COLLABORATIVE PRACTICE AGREEMENT:

ANTICOAGULATION SERVICE AMBULATORY CARE GUIDELINE

UCONN HEALTH ANTICOAGULATION CLINIC

I. PURPOSE:

To provide all UConn Health patients with optimal dosing and monitoring of anticoagulation therapy in order to prevent new or recurrent thromboembolic events and to avoid adverse drug events in a cost-effective manner.

II. GOALS:

- Maintain a systematic, coordinated process to monitor anticoagulation therapy using the best practice model in order to achieve the best possible outcomes for these patients
- Provide consultative services to providers regarding anticoagulation therapy
- Provide guidance for patients requiring periprocedural anticoagulation management
- Maintain International Normalized Ratios (INRs), for patients on warfarin, in the therapeutic range as consistently as possible, with the INR range specified by the patient's disease state in accordance with national guidelines
- Provide a cost-effective service to patients and UConn Health providers, to allow providers increased availability of clinic time for direct patient care
- To improve patient/caregiver understanding and compliance related to anticoagulation therapies by providing continuous patient/caregiver education about their prescribed anticoagulation medication(s) and associated disease state.
- To ensure proper prescribing and monitoring of laboratory parameters specific to the anticoagulation therapy
- To improve continuity of care for patients on anticoagulation therapy

III. COLLABORATIVE PRACTICE AGREEMENT:

Under this collaborative practice agreement, UConn Health Anticoagulation Specialist(s), according to and in compliance with section 91 of Public Act 10-117 and Connecticut General Statues sSB186/File No. 213 "An ACT Concerning Collaborative Drug Therapy Management and Policies", may design, implement, and monitor a therapeutic drug plan intended to manage anticoagulation therapies. Anticoagulation Specialists may sign patient summaries for assisted living facilities as well as orders for visiting nurses. Services offered by the Anticoagulation Specialist may include education on disease state and lifestyle modification, in addition to the drug therapy services listed above. Written educational materials and patient specific information may be provided to improve quality of care.

The Anticoagulation Specialist(s) may initiate, discontinue, or adjust anticoagulation therapies in accordance with current treatment guidelines, may order laboratory tests appropriate to the disease or drug therapy. Education at office visits shall include appropriate counseling on all new medications. The results of all lab tests ordered under the protocol shall be reviewed and managed by the Anticoagulation Specialist(s) to assess efficacy of treatment and necessity for medication and/or therapeutic lifestyle change. Lab results will be relayed to clinic patients by a patient-specific predetermined method which may include face-to-face encounter, scheduled secure telephone/video visit, or written communication. Any lab outliers that require further investigation will be sent to the referring provider and/or PCP as appropriate and the patient will be told to contact that LIP immediately. If the LIP is not available, the patient will be sent to the UConn Health Emergency Department.

A patient whose drug therapy is managed under this agreement must have established care with a provider within UConn Health and all aspects of the patient's anticoagulation medication management will be followed in collaboration with the patient's referring provider (or primary care as necessary). In addition, the patient must be seen by their UConn Health provider at least once per year, in addition to which cases may be reviewed with clinic medical directors as needed. All issues outside of the scope of anticoagulation medication management shall be referred to the patient's primary care provider, daily supervising LIP or medical director(s).

The Anticoagulation Specialist(s) will assure documentation of allergies and adverse drug reactions prior to initiation of the anticoagulation service and, in the course of the above-mentioned therapy, shall document all activities appropriately in the medical record.

The collaborating provider (APRN or MD) will review the patient's drug therapy management in Epic at least every thirty days.

Approved by Anticoagulation Clinic Medical Directors (Dr. Heiko Schmitt, Dr. Ritika Vankina) and UConn Health Pharmacy & Therapeutics Committee on 11/29/2023. Referral to this service constitutes agreement by the referring provider with this collaborative practice agreement and satisfies all state legal requirements of a pharmacist collaborative practice agreement. Under Connecticut State Law and CMS requirement. The collaborative practice agreement and referral must be renewed yearly by each referring LIP by signing a new agreement.

