One Umbrella:
Evaluating Healthcare Efficiency At Eastern Health's Adult Outpatient Thrombosis Service

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Presentation Overview

- Introduction
- Need for a Thrombosis Service
- Aim of the Service
- Current Thrombosis Service
- Evaluating the Service
- Maximizing Efficiency
- Current Challenges / Forward Direction
- Questions and Discussion

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Introduction

- There are 3 main patient groups with thrombotic disorders requiring Anticoagulation Therapy
  - Venous thromboembolism (VTE) comprised of deep vein thrombosis (DVT) and pulmonary embolism (PE)
  - Atrial Fibrillation
  - Mechanical Prosthetic Heart Valves

Need for a Thrombosis Service

- Venous Thromboembolism
  - 1-2 per 1000 people per year (~500+ in NL) will develop VTE
  - ~25% of patients with new PE die before reaching the hospital
  - Average cost per patient of managing DVT in Canada was $5180.00 in 2011
  - Estimated cost of managing DVT in Newfoundland & Labrador each year is ~ $2,590,000.00
  - The main treatment of VTE is blood thinning medication, which is the leading drug class linked to related adverse events
  - Costs may increase significantly in the presence of complications
  - Management costs may be reduced when patients have access to a specialized thrombosis centre

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J Thromb Haemost. 2011;9:2397–2405

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Need for a Thrombosis Service

- Patients at risk of stroke

  Atrial fibrillation (AF)

  - Affects 1-2 % of the Canadian population (~5000 people in NL living with Atrial fibrillation)
  - Carries an average stroke risk of 5%, which increases with increasing age and diseases to almost 20%
  - AF strokes are more severe, disabling and fatal relative to non-AF strokes
  - Therapy with anticoagulation is very effective at reducing the risk of stroke

  Mechanical prosthetic heart valves

  - Risk of stroke without anticoagulation is high
  - Drug of choice for anticoagulation is warfarin, which is challenging to manage

Need for a Thrombosis Service

- Stroke
  - The average cost of managing stroke per patient in Canada (with or without disability) was noted to be $74,353.00
  - The estimated cost of managing stroke (disabling or non-disabling) due to AF in Newfoundland & Labrador each year would be ~$18,600,000.00
  - Complications can occur due to difficulties in the management of anticoagulation therapy
  - Management costs may be significantly reduced when patients have access to a specialized anticoagulation management centre with a focus on prevention of strokes

Can J Neurol Sci. 2012 Nov;39(6):793-800

Aim of the Service

- Mission:
  - The Thrombosis Service is a comprehensive clinical service committed to excellence in patient care, education, and leadership in the area of thromboembolism and anticoagulant management
- Goal of the service is to maximize efficiency and quality of care through the use of standardized, evidenced based processes and practices

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Aim of the Service

Overall plan

- Initial funding received in 2015 to start a 3 year Pilot project
- Thrombosis Service officially opened October 2017
- Operates as an adult outpatient service
- An evaluation process is in place to assess the impact of the Thrombosis Service on:
  - Patient care
  - Costs
- Should improved outcomes be confirmed, request will be for Eastern Health to assume the cost of running the service

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Current Thrombosis Service: Team

- Thrombosis Service Team
  - Thrombosis physician/Hematologist(s) (1 Medical Director)
  - Clinical Pharmacist (Coordinator of the Service)
  - 3 FTE Clinical Pharmacist positions
  - Manager (Regional Medicine Program)
  - Clerk

Current Thrombosis Service: Clinics

Clinic	Target Population
Emergency Thrombosis Clinic (ETC)	People with acute VTE events (seen in Thrombosis Service within 24-72 hours)
Perioperative Anticoagulation Management Clinic	People on anticoagulants who require procedure or surgery
Thrombosis Clinic	Complex patients, as well as follow up from ETC /discharge
Anticoagulation Management Clinics (oral (DOAC) and injectable agents (LMWH)) ***(Pharmacists Led)***	People on long term anticoagulants – follow up
Point of care clinic for warfarin management ***(Pharmacists Led)***	People (especially newly initiated) on warfarin

Key: DOACs = Direct oral anticoagulants; LMWH = Low-molecular-weight heparin

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Current Thrombosis Service – Weekly Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
MORNING					
Clinic:	Emergency Thrombosis Clinic	Emergency Thrombosis Clinic	Emergency Thrombosis Clinic	Emergency Thrombosis Clinic -PAM Clinic (MP) *-POCT Clinic (MP)*	Emergency Thrombosis Clinic
AFTERNOON					
Clinic:	-DOAC/LMWH -Outpatient Follow up Clinic (Thrombosis Physician)	Thrombosis Clinic	Thrombosis Clinic	-WIFU (MP) -Thrombosis follow up Clinics - Urgent Thrombosis Clinic	

Key:
DOAC – Direct oral anticoagulant
PAM - Perioperative Anticoagulation Management Clinic
HSC – Health Sciences Centre
LMWH- Low molecular weight heparin
MP- Major's Path
WIFU- Warfarin Intake and Follow up

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Current Thrombosis Service: Multidisciplinary Approach

- Hematologists and Pharmacists work together to provide patient care
- Support for the Service is provided by the Managers and Director of the Medicine Program, as well as the full time clerk
- Allowing Pharmacists to practice to their scope allows the service to operate efficiently and maximize the Hematologists time

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Current Thrombosis Service: Multidisciplinary Approach

- Clinical Pharmacists:
  - Responsible for day to day operations; work with Thrombosis Physician/ Hematologist to deliver service
  - Interview /assessment of patients and medical records
  - Document assessments (draft letters, forms)
  - Present to Thrombosis physician/Hematologist
  - Deliver pharmacist led follow up clinics
  - Medication teaching and ensure medication access
  - Answer follow up questions with discussion/deferral to Thrombosis Physician/ Hematologist
- Thrombosis Physician/Hematologist:
  - Chart and Patient assessment
  - Discussion with patient
  - Sign off documentation
- All pharmacists complete a pre-defined training program to enhance skills and knowledge in Thrombosis and Anticoagulation

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Evaluation of Thrombosis Service

- Comprehensive, multi-faceted evaluation underway
- Research Team:
  - Dr. Rufaro Chitsike
  - Dr. Stephanie Young
  - Dr. Hai Nguyen
  - Dr. Kwadwo Bonsu
  - Research Assistants (students/pharmacy residents)

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Evaluation of Thrombosis Service: Outcomes being Assessed

1) Patient Quality

- *Clinical outcomes* –thromboembolic events, bleeding, mortality and other complications e.g. post thrombotic syndrome/chronic thromboembolic pulmonary hypertension for patients in Thrombosis Service vs usual care*
- *Process outcomes* e.g. unnecessary investigations, cancelled surgeries, access to medications, access to specialist, wait times for appointments, volume of patients assessed, patient satisfaction for patients in Thrombosis Service vs usual care*

2) Costs

- *Cost effectiveness/savings* with each of the outcomes in Thrombosis Service vs usual care

* Where possible as there may not be a feasible control group for various outcomes

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Evaluation of Thrombosis Service: Outcomes

<u>Preliminary impact/potential impact of the Thrombosis Service:</u>

- Overall improvement in patient quality of care
- Reduction in the cost of management of VTE
- Reduction in the number of strokes per year
- Less admissions to the Hospital
- Less visits to the Emergency Room

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Evaluation of Thrombosis Service: Outcomes

<u>Preliminary impact/potential impact of the Thrombosis Service:</u>

- Less unnecessary investigations completed (e.g. CT scans)
- Less adverse events related to surgery
- Less expensive and unnecessary laboratory testing
- Determine appropriate duration of anticoagulation
  - Appropriate follow up of patients remaining on long term therapy
- Decreased wait times for appointments

