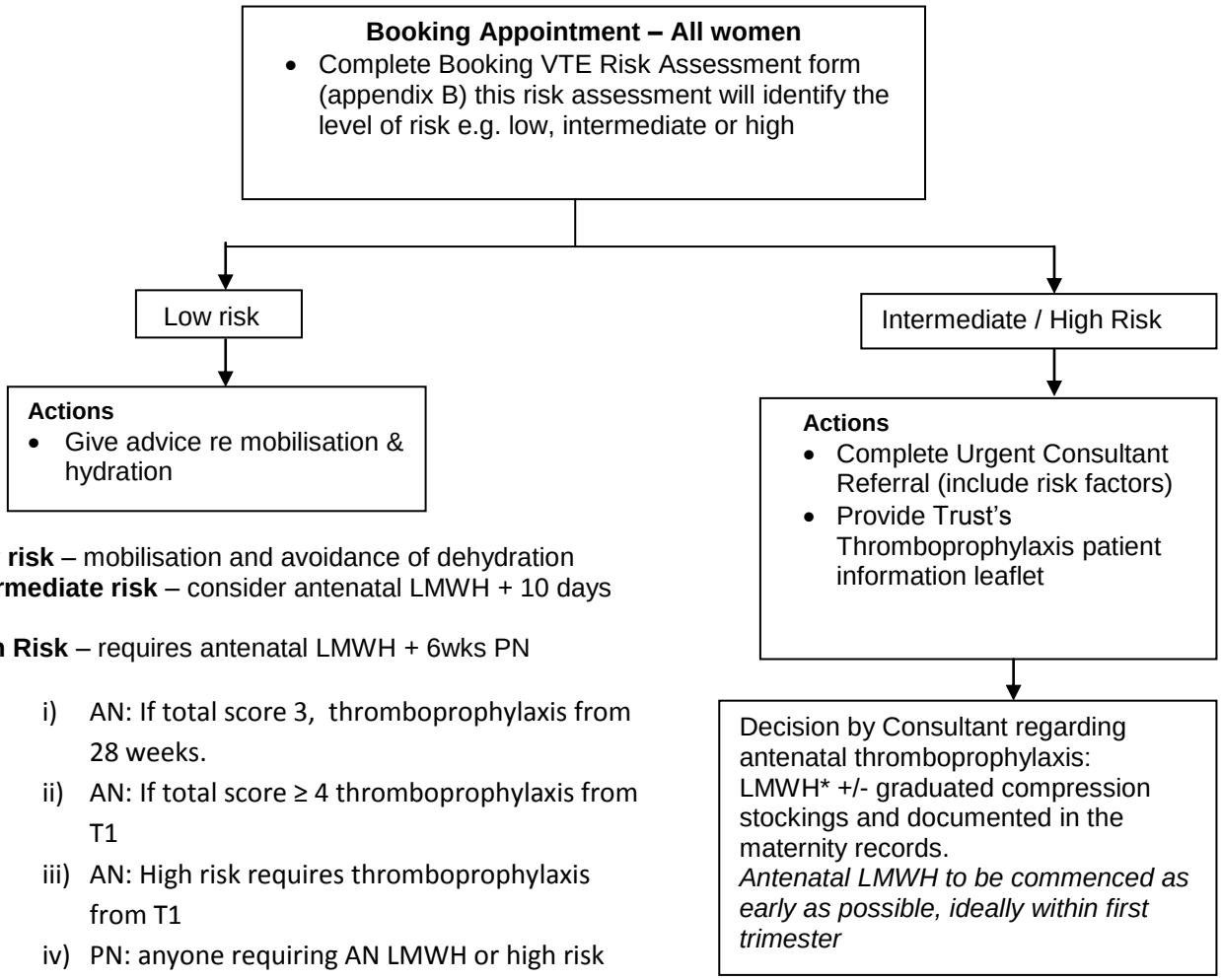
HULL UNIVERSITY TEACHING HOSPITALS NHS TRUST
111 – VENOUS THROMBOEMBOLISM – THROMBOPROPHYLAXIS, MANAGEMENT & TREATMENT OF THROMBOSIS IN THE ANTENATAL, INTRAPARTUM & POSTNATAL PERIOD

Broad Recommendations / Summary

For quick reference the guide below is a summary of actions required to ensure appropriate implementation of this policy / procedure / guideline. This does not negate the need for the document author and others involved in the process to be aware of and follow the detail of this policy / procedure / guideline.

Booking



Low risk – mobilisation and avoidance of dehydration
Intermediate risk – consider antenatal LMWH + 10 days PN
High Risk – requires antenatal LMWH + 6wks PN

i) AN: If total score 3, thromboprophylaxis from 28 weeks.
ii) AN: If total score ≥ 4 thromboprophylaxis from T1
iii) AN: High risk requires thromboprophylaxis from T1
iv) PN: anyone requiring AN LMWH or high risk factors, for 6 weeks PN LMWH
v) PN: >three persistent risks - LMWH 6 weeks
vi) PN : two or more risk factors - LMWH 10d

* LMWH = Low molecular weight heparin

Antenatal prophylactic LMWH Schedule

The dose given, is determined by the most recent maternal weight	
Weight < 50kg	2500 units dalteparin
Weight 50-90 kg	5000 units dalteparin
Weight 91-130 kg	7500 units dalteparin
Weight 131-170 kg	10000 units dalteparin
Weight >170 kg	75 units/kg/day dalteparin