PCP/Referring LIP: _____ Signature_____ Date: _____
(Print Name)
This Collaborative Practice Agreement was enacted for: _____
(Patient)

_____ On _____
(Medical Record Number) (Date)

A copy of the entire collaborative practice agreement is available on the University of Connecticut Health Center Anticoagulation Service website: http://pharmacy.uchc.edu/services/anticoagulation/index.html. Location and contact information for the anticoagulation services and staff can also be located there.

IV. IMPLEMENTATION:

REFERRING/COLLABORATING PROVIDER

1. Collaborating provider may be any UConn Health attending physician (MD, DO), or Advanced Practice Registered Nurse (APRN) with a documented established relationship with the patient.
2. The collaborating provider needs to have had at least one outpatient visit with the patient within the past year.
3. Referring provider must see the anticoagulation patient at least once a year.
4. Referring provider will renew the Collaborative Practice Agreement and patient referral at least yearly if continued anticoagulation management is warranted.

ANTICOAGULATION SPECIALIST

1. Definition
   a. Any pharmacist meeting the competency requirements below, who is also licensed in Connecticut and has completed the Anticoagulation Clinic Specialist Training program and passed the Anticoagulation Clinic Credentialing Test with a score of ≥ 80% will be considered a qualified Anticoagulation Clinic Specialist.
2. Competency Requirements
   a. Participating pharmacists must be licensed in CT, and meet at least one of the following qualifications:
      i. Bachelor of Science in pharmacy with 10 years of clinical experience or a Pharm D. Degree
      ii. Certification by the Board of Pharmaceutical Specialties (BCPS)
      iii. Certification by the Commission for Certification in Geriatric Pharmacy (CGP)
      iv. A credential in disease state management from the National Institute for Standards in Pharmacist Credentialing
      v. Pharmacy residency accredited by the American Society of Health-System Pharmacists
      vi. Completion of a disease state management certification program approved by the Accreditation Council for Pharmacy Education (ACPE)
      vii. Competency of the participating pharmacists will be assessed yearly
3. Training
   a. The training will consist of a didactic portion and practical experience. For the didactic portion, all Anticoagulation Specialists must complete one of the following educational requirements:
      i. Complete all of the learning objectives in the "**Anticoagulation Clinic Specialist Training**"
      ii. Complete available educational activities in the following areas:
         (1) Anticoagulation Monitoring
         (2) Extended Anticoagulation Prophylaxis post-hospitalization
         (3) New Oral Anticoagulants
         (4) Vitamin K Antagonist Pharmacology, Pharmacotherapy and Pharmacogenomics
         (5) Heparin/Low Molecular Weight Heparin and Fondaparinux Pharmacology and Pharmacotherapy
         (6) Factor Xa and Direct Thrombin Inhibitor Pharmacology and Pharmacotherapy
         (7) Pharmacist Reimbursement for Anticoagulation Services
         (8) Risk Management in Anticoagulation

b. Training will be provided to the Anticoagulation Specialists on the appropriate use and maintenance of the point-of-care testing device.
c. All Anticoagulation Specialists must show proficiency by successfully passing the anticoagulation clinic credentialing and i-STAT competency tests with a score of ≥80%.

SUPPORT STAFF

1. Pharmacy Technicians
   a. May finger-stick, interview and instruct patients under the pharmacist license provided that:
      i. They have been trained on the appropriate use and maintenance of the point-of-care testing device and have successfully passed the i-STAT competency test with a score of ≥80%.
      ii. Patient assessment and warfarin dosing is determined by the Anticoagulation Specialist prior to the instructions being given to the patient.
      iii. All documentation done by the pharmacy technician must be reviewed and co-signed by an Anticoagulation Specialist before the end of the working day.
2. Students
   a. May interview, assess and instruct patients provided that:
      i. They have passed the anticoagulation clinic credentialing test with a score of ≥80%.
      ii. Assessment and instructions are reviewed by an Anticoagulation Specialist prior to the instructions being given to the patient.
      iii. All documentation done by the student must be reviewed and co-signed by an Anticoagulation Specialist before the end of the working day.