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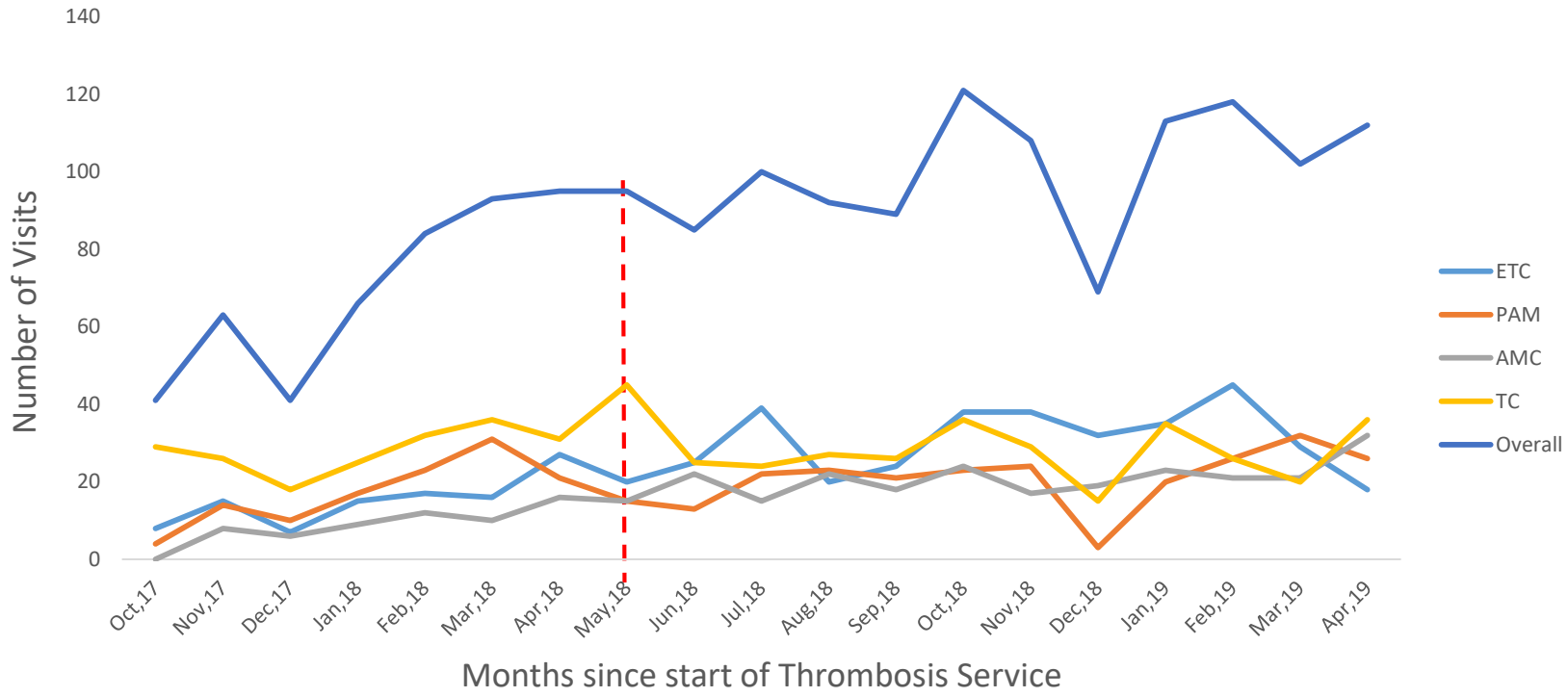
Evaluation of Thrombosis Service: Patient Quality - Overall Service Utilization

- Over 20 months - 10 October, 2017 – April 30, 2019
- Total number of patient visits = 1697



*Numbers counted between Jun 1/18 – April 30/19 are approximate

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Evaluation of Thrombosis Service: Patient Quality - New Patients Seen

Clinic	Oct. 10, 2017 – April 30, 2019 Total New Consults n=1317* (%)
Thrombosis Clinic	585 (44.6)
Emergency Thrombosis Clinic	358 (27.2)
Perioperative Management Clinic	369 (28.0)
Other	5 (0.003)

- Current output of Thrombosis Service is ~100 new patients seen per month

*Numbers counted between Jun 1/18 – April 30/19 are approximate

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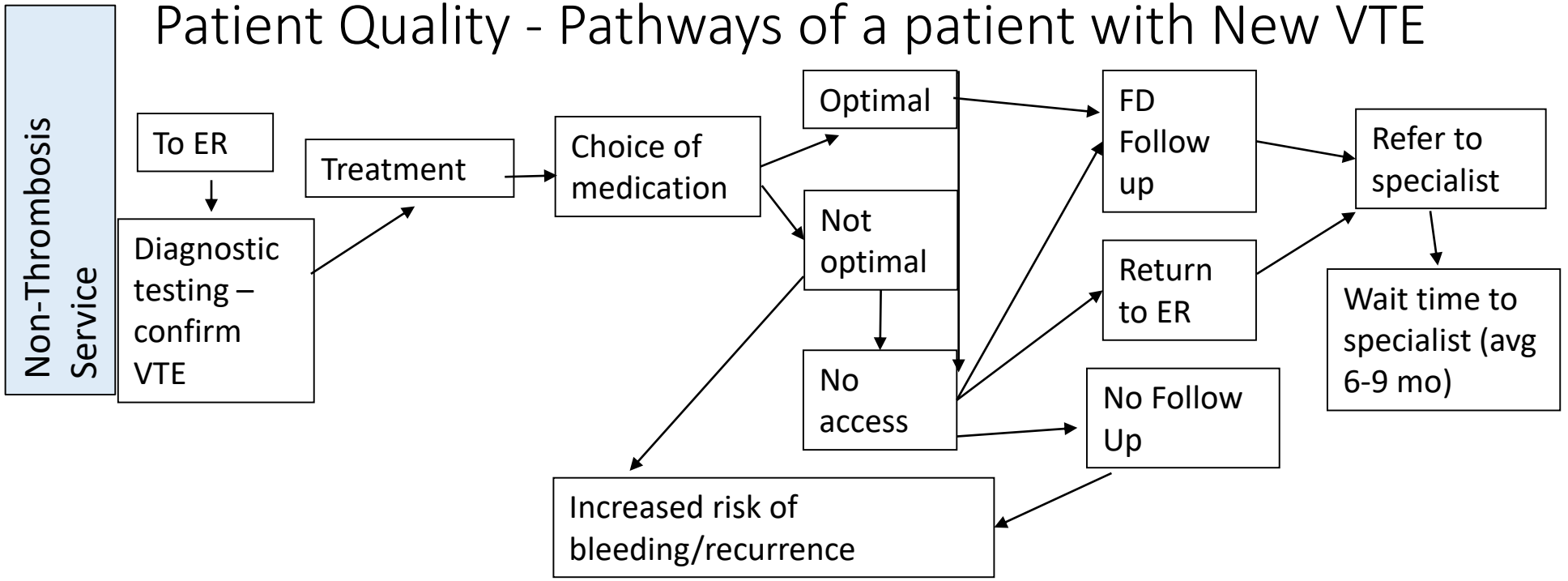
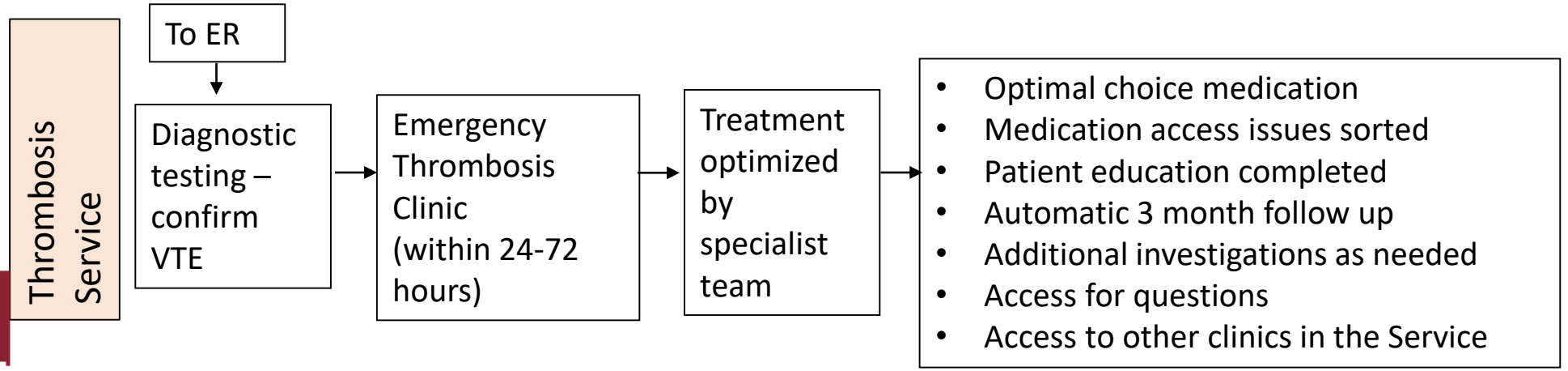
Evaluation of Thrombosis Service:
Patient Quality - Pathways of a patient with New VTE