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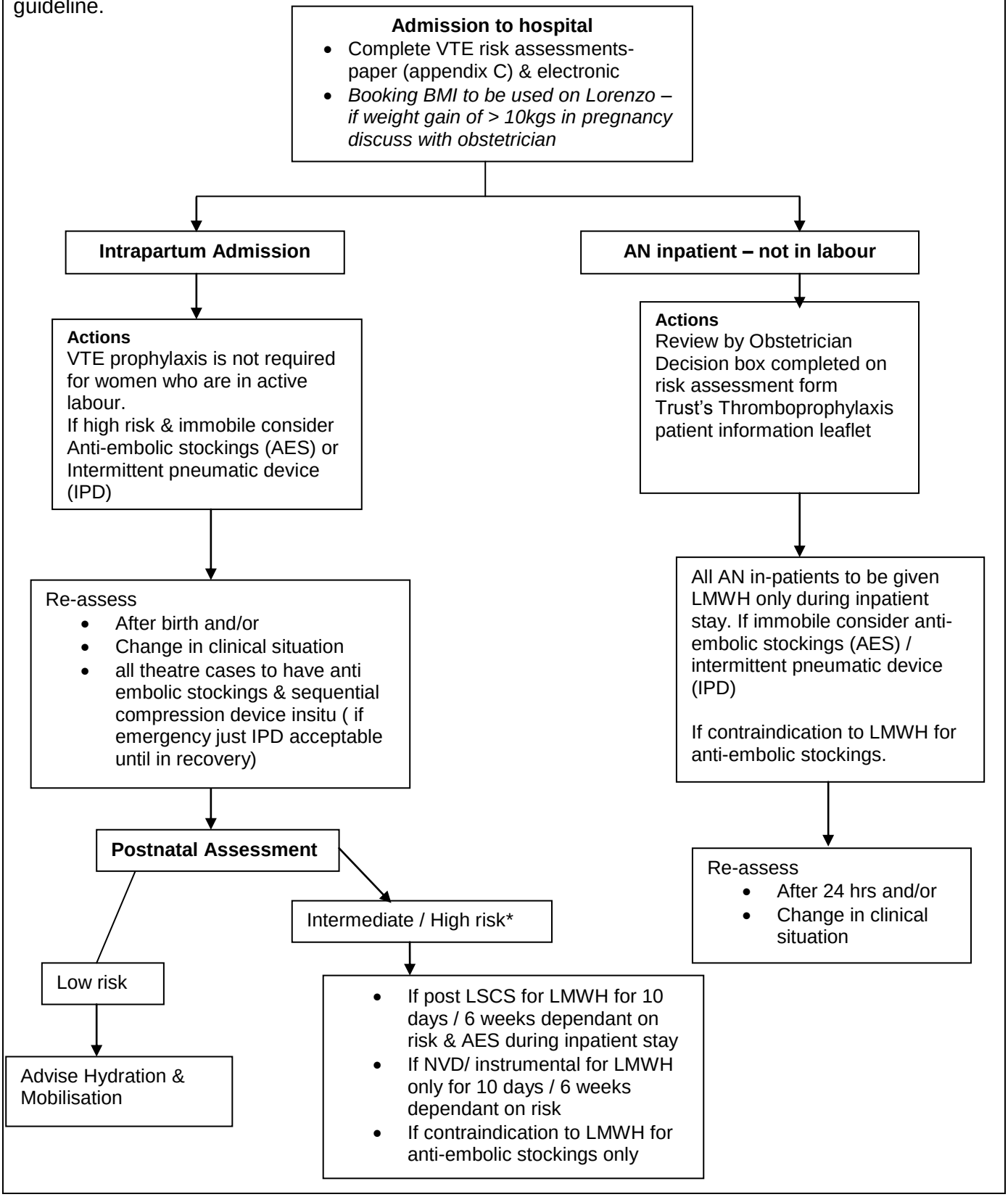
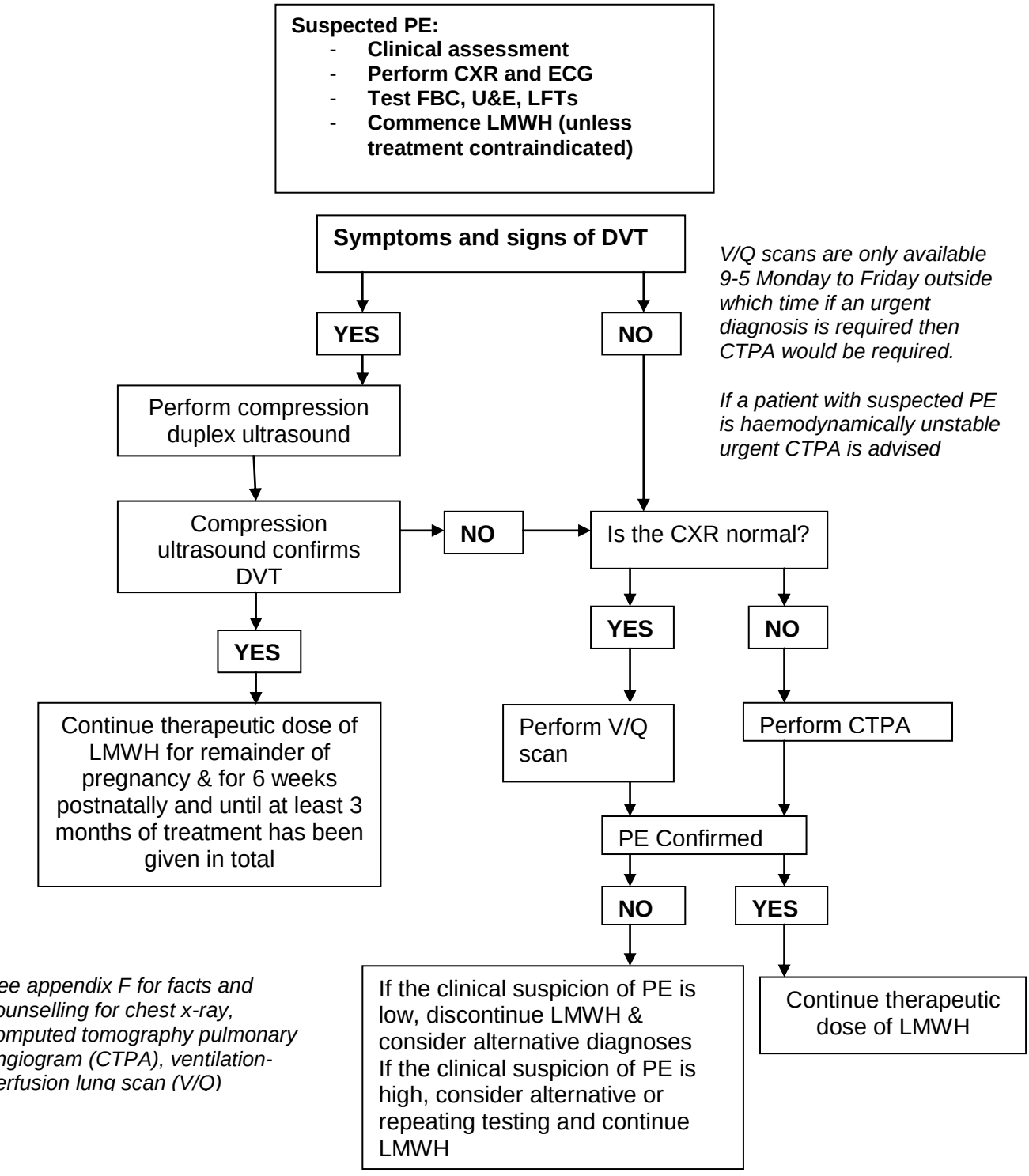


Diagnosis & Management of Acute VTE in pregnancy and Puerperium
See the following flow chart.

All confirmed cases should be discussed with Consultant Obstetrician. Treatment with LMWH should be given until the diagnosis has been excluded by objective testing unless treatment is strongly contraindicated.

