In the first cycle only 1 in 10 patients had been both VTE risk assessed and prescribed thromboprophylaxis as recommended by NICE. We demonstrated a poor awareness of recent recommendations made by NICE in our hospital. The significant areas of weakness identified were a lack of documented risk assessment for patients admitted non-electively and a lack of awareness of the need for a 28 day course of prophylaxis for patients that had undergone major cancer surgery in the abdomen and pelvis. The findings here highlight that different strategies for ensuring VTE risk assessment completion need to be employed for different admission pathways. It is also clear that the strategies in place must be regularly reviewed in light of new guidance published to maintain up-to-date practice.

Passive measures, such as clinical meetings or distribution of educational materials, are not recommended as lone strategies to improve guideline adherence[1]. Interventions known to improve thromboprophylaxis adherence include computer decision support systems, pre-printed orders, periodic audit and feedback[1]. The main intervention in this audit was a pre-printed proforma (UAP) for use in clerking patients at admission. UAPs were launched with accompanying educational meetings and provision of doctors' induction materials. This combination of interventions was successful in increasing full guideline compliance from 10% to 65%.

Junior doctors found the UAP particularly useful because it guided a thorough assessment of urological admissions as well as prompting VTE risk assessment. Its strengths include ease of use and clarity. This proforma has the scope to be amended in light of new guidance, for example the recently released 9th edition of the ACCP evidence-based recommendations[7]. It could also be employed to achieve further improvements in other areas of urological patient assessment.

Limitations of this audit include the small study population and therefore lack of power to demonstrate meaningful change in VTE events. We were unable to show, for example, any changes in the

rate of clinically diagnosed VTE after our interventions. Due to the small study population, the number of patients undergoing a major cancer operation was also particularly small in Cycle-2. It is possible that some of the analyses were underpowered and therefore did not reveal significant associations which could have aided us in improving guideline compliance. We were also unable to control all variables between Cycle-1 and Cycle-2, for example, different junior doctors were present during each cycle. With 3 different interventions it becomes unclear which strategy was the most effective in improving adherence to guidelines, although it has been shown that pre-printed proformas are often superior to education or written material[1].

Conclusions

In conclusion, this complete audit cycle demonstrated an improvement in compliance with guidelines on VTE risk assessment and thromboprophylaxis prescription after the introduction of an integrated UAP form and education package. The UAP may also be a useful tool for implementing future improvements to urological practice.

Conflict of interests: There is no conflict of interest in this study.

References

1. Geerts WH, Bergqvist D, Ineo GF, Heit JA, Samama CM, Lassen MR, Colwell CW: Prevention of venous thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). *Chest* 2008, 133(6 Suppl):381S-453S.
2. Lindblad B, Sternby NH, Bergqvist D: Incidence of venous thromboembolism verified by necropsy over 30 years. *BMJ* 1991, 302:709–711.
3. Alikhan R, Peters F, Wilmott R, Cohen AT: Fatal pulmonary embolism in hospitalised patients: a necropsy review. *J Clin Pathol* 2004, 57:1254–1257.
4. Rashid ST, Thursz MR, Razvi NA: Venous thromboprophylaxis in UK medical inpatients. *Journal of the Royal Society of Medicine* 2005, 98(11):507–12.
5. The National Institute of Clinical Excellence: Clinical Guideline 92: *Venous thromboembolism: reducing the risk. Reducing the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in patients admitted to hospital*; 2010.
6. Buckinghamshire Healthcare NHS Trust: Guideline 733.1: Mandatory Risk Assessment for Venous Thromboembolism (VTE) for Surgery unless when an ICP is in use. *Buckinghamshire Healthcare NHS Trust* 2010, Appendix 6.4:WZZ 1244.
7. Gould MK, Garcia DA, Wren SM, Karanicolas PJ, Arcelus JI, Heit JA, Samama CM: Prevention of VTE in nonorthopaedic surgical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th edition: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest* 2012, 141(2 Suppl):e227S-77S.

