Venous thromboembolism (VTE) prevention Training

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Thromboprophylaxis (VTE prevention) training

- What is VTE
- Impact of VTE
- History of VTE prevention
- National requirements re VTE
- Overview of VTE assessment
- LMWH prophylaxis
- AES/IPC
- Extended prophylaxis
- Patient information
- Anticoagulation service/anticoagulants

CARE RESPECT RESPONSIBILITY

Venous Thromboembolism

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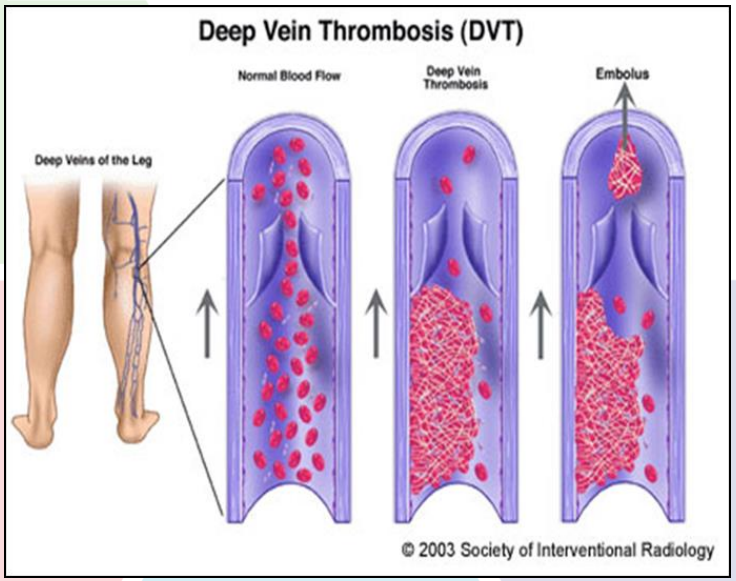
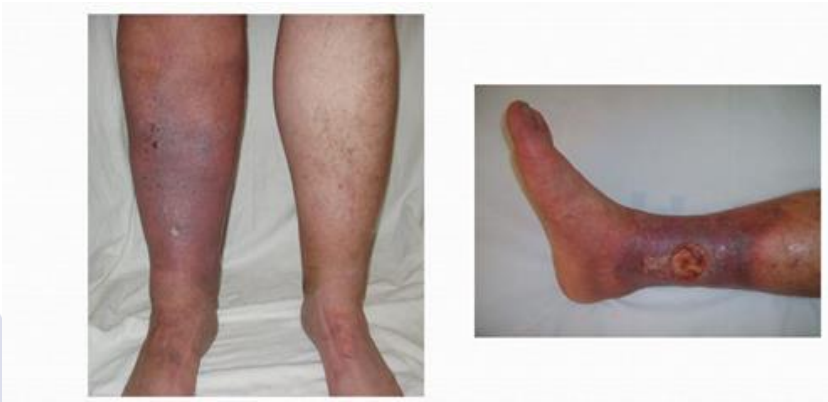
DVT (Deep vein thrombosis)	PE (Pulmonary Embolism)
Occurs in deep veins leg most common (abdominal/pelvic veins arm, gut, cerebral sinuses)	Occurs after DVT dislodges and travels to the lungs (Can be immediately life threatening)
Can cause long-term issues – 'post-thrombotic syndrome' (PTS)	Serious complication which can lead to death
Post Thrombotic Syndrome(PTS)affects 1:3 (30%) of DVT patients within 5 years most occur within 2 years	Chronic Thromboembolic Pulmonary Hypertension(CTEPH) 2-4% of patients. (Can be life threatening)





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Long term VTE complications

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Post thrombotic syndrome

(chronic condition that can occur after DVT due to scarring and damage to veins.)

Signs and Symptoms

- Chronic pain, aching and heaviness of the leg
- Itching
- Pins and needles
- Oedema (swelling) of the leg
- Varicose veins
- Brown discolouration (hyperpigmentation) around the ankle
- Ulceration (in severe cases)

Chronic thromboembolic pulmonary hypertension (CTEPH)

(CTEPH form of pulmonary hypertension caused by partial obstruction of the major pulmonary arteries)

- Resulting from an unresolved PE.
- Can lead to heart failure and other serious consequences
- Without intervention 5-year survival rate once the mean pulmonary artery pressure reaches 40 mm Hg is about 30%

Signs and Symptoms

•Dyspnoea
•Chest pain with exertion
•Pre-syncope or syncope
•Haemoptysis

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VTE statistics

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In Europe, there are 544,000 VTE-related deaths every year

55%-60% of VTE cases occur during or following hospitalisation (Hospital associated thrombosis = HAT)

The absolute risk of VTE for a flight > 4 hours, in healthy individuals, is estimated to be 1 in 6,000

VTE is the leading cause of preventable deaths in hospital

1-2 in 1000 pregnant women develop thrombosis during pregnancy and post partum (currently the leading cause of maternal deaths (Mbrrace report 2018)