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Evaluation of Thrombosis Service: Patient Quality Indicators

Emergency Thrombosis clinic

- Time from consult received to appointment:
  - Median 1 day (IQR 0-3)
- Therapy changed from pre visit: 53%

PAM clinic

- Time from consult received to appointment
  - Median 15 days (IQR 7-24)

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Evaluation of Thrombosis Service: Patient Quality Indicators

Thrombosis Clinic

- Time from consult received to appointment:
  - Pre-service average 5 months or greater
  - Post-service average 2.8 months (maximum 6 months)
- Therapy discontinued in 18%, changed in 28%

Anticoagulation Management Clinic

- Same therapy continued – 84%, recommendation to discontinue (3%) or change (13%) therapy after discussion with Thrombosis physician/Hematologist
- Physician appointment required post visit- 5%

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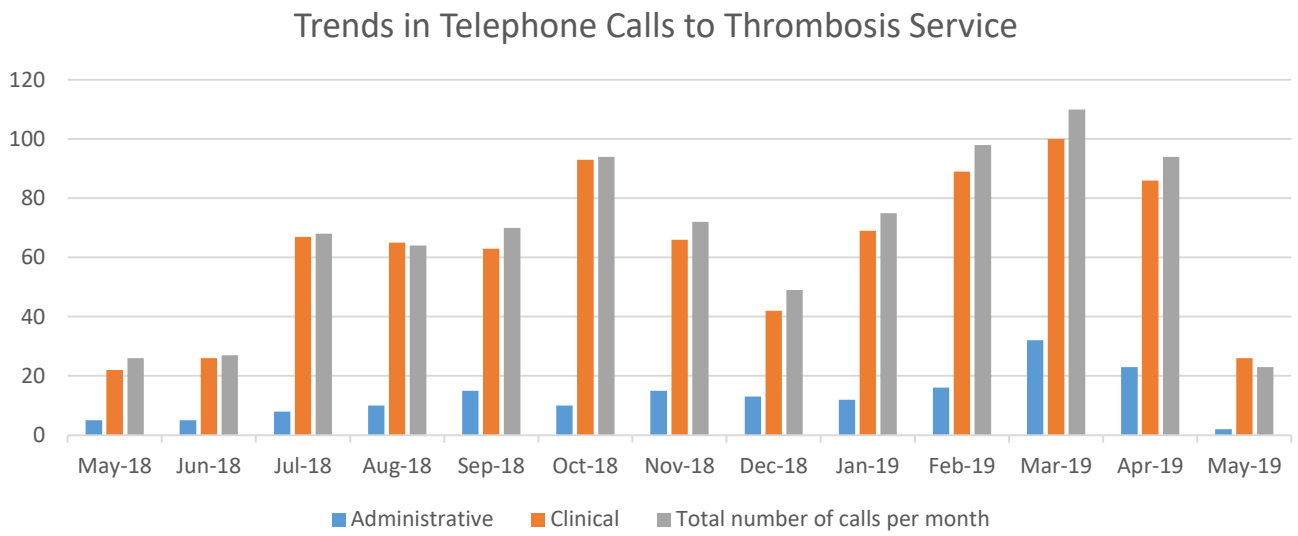
Evaluation of Thrombosis Service: Patient Quality Indicators

- Thrombosis Service office operates Mon-Fri 8am to 4pm
- Average number of calls to service per month ~ 70
- Most calls are clinical queries (patients and health professionals) versus administrative calls



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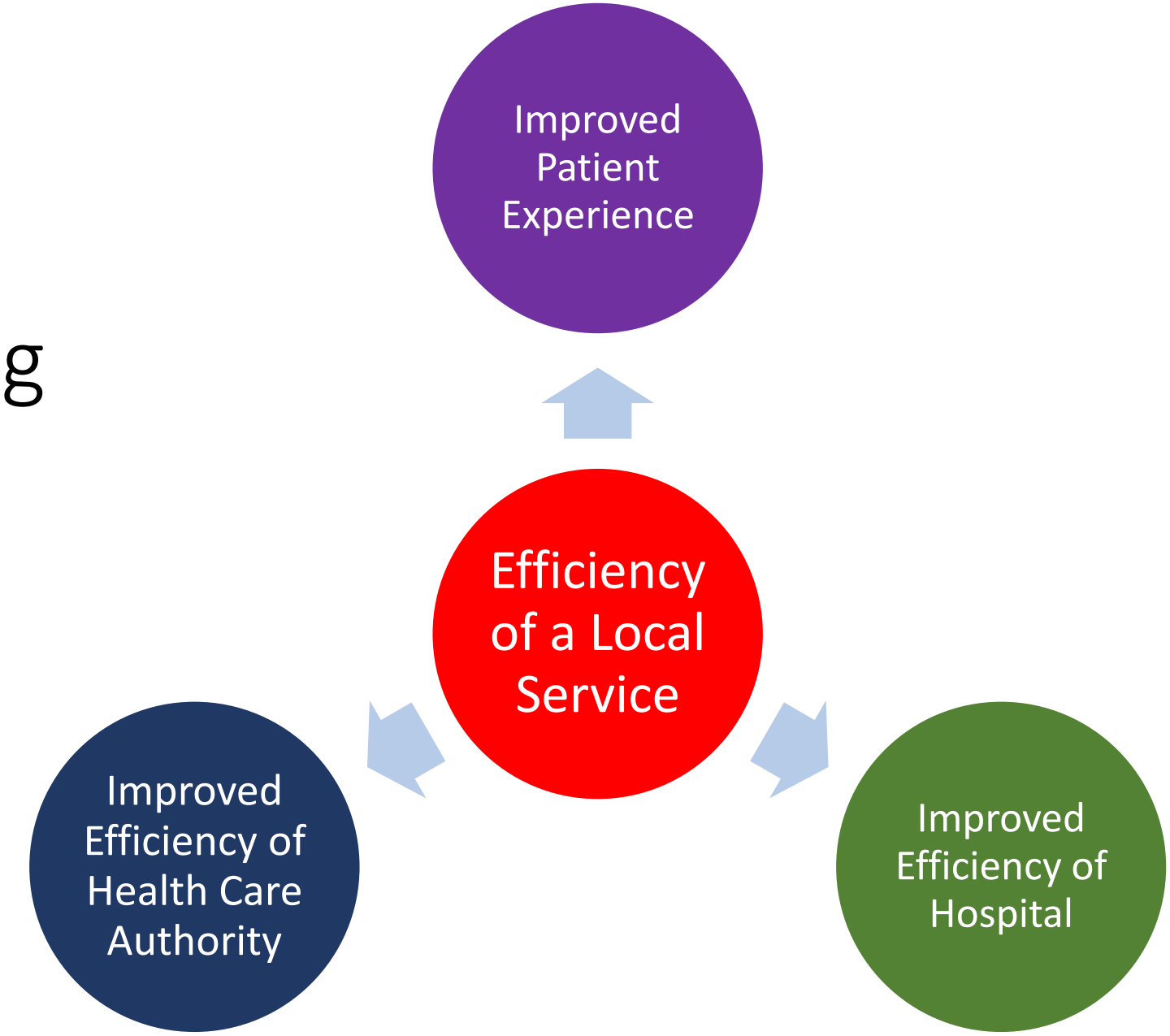
Maximizing Efficiency



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Maximizing Efficiency in the Thrombosis Service

- Minimize entropy and maximize enthalpy or minimize wastage and maximize consolidation of tasks
- Each person does what essentially only they can do
  - Thrombosis Physician/Hematologist
  - Pharmacist
  - Clerk
- Provide all thrombosis/anticoagulation specialty services under one roof
- We understand that committing time to a particular task means removing time from other tasks – the trade off should be worth it
- We do not work on the same job more times than is necessary