Appendix1:

VTE AUDIT DATA COLLECTION PROFORMA

ADAPTED FROM BHT ROLLING VTE PROPHYLAXIS AUDIT FORM (VTE RCA TOOL)

Hospital number:	**Patient age:**	**Patient gender:**	**Ward:**
Admission date:	**Discharge date:**	**Consultant:**	**Division:**
Primary reason for admission		**Surgery and dates:**	
Diagnosis of cancer?	**Name of auditor:**	**Job title of auditor:**	**Date of auditing:**

Look at what is documented in the patient's notes and tick the boxes below. Please comment as appropriate

		Comments
1. Had the patient been assessed using the appropriate BHT VTE assessment form? (If yes, please tick box and go to Q2, if no, please tick box and go to Q5)	☐Yes ☐No	
2. Were any risk factors for VTE identified using the tool? – details in comments please	☐Yes ☐No	
3. Were any contraindications to heparin identified using the tool? – details in comments please	☐Yes ☐No	
4. Were any contraindications to anti-embolism stockings or foot pumps identified using the tool? – details in comments please. Then go to Q9	☐Yes ☐No	
5. Is there any documented evidence in the notes of a VTE risk assessment having been performed?	☐Yes ☐No	
6. Were any risk factors for VTE identified in the notes? – details in comments please	☐Yes ☐No	
7. Were any contraindications to heparin identified in the notes? – details in comments please	☐Yes ☐No	
8. Were any contraindications to anti-embolism stockings or foot pumps identified in the notes? – details in comments please	☐Yes ☐No	
9. Was the patient prescribed LMWH? – dates and doses in comments please	☐Yes ☐No	
10. Was the patient prescribed anti-embolism stockings or foot pumps – details in comments please	☐Yes ☐No	

Please complete the conclusions table

1. Full compliance with NICE guideline 92 (VTE form completed and appropriate thromboprophylaxis given)	☐Yes ☐No	
2. Partial compliance with NICE guideline 92 (VTE form not completed but appropriate thromboprophylaxis given)	☐Yes ☐No	
3. Not compliant with NICE guideline 92 (appropriate thromboprophylaxis not given)	☐Yes ☐No	

Appendix 2:

Buckinghamshire Healthcare NHS
NHS Trust

WycombeHospitalUrologyAdmission

Name:

DOB:

Hospital No:

NHS No:

Consultanton-call:

Clerkingby: Location:

Date: Time:

Presenting Complaint:

History of PC:

(including pasturologicalhistory)

Past Medical/Surgical History:

Drug History: **Allergies:**

Buckinghamshire Healthcare NHS
NHS Trust

WycombeHospitalUrologyAdmission

Name:

DOB:

Hospital No:

NHS No:

Date: Time:

Family History

Social History:

Smoking:

Alchohol:

Systems Enquiry:

Examination:

BP: Pulse: RR: Sats: Temp:

Buckinghamshire Healthcare NHS
NHS Trust

WycombeHospitalUrologyAdmission

Name:

DOB:

Hospital No:

NHS No:

Date: Time:

Blood results:

	Date	(Baseline)		Date	(Baseline)
Hb			cCa		
WCC			Mg		
Plts			PO_{4-}		
Nø			Urate		
Na K					
Urea			B12		
Creat			Folate		
eGFR			Iron		
			Ferritin		
CRP			Transf		
			T sat %		
INR			MCV		
Alb					
ALT					
ALP			PSA		
Bili					

Urine dip:

Imaging:

Catheterisation:

Residual volume:

Catheter sticker

Buckinghamshire Healthcare NHS
NHS Trust

WycombeHospitalUrologyAdmission

Name:

DOB:

Hospital No:

NHS No:

Date: Time:

Summary/Impression:

Plan:

Drug chart including usual medications

VTE risk assessment form & prophylaxis prescription

Signed:

Presenting Condition	Bleeding risk	VTE risk	Routine prophylaxis (if required)
RENAL COLIC	→ Fill out TrustVTE risk form	If prophylaxis required →	TEDS NoDalteparininthe12hrsbeforetheatre
URINARY RETENTION			TEDS Dalteparin 5000 units OD
HAEMATURIA			TEDS No Dalteparin
EPIDIDYMO-ORCHITIS PROSTATITIS,UTI			TEDS Dalteparin5000units OD
ACUTE KIDNEY TRAUMA			NoDalteparin[new line]TEDS or Flow-tronboots

VTE

Buckinghamshire Healthcare NHS
NHS Trust

Name: DoB:

Hospital No:

NHS No:

BHTPolicy733Appendix6.4 MandatoryRiskAssessment forVenousThromboembolism (VTE) forSurgeryunlessanICPisinuse

Tobeperformedonadmission,after24hours,andwhenevertheclinical situationchangessignificantly.ForfurtherinformationseeBHTPolicy733.