LMWH Treatment = 100 units/kg* - consider using once daily until confirmed then this can be changed to twice daily
**use booking weight or most recent documented to calculate*



See appendix F for facts and counselling for chest x-ray, computed tomography pulmonary angiogram (CTPA), ventilation-perfusion lung scan (V/Q)

111 – VENOUS THROMBOEMBOLISM – THROMBOPROPHYLAXIS, MANAGEMENT & TREATMENT OF THROMBOSIS IN THE ANTENATAL, INTRAPARTUM & POSTNATAL PERIOD

1 BACKGROUND

Venous Thromboembolism is up to ten times more common in pregnant women than in the non-pregnant woman of the same age and can occur at any stage of the pregnancy, however the puerperium remains the time of highest risk. Venous Thromboembolism remains one of the main causes of maternal death in the UK and has been a recurrent theme in the confidential enquiries into maternal and child health.

1.1 PURPOSE

Prevention of Venous Thromboembolism (VTE) is a Trust target for quality and safety to reduce avoidable harm by ensuring that at least 90% of all patients accessing the Trust have a full assessment on admission to hospital. The Hull University Teaching Hospitals Maternity Specific VTE Assessment (see appendix B) should be completed on the Maternity Drug Card, and an electronic VTE assessment completed on the Hull University Teaching Hospitals NHS Trust Lorenzo system at each admission .

1.2 SCOPE

All Midwives and Obstetricians working in Hull & east Yorkshire Maternity Services will care for women in accordance with this guideline.

1.3 DUTIES

Antenatal Booking

Midwife

It is the responsibility of the Midwife booking a woman for her pregnancy care to complete a Booking VTE Risk Assessment (appendix A) and complete a Consultant referral form for any women identified as intermediate or high risk.

Any woman with a previous thromboprophylaxis (except an event provoked by major surgery) identified at booking must be referred urgently to the Joint Obstetric / Haematology Team.

Any immediate or high risk identified at booking must be referred urgently to the Obstetrician for review regarding instigation of thromboprophylaxis.

Obstetric Consultant

It is the responsibility of the Obstetric Consultant to ensure the team review any cases sent for referral and instigate any necessary treatment for the antenatal period.

Ensure any woman referred urgently for intermediate / high risk VTE assessment at booking are reviewed in the earliest available clinic for discussion a/- instigation of thromboprophylaxis.

A significant family history is probably one of an unprovoked episode of venous thromboembolism in any first-degree family relative aged 50years or less at the time of the thrombosis or of a pregnancy or oestrogen related thrombosis in a first-degree female relative.

Testing for heritable thrombophilia (deficiencies of protein C,S, antithrombin and mutations in the factor V and prothrombin genes) is not routinely performed due to difficulties in the interpretation of these tests, particularly during pregnancy. Testing

for these abnormalities is not thought to be useful in the investigation of pregnancy-related complications and pregnancy loss.

Joint Obstetric / Haematology Clinic
This clinic will review all women with current or previous thrombosis. Where there is a strong family history of VTE in first degree relative (s), this should be discussed with a member of the Obstetric/Haematology Team.

ON admission to hospital
Midwife
It is the responsibility of the Midwife to complete the Trust Maternity Specific VTE Assessment (see appendix B) for all women on admission to hospital and the Trust electronic VTE assessment on Lorenzo. Where the woman's situation changes or at 24 hours the Midwife will re-risk assess.

Where intermediate or high risk is identified either on initial assessment or on re-assessment, the Midwife will refer to the Obstetrician for prescription of LMWH +/- anti-embolic stocking.

Obstetrician
For all women with intermediate or high risk, it is the responsibility of the Obstetric team to review the woman, and implement appropriate therapies.

2 GUIDELINE DETAILS

2.1 Timing of Risk Assessment
Women are at risk of thromboembolism from the very beginning of pregnancy until the end of the puerperium. All women will be risk assessed at their booking appointment (see appendix A) and reassessed at every hospital admission (see appendix B), 24 hrs following admission and following delivery.

2.2 Antenatal Suspicion of DVT
Where a community or ADU midwife suspects a DVT in a pregnant lady they can refer directly into the Hull Community Deep Vein Thrombosis Service for assessment, diagnosis and treatment. The lady must have been seen by either a midwife or doctor (not simply a telephone triage) and documentation of the review in the handheld records. If DVT suspected then referral to the service is by telephone referral, ensuring that the woman fulfils the Inclusion Criteria. See appendix C for Inclusion /Exclusion Criteria, service guideline and referral process.
For acute presentation of suspected thrombosis manage as section 5.5

2.3 Admission to hospital
All women on each admission to hospital will be risk assessed against the Hull University Teaching Hospitals NHS Trust Maternity Specific Inpatient Thromboprophylaxis Risk Assessment & Management Form (on the drug card) where a plan will be made for any thromboprophylaxis if required. Women will be re-assessed:

- 24 hours after admission and / or
- wherever their situation may change e.g. prolonged immobility, ICC chart
- following delivery

All to be documented on the risk assessment form (appendix C)

2.4 Known Risk Factors Signs and Symptoms

In light of known risk factors (appendix A & B) the following signs and symptoms of VTE require immediate assessment by senior obstetricians:

- Leg pain and swelling (usually unilateral)
- Dyspnoea
- Chest pain
- Haemoptysis and collapse.

2.5 Thromboprophylaxis during Pregnancy, Labour and Delivery and the Postnatal Period

Low Molecular Weight Heparin

The dose schedules for LMWH in the antenatal and postnatal period are highlighted within the flowcharts

To ensure the correct weight is used for prescription of LMWH please ensure that the woman is weighed at the point of prescription e.g. on admission if AN thromboprophylaxis, following delivery if postnatal prophylaxis. If it is not possible to weigh the woman then use most recent weight e.g. 36 weeks for postnatal.

Heparins are porcine-derived (from pigs) though other drugs are available for people whose religious views preclude the use of porcine products.

An Anticoagulant Safety Checklist must be completed & sent with the drug card to Pharmacy for any woman requiring TTO Fragmin (see appendix G). This form will be returned with the LMWH and must be filed into the hospital records.

Graduated Compression Stockings

Graduated compression stockings are to be fitted and properly applied ensuring the woman is aware of how to correctly apply. The following women should be advised to wear graduated compression stockings:

Antenatal

- Women travelling long-distances >4hours
- Women who have a contraindication to LMWH
- Women admitted for EL LSCS see Trust guideline https://pattie.info/Interact/Pages/Content/Document.aspx?id=3776&SearchId=558187
- As per Consultant guidance

Intrapartum

- Women taken to theatre with regional anaesthesia or GA should have compression stockings applied prior to transfer if clinical situation allows.
- As per obstetrician guidance

Postnatal

Stockings to be worn for the duration of inpatient stay unless stated otherwise in management plan.