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Maximizing Efficiency in the Thrombosis Service

- We employ efficient paperwork management systems
  - For repetitive documentation we use templates and modify each to the patient
  - We use a real time dictation system
- Aim to leave no strings at the end of clinic
- We streamline communication within the Service – increase use of written messages rather than oral
- Keep a leaner focused unit
  - Less time wasted trying to communicate
  - Decisions get made quicker
- We aim to keep a sustainable pace

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Maximizing Efficiency in the Thrombosis Service

- End result of enhanced efficiency in the Thrombosis Service is the management of higher volumes of patients without reducing the quality of the Service and at a low cost

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Current Challenges / Forward Direction

- Challenges / Future
  - Meeting the demand
  - Optimizing the Emergency Thrombosis Clinic
  - Establishing an Inpatient Thrombosis Service
  - Expanding the reach within and beyond Eastern Health
  - Securing a permanent space

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Questions & Discussion

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Referral Form

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Adult Outpatient Thrombosis Service Consultation (Part I)

AM 370 1748 10 2017

Name:

HCN:

Date of Birth:

1. SELECT APPROPRIATE CLINIC

☐ **A. Emergency Thrombosis Clinic** (i.e., Management of confirmed diagnosis of New Superficial Vein Thrombosis (SVT), Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE) - SEE REVERSE

Patients with diagnosis of ACUTE PULMONARY EMBOLISM MUST FIRST BE SEEN IN THE EMERGENCY DEPARTMENT and be clinically stable prior to referral to Emergency Thrombosis Clinic.

All patients to remain under the care of the referring physician until assessed by the Emergency Thrombosis Clinic on the next working day (clinic - Monday to Friday except statutory holidays).

- **All bloodwork must be completed by referring physician:** (B-HCG if female patient is less than 55 years) i) CBC ii) Serum Creatinine iii) INR iv) PTT v) D-dimer vi) B-HCG
- **Anticoagulant given:** Drug: _____ Dose: _____ Time: _____
- **Supply patient with enough anticoagulant** until Emergency Thrombosis Clinic visit. First Dose should be given **within 4 hours** of suspected diagnosis.
- **Either fax** this consult form to 777-1074 **OR call** 777-1062 andleave message with name, MCP/HCN, and details of consult, **AND** give patient copy of completed consult form.
- **Instruct patient** to register at main registration and proceed to the Emergency Thrombosis Clinic at the Health Sciences Centre at 0900 the next clinic working day(clinic - Monday to Friday except statutory holidays; consults received by 0800 on clinic working days can be seen same day).

☐ **B. Thrombosis Clinic** for GENERAL THROMBOSIS RELATED CONSULTS. All consults will be triaged.

- Semi urgent (Appointment within 14 days) or Non-urgent (Appointment within 1 to 6 months)
- If applicable, ensure patient has prescription of anticoagulant medication for minimum 6 months.

☐ **C. Anticoagulant Management Clinic** - SEE REVERSE

- Patient must be able to attend clinic in person.
- Current anticoagulant _____
- Indication for anticoagulant ☐ DVT/PE ☐ Atrial Fibrillation ☐ Mechanical Valve ☐ Other _____

☐ **D. Perioperative Anticoagulation Management Clinic (PAM Clinic) /Bridging Clinic**

- Patient on anticoagulation? ☐ Yes ☐ No If yes, specify anticoagulant _____
- Indication for anticoagulant ☐ DVT/PE ☐ Atrial Fibrillation ☐ Mechanical Valve ☐ Other _____
- Procedure _____ Date of Procedure (if known) _____ DD/MONTH/YYYY

2. REASON FOR CONSULT/ RELEVANT HISTORY

_____

_____

3. REFERRING CLINICIAN

Name: _____ Signature: _____ Date: DD/MONTH/YYYY

For Emergency Thrombosis Clinic Fax or Call as above

For all other consults FAX COMPLETED CONSULT to (709) 777-1074

FOR THROMBOSIS SERVICE USE ONLY		
☐ *First Episode DVT: US ☐Yes ☐No* ☐ *Atrial Fibrillation* ☐ *First Episode PE: VQ ☐Yes ☐No* ☐ *MPHV* ☐ *Recurrent DVT : US ☐Yes ☐No* ☐ *Other*_____ ☐ *Recurrent PE: VQ ☐Yes ☐No* ☐ *IVC Filter* ☐ *ASx Thrombophilia*	☐ *Bloods Thromb* ☐ *Bloods Other*_____	☐ *Emergency Thrombosis Clinic* ☐ *Thrombosis Clinic: ☐P1 ☐P2 ☐P3 ☐P4 ☐P5* ☐ *Anticoagulation Clinic:* ☐ *Mon pm DOAC/LMWH* ☐ *Thur am Warf* ☐ *Thur pm Warf* ☐ *PAM Clinic: ☐P1 ☐P2 ☐P3 ☐P4 ☐P5*
Referral received Date: DD/MONTH/YYYY *Time:* ___/___	*Appointment Date:* DD/MONTH/YYYY *Time* ___/___	

Name: _____ Signature: _____ Date: DD/MONTH/YYYY

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Adult Outpatient Thrombosis Service Consultation (Part II)

AM 370 1748 10 2017

A. EMERGENCY THROMBOSIS CLINIC*

ACUTE VTE PATIENTS LIKELY REQUIRING HOSPITAL ADMISSION AND/OR FURTHER ASSESSMENT (E.G., INTERNAL MEDICINE CONSULTATION) PRIOR TO REFERRAL

(Therefore CURRENTLY NOT ELIGIBLE for management in the Outpatient Thrombosis Service)

- **CARDIOPULMONARY COMPROMISE**, including:
  - Pulse rate less than 50 or greater than or equal to 110
  - Systolic blood pressure (SBP) less than 100 mmHg
  - O_2 saturation less than 90%
- **VTE REQUIRING SYSTEMIC THROMBOLYSIS**, e.g.,
  - Pulmonary embolism with SBP less than 90 mmHg or drop in SBP greater than 40 mmHg
  - Deep Vein Thrombosis with threatened limb (no palpable leg pulses)
- Any patient with confirmed VTE where clinical judgement deems patient unsuitable for outpatient treatment.
- Patients with very high bleeding risk.
- Patients who require parenteral pain medication.
- Patients unable to travel to urgent outpatient appointment (whether or not they require hospitalization).

All Other Patients Consider Referral to Thrombosis Service

- SUPPLY PATIENT WITH ENOUGH ANTICOAGULANT UNTIL CLINIC VISIT (if appropriate).

C. ANTICOAGULANT MANAGEMENT CLINIC

Patient must be able to attend clinic in person

- For ongoing management of an oral or injectable anticoagulant
- Acute anticoagulation management – not actively bleeding
- Warfarin INR management to facilitate discharge from hospital

*Reference:

Jiménez D, et al. RIETE Investigators. Simplification of the pulmonary embolism severity index for prognostication in patients with acute symptomatic pulmonary embolism. Arch Intern Med. 2010;170:1383-9.