REFERRALS

1. General Guidelines
   a. Patients may be referred by their UConn Health provider to the UConn Health Anticoagulation Service at any stage of therapy.
   b. All patients must have an electronically completed Anticoagulation Service Referral for review before they are accepted into the Anticoagulation Service. This will generate an active Anticoagulation Episode for the patient.
   c. The Anticoagulation Specialist will send the Collaborative Practice Agreement Signature Page for co-signature by the referring provider/APRN in the electronic health record.
   d. If a patient is deemed inappropriate for management by the Anticoagulation Service, the referring provider will be contacted by the Anticoagulation Specialist within 48 hours of receipt of all necessary forms.
   e. Anticoagulation care by the service commences once an active anticoagulation episode exists for the patient, the referral and collaborative practice agreement forms have been received and accepted by the Anticoagulation Specialist (72 hours after receipt of the referral). The referring provider will provide the following information on or accompanying the standard patient referral form:
      i. Anticoagulation medication prescribed
      ii. Indication for anticoagulation
      iii. Expected duration of therapy
      iv. Desired therapeutic INR range if applicable
      v. Type of artificial heart valve if applicable

f. Patients whose anticoagulation episode has been resolved will not be followed by the clinic until the patient is re-referred to the clinic.
g. Every year for renewal purposes, the Anticoagulation Clinic support staff will send the anticoagulation episode summary and collaborative practice agreement to the referring provider for co-signature with the attestation "I, (referring provider) have reviewed/updated the current anticoagulation episode for this patient. Indicating diagnosis for anticoagulation, ICD 10 Code, duration of therapy & INR range (as applicable) is correct and current. I have read and agree with the terms of the collaborative practice agreement. I would like to continue patient's anticoagulation for one year".
h. When a patient no longer requires anticoagulation therapy, the referring provider will advise the Anticoagulation Specialist that the patient be discharged from the Anticoagulation Service in writing with the inclusion of an effective date.
i. The Anticoagulation Specialist will contact the referring provider or primary care provider (PCP) when the patient has reached their proposed end date of therapy or when patient is eligible for discharge due to non-compliance.

2. Patients Discharged to Rehabilitation/Skilled Nursing/Long-Term Care Facilities

1. Patients who reside either temporarily or permanently in a skilled nursing or long-term care facility will not be managed by the UConn Health Anticoagulation Service.
2. UConn Health patients should be referred to the Anticoagulation Service prior to transfer to a rehabilitation/skilled nursing/long-term care facility after discharge from UConn Health John Dempsey Hospital.
3. Provider orders should be written for the rehabilitation facility to contact the UConn Health Anticoagulation Specialist when the patient is being discharged from the rehab facility to home, to assist in continuity of care.
4. The Anticoagulation Clinic support staff will contact the facility weekly to determine whether the patient is still in the facility or has been sent home. If the patient has been sent home, the Specialist will contact the patient at home to establish anticoagulation monitoring, if still necessary.

ELIGIBILITY CRITERIA

1. Accepted

a. Patients may be **Accepted** into the Anticoagulation Service if they meet the following criteria:
   i. Sign the Anticoagulation Service Patient Agreement and are willing to follow the service's therapeutic plan
   ii. Have transportation to the facility for in-person visits
   iii. Patients on warfarin therapy who can have their INR drawn outside the facility (home health care (HHC), etc.) when applicable and are accessible by telephone may be accepted to the clinic as per the Director of Pharmacy and the Medical Directors of the Anticoagulation clinic
   iv. Have a therapeutic plan (e.g., target INR or other specified anticoagulation monitoring parameters) that has been communicated and agreed upon between the referring provider and the Anticoagulation Service