- Any woman following Caesarean section
- Any woman with a contraindication to LMWH

See appendix D for details on contraindications, measuring & fitting graduated compression stockings

Sequential Compression Devices

It is advised that the following women have sequential compression devices fitted:

- Women taken to theatre with regional analgesia or GA will have sequential compression devices applied in theatre and maintained postnatally until transfer to the postnatal ward.
- Women being cared for on the Intensive Care Chart, on Labour Ward, with significantly reduced mobility
- At Consultant guidance

2.6 Care during Labour and Delivery for women on Thromboprophylaxis

Any women receiving antenatal LMWH should be advised that once labour begins they should not inject with any further LMWH. In these women the following should be observed:

Regional analgesia or anaesthesia cannot be used until at least;

- Twelve hours from the last dose of prophylactic LMWH
- Twenty-four hours from the last dose of therapeutic LMWH

Any women who require to continue with LMWH with epidural in situ, discuss management with Consultant Anaesthetist.

2.7 Postnatal Prophylactic LMWH

Commence no less than four hours after delivery, or removal of an epidural catheter (whichever is the later) or if spinal or general anaesthetic discuss with anaesthetist.

All women will be advised re signs and symptoms thrombosis as part of their discharge discussion and as per '*Prevention of circulatory problems'* in the Postnatal Maternal Record.

Intermediate risk women will also be discharged home with 10 days of postnatal LMWH.

High risk women will also be discharged home with at least 6 weeks of LMWH.

Prior to discharge home women requiring postnatal LMWH will have a demonstration on how to self-administer LMWH (or demonstration given to nominated person). Women will be provided with a burn bin and the Trust's Thromboprophylaxis patient information leaflet and DVD. The leaflet and DVD supports the woman with the self administration of LMWH.

Low risk women will be advised re signs and symptoms thrombosis as part of their discharge discussion and as per '*Prevention of circulatory problems'* in the Postnatal Maternal Record.

2.8 Women diagnosed with VTE during pregnancy or postnatal period

All women who have been diagnosed with a VTE during pregnancy will attend appointments with an appropriate clinician; consultant obstetrician and Consultant Haematologist in a specialist obstetric thrombosis clinic as identified in their individual management plans. All discussion and treatment will be documented in woman's maternity hospital notes and their hand held records.

All women who have been diagnosed with a VTE during the postnatal period will be referred to their registered GP via an Immediate Discharge Letter (IDL) for continued monitoring and management or to the Community DVT Service.

2.9 Management of massive life-threatening thrombosis in pregnancy

Collapsed, shocked patients need to be assessed by a multidisciplinary team of experienced clinicians including Consultant Obstetrician, Consultant Anaesthetist and Consultant Haematologist who will decide on an individual basis whether a woman receives intravenous unfractionated heparin, thrombolytic therapy or thoracotomy and surgical embolectomy. Intravenous unfractionated heparin is the preferred treatment in massive PTE with cardiovascular compromise.

The on-call medical team will be contacted immediately. An urgent portable echocardiogram or CTPA within 1 hour of presentation will be arranged. If massive PTE is confirmed or, in extreme circumstances prior to confirmation, immediate thrombolysis should be considered.

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Management will involve a multidisciplinary resuscitation team including senior physicians, obstetricians and radiologists and all decisions documented in any of the following:

- Antenatal Care Plan
- Birth notes
- Postnatal care Plan
- Intensive care Chart
- Or Speciality specific paperwork

Depending on which is most appropriate.

2.10 Diagnosis & Management of Acute VTE in pregnancy and Puerperium

See the flow chart.

3 PROCESS FOR MONITORING COMPLIANCE

A yearly audit of 25 sets of records will be undertaken to assess timely and correct risk assessment is carried out & that the correct treatment and care is provided according to the guideline.

All VTE diagnosed during pregnancy and up to 3 months postnatally will be subject to a Root Cause Analysis & submitted to the Trust Thromboembolism Group for review and actions where required.

4 REFERENCES

Royal College of Obstetricians & Gynaecologist, Reducing the Risk of Venous Thromboembolism during Pregnancy and the Pueperium. Green-top Guideline No.37a (April 2015)

Royal College of Obstetricians & Gynaecologists, Thromboembolic Disease in Pregnancy and the Puerperium: Acute Management. Green-top Guideline No. 37B (April 2015)

RCN, 2010 – Antiembolic stockings

http://www.rcn.org.uk/development/practice/cpd_online_learning/nice_care_preventing_venousthromboembolism/preventing_vte)

Nursing and Midwifery Council. The Code: Professional Standards of Practise and Behaviour for Nurses and Midwives. March 2015