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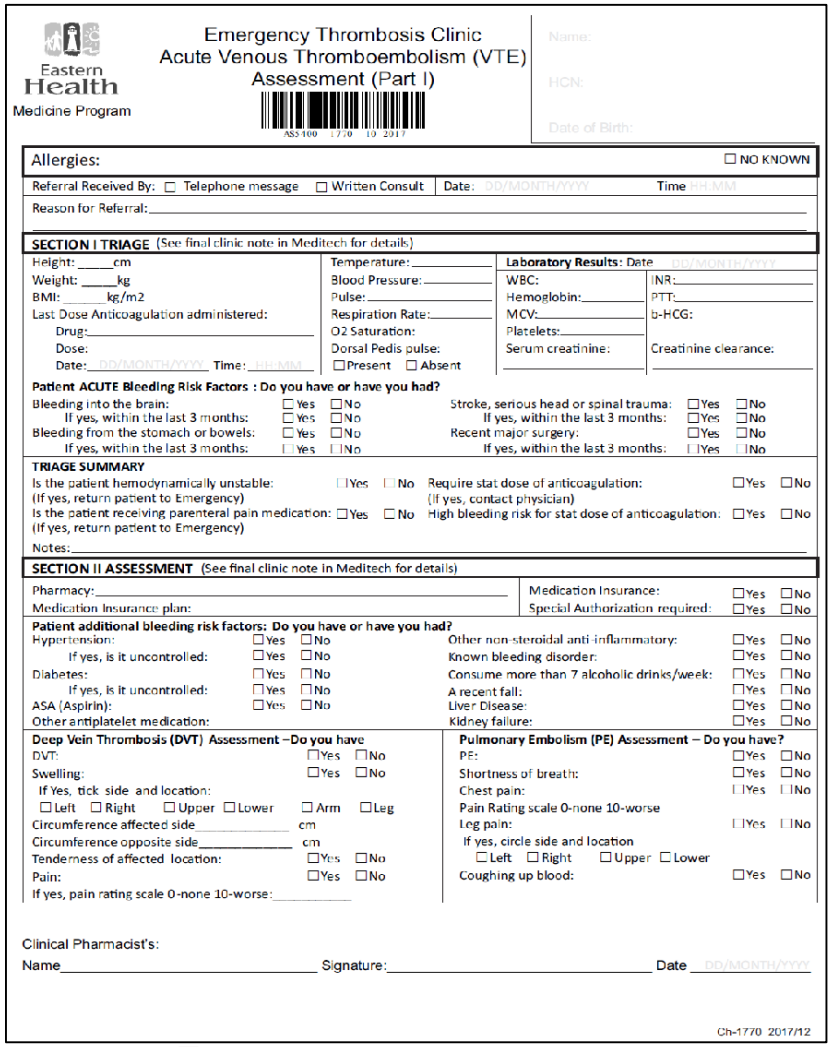
Emergency Thrombosis Clinic Assessment Form



Eastern Health
Medicine Program

Emergency Thrombosis Clinic
Acute Venous Thromboembolism (VTE)
Assessment (Part I)

Name:
HCN:
Date of Birth:

Allergies: ☐ NO KNOWN

Referral Received By: ☐ Telephone message ☐ Written Consult | Date: DD/MONTH/YYYY | Time HH:MM

Reason for Referral:

SECTION I TRIAGE (See final clinic note in Meditech for details)

Height: _____cm
Weight: _____kg
BMI: _____kg/m2
Last Dose Anticoagulation administered:
Drug:
Dose:
Date: DD/MONTH/YYYY Time: HH:MM

Temperature:
Blood Pressure:
Pulse:
Respiration Rate:
O2 Saturation:
Dorsal Pedis pulse:
☐Present ☐ Absent

Laboratory Results: Date DD/MONTH/YYYY

WBC: | INR:
Hemoglobin: | PTT:
MCV: | b-HCG:
Platelets:
Serum creatinine: | Creatinine clearance:

Patient ACUTE Bleeding Risk Factors : Do you have or have you had?

Bleeding into the brain: ☐Yes ☐No
If yes, within the last 3 months: ☐Yes ☐No
Bleeding from the stomach or bowels: ☐Yes ☐No
If yes, within the last 3 months: ☐Yes ☐No
Stroke, serious head or spinal trauma: ☐Yes ☐No
If yes, within the last 3 months: ☐Yes ☐No
Recent major surgery: ☐Yes ☐No
If yes, within the last 3 months: ☐Yes ☐No

TRIAGE SUMMARY

Is the patient hemodynamically unstable: ☐Yes ☐No
(If yes, return patient to Emergency)
Is the patient receiving parenteral pain medication: ☐Yes ☐No
(If yes, return patient to Emergency)
Require stat dose of anticoagulation: ☐Yes ☐No
(If yes, contact physician)
High bleeding risk for stat dose of anticoagulation: ☐Yes ☐No

Notes:

SECTION II ASSESSMENT (See final clinic note in Meditech for details)

Pharmacy:
Medication Insurance plan:
Medication Insurance: ☐Yes ☐No
Special Authorization required: ☐Yes ☐No

Patient additional bleeding risk factors: Do you have or have you had?

Hypertension: ☐Yes ☐No
If yes, is it uncontrolled: ☐Yes ☐No
Diabetes: ☐Yes ☐No
If yes, is it uncontrolled: ☐Yes ☐No
ASA (Aspirin): ☐Yes ☐No
Other antiplatelet medication:
Other non-steroidal anti-inflammatory: ☐Yes ☐No
Known bleeding disorder: ☐Yes ☐No
Consume more than 7 alcoholic drinks/week: ☐Yes ☐No
A recent fall: ☐Yes ☐No
Liver Disease: ☐Yes ☐No
Kidney failure: ☐Yes ☐No

Deep Vein Thrombosis (DVT) Assessment –Do you have

DVT: ☐Yes ☐No
Swelling: ☐Yes ☐No
If Yes, tick side and location:
☐Left ☐Right ☐Upper ☐Lower ☐Arm ☐Leg
Circumference affected side _____ cm
Circumference opposite side _____ cm
Tenderness of affected location: ☐Yes ☐No
Pain: ☐Yes ☐No
If yes, pain rating scale 0-none 10-worse:

Pulmonary Embolism (PE) Assessment – Do you have?

PE: ☐Yes ☐No
Shortness of breath: ☐Yes ☐No
Chest pain: ☐Yes ☐No
Pain Rating scale 0-none 10-worse
Leg pain: ☐Yes ☐No
If yes, circle side and location
☐Left ☐Right ☐Upper ☐Lower
Coughing up blood: ☐Yes ☐No

Clinical Pharmacist's:
Name_____ Signature:_____ Date DD/MONTH/YYYY

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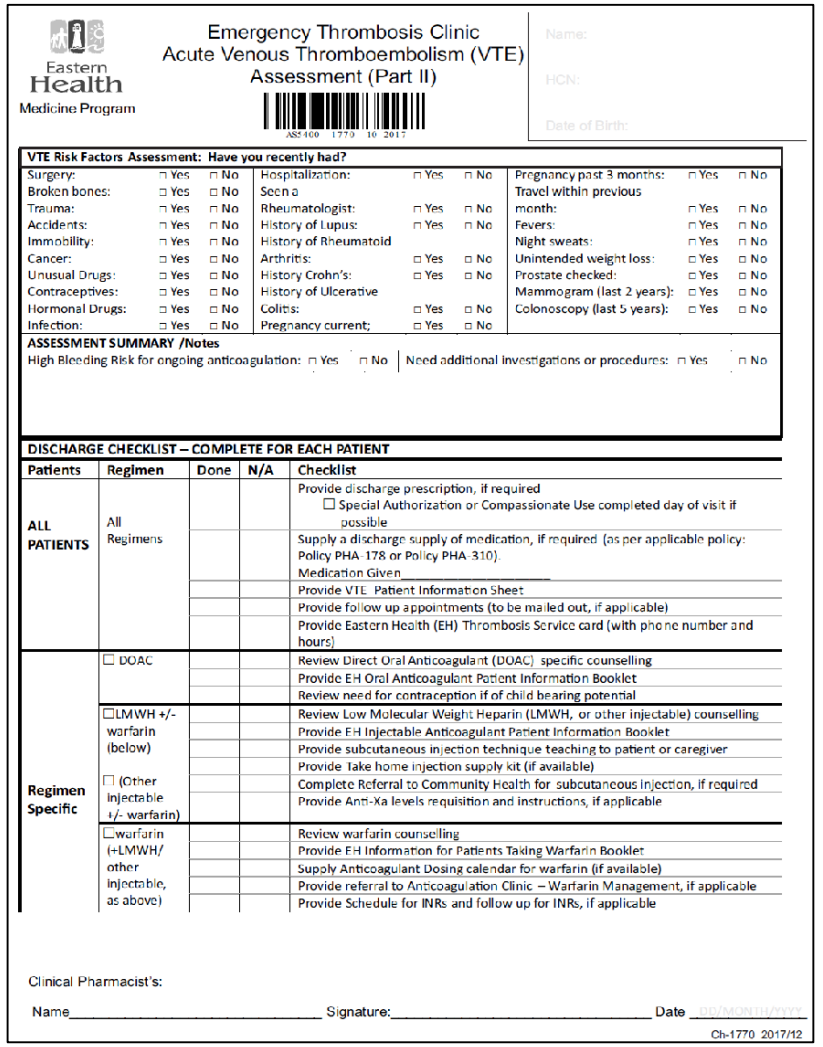

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Emergency Thrombosis Clinic
Acute Venous Thromboembolism (VTE)
Assessment (Part II)

Name:
HCN:
Date of Birth:

VTE Risk Factors Assessment: Have you recently had?