2. Denied

a. Patients may be **Denied** admission into the Anticoagulation Service for the following reasons (NOTE: These cases may be referred to the medical director for review as necessary):

i. Inappropriate reason for anticoagulation medications
ii. Therapeutic goals which are not consistent with best clinical practices
iii. Lack of ability for appropriate follow-up
iv. Inability of the Anticoagulation Service to manage additional patients due to time, space, or personnel limitations
v. Patients who reside at rehab/skilled nursing/Long Term Care facilities
vi. No UConn Health provider
vii. Refusal to sign the Anticoagulation Service Patient Agreement
viii. Refusal to follow clinic plan
ix. Medical contraindication (risks of anticoagulation therapy outweigh the benefits). Anticoagulation therapy is contraindicated in any localized or general physical condition or personal circumstance in which the hazard of hemorrhage might be greater than the potential clinical benefits, such as:
    (1) Patients with hypersensitivity to the prescribed anticoagulation medication or any component of the formulation.
    (2) Patients with hemorrhagic tendencies (e.g., patients bleeding from the GI, respiratory or GU tract) unless approved by referring provider.
    (3) Patients with aneurysm, cerebrovascular hemorrhage
    (4) Patients who have recently undergone spinal puncture or other diagnostic or therapeutic procedures with potential for significant bleeding.
    (5) Patients with history of bleeding diathesis
    (6) Patients with recent or potential surgery of the eye or CNS
    (7) Patients with recent major regional lumbar block anesthesia or surgery resulting in large, open surfaces.
    (8) Patients with blood dyscrasias
    (9) Patients with severe uncontrolled or malignant hypertension
    (10) Patients with pericarditis or pericardial effusion, subacute bacterial endocarditis
    (11) Patients with history of warfarin-induced skin necrosis
    (12) Unreliable, noncompliant patients
    (13) Unsupervised senile or psychotic patient
    (14) Patients with eclampsia/pre-eclampsia
    (15) Threatened abortion
    (16) Patients with active alcohol or drug abuse
    (17) Increased falling risk (occupational, medical, etc.)

TELEMANAGEMENT

1. General Guidelines

a. On an exception basis, certain patients may be eligible for telemanagment or “home care” as determined by the referring provider and anticoagulation clinic medical directors in collaboration with the Anticoagulation Specialist.

b. Patients referred to the UConn Health Anticoagulation Service who are unable to come into the UConn Health Anticoagulation Clinic for monitoring will be considered telemanaged or "home care" patients. These patients include those with at home INR anticoagulation monitoring self-testing device, patients unable to come to the Anticoagulation Clinic due to physical limitations, transportation issues, dialysis or other chronic illness. This designation includes patient's currently receiving Home Health Care (HHC) or Hospice Services but is not exclusive to this population.

c. All telemanaged patients will receive the same level of care, including safety and efficiency, as patients who physically come to the clinic.
d. Telemanaged patients will be requested to attend clinic for orientation and education at or near the time of initial referral and then periodically thereafter, as determined by Anticoagulation Specialist. Patients who cannot come to clinic will be oriented and educated via the telephone or via a home care nurse, if applicable.
e. Every effort will be made to contact the patient directly through an agreed upon format of communication. Telemanaged patients (and/or caregivers of) will be required to be available by video/telephone or to grant permission for the Anticoagulation Specialist to leave instructions on voicemail, an answering machine, email, web-based format, or with another designated person. All patients will be instructed to contact the Clinic within 2 business days of their blood test (eg. INR or other specified anticoagulation monitoring parameters) if they do not receive instructions.
f. If a telemanaged patient is repeatedly unavailable or unresponsive to above mentioned methods of agreed upon communication, then the patient may be eligible for discharge by the Clinic due to non-compliance with protocol.
g. Telemanaged patients on warfarin must have a billable Anticoagulation Clinic visit at a frequency determined by the Anticoagulation Clinic Specialist. These may be scheduled to coincide with medical visits at UConn Health or performed via scheduled telephone or video visit.
h. Patients who live or travel outside of Connecticut may be managed by the UCHC Anticoagulation Service temporarily for a period of 3 months until more local care can be established.
i. Patients with extended stay (>3months) in another state will need to be managed locally.