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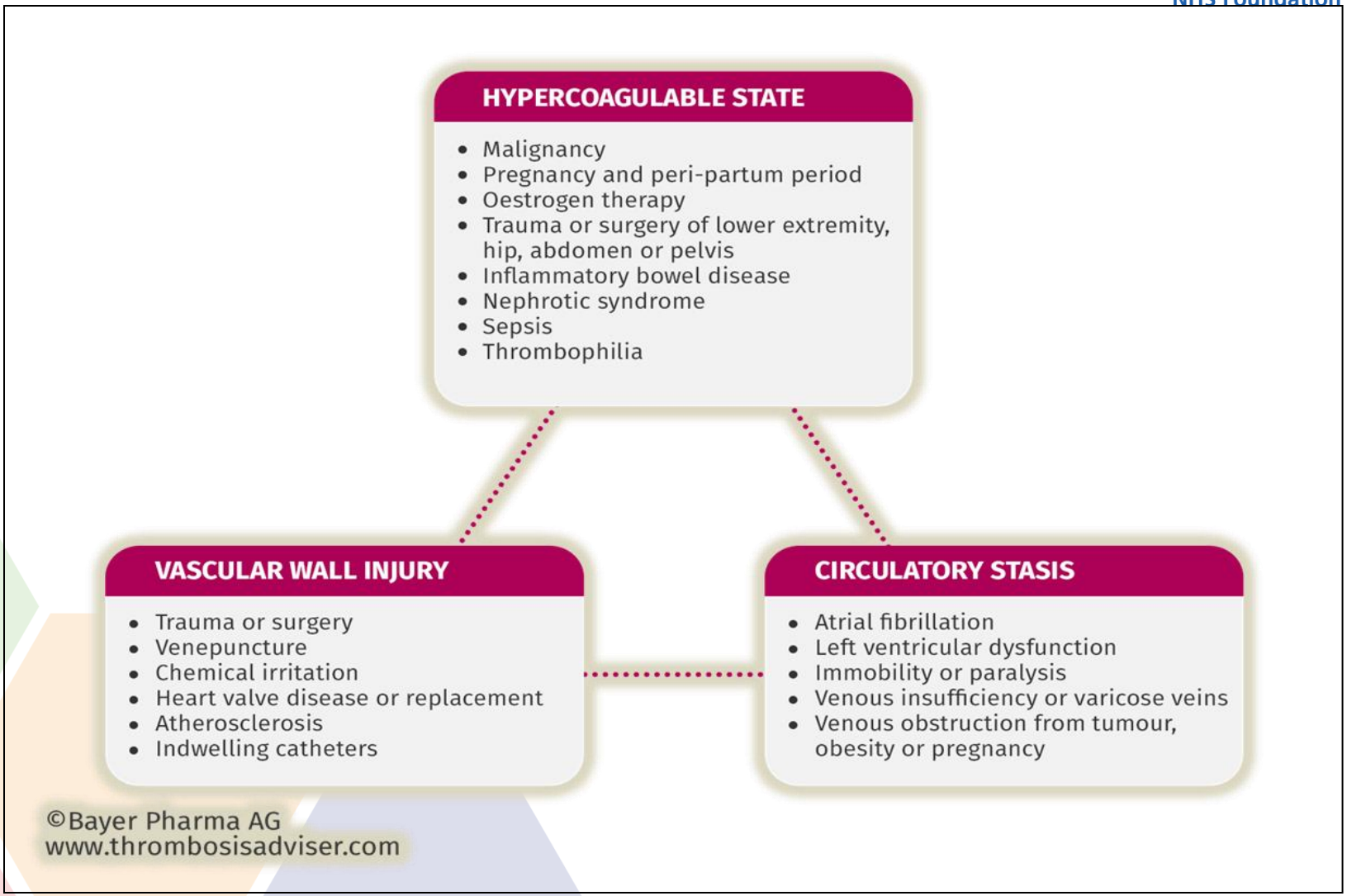
Virchow's Triad



National VTE prevention programme….

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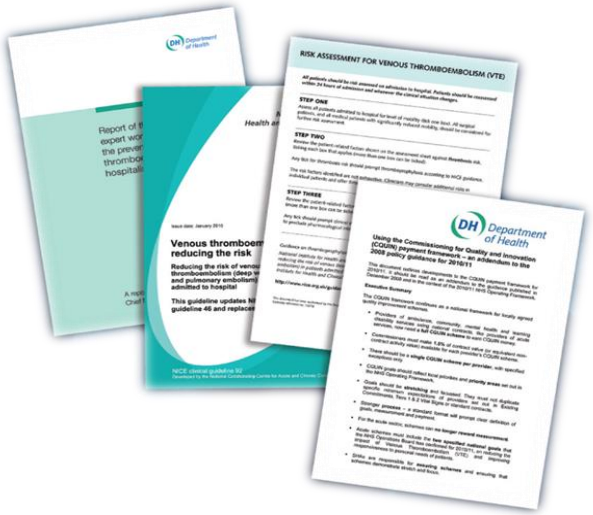
The Department of Health has defined hospital associated VTE as any VTE event occurring within 90 days of hospital admission/surgery.