Surgery:	☐Yes	☐No	Hospitalization:	☐Yes	☐No	Pregnancy past 3 months:	☐Yes	☐No
Broken bones:	☐Yes	☐No	Seen a			Travel within previous		
Trauma:	☐Yes	☐No	Rheumatologist:	☐Yes	☐No	month:	☐Yes	☐No
Accidents:	☐Yes	☐No	History of Lupus:	☐Yes	☐No	Fevers:	☐Yes	☐No
Immobility:	☐Yes	☐No	History of Rheumatoid			Night sweats:	☐Yes	☐No
Cancer:	☐Yes	☐No	Arthritis:	☐Yes	☐No	Unintended weight loss:	☐Yes	☐No
Unusual Drugs:	☐Yes	☐No	History Crohn's:	☐Yes	☐No	Prostate checked:	☐Yes	☐No
Contraceptives:	☐Yes	☐No	History of Ulcerative			Mammogram (last 2 years):	☐Yes	☐No
Hormonal Drugs:	☐Yes	☐No	Colitis:	☐Yes	☐No	Colonoscopy (last 5 years):	☐Yes	☐No
Infection:	☐Yes	☐No	Pregnancy current;	☐Yes	☐No			

ASSESSMENT SUMMARY /Notes

High Bleeding Risk for ongoing anticoagulation: ☐Yes ☐No | Need additional investigations or procedures: ☐Yes ☐No

DISCHARGE CHECKLIST – COMPLETE FOR EACH PATIENT

Patients	Regimen	Done	N/A	Checklist
ALL PATIENTS	All Regimens			Provide discharge prescription, if required ☐ Special Authorization or Compassionate Use completed day of visit if possible
				Supply a discharge supply of medication, if required (as per applicable policy: Policy PHA-178 or Policy PHA-310). Medication Given_____
				Provide VTE Patient Information Sheet
				Provide follow up appointments (to be mailed out, if applicable)
				Provide Eastern Health (EH) Thrombosis Service card (with phone number and hours)
Regimen Specific	☐ DOAC			Review Direct Oral Anticoagulant (DOAC) specific counselling
				Provide EH Oral Anticoagulant Patient Information Booklet
				Review need for contraception if of child bearing potential
	☐LMWH +/- warfarin (below) ☐ (Other injectable +/- warfarin)			Review Low Molecular Weight Heparin (LMWH, or other injectable) counselling
				Provide EH Injectable Anticoagulant Patient Information Booklet
				Provide subcutaneous injection technique teaching to patient or caregiver
				Provide Take home injection supply kit (if available)
				Complete Referral to Community Health for subcutaneous injection, if required
				Provide Anti-Xa levels requisition and instructions, if applicable
	☐warfarin (+LMWH/ other injectable, as above)			Review warfarin counselling
				Provide EH Information for Patients Taking Warfarin Booklet
				Supply Anticoagulant Dosing calendar for warfarin (if available)
				Provide referral to Anticoagulation Clinic – Warfarin Management, if applicable
				Provide Schedule for INRs and follow up for INRs, if applicable

Clinical Pharmacist's:
Name_____ Signature:_____ Date DD/MONTH/YYYY

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Anticoagulation Management Clinic Assessment Forms

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Medicine Program

Anticoagulation Clinic
Direct Oral Anticoagulant (DOAC) Assessment

Name:
HCN:
Date of Birth:

Allergies : ☐ No Known

Height: ____cm Weight: ____kg BMI: ____kg/m²
Age:

LABS: Date: DD/MONTH/YYYY

WBC	Platelets	SCr
Hgb	INR	CrCl mL/min
MCV	PTT	b-HCG

PATIENT INTERVIEW PART A:

Current Medications

DOAC:
☐ Apixaban _____
☐ Dabigatran _____
☐ Edoxaban _____
☐ Rivaroxaban _____
•Start Date: DD/MONTH/YYYY
•Duration: _____
•Indication: ☐ Venous Thromboembolism (VTE)
☐ Atrial fibrillation: CHADS2 Score:___
☐ Other: _____
•Missed 1 or more doses in last week? ☐ Yes ☐ No
If yes, number of missed doses _____

Other Medications (including over-the-counter/herbal):

Pharmacy_____
Medication Insurance:_____
Special Authorization required? ☐ Yes ☐ No
Special Authorization completed? ☐ Yes ☐ No

Do you have:
New medical conditions since last visit? ☐ Yes ☐ No
If Yes, condition:_____
New VTE since last visit? ☐ Yes ☐ No
If Yes, describe:_____
New Stroke or Transient Ischemic Attack since last visit? If yes, Date: DD/MONTH/YYYY ☐ Yes ☐ No
Planned medical procedures or surgery? ☐ Yes ☐ No
If Yes, describe:_____

PATIENT EDUCATION for DOAC
☐ I have reviewed with the patient the importance of adherence, handling of missed doses, proper administration, avoidance of over the counter drugs like ASA, minimizing alcohol intake, and self-monitoring for bleeding and thrombotic events.
Eastern Health DOAC Patient Education Booklet :
☐ provided today ☐ previously provided

PATIENT INTERVIEW PART B: BLEEDING RISK FACTORS:

Age over 75 years?	☐ Yes	☐ No
Do you have or have you had:		
Bleeding episode since last visit?	☐ Yes	☐ No
If yes, describe:		
Bleeding into the brain?	☐ Yes	☐ No
Stomach ulcer?	☐ Yes	☐ No
Bleeding from the bowels?	☐ Yes	☐ No
Hypertension?	☐ Yes	☐ No
Is it uncontrolled?	☐ Yes	☐ No
Diabetes?	☐ Yes	☐ No
Is it uncontrolled?	☐ Yes	☐ No
ASA (Aspirin)?	☐ Yes	☐ No
Antiplatelet medication (clopidogrel or ticagrelor or prasugrel)?	☐ Yes	☐ No
Other non-steroidal anti-inflammatory?	☐ Yes	☐ No
Known bleeding disorder?	☐ Yes	☐ No
Consume more than 7 alcoholic drinks/week?	☐ Yes	☐ No
A recent fall?	☐ Yes	☐ No
Liver disease?	☐ Yes	☐ No
Kidney disease or failure?	☐ Yes	☐ No
Other?	☐ Yes	☐ No

FINAL ASSESSMENT

New thrombotic episode since last visit?	☐ Yes	☐ No
New bleeding episode since last visit?	☐ Yes	☐ No
New bleeding risk factors since last visit?	☐ Yes	☐ No
DOAC dose is verified and is appropriate for the patient's age /weight /renal function / indication?	☐ Yes	☐ No
Changes to current therapy recommended?	☐ Yes	☐ No
If yes, provide details:		
Referral to another Thrombosis Service clinic required?	☐ Yes	☐ No
If yes, specify clinic: ☐ Perioperative Clinic ☐ Thrombosis Follow up Clinic ☐ Thrombosis Clinic		
Referral completed?	☐ Yes	☐ No
Urgent consult to Thrombosis Physician?	☐ Yes	☐ No
If yes, date notified: DD/MONTH/YYYY		
Additional details:		

NEXT APPOINTMENT:

Clinical Pharmacist's Name_____ Signature: _____ Date DD/MONTH/YYYY

Adapted from: 1)Thrombosis Canada DOAC Monitoring Checklist for Pharmacists (http://thrombosiscanada.ca/?resourcepage=resources-2);
2)Chest 2012;141;e445-e88S

Ch-1829 2017/12

Eastern Health
Medicine Program

Adult Thrombosis Service
Anticoagulation Clinic Injectable Anticoagulant Assessment

Name:
HCN:
Date of Birth:

Allergies: ☐ No Known

Height: ____cm Weight: ____kg BMI: ____kg/m²
Age:

LABS: Date: DD/MONTH/YYYY

WBC	Platelets	SCr
Hgb	INR	CrCl mL/min
MCV	PTT	Peak Anti Xa

PATIENT INTERVIEW PART A:

Current Medications

Injectable Anticoagulant :
☐ Enoxaparin: Dose_____
☐ Other_____ Dose_____
•Start Date: DD/MONTH/YYYY
•Duration: _____

Indication:
☐ Venous Thromboembolism (VTE) Date DD/MONTH/YYYY
Cancer associated? ☐ Yes ☐ No
☐ Atrial fibrillation: CHADS2 Score:___
☐ Other: _____
•Missed 1 or more doses in last week? ☐ Yes ☐ No
If yes, number of missed doses _____

Other Medications (including over-the-counter/herbal):

Pharmacy_____
Medication Insurance:_____
Special Authorization required? ☐ Yes ☐ No
Special Authorization completed? ☐ Yes ☐ No

Do you have:
New medical conditions since last visit? ☐ Yes ☐ No
If Yes, condition:_____
New VTE since last visit? ☐ Yes ☐ No
If Yes, describe:_____
New Stroke or Transient Ischemic Attack since last visit? If yes, Date: DD/MONTH/YYYY ☐ Yes ☐ No
Planned medical procedures or surgery? ☐ Yes ☐ No
If Yes, describe:_____

PATIENT EDUCATION for Injectable Anticoagulant
☐ I have reviewed with the patient the importance of adherence, handling of missed doses, proper administration, avoidance of over the counter drugs like ASA, minimizing alcohol intake, and self-monitoring for bleeding and thrombotic events.
Eastern Health Injectable Anticoagulant Patient Education Booklet
☐ provided today ☐ previously provided

PATIENT INTERVIEW PART B: BLEEDING RISK FACTORS:

Age over 75 years?	☐ Yes	☐ No
Do you have or have you had:		
Bleeding episode since last visit?	☐ Yes	☐ No
If yes, describe:		
Bleeding into the brain?	☐ Yes	☐ No
Stomach ulcer?	☐ Yes	☐ No
Bleeding from the bowels?	☐ Yes	☐ No
Hypertension?	☐ Yes	☐ No
Is it controlled?	☐ Yes	☐ No
Diabetes?	☐ Yes	☐ No
Is it controlled?	☐ Yes	☐ No
ASA (Aspirin)?	☐ Yes	☐ No
Antiplatelet medication (clopidogrel or ticagrelor or prasugrel)?	☐ Yes	☐ No
Other non-steroidal anti-inflammatory?	☐ Yes	☐ No
Known bleeding disorder?	☐ Yes	☐ No
Consume more than 7 alcoholic drinks/week?	☐ Yes	☐ No
A recent fall?	☐ Yes	☐ No
Liver disease?	☐ Yes	☐ No
Kidney disease or failure?	☐ Yes	☐ No
Other?	☐ Yes	☐ No

FINAL ASSESSMENT

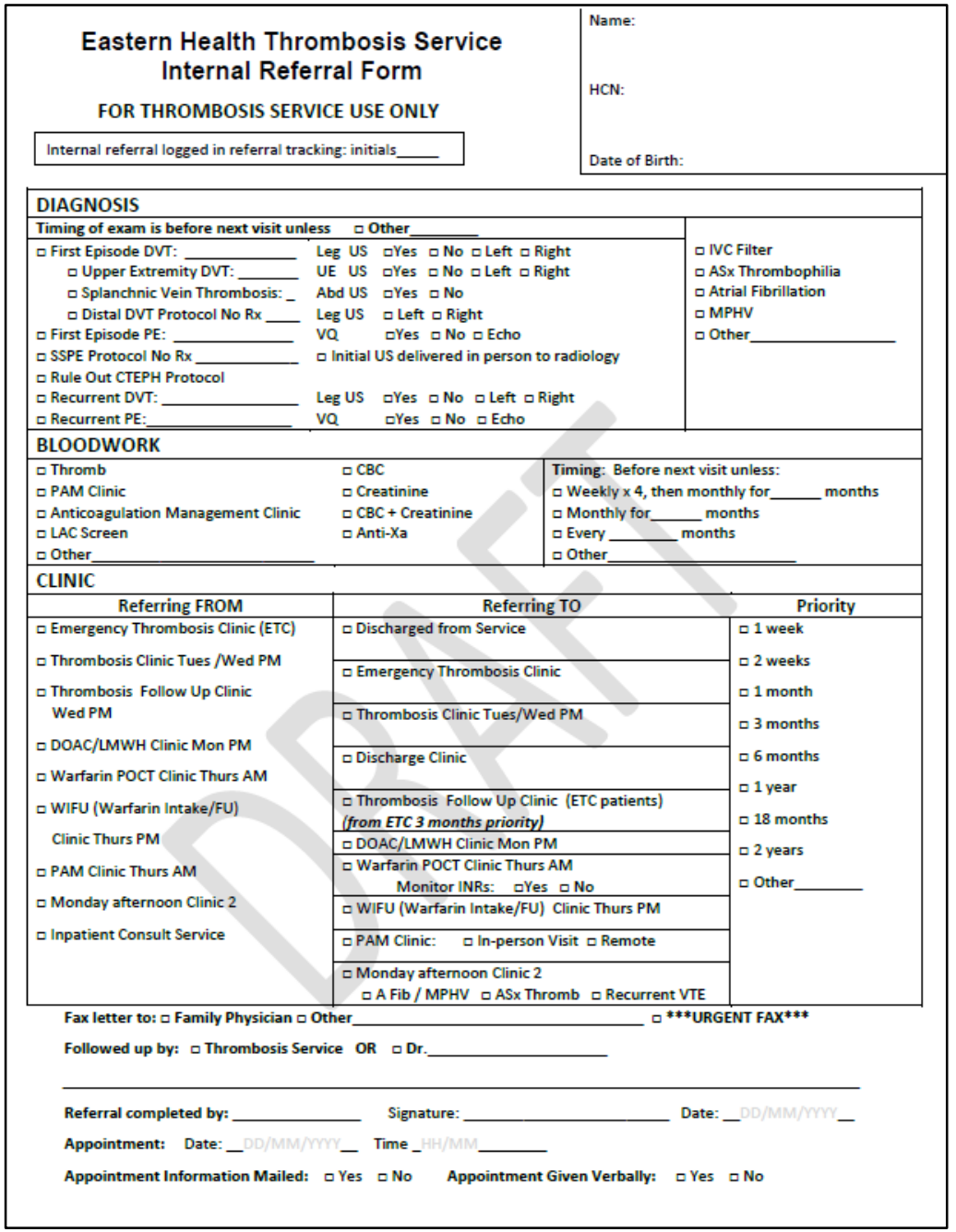
New thrombotic episode?	☐ Yes	☐ No
New bleeding episode?	☐ Yes	☐ No
New bleeding risk factors?	☐ Yes	☐ No
Injectable anticoagulant dose is verified and is appropriate for the patient's age / weight /renal function / indication?	☐ Yes	☐ No
Changes to current therapy recommended?	☐ Yes	☐ No
If yes, provide details:		
Referral to another Thrombosis Service clinic required?	☐ Yes	☐ No
If yes, specify clinic: ☐ Perioperative Clinic ☐ Thrombosis Follow up Clinic ☐ Thrombosis Clinic		
Referral completed?	☐ Yes	☐ No
Urgent consult to Thrombosis Physician?	☐ Yes	☐ No
If yes, date notified: DD/MONTH/YYYY		
Additional details:		

NEXT APPOINTMENT:

Clinical Pharmacist's Name_____ Signature: _____ Date DD/MONTH/YYYY

Ch-1828 2017/12

Internal Referral Form



Eastern Health Thrombosis Service
Internal Referral Form

FOR THROMBOSIS SERVICE USE ONLY

Internal referral logged in referral tracking: initials_____

Name:

HCN:

Date of Birth:

DIAGNOSIS

Timing of exam is before next visit unless ◻ **Other**_____

◻ First Episode DVT: _____ Leg US ◻Yes ◻ No ◻ Left ◻ Right
◻ Upper Extremity DVT: _____ UE US ◻Yes ◻ No ◻ Left ◻ Right
◻ Splanchnic Vein Thrombosis: _ Abd US ◻Yes ◻ No
◻ Distal DVT Protocol No Rx ____ Leg US ◻ Left ◻ Right
◻ First Episode PE: _____ VQ ◻Yes ◻ No ◻ Echo
◻ SSPE Protocol No Rx _____ ◻ Initial US delivered in person to radiology
◻ Rule Out CTEPH Protocol
◻ Recurrent DVT: _____ Leg US ◻Yes ◻ No ◻ Left ◻ Right
◻ Recurrent PE:_____ VQ ◻Yes ◻ No ◻ Echo

◻ IVC Filter
◻ ASx Thrombophilia
◻ Atrial Fibrillation
◻ MPHV
◻ Other_____

BLOODWORK

◻ Thromb
◻ PAM Clinic
◻ Anticoagulation Management Clinic
◻ LAC Screen
◻ Other_____

◻ CBC
◻ Creatinine
◻ CBC + Creatinine
◻ Anti-Xa

Timing: Before next visit unless:
◻ Weekly x 4, then monthly for_____ months
◻ Monthly for_____ months
◻ Every _____ months
◻ Other_____

CLINIC

Referring FROM	Referring TO	Priority
◻ Emergency Thrombosis Clinic (ETC)	◻ Discharged from Service	◻ 1 week
◻ Thrombosis Clinic Tues /Wed PM	◻ Emergency Thrombosis Clinic	◻ 2 weeks
◻ Thrombosis Follow Up Clinic Wed PM	◻ Thrombosis Clinic Tues/Wed PM	◻ 1 month
◻ DOAC/LMWH Clinic Mon PM	◻ Discharge Clinic	◻ 3 months
◻ Warfarin POCT Clinic Thurs AM	◻ Thrombosis Follow Up Clinic (ETC patients) *(from ETC 3 months priority)*	◻ 6 months
◻ WIFU (Warfarin Intake/FU) Clinic Thurs PM	◻ DOAC/LMWH Clinic Mon PM	◻ 1 year
◻ PAM Clinic Thurs AM	◻ Warfarin POCT Clinic Thurs AM Monitor INRs: ◻Yes ◻ No	◻ 18 months
◻ Monday afternoon Clinic 2	◻ WIFU (Warfarin Intake/FU) Clinic Thurs PM	◻ 2 years
◻ Inpatient Consult Service	◻ PAM Clinic: ◻ In-person Visit ◻ Remote	◻ Other_____
	◻ Monday afternoon Clinic 2 ◻ A Fib / MPHV ◻ ASx Thromb ◻ Recurrent VTE	

Fax letter to: ◻ **Family Physician** ◻ **Other**_____ ◻ ***URGENT FAX***

Followed up by: ◻ **Thrombosis Service OR** ◻ **Dr.**_____

Referral completed by: _____ **Signature:** _____ **Date:** __DD/MM/YYYY__

Appointment: **Date:** __DD/MM/YYYY__ **Time** _HH/MM_____

Appointment Information Mailed: ◻ **Yes** ◻ **No** **Appointment Given Verbally:** ◻ **Yes** ◻ **No**

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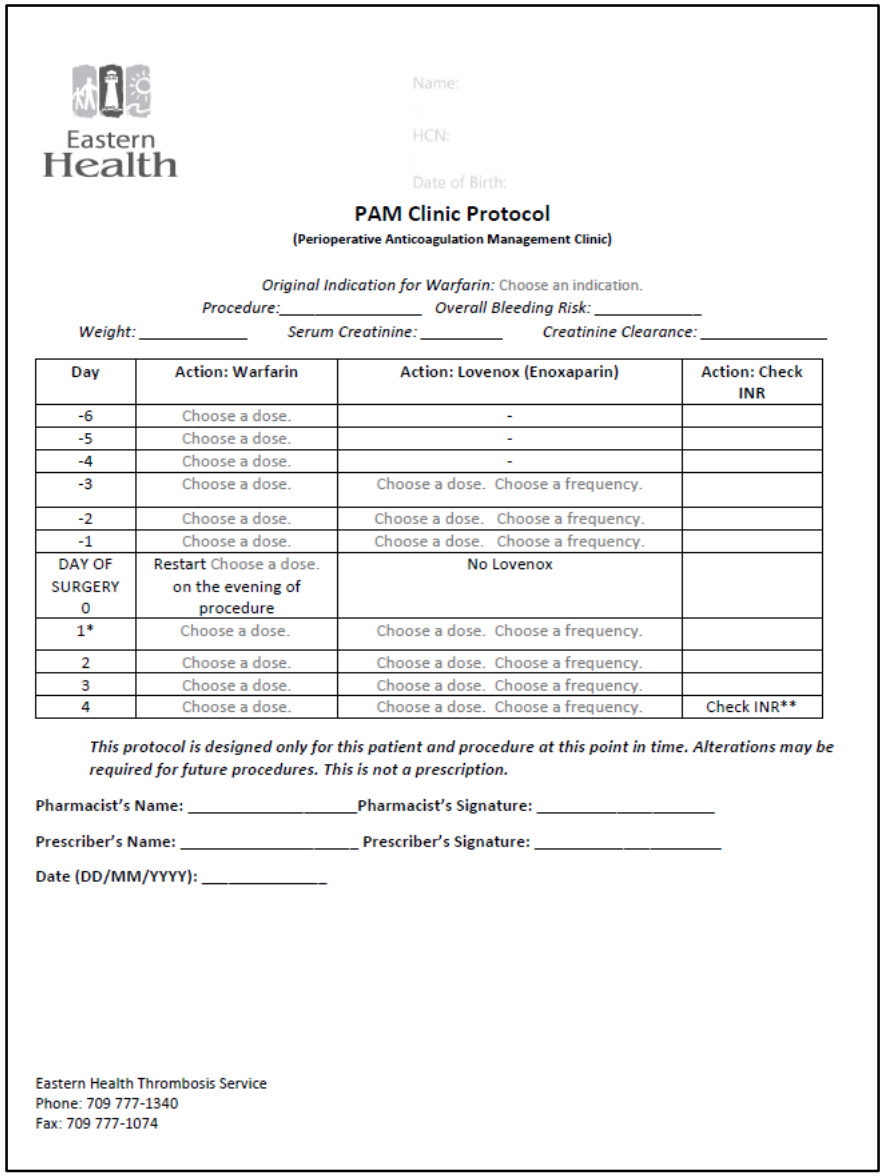
PAM Clinic Protocol Template



Eastern Health

Name:

HCN:

Date of Birth:

PAM Clinic Protocol

(Perioperative Anticoagulation Management Clinic)

Original Indication for Warfarin: Choose an indication.

*Procedure:*_____ *Overall Bleeding Risk:* _____

Weight: _____ *Serum Creatinine:* _____ *Creatinine Clearance:* _____

Day	Action: Warfarin	Action: Lovenox (Enoxaparin)	Action: Check INR
-6	Choose a dose.	-	
-5	Choose a dose.	-	
-4	Choose a dose.	-	
-3	Choose a dose.	Choose a dose. Choose a frequency.	
-2	Choose a dose.	Choose a dose. Choose a frequency.	
-1	Choose a dose.	Choose a dose. Choose a frequency.	
DAY OF SURGERY 0	Restart Choose a dose. on the evening of procedure	No Lovenox	
1*	Choose a dose.	Choose a dose. Choose a frequency.	
2	Choose a dose.	Choose a dose. Choose a frequency.	
3	Choose a dose.	Choose a dose. Choose a frequency.	
4	Choose a dose.	Choose a dose. Choose a frequency.	Check INR**

This protocol is designed only for this patient and procedure at this point in time. Alterations may be required for future procedures. This is not a prescription.

Pharmacist's Name: _____**Pharmacist's Signature:** _____

Prescriber's Name: _____ **Prescriber's Signature:** _____

Date (DD/MM/YYYY): _____

Eastern Health Thrombosis Service
Phone: 709 777-1340
Fax: 709 777-1074

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Eastern Health