Nursing and Midwifery Council. Midwives Rules and Standards. 2012

5 APPENDICES

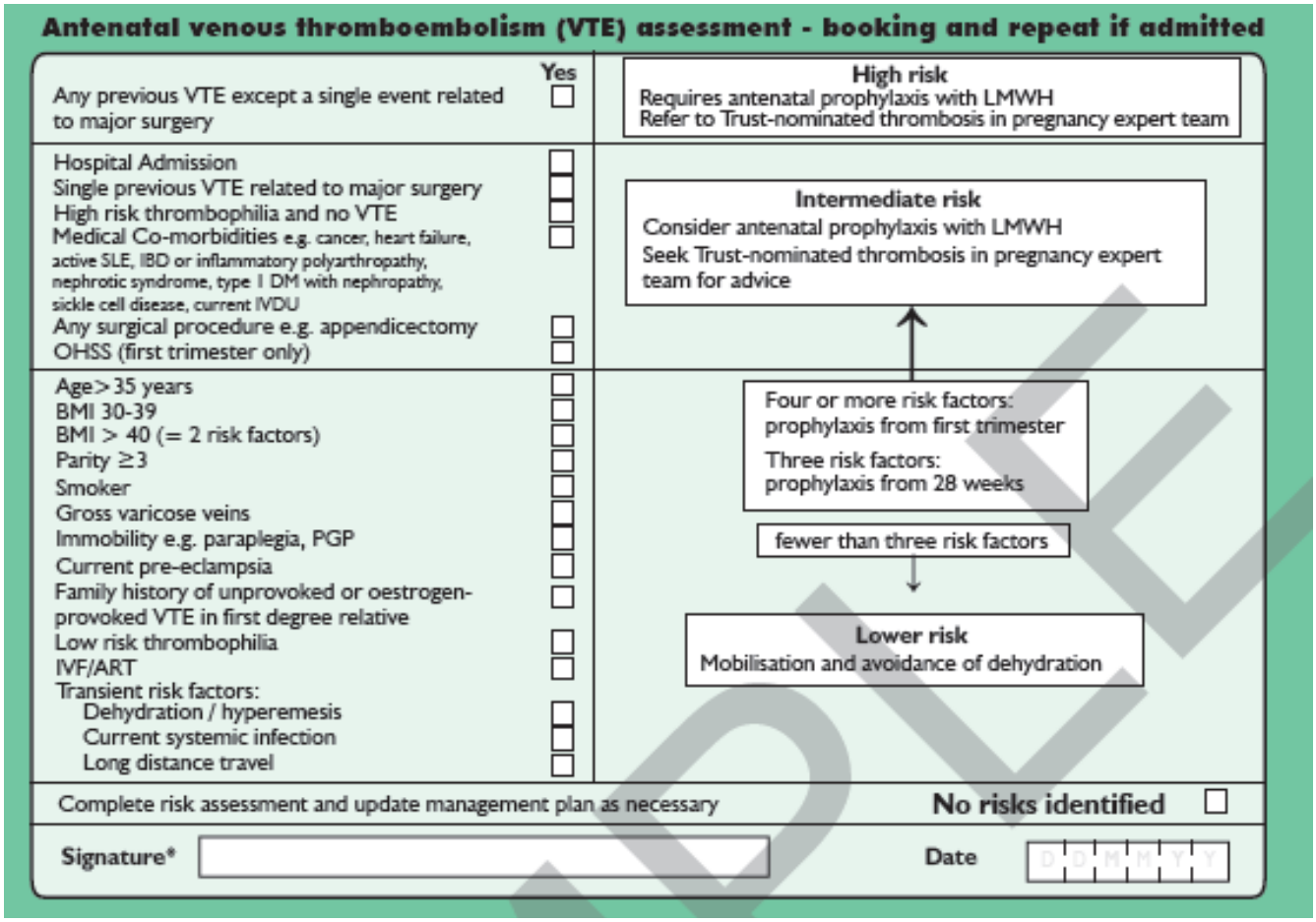
- *Appendix A – Booking VTE Risk Assessment*
- *Appendix B – Hospital antenatal and postnatal risk assessments*
- *Appendix C – Hull Community Deep Vein Thrombosis Service*
- *Appendix D – Graduated Compression Stockings*
- *Appendix E - Doses and Risks: VQ Radionuclide Imaging vs. CT Scanning*
- *Appendix F – Facts & counselling regarding chest x-ray, VQ and CTPA*
- *Appendix G – Anticoagulant Checklist*

Document Control			
Reference No:	111	**First published:**	August 2008
Version:	6	**Current Version Published:**	October 2019
Lead Director:	Mr Colin Vize	**Review Date:**	October 2022
Document Managed by Name:	Julia Chambers	**Ratification Committee:**	Health Group Governance
Document Managed by Title:	Labour ward practitioner		
Consultation Process			
Email distribution to all midwifery, obstetric and anaesthetic staff. Discussion and approval at thrombosis committee, CEPPD committee, obstetric guidelines meeting, obstetric governance meeting and health group governance meeting.			
Key words (to aid intranet searching)			
Thromboprophylaxis; VTE ;thrombosis			
Target Audience			
All staff			

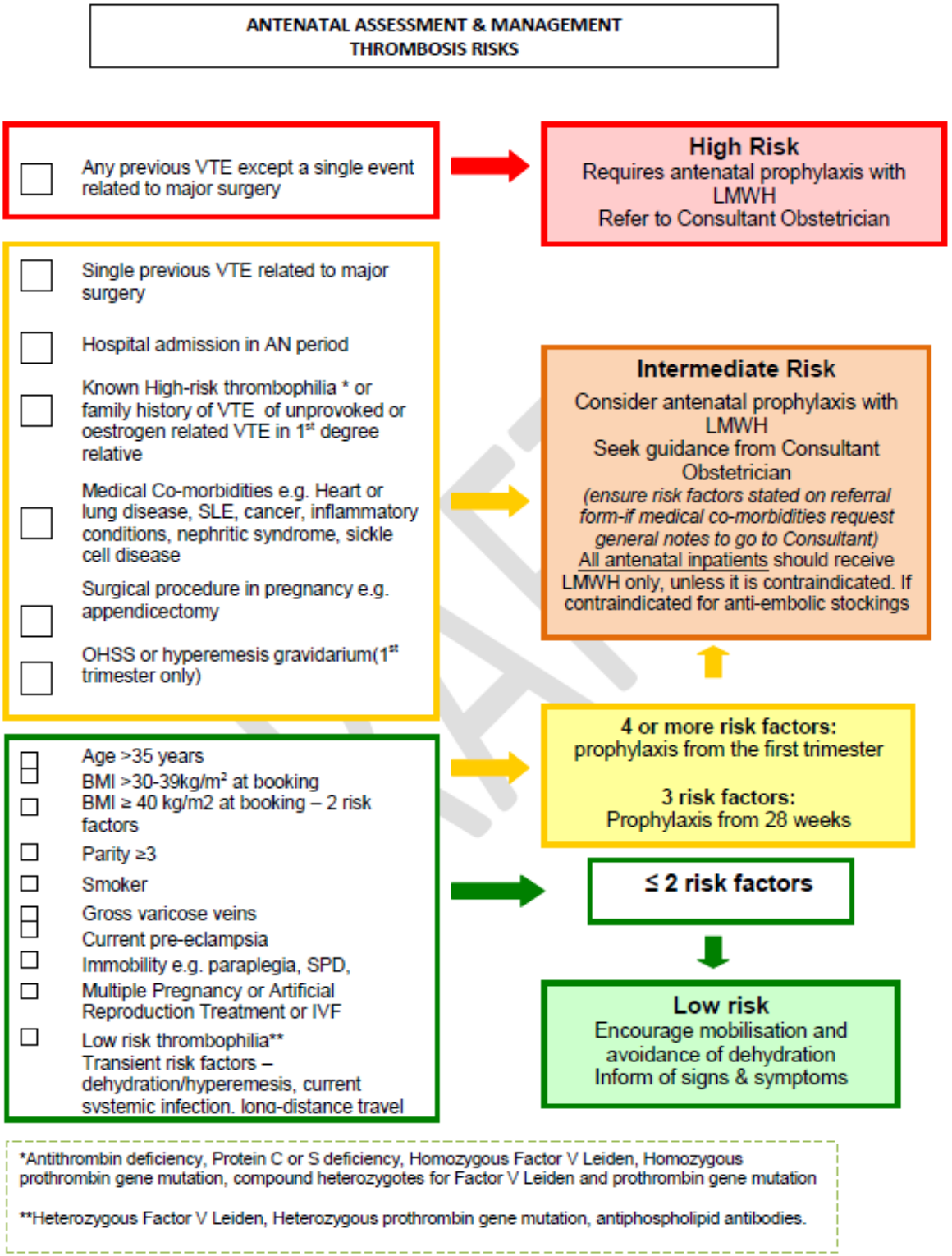
Version Control			
Date	**Version**	**Author**	**Revision description**
August 2008	1	Obstetric Guideline Group	New Policy
November 2011	2	Obstetric Guideline Group	Incorporate National Guidance
August 2012	3	Obstetric Guideline Group	Changes to Practice Recommendations from SUI
November 2012	4	Compliance Manager	Minor Amendments Section 5
May 2014	4.1	Obstetric Guideline Group	Amendment to Monitoring Form – frequency of audit
June 2016	5	Julia Chambers	Update
October 2019	V6	Julia Chambers	Review & renewal