The National Venous Thromboembolism Prevention Programme was launched in England, in 2010. Its central objective was to reduce morbidity and mortality from preventable deep vein thrombosis and pulmonary embolism through introduction of a comprehensive systematic approach.

Results reported in 2020 show deaths from hospital associated VTE, have reduced by 15.3% since 2007.

The Programme consisted of:

- ✓ The NICE Clinical Guideline 92
- ✓ The NICE Quality Standards for VTE prevention
- ✓ The NICE pathway for VTE prevention
- ✓ Mandatory VTE prevention requirements set out in the NHS Standard Contract
- ✓ The national CQUIN goal for VTE prevention*
- ✓ A national tool for VTE risk assessment



- The commissioning for quality and innovation (CQUIN) payment exists to encourage NHS organisations to sharpen their focus on quality by making a proportion of income conditional on quality and innovation and meeting targets

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...Now we have moved on

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- CQUIN target replaced by National Quality Standard (In NHS Operating contract)
- Mandatory requirements in NHS operating contract remain for audit and RCA for HAT
- For every patient that takes us below target for risk assessment <95% target £200
- (1% = £20,000 based on DGFT admission/discharge figures)
- RCOG green top guideline 37a (updated 2015)
- Nice guideline 92 (updated March 2018)– now numbered NG89
- Patients Age ≥16 instead of ≥18

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NICE NG89 Quality Standards

Statement 1-Medical, surgical or trauma patients have their risk of VTE and bleeding assessed using a national tool as soon as possible after admission to hospital.

Statement 2-Patients who are at increased risk of VTE, are given information about VTE prevention on admission to hospital.

Statement 3-Patients provided with anti-embolism stockings have them fitted and monitored in accordance with NICE guidance.

Statement 4-Medical, surgical or trauma patients have their risk of VTE reassessed at consultant review or if their clinical condition changes.

Statement 5-Patients assessed to be at risk of VTE are offered VTE prophylaxis in accordance with NICE guidance.

Statement 6-Patients/carers are offered verbal and written information on VTE prevention as part of the discharge process.

Statement 7-Patients are offered extended (post hospital) VTE prophylaxis in accordance with NICE guidance.

Risks and benefits LMWH prophylaxis

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Risk of Clotting

Age > 60 (≥35 in maternity)
Surgery – especially Orthopaedic surgery
Acute medical illness
Malignancy
Immobility
Prolonged travel
Thrombophilia
COP / HRT
Pregnancy/post partum
Obesity (BMI > 30)
Previous history of DVT
Family history of DVT
Varicose veins
Dehydration

Risk of Bleeding

Active bleeding
Acquired bleeding disorders (e.g. Acute liver failure)
On therapeutic anti-coagulation
Acute stroke
Uncontrolled hypertension (≥ 230/120mmhg)
Lumbar puncture pre 12 hours/ post 4 hours
Untreated inherited bleeding disorders
Caution in renal impairment (GFR<30)

Enoxaparin (Inhixa)	
<50kg	20mg daily SC
50 – 90kg	40mg daily SC
91 – 130kg	60mg daily SC*
131 – 170kg	80mg daily SC*
>170kg	0.6mg/kg/day* SC
High prophylactic dose for women weighing 50 – 90kg	40mg BD SC
*may be given in 2 divided doses	

Enoxaparin(Inhixa) 40mg
eGFR <30 Enoxaparin(Inhixa) 20mg
Pregnancy and post partum dose is weight based

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Anti- embolism stockings

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Do not offer mechanical thromboprophylaxis to patients who have:

- Suspected or proven peripheral arterial disease
- Peripheral arterial bypass grafting
- Peripheral neuropathy or other causes of sensory impairment
- Any local conditions in which stockings may cause damage, for example fragile 'tissue paper' skin, dermatitis, gangrene or recent skin graft
- Known allergy to material of manufacture
- Cardiac failure
- Severe leg oedema or pulmonary oedema from congestive heart failure
- Unusual leg size or shape
- Major limb deformity preventing correct fit
- Do not use anti-embolism stockings in stroke patients(*CLOTS trial identified no risk reduction but increased skin damage*)
- Do not use intermittent pneumatic compression in patients with a recent DVT
- **On discharge consider whether safe for patient to wear AES (Patients who are unable to remove stockings themselves and have no one there all the time to assist should not be sent home with them)**

- Compression Profile (Sigel 1975)
- Thigh or knee length used for VTE prevention (Not indicated in medical patients receiving LMWH prophylaxis)
- Knee length for suspected/confirmed VTE
- AES are a medical device and all staff should have training and be competent in their use
- **Ensure both legs measured and stocking/s fitted correctly assess leg to ensure no constriction**
- **AES should be removed daily and skin checked this must be documented in nursing notes (there is a section for this on intentional rounding document)**
- **Self caring pts and those going home with AES should be taught how to reapply correctly (Are they safe to go home with?)**

This patient is suffering from peripheral arterial disease and mechanical methods of thromboprophylaxis are contraindicated.