2. Patient Self Testing (PST)
a. On an exception basis, certain patients may be eligible for receiving at home INR self-testing devices as determined by the referring provider and anticoagulation clinic medical directors in collaboration with the Anticoagulation specialist.
b. Patient must be an established clinic patient and taking warfarin for at least 90 days, adherent to appointments and clinic instructions. Expected duration of enrollment in PST should be a minimum of one year.
c. Patients must not have any physical or cognitive limitations that would prevent them from performing PST. Patients may have a reliable caregiver that can be trained to perform PST.
d. Patient or caregiver must be able to understand and follow verbal communication/dosing instructions.
e. Patient must bring in their home monitor for review of INR log to each clinic visit.
f. Patients whose INR is being tested by an at-home devices will get confirmatory venous INR for any INR>4.
g. Patient or caregiver may be required to periodically demonstrate technique at the discretion of the Anticoagulation Specialist.
h. Patient is responsible for contacting the supplier if more testing supplies are needed.
i. If a patient with an at home INR anticoagulation monitoring self-testing device is determined to be unreliable or dishonest by the Anticoagulation Specialist, their referring provider will be contacted and discharge from the Anticoagulation Service may be considered.
j. Patient agrees to return the monitor and any remaining strips to the Independent Diagnostic Testing Facility (IDTF) in the event of discontinuation of warfarin OR discontinuation from the PST program.

RESPONSIBILITIES

1. The Anticoagulation Patient will:
a. Follow Anticoagulation Service instructions regarding anticoagulation dosing and monitoring.

b. Contact the Anticoagulation Service with any alteration to the dosing and monitoring plan.
c. Notify the Anticoagulation Service with any changes to medications (including over the counter (OTC) or herbal products), diet, or medical conditions.
d. Notify the Anticoagulation Specialist with any planned medical, dental, or surgical intervention so temporary cessation of their anticoagulation therapy can be considered.
e. Have an Anticoagulation Clinic visit and Anticoagulation assessment with UConn Health referring provider or UConn Health PCP at least annually.
f. Patients that are eligible for tele-management or self-testing will schedule a billable visit with the Anticoagulation clinic at a frequency determined by the Anticoagulation Clinic Specialist.

2. The Anticoagulation Technician or Support Staff will:
   a. Arrive, schedule, re-schedule patients in Epic.
   b. Assist with coordinating patient care with home health agencies, skilled nursing facilities, and laboratories.
   c. Examine patient compliance with PT/INR monitoring, or other specified anticoagulation monitoring parameters, by generating reports of patients overdue for required blood work and contacting these patients in a timely manner by phone and/or letter.
   d. Assist the Anticoagulation Specialist in notifying patients of INR results (or laboratory parameter specific to the anticoagulation therapy) in person or via phone calls.
   e. Manage the clinic correspondence with patients and providers.
   f. Document any contact or attempted contact with the patient or any agent thereof except for upcoming appointment reminder calls.
   g. Contact/attempt to contact and follow-up with patients who do not attend scheduled clinic visits, as per clinic guidelines.
   h. Obtain or update patient and pharmacy phone number, if necessary.
   i. Educate the patient/caregiver on therapeutic results, any dose changes, and any anticoagulation issues as determined by the Anticoagulation Specialist.

Note: In the absence of Anticoagulation technicians or support staff, the Anticoagulation Specialist will assume the above responsibilities.