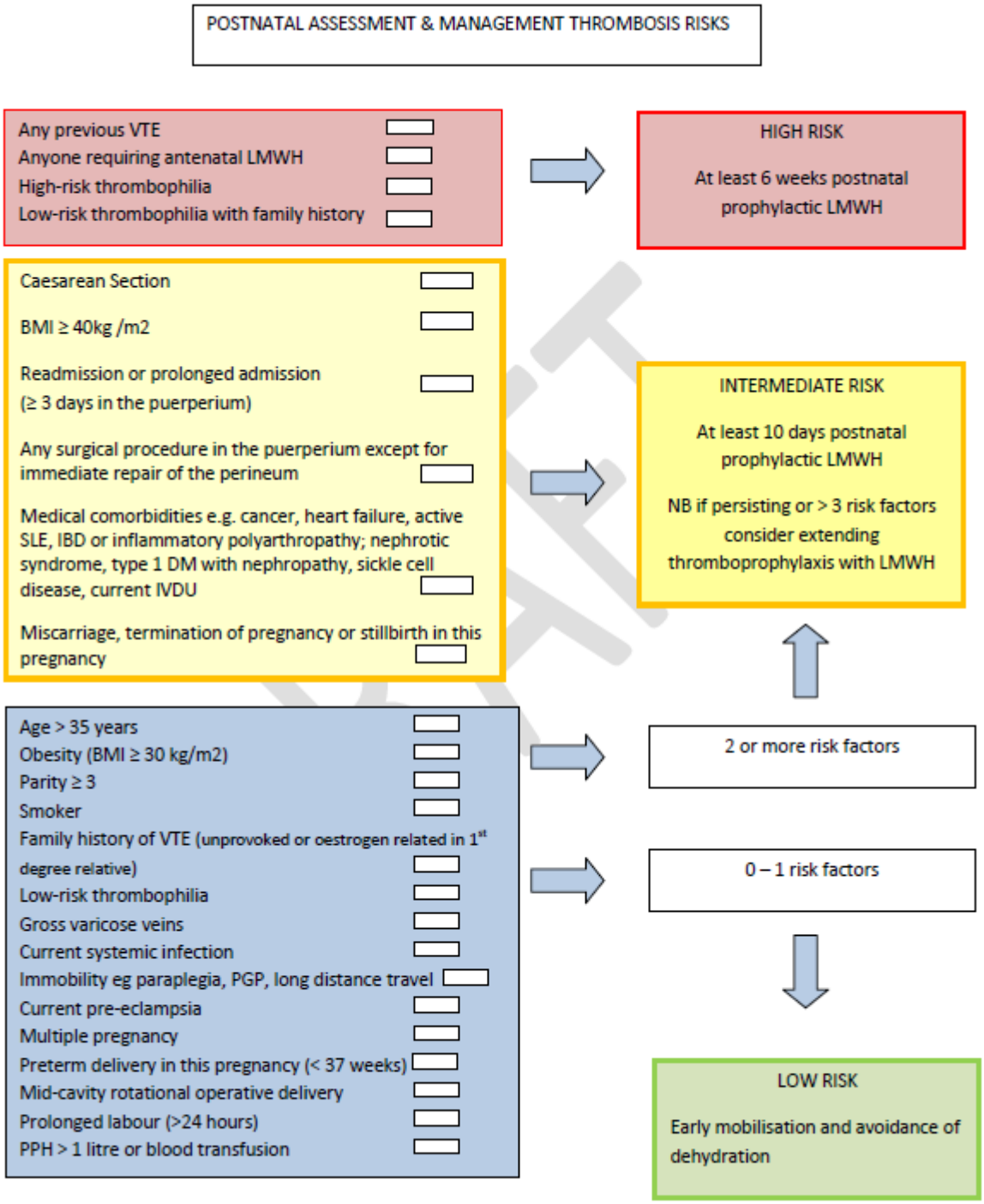
Appendix A – Booking VTE Risk Assessment

Page 13 Perinatal Institute Pregnancy Notes



Appendix B – In patient risk assessment





Postnatal BMI to be recalculated following birth to ensure accurate risk assessment and dosage of LMWH if required.

Recommended AN & PN prophylactic doses according to drug:

Table 3. Suggested thromboprophylactic doses for antenatal and postnatal LMWH

Weight	Enoxaparin	Dalteparin	Tinzaparin (75 u/kg/day)
< 50 kg	20 mg daily	2500 units daily	3500 units daily
50–90 kg	40 mg daily	5000 units daily	4500 units daily
91–130 kg	60 mg daily*	7500 units daily	7000 units daily*
131–170 kg	80 mg daily*	10 000 units daily	9000 units daily*
> 170 kg	0.6 mg/kg/day*	75 u/kg/day	75 u/kg/day*
High prophylactic dose for women weighing 50–90 kg	40 mg 12 hourly	5000 units 12 hourly	4500 units 12 hourly

Appendix C

City Health Care Partnership CIC

a co-owned business

Community DVT Service Telephone Referral Sheet

Date and time call	Appointment time offered	Reason if not same day	**Communication problems Y/N**
27 May 2013			**Interrupter Required Y/N**

Patient name:
Date of Birth:
NHS Number:
Address:
Telephone contact number:

Referring GP and surgery: GP/Clinician

Leg : Right Left	Previous DVT Yes: when?
Chest pain :	Calf pain Calf swelling
Other relevant medication: Warfarin, Methadone	Relevant risk factors or Past medical History
Call taken By:	Signature Print Name

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Appendix 2

COMMUNITY DVT SERVICE CLINIC REFERRAL FORM

TELEPHONE REFFERALS *ONLY* (9.30-8pm last referral 6pm)

TEL: 01482 335597 FAX: 01482 344338

Date & time of referral……NHS No……

Patients name…….DOB……..

Address……..….

……..Post Code…….

Telephone Number……Mobile number.....

GP Name……

Practice Address……

……..

Practice Telephone Number…….Fax……

Brief Summary of symptoms……..

……

……

Concurrent Medical Conditions……..