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Intermittent Pneumatic compression(IPC)

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Indications • Surgery • Orthopaedics (including Trauma) • Immobile acute stroke patients (start within 3 days and continue until mobile, 30 days or discharge whichever sooner) • Pregnant women or who have given birth, had a miscarriage/ termination of pregnancy within the last 6/52 whilst immobilised post operatively	**Contraindications** • **Known or suspected DVT/PE or phlebitis** • Peripheral vascular disease • Severe congestive cardiac failure • Any local condition in which the garments would interfere including gangrene, recent skin graft, dermatitis or untreated, infected leg wounds. • If you are unsure of any contraindications refer to the patient's physician before using the device.
Recommendations •Check limbs every shift or more often if known to have skin, circulatory problems or diabetes •Arjohuntleigh do not recommend AES with system •Apply preoperatively prior to anaesthetic •Use for at least 72 hours or until patient mobile •In non-surgical patients should be used immediately after risk of VTE identified	**Cautions** •Proper garment application and connection to pump essential •Position garments so they do not create constant pressure points on limb •Extra care needed when placing on deformed or oedematous legs •Uninterrupted use recommended until patient fully mobile •Garments should be removed immediately if the patient experiences tingling, numbness or pain and physician notified

CARE RESPECT RESPONSIBILITY

Process for completing Electronic VTE assessment

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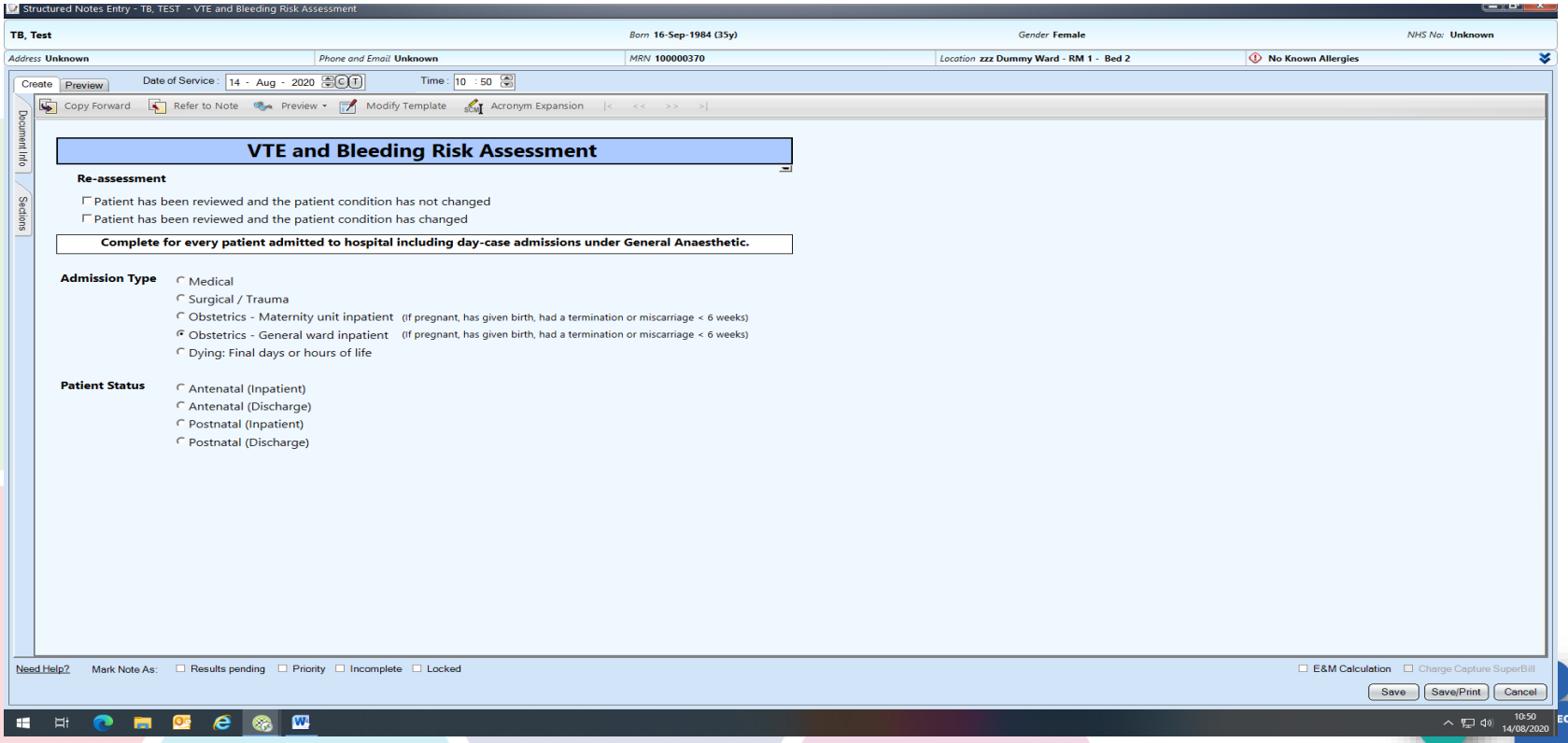
<u>VTE assessment remains a medical/midwife role nurses should not complete.</u>