3. The Anticoagulation Specialist will**:**
   a. Follow all aspects of the patient's anticoagulation therapies in collaboration with the patient, patient's referring provider and as necessary the patient's primary care provider or the service medical director.
   b. Assist with anticoagulation medication selection or transition of therapy.
   c. Confirm appropriateness of selected anticoagulation therapy and duration of treatment for all patients using **Attachments 1A, Attachment 1B** and **Attachment 2D (**for warfarin patients only).
   d. Provide dosing for anticoagulants and follow monitoring parameters such as CBC, SCr, renal and liver function tests of patients as appropriate (refer to guidelines in '**Management'** section below).
   e. Provide dosing for anticoagulants during the perioperative period as needed (refer to guidelines in '**Management'** section below).
   f. Initiate, adjust, or renew orders appropriate for the patient's anticoagulation therapies, which include anticoagulation medications, vitamin K, PT/INR, CBC, urinalysis, basic metabolic panel (BMP), SCr, LFTs, Hgb, Hct, and other related laboratory tests with the referring provider's co-signature, per established guidelines.
   g. Continue to monitor the patient's anticoagulant therapy until the patient's provider discontinues anticoagulant therapy or until the patient is discharged from the clinic by other means.

h. Perform assessment of therapy including the status of the medical problem necessitating anticoagulation therapy, patient's understanding of disease and treatment, and willingness to comply with treatment and clinic visits (**Attachment 1C**).
i. Perform thromboembolic risk (**Attachment 6A**), hemorrhagic risk (**Attachment 6B**), and procedural risk (**Attachment 6C**) assessments and document in an electronic database.
j. Educate the patient (using verbal and/or written communication) on the safe and appropriate use of anticoagulation medication. (refer to **Attachment 1D**)
k. Address each patient's PT/INR (or other anticoagulation related laboratory result), assess the efficacy of treatment, and determine if therapeutic goals have been achieved. Specifically:
    i. Identify patient-related variables that affect therapy and evaluate the stability of each individual result.
    ii. Make appropriate changes to anticoagulation therapy when the therapeutic goals of treatment are not being met.
    iii. Dosing adjustments may deviate from the given guidelines based on referring provider or PCP's clinical experience and patient's individual case factors. However, these patients will not be treated under the protocols listed here, but rather each such referral will be accompanied by an individualized patient specific protocol for all therapies that would require INRs outside of the ranges of 1.5-2, 2-3, or 2.5-3.5.
    iv. Educate the patient/caregiver on therapeutic results, any dose changes, and any anticoagulation issues.
    v. Assign a date for follow-up monitoring (if applicable).
l. When applicable, follow patient's whose INR is unstable (not yet at steady state) at least once to twice weekly as needed, then every 4-12 weeks once stable (see **Attachment 2C**).
m. Manage any clinically significant drug interactions and contact the referring provider as needed.
    i. Verify need for concomitant aspirin/antiplatelet and anticoagulant medication (refer to **Attachment 1E**)
    ii. For patients on concomitant aspirin/antiplatelet and anticoagulant medications, determine if GI protective agent indicated (refer to **Attachment 1F**)
n. Monitor the following items as needed based on clinical judgment:
    i. Chart review
    ii. Care coordination
    iii. Medication review
    iv. Drug-drug interaction monitoring
    v. Adherence assessment
    vi. Continued need for anticoagulation and appropriate dosing
    vii. Transition of care management
    viii. Document all activities performed appropriately in the medical record.

MANAGEMENT

1. General

a. For any anticoagulation medication prescribed, confirm referring provider has an established and ongoing relationship with the patient at UConn Health John Dempsey Hospital (yearly visits with referring provider)
b. For any anticoagulation medication prescribed, confirm appropriateness of selected anticoagulation therapy and duration of treatment using the attachments below:
    i. **Attachment 1A:** Choosing Between Anticoagulat Agents
    ii. **Attachment 1B:** Duration of Anticoagulation Therapy
    iii. **Attachment 2D**: Optimal Therapeutic Range of Warfarin Therapy (for warfarin patients only)
c. For any anticoagulation medication prescribed assessment of therapy will be performed