Step1:Assessthrombosisrisk:ifanyboxesareticked,considerdalteparin5000unitsS/Cdaily,and mechanicalthromboprophylaxis. Thislistisnotexhaustive –ifindoubt,ask!

	Pre-admission	Admission	24hrslater:	Date:
Activecancerorcancertreatment				
Age>60				
Dehydration				
Obesity (BMI>30kg/m^2)				
One ormoresignificantmedicalcomorbidities				
PersonalorFH ofVTE orthrombophilia				
Use ofHRT or combinedoral contraceptive pill				
Varicoseveinswith phlebitis				
Pregnancy or<6 weekspostpartum (see BHNHST VTE Policy733)				
Significantlyreducedmobility for3 daysormore,or surgery withsignificant reductioninmobility				
Recenthip or kneereplacement-changefrom dabigatranto dalteparin (firstdalteparin doseto be given24 hoursafterlastdabigatrandose)				
Surgery involvingpelvisorlowerlimb withatotalanaesthetic+surgical time>60minutes				
Totalanaesthetic+ surgicaltime>90minutes				
Acute admission withinflammatory orintra-abdominal condition				
Critical care admission				

Step 2:Assess the safety of administeringdalteparinto this patient: if any boxes areticked, omit dalteparinorseekadviceasindicated.

		Pre-admission	Admission	24hrslater:	Date:
Spinal,neurooreyesurgery orotherprocedure with high bleedingrisk	Advice				
Active bleeding	Omit				
Inherited oracquired bleeding disorders(such as haemophilia or liverfailure)	Omit				
Anticoagulantsknowntoincreasetheriskofbleeding(such as warfarin withINR >2)	Omit				
Acutestroke	Omit				
Platelets<75x10^9/l	Advice				
Creatinineclearance<30 ml/min	Advice				
Hypertension– BP 230/120 or higher	Omit				
Heparin allergyorpreviousheparininducedthrombocytopenia	Advice				
Lumbarpuncture/epidural/spinalanaesthesia performed within thelast4 hoursorexpected withinthe next12hours	Omit				

Step 3: Consider mechanicalprophylaxis at admission – if any boxes are ticked, anti-embolism stockingsarecontraindicatedandfootpumpsarepreferable.

	Pre-admission	Admission	24hrslater:	Date:
Massiveleg oedema,heartfailure				
Suspected/provenperipheralarterialdisease orperipheralarterialbypass surgery– seekexpertopinion.				
Sensory impairment				
Acutestroke				
Skin– fragile,damaged,ulcerated, recentgrafts				
Known allergytomaterialofmanufacture				

Step4:Prescribe VTEprophylaxisonTrustdrugchartbasedonthisriskassessment:

NameofDoctororPre-op assessmentnurse		Pre-Admission Date:		Admission: Date:		24hrslater:		Date:	
		Sig:		Sig:		Sig:		Sig:	
Dalteparin 5000unitsS/C oncedaily (from admission,stop 12 hrspre-op, restart6-12 hrs post-opfor28daysifmajor cancer surgery inthe abdomen or pelvisand5 -7 daysfor otherpatientsoruntilmobility no longer significantlyreduced)		y	n	y	n	y	n	y	n
Anti-embolism stockings (from admission)		y	n	y	n	y	n	y	n
Footpumps(from admission)		y	n	y	n	y	n	y	n

Buckinghamshire Healthcare NHS
NHS Trust

WycombeHospitalUrologyAdmission

RegistrarReview:

Date:

Time:

Re-assessment ofVTE risk at 24 hours ☐

Nursing Notes:
Date:
Time:

MRSA Screen

Appendix 3:

ROUTINE VTE PROPHYLAXIS IN UROLOGY

NOTE: A **VTE form should be completed first.** Then follow this guide for all patients, **unless prophylaxis contraindicated**or**unless**otherwise specified by a**Consultant / the operation note**