1st assessment <12 hours

2nd assessment <5 days

- Select patient
- Select enter document icon
- Type in VTE and option for VTE assessment
- Select admission type to ensure correct VTE assessment is generated.
- Tracking board Red= not done Green= done within target time Amber= done >12hrs



RESPONSIBILITY

VTE risk assessment for pregnant women OR who have given birth, had a miscarriage/ termination within the last 6/52

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Appendix 4

ANTENATAL VENOUS THROMBOEMBOLISM (VTE) RISK ASSESSMENT OR PAPER REFERRAL

EDD.....**GESTATION**..... **BOOKING WEIGHT**.....

NAME:
DOB:
ADDRESS:
HOSPITAL/NHS NUMBER:

REMEMBER RISK ASSESSMENT IS CONTINUOUS AND MAY CHANGE AT ANY POINT DURING PREGNANCY ALWAYS SEEK ADVICE IF YOU ARE NOT SURE IF A WOMAN REQUIRES PROPHYLAXIS

RISK	SCORE		
	Previous VTE (except a single event related to major surgery)	4	
	Thrombophlebitis *associated with* pregnancy	4	
	Current thrombophlebitis	4	
	Ovarian hyperstimulation syndrome (first trimester only & inpatient)	4	
	Previous VTE provoked by major surgery	3	
	Medical comorbidities (e.g. **active** systemic lupus erythematosus,inflammatory polyarthropathy or inflammatory bowel disease, nephrotic syndrome, type 1 diabetes with nephropathy, cardiac disease, cancer, sickle cell disease) **not** diabetes	3	
	Known high risk thrombophilia **Specific** : Protein C or S deficiency, Antithrombin deficiency, *Homozygous* Factor V Leiden,compound *heterozygotes*	3	
	Current IV drug user	3	
	BMI ≥ 40	2	
	BMI ≥ 30	1	
	Known Low Risk Thrombophilia **Specific** *Heterozygous* Factor V Leiden, Prothrombin gene mutation or Antiphosphilipid antibodies	1	
	Gross varicose veins and/or phlebitis	1	
	Family history of VTE * **details of who and event**	1	
	Assisted reproductive technology (ART) / in vitro fertilisation(IVF)	1	
	Parity ≥ 3	1	
	Current Smoker	1	
	Age ≥ 35	1	
	Immobility e.g SPD requiring mobility aids	1	
	Mulitiple pregnancy	1	
	Moderate or severe pre-eclampsia **(raised BP with proteinurea and medication)**	1	
	Current systemic infection	1	
	Dehydration	1	
TOTAL SCORE			
If score ≥ 3 details must be provided e.g if family history who/ what happened, advise to bring details to the appointment. *			

Score ≥ 4 ➔ URGENT referral to Anticoag for consideration of antenatal thromboprophylaxis from booking.

Reducing The Risk Of Venous Thromboembolism (VTE) During Pregnancy And In Puerperium Including Referral Pathway For Suspected VTE Guideline V10.10 April 2018.

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CURRENT PREGNANCY	Ovarian hyperstimulation syndrome (first trimester only)	4						
	Current thrombophlebitis	4						
	Surgical procedures AN or PN (not including MROP or suturing)	3						
	Hyperemesis **(assess at discharge by senior obstetrician, consider continuing prophylaxis for remainder of treatment)**	3						
	Hospital admission >24hrs **(reassess VTE risk factors at discharge, do any remain?)**	3						
	Emergency caesarean section	2						
	Current systemic infection **(assess at discharge by senior obstetrician, consider continuing prophylaxis for remainder of treatment)**	1						
	Assisted reproductive technology (ART) in vitro fertilisation (IVF)	1						
	Moderate or severe pre-eclampsia **(raised BP with proteinuria and medication)**	1						
	Midcavity instrumental delivery	1						
	Postpartum haemorrhage (> 1 litre or transfusion)	1						
	Prolonged labour (>24 hours)	1						
	Immobility e.g. SPD requiring mobility aids	1						
	Elective caesarean section	1						
	Dehydration	1						
	Multiply pregnancy **(this continues as a risk factor postnatally)**	1						
	Stillbirth in current pregnancy (add extra score of 1 if IUD with spontaneous onset of labour < 37/40)	1						
	Preterm birth < 37 weeks in current pregnancy	1						
		TOTAL SCORE						
		INITIALS						