……

Current Medication Please **attach** copy of Medication……

Signature of referrer .....……Print name.....
Please complete and fax this form once the referral has been accepted by the DVT service via telephone

Please refer to the inclusion/exclusion overleaf before referring the patient to the DVT Service.
Westbourne (NHS) Centre, Westbourne Avenue, HULL,
HU5 3HP

Patient Criteria and Selection

Patients who may be referred to the Community DVT Service for Assessment, Diagnosis and Treatment.

- Patients aged 18 years of age and over.
- Access to telephone
- Suitable for ambulatory care
- Stable medical condition
- Alcohol or substance misuse under stable clinical care with another primary health care professional/service.

EXCLUSION CRITERIA

- ***Patients who are not suitable for DVT pathway should be referred to Acute Assessment Unit by the General Practitioner:***
- Suspected DVT of upper limb
- Patients under 18 years of age
- Patients not registered with a GP
- **Patients with:**
- Known severe hepatic impairment
- Renal Failure with serum creatinine >170 umols/1
- Thrombophilla
- Confirmed bleeding disorder e.g. Haemophilia Platelets ,130
- Heparin induced osteoporosis/thrombocytopenia
- Uncontrolled hypertension >180/100(>80 years 200/120)
- Active bleeding e.g. intra-cerebral bleed within the last 6 months due to higher risk of haemorrhage
- Endocarditis/Septic Endocarditis due to higher risk of haemorrhage
- High bleeding risk i.e. Peptic ulcer/Oesophageal Varies
- Brain or Spinal surgery within 6 months
- Suspected Pulmonary Embolism
- Suspected Bilateral DVT
- Current severe Psychiatric or mental illness who are unlikely to comply
- Frequent falls
- Patients who are not contactable on day of referral
- Patients unwilling to co-operate with the service
- Memory impairments (unless measures to supervise medication are in place)

Appendix D
Graduated Compression Stockings

This refers to preventative measures that are not related to medication. Anti-embolism stockings can decrease the risk of DVT. They may be used alongside anti-coagulants, intermittent pneumatic compression and/or foot pumps. Anti-embolism stockings help to prevent venous stasis (pooling of blood in the leg veins) and venous distension which can trigger formation of blood clots. Anti-embolism stockings should not be used in patients with diabetes or peripheral arterial disease as both diseases narrow the blood vessels and stockings will do more harm than good.

Other options for mechanical prophylaxis include intermittent pneumatic compression devices such as compression sleeves and foot pumps. As with anti-embolism stockings, these devices must be fitted correctly for each patient and there is a video later in this section that demonstrates how stockings and intermittent pneumatic compression devices should be fitted.

There are some contra-indications for the use of anti-embolism stockings. These are:

- severe peripheral vascular disease
- severe dermatitis
- oedema of the legs
- deformity of the legs
- peripheral neuropathy
- recent skin graft.

(RCN: http://www.rcn.org.uk/development/practice/cpd_online_learning/nice_care_preventing_venousthromboembolism/preventing_vte)

Appendix E

Doses and Risks: VQ Radionuclide Imaging vs. CT Scanning
January 2016

Introduction:

The Trust may discontinue using radionuclide VQ scanning for investigation of pulmonary embolism (PE) in pregnant patients and move to CT scanning. This report examines effective dose and uterine dose and subsequent cancer risks for the mother and baby from planar VQ, planar Q only, SPECT VQ and CT imaging.

Method:

The following local diagnostic reference levels (DRLs) for planar and SPECT scans were used in the calculation of dose:

Planar (V) DTPA (ARSAC Serial No. 43a5xix)	20MBq
Planar (Q) Human albumin macroaggregates (ARSAC Serial No. 43a3i)	100MBq
Planar perfusion (Q) only	60MBq
SPECT (V) DTPA	20MBq
SPECT (Q) Human albumin macroaggregates	200MBq

Administered activity to effective dose conversion factors used were:

Tc-99m DTPA aerosol	6.1×10^{-3} mSv/MBq[1]
Tc-99m macro-aggregated albumin	1.1×10^{-2} mSv/MBq[2]

Administered activity to uterine dose conversion factors used were:

Tc-99m DTPA aerosol mGy/MBq[1]	4.8	x	10^{-3}
Tc-99m macro-aggregated albumin mGy/MBq[2]	2.2	x	10^{-3}

Doses from CT scanning were calculated using an average dose-length-product (DLP) of 230 mGycm for the Trust's Siemens scanner and dose calculation software[1]

Results:

Doses for each of the above scans are shown in table 1:

[1] ImPACT CT Patient Dose Calculator, v 1.0.4 27/05/2011

Modality	Uterine Dose (mGy)	Effective Dose (mSv)
Planar VQ	0.32	1.22
Planar Perfusion Only	0.13	0.66
SPECT	0.54	2.32
CT	0.04	4.50

Table 1: Effective and uterine doses for each modality

It is clear from table 1 that CT gives the highest effective dose but lowest uterine dose.

Radiation Induced Cancer Risk to the Mother

Risks to the patient of radiation cancer induction[2] from the above *effective doses* as a function of age are shown in table 2.

Age	Percentage (%) risk per mSv	Lifetime risk of inducing cancer			
		Planar VQ	Planar Perfusion Only	SPECT	CT
20-29	0.0064	1 in 12,800	1 in 23,800	1 in 6,700	1 in 3,500
30-39	0.0046	1 in 17,700	1 in 32,800	1 in 9,300	1 in 4,800
40-49	0.0044	1 in 18,500	1 in 34,300	1 in 9,700	1 in 5,000
50-59	0.0041	1 in 19,700	1 in 36,500	1 in 10,400	1 in 5,400

Table 2: Lifetime risk to the patient of radiation induced cancer from effective dose (risk rounded to nearest hundred)

As demonstrated in table 2, CT scanning gives the highest risks, followed by SPECT imaging. CT scanning results in risks approximately 7 times higher than perfusion only, 4 times higher than planar VQ, and 2 times higher than SPECT.

Radiation Induced Cancer Risk to the Baby

Risks to the unborn child of radiation cancer induction is believed to be present during the entire pregnancy, and is approximately 1 in 10,000 per mGy[3]. Typical *uterine doses* and cancer risks are shown in table 3.

Modality	Uterine Dose (mGy)	Risk of inducing

[2] BIER VII Phase 2, Health Risks from exposure to low levels of ionising radiation, 2006

[3] Radiation Protection 100, Guidance for protection of unborn children and infants irradiated due to parental medical exposures, European Commission, 1998

		cancer in childhood
Planar VQ	0.32	1 in 31,300
Planar Perfusion Only	0.13	1 in 76,900
SPECT	0.54	1 in 18,500
CT	0.04	1 in 250,000

Table 3: Risk of radiation induced cancer in childhood from uterine dose (risk rounded to nearest hundred)

As demonstrated in table 3, CT scanning gives the lowest risk, followed by perfusion only imaging. SPECT scanning results in the highest risk of childhood cancer induction.