EMERGENCY ADMISSIONS

Condition/Procedure	Bleeding risk	VTE risk	Routine prophylaxis (if required)
RENAL COLIC	Fill out Trust VTE risk form[1] → If prophylaxis required →		TEDS **No Dalteparin** in 12hrs prior to theatre
URINARY RETENTION			TEDS Dalteparin 5000 units OD S/C[2]
HAEMATURIA			TEDS **No Dalteparin** (patient by patient basis)
EPIDIDYMO-ORCHITIS PROSTATITIS, UTI			TEDS Dalteparin 5000 units OD S/C[2]
ACUTE KIDNEY INJURY			TEDS or Flow-trons **No Dalteparin** (patient by patient basis)

OPERATIONS (Most non day-case surgery patients will automatically qualify for prophylaxis)[3]

NOTE: Do not administer Dalteparin S/C **<12 hours before or <4 hours after** insertion or removal

References

Condition/Procedure	**Bleeding risk**	**VTE risk[5]**	**Prescribe as below~~unless~~ otherwise specified by ~~Consultant /op note /VTE form~~**
TURP	(Inherent to procedure)		
GREENLIGHT PVP BNI	MOD	MOD	TEDS or Flow-trons Dalteparin[5000 units OD] from **6-12h[6]** post-op
CYSTOSCOPY BLADDER BIOPSIES TURBT	MOD	MOD	TEDS or Flow-trons Dalteparin[5000 units OD] from **6-12h[6]** post-op
URETEROSCOPY LASER CALCULUS STENT PLACEMENT	LOW	MOD	TEDS or Flow-trons Dalteparin[5000 units OD] from **6-12h[6]** post-op
RADICAL CYSTECTOMY	MOD	HIGH	TEDS or Flow-trons Dalteparin[5000 units OD] from **6-12h[6]**post-op Cont Dalteparin & 'TEDS' for **28 days[7]**
RADICAL PROSTATECTOMY	MOD	HIGH	TEDS or Flow-trons Dalteparin[5000 units OD] from **6-12h[6]**post-op Cont Dalteparin & TEDS for **28 days[7]**
RADICAL NEPHRECTOMY	MOD	Benign: MOD Malignant: HIGH	Benign disease: Patient by patient basis Malignant: TEDS or Flow-trons Dalteparin from **6-12h[6]** post-op Cont Dalteparin & 'TEDS' **28d[7]**

1. Buckinghamshire Healthcare NHS Trust Guideline 733.1, Appendix 6.4, WZZ 1244 (December 2010). Mandatory Risk Assessment for Venous Thromboembolism (VTE) for Surgery unless when an ICP is in use.

2. Buckinghamshire Healthcare NHS Trust Guideline 733.1: Trust policy for thromboprophylaxis in adults (December 2010). *"LMWH (Dalteparin) at a dose of 5000 units subcutaneously (s/c) once daily should be used for the majority of patients receiving VTE prophylaxis in hospital. See Section 4.1.1 for dosing in renal impairment. For dosing in pregnancy see Guideline 646."*

3. Buckinghamshire Healthcare NHS Trust Guideline 733.1, Appendix 6.4, WZZ 1244, (December 2010). "*Surgery involving pelvis or lower limb with a total anaesthetic + surgical time >60 minutes …[equals]… consider Dalteparin 5000 units S/C daily and mechanical thromboprophylaxis".*

4. NICE Guideline 92: Venous thromboembolism: Reducing the risk (January 2010).

5. Geerts et al. The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Prevention of Venous Thromboembolism. Chest 2004; 126: 338-400.

6. Buckinghamshire Healthcare NHS Trust Guideline 733.1, Appendix 6.4, WZZ 1244 (December 2010). "Restart [Dalteparin 5000 units S/C once daily] 6-12 hours post-op".

7. Buckinghamshire Healthcare NHS Trust Guideline 733.1, Appendix 6.4, WZZ 1244 (December 2010). *"Note: if major cancer surgery in abdomen/pelvis continue [Dalteparin 5000 units S/C once daily and anti-embolism stockings] for 28 days after surgery".*