TREATMENT RECOMMENDATIONS FOLLOWING VTE RISK ASSESSMENT AND ACTION REQUIRED

ANTENATAL IN-PATIENT	Score ≥4	Requires both LMWH and AES **unless either contraindicated.**
	Score 2 or 3	Requires LMWH only **unless contraindicated.**
	Score <2	No prophylaxis required.
ANTENATAL DISCHARGE	On discharge if VTE score ≤2	Discontinue treatment, discuss signs of VTE.
	On discharge if VTE score 3 and <28/40	**Discontinue** LMWH on discharge and refer to Thrombosis Clinic as will need review at 28/40. Discuss signs of VTE
	On discharge if VTE score ≥3 and ≥28/40 Or ≥ 4 at any gestation	**Continue** LMWH and refer to Thrombosis Clinic.
POSTNATAL	Score 2 **If ELCS and scores 1 at discharge for LMWH & AES until discharge**	LMWH for 10 days. AES **until normal mobility resumed** (usually at discharge, individual assessment required)
	Score ≥ 3 **OR** already on LMWH antenatally	Continue LMWH for 6 weeks. AES **until normal mobility resumed** (usually at discharge individual assessment required)

EXTENDED PROPHYLAXIS NICE GUIDELINES

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RECOMMENDED

- Fragility fractures of pelvis, hip and proximal femur starting 6-12 hours post op for 28 days(consider pre op if surgery delayed)
- Hip replacement 28 days
- Knee replacement 14 days
- Abdominal (gastrointestinal , gynaecological, urological) surgery 7 days
- Acutely ill medical patients
- Major cancer surgery in the abdomen and pelvis 28 days
- Pregnancy and post-partum (as per RCOG guidelines)

CONSIDER

7 days

Varicose veins, Vascular surgery

Lower limb amputation , ENT & Max fax surgery, Major trauma

•Non arthroplasty orthopaedic knee surgery(14 days)

Duration of cancer treatment

•Myeloma receiving chemotherapy with thalidomide, pomalidomide or lenalidomide with steroids.

•Pancreatic cancer who are receiving chemotherapy

•Lower limb immobilisation including following trauma or foot/ankle surgery - Consider stopping prophylaxis if lower limb immobilisation continues beyond 42days

CARE RESPECT RESPONSIBILITY

Patient Information- What do we need to tell them?

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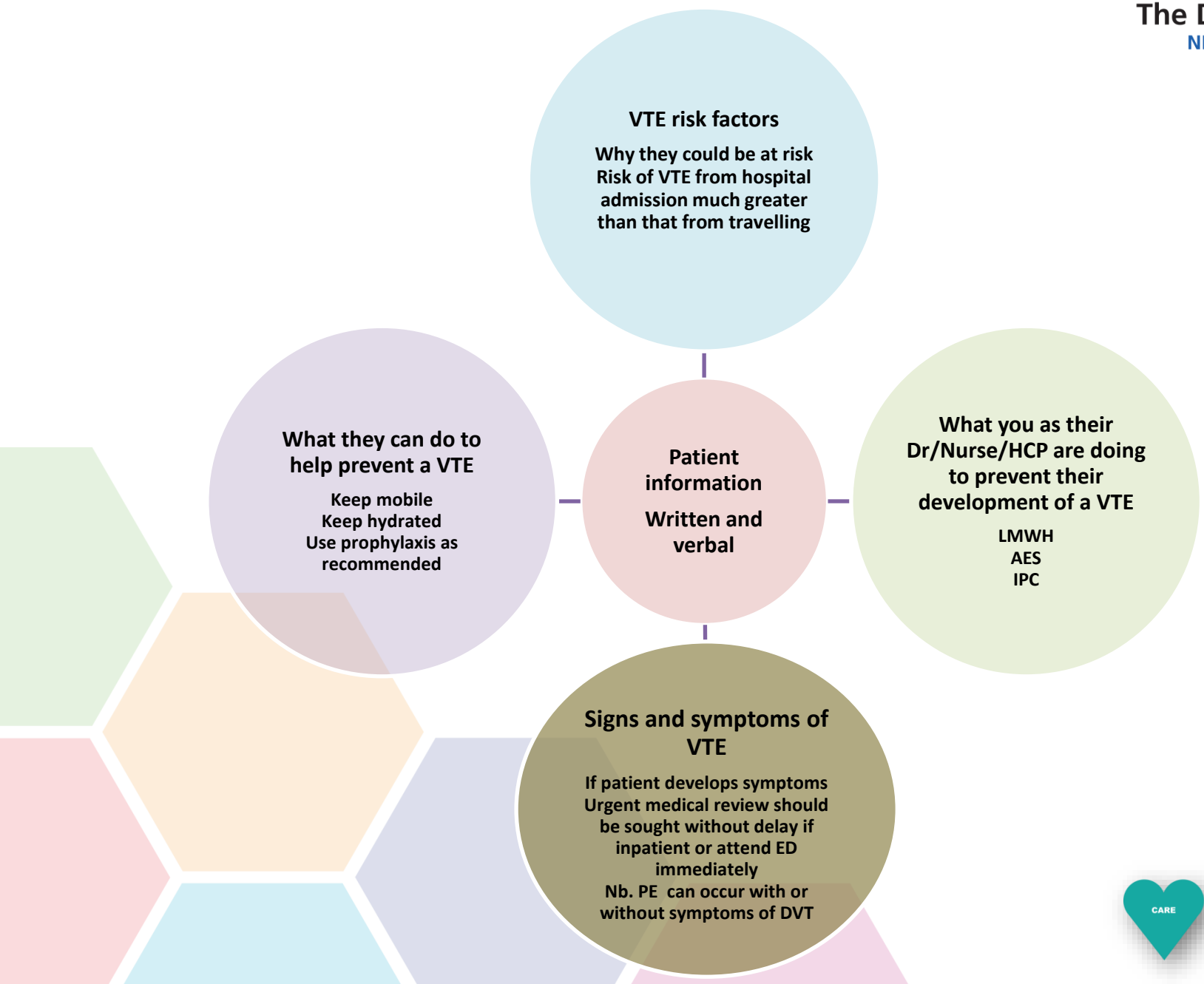