Potential effects on the unborn child from these doses are as follows[3]:

- All uterine doses result in very small risks and are much smaller than the natural risk of a child developing cancer (up to the age of 15 years) of 1 in 500[4].
- There is ***no risk*** of malformation or death from the above levels of dose, as the threshold for these occurrences is approximately 100 mGy.
- There is ***no risk*** of loss of intelligence quotient (IQ) of the unborn child, as the estimated loss is approximately 3 IQ points per 100 mGy.
- There is ***no risk*** of severe retardation of the unborn child, as the excess probability is approximately 0.4 per 1000 mGy.

So as we can see, there is a slight increase in risk of a child developing a radiation induced cancer from these doses, but risks are much smaller than the natural risk. There are no acute effects (such as malformation or retardation) associated with these levels of dose.

Conclusions:

CT scanning results in higher effective doses than all radionuclide modalities giving increased risk of cancer induction to the mother. However, CT scanning results in lowest uterine doses and therefore risk to the baby.

Dr Craig Moore
Physicist & RPA

[4] Protection of pregnant patients during diagnostic medical exposures to ionising radiation. Advice from the Health Protection Agency, The Royal College of Radiologists and the College of Radiographers, 2009

FACTS AND COUNSELLING REGARDING CHEST X-RAY, V/Q SCAN AND CTPA

Chest X-ray

- The radiation dose to the fetus is negligible at any stage in pregnancy
- Results found to be normal in >50% of pregnant women with proven PE
- May identify other pulmonary disease e.g. pneumonia, pneumothorax, lobal collapse
- Abnormal features indicating PE:
  - atelectasis
  - effusion
  - focal opacities
  - pulmonary oedema
- If the x-ray is abnormal with a high clinical suspicion of pulmonary embolism a CTPA should be performed
- If the x-ray is normal and the patient is stable, bilateral Doppler USS should be performed
- If both chest x-ray and Doppler are normal, discuss with the radiologist regarding V/Q or CTPA

V/Q Scan

Women should be advised that V/Q scanning carried a slightly increased risk of childhood cancer compared with CTPA (1/280 000 versus less than 1 / 1 000 000) but carries a lower risk of maternal breast cancer (lifetime risk increased by 13.6% with CTPA, background risk of 1/200 for study population)

Advantages of V/Q over CTPA:

- high negative predictive value
- substantially lower radiation to pregnant breast tissue therefore in young women or those who have already had a previous CT chest lung perfusion scan this should be 1st choice.

Disadvantages of V/Q

- increased radiation to fetus
- potential delay because of availability of isotopes

CTPA

British Thoracic Society recommends CTPA as 1st line investigation for non-massive PTE in non pregnant women.

Advantages over V/Q imaging

- better sensitivity and specificity
- lower radiation dose to fetus
- can identify other pathology
- easily accessible

Disadvantages over V/Q

- high radiation dose to maternal breast
- may not identify small peripheral PE

Appendix G

Attach addressograph sticker if available:
Surname:
First names:
DoB: **Unit No:**
HEY No:

Hull and East Yorkshire Hospitals NHS
NHS Trust

ANTICOAGULATION SAFETY CHECKLIST

This must be completed for all patients on any anticoagulant therapy, before discharge. This form must be sent to pharmacy with the prescription charts and IDS before pharmacy can release the discharge drugs.

Oral: Vitamin K antagonist (warfarin, acenocumarol, phenindione) or Direct Oral Anticoagulant - DOAC - (dabigatran, rivaroxaban, apixaban and edoxaban). **Sub Cutaneous** (sc): dalteparin, fondaparinux

General advice for all anticoagulants	Date/time	Signature
Document in medical notes that patient has been given written information the Trust VTE leaflet The patient has been given education on: - The risks and benefits of anticoagulation, including lifestyle and diet - Indication of the prescribed anticoagulant, the planned length of treatment and the importance of stopping at the right time, if applicable - The prescribed dose - The frequency (every day at the same time or times) - The signs/symptoms of overdose/side effects: bleeding, stomach disturbances… - Possible interactions with food or other medicines, including herbal products - Discuss treatments in pregnancy & breastfeeding (if applicable) - Possible increased risk of bleeding when anticoagulants given with NSAIDs: ideally avoid - Analgesics of preference: paracetamol or co-codamol - The importance of a regular diet and alcohol consumption (as general advice) - Informing their GP or pharmacist that they are taking anticoagulants if any new medication is started, including herbal - What to do if they notice any bleeding		
For Warfarin (or other Vitamin K antagonist: acenocumarol, phenindione)	Date/time	Signature
The patient has been informed of - The reason for / frequency of blood tests to monitor INR - Need for variation of dose - Do not drink cranberry juice		
The patient's yellow oral anticoagulant therapy booklet has been completed by the doctor with patient information, INRs, oral anticoagulant doses and duration of therapy. **This is essential for continued dosing in the community.**		
The patient has been referred to the anticoagulation clinic/ GP: For GP postcodes HU1 to HU9 + HU11 - phone 335509. For all other postcodes - phone the patient's GP **Clinic/GP informed if patient requires Medicines Record Card ("MRC chart") or Nomad box (this has impact on management of anticoagulation)**		
Time and Date of appointment for next INR check/anticoagulation clinic appointment: Date _____ Time _____		
Warfarin chart containing INR and dose plus anticoagulation referral letter completed and signed faxed according to GP postcode to: • 335507 for GP postcodes HU1 to HU9 or fax to patient's GP for all other postcodes		
Please document any difficulty you had organizing this discharge i.e. time spent organizing appointment		
For Sub Cutaneous preparations (Dalteparin, Fondaparinux)	Date/time	Signature
- If the patient can self-inject, training provided - If District Nurse needed, it's booked and chart completed by doctor - Inform of frequency and duration - Sharp bin provided and information given. To phone patient's council for disposal		
For Direct Oral Anticoagulant – DOAC – Dabigatran, Rivaroxaban, Apixaban, Edoxaban		
- If DOAC replaces warfarin, let anticoagulation services or GP know ASAP - DOAC alert card completed by doctor and given to the patient - Take with food, regularly at the prescribed frequency and at the same time - Generally no need for monitoring		
Check if the patient has any further questions or concerns		

For DOACs information see http://intranet/vteAnticoagulation/pdf/NOACinformationchart.pdf

PHARMACY WILL RETURN THIS FORM WITH THE DISCHARGE MEDICATION. TO FILE IN PATIENT'S NOTES

Version 4.4: December 2015 Approved by Thrombosis Committee April 2016 Review April 2019