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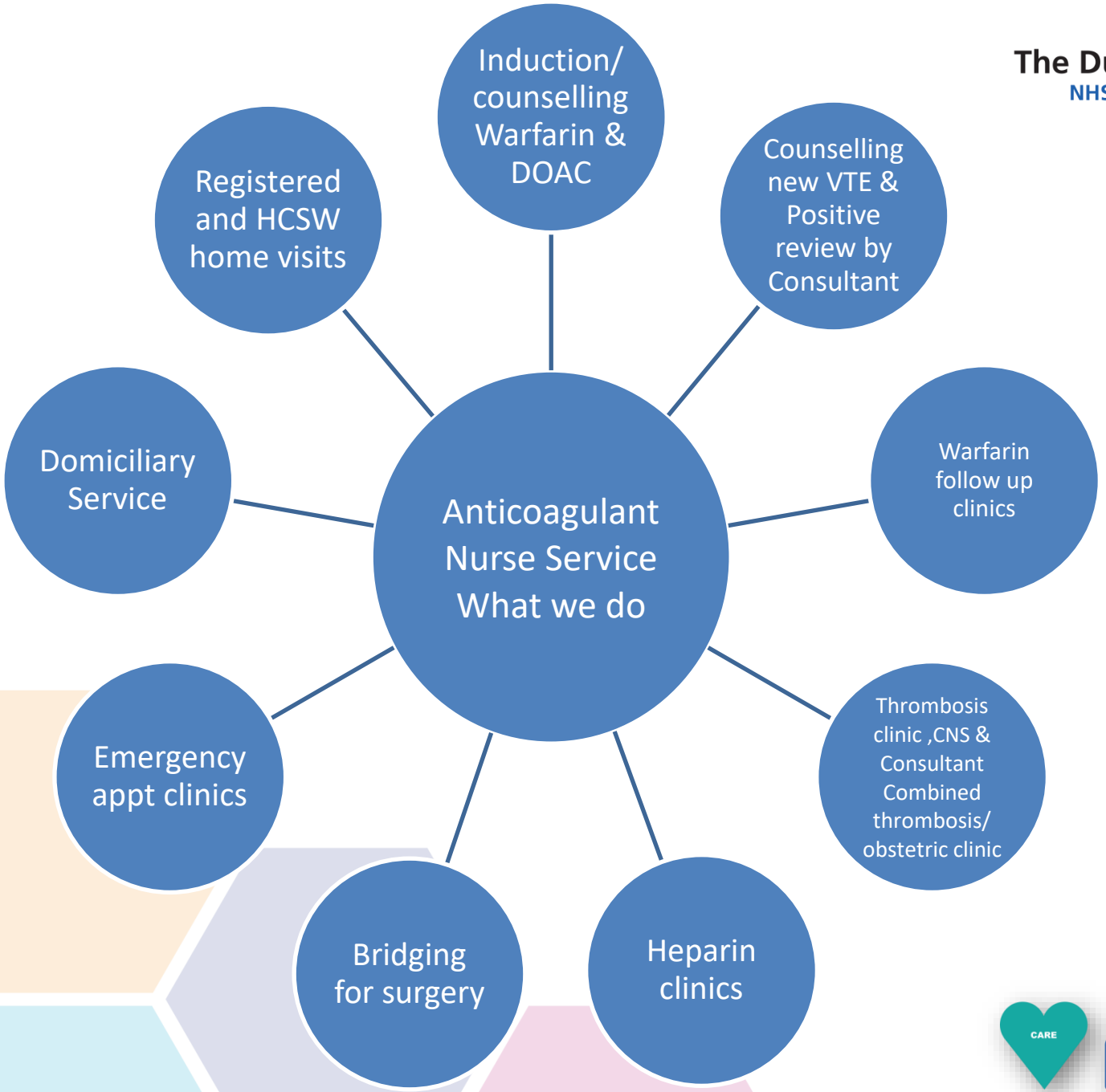

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Starting anticoagulation general guidelines

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- Baseline bloods
- Patient current weight **MUST** be recorded (Booking weight in pregnancy)
- Ladies of childbearing age **MUST** have pregnancy test prior to starting treatment (only LMWH is safe in pregnancy)
- Identify whether ladies breast feeding (DOACs contraindicated)
- Assess patient co morbidities (e.g. if active cancer type may determine whether suitable for DOAC or needs LMWH)
- Drug history (check for interactions with Anticoagulants)
- Refer New patients to Anticoagulation service
- All patients on Vitamin K antagonists should be referred to Anticoagulation on discharge to ensure safe follow up

Vitamin K antagonists -Warfarin,
-Acenocoumarol(Sinthrome)
-Phenindione (Dindevan)

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- INR used to titrate dosage for all Vitamin K antagonists
- Dudley – Dosed in single strength tablets mainly 3mg tabs only(sensitive patients may require 1mg)
- Sticker in yellow book will show demographic details, strength of tablet, INR reading on day of clinic and under days of week how many tablets to take each day and next clinic appointment
- Harmful to Foetus therefore contraindicated in pregnancy
- Safe with breastfeeding

Be Aware!!

- **NO set loading dose everyone has different requirements**
- **Admitted, may need to vary from normal dose**
- **New medications e.g., Steroids, Antibiotics and Antifungal drugs interact affecting control, not eating etc.....**
- **Some drugs Block action of Warfarin altogether e.g., Rifampicin**
- **Contact Anticoagulation dept for advice on dosing if needed**
- **Refer to Anticoagulation dept on discharge to arrange safe follow up**
- **If not staying in hospital planned follow up arrangements may not be safe**
- **Vitamin K used as a reversal dose with caution as per guidelines**

CARE RESPECT RESPONSIBILITY

- **Unfractionated Heparin**

- **Low Molecular Weight Heparin**
  Enoxaparin(Inhixa)
  Tinzaparin (Innohep)
  Dalteparin (Fragmin)

If already on one brand of LMWH started out of Dudley we do not switch brand

- Enoxaparin sodium can be administered SC either as a once daily injection of 1.5 mg/kg or as twice daily injections of 1 mg/kg. (The regimen should be selected based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding)
- BD dosing recommended in pregnancy/ post partum (dose based on booking weight)
- Heparin (Xa) assay checked 3-4 hours post injection in pregnancy(processed in lab Tuesday pm)
- Heparin (Xa) assay not routinely checked in non pregnant patient unless clinical reason but if done needs to be 3-4 hours post injection
- Non pregnant patients on LMWH monthly appointments for weight, bloods and issue of new prescription
- Safe with breast feeding

Fondiparinux- Synthetic pentasaccharide factor Xa inhibitor

- Can be used if allergy to LMWH or pork if patient has previously had HIT
- Peak level is at 2 hours if Heparin (Xa) assay required
- Half life is 17hrs vs Inhixa half life 5hrs which has implications for surgery etc
- Not to be used in pregnancy without discussion with Haematology Consultant

Direct Factor Xa inhibitors- Rivaroxaban
Apixaban
Edoxaban

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Direct Thrombin inhibitors- Dabigatran

Be aware!
Dosing regimes vary with indication and choice of drug

DOACs- renal dependant eGFR < 20 contraindicated
eGFR calculated using adjusted Cockcroft Gault calculation
Pregnancy must be excluded and counselled not to attempt to conceive
Not to be used for ladies who are breast feeding (unknown whether safe)
Not licensed for Antiphospholipid Syndrome or where pt requires higher range INR
Not licensed for some Cancers

DO NOT CHECK INR RESULT NO INDICATION OF ANTICOAGULANT STATUS

- Licensed for VTE, Non Valvular AF and VTE prophylaxis following Hip and knee replacement
- Rivaroxaban 2.5mg BD licensed for coronary and/or peripheral artery disease (CAD and/or PAD) with Aspirin also Prevention of adverse outcomes after acute management of ACS with raised biomarkers
- Reversal agents are available Andexanet alfa (Apixaban or Rivaroxaban) or Praxbind (Dabigatran) in life-threatening or uncontrolled bleeding (DW Haematology Consultant)
- Stopping/pausing drug normally enough to reverse bleeding

CARE RESPECT RESPONSIBILITY

In conclusion

- VTE is a still a common disease
- VTE is still a major cause of mortality and morbidity
- >50% of VTE cases hospital associated
- We all have a duty of care to keep our patients safe

Any questions

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Please contact

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Employee Confirmation

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You must confirm your review and understanding of this VTE document through one of two methods most convenient to you:

1) You may print this page, complete the details below manually, and return the page to use via Learning and Development Department, 2nd Floor, South Block, Trust HQ, RHH

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2) From your own .DGH or .NHS e-mail login, click dgft.learning@nhs.net to send an e-mail confirmation of your completion, identifying your name and Ward, Department, or Area of practice.

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