i. **Attachment 1C:** Assessment of Therapy

d. For any anticoagulation medication prescribed, patients will be offered formal education session, please see attachment below
   i. **Attachment 1D:** Education Session
e. For any anticoagulation medication prescribed, the anticoagulant specialist will ensure baseline and yearly CBC, LFT and SCR ordered and reviewed.
f. For any anticoagulation medication prescribed, the anticoagulation technician will obtain patient's age, height, and weight
g. Anticoagulation clinic staff will provide most recent anticoagulant medication dosing and follow up recommendations to facilities during transition of care (eg. Transfer to hospital, SNF)
h. For any anticoagulation medication prescribed, the Anticoagulation Specialist will
   i. Review patient's indication and history of hemorrhage and thrombosis
   ii. Review patient's medical history for contraindications for any anticoagulation medication prescribed
   iii. Perform yearly Thromboembolic and Bleeding Risk assessment using **Attachment 6A**, **Attachment 6B**
i. The anticoagulation medication selected should be a shared decision-making process with the patient, the MD, and the Anticoagulation Specialist

2. DOAC

a. Refer to **General Management** above to confirm appropriateness of selected anticoagulation therapy, duration of treatment, and patient education

b. DOAC Dosing
   i. **Attachment 3A**: Direct Anticoagulant Guideline

c. DOAC Monitoring
   i. **Attachment 3B**: Direct Oral Anticoagulant Active Management Timeline-1st 6months of enrollment in Anticoagulation Service
   ii. **Attachment 3C**: Direct Oral Anticoagulant-Patient Stratification to Active Surveillance
   iii. **Attachment 3D**: Direct Oral Anticoagulant-Active Surveillance/Maintenance Mode Timeline
   iv. **Attachment 1E**: Indication for Concomitant Aspirin/Antiplatelet & Anticoagulant Use
   v. **Attachment 1F**: Indication/Duration for GI Protection for Patients on Antiplatelet/ASA
   vi. **Attachment 5**: Guidelines For Excessively Prolonged INR Or Bleeding While On Anticoagulants

3. Warfarin

a. Refer to **General Management** above to confirm appropriateness of selected anticoagulation therapy, duration of treatment, and patient education
b. The anticoagulation specialist will renew standing PT/INR lab orders yearly

c. Warfarin Dosing
   i. **Attachment 2A**: Warfarin Dosing Strategy
   ii. **Attachments 2B**: Warfarin Dosing Nomogram for Maintenance Therapy
   iii. Refer to the Long-Term Injectable Anticoagulant Guideline (**Attachment 6F**) for perioperative dosing of injectable anticoagulants, if warranted

d. Warfarin Monitoring
   i. **Attachment 2C**: Frequency Of Monitoring Warfarin Therapy
   ii. **Attachment 2D:** Optimal Therapeutic Range of Warfarin Therapy

iii. **Attachment 1E**: Indication for Concomitant Aspirin/Antiplatelet & Anticoagulant Use
iv. **Attachment 1F**: Indication/Duration for GI Protection for Patients on Antiplatelet/ASA
v. **Attachment 5**: Guidelines For Excessively Prolonged INR Or Bleeding While On Anticoagulants

4. Injectable Anticoagulation
   a. Refer to **General Management** above to confirm appropriateness of selected anticoagulation therapy, duration of treatment, and patient education

   b. For dosing, monitoring, and management considerations of injectable anticoagulants, use the attachments below:
      i. **Attachment 7**: Long-Term Injectable Anticoagulant Guideline
      ii. **Attachment 1E**: Indication for Concomitant Aspirin/Antiplatelet & Anticoagulant Use
      iii. **Attachment 1F**: Indication/Duration for GI Protection for Patients on Antiplatelet/ASA
      iv. **Attachment 5**: Guidelines For Excessively Prolonged INR Or Bleeding While On Anticoagulants

5. Perioperative Anticoagulation
   a. For dosing, monitoring, and management considerations of perioperative anticoagulation, use the attachments below:
      i. **Attachment 6A**: Thromboembolic Risk Assessment
      ii. **Attachment 6B**: Hemorrhagic Risk Assessment
      iii. **Attachment 6C**: Procedural Bleeding Risk Assessment
      iv. **Attachment 6D**: Perioperative Warfarin Management
      v. **Attachment 6E**: Perioperative Direct Oral Anticoagulant Management
      vi. **Attachment 6F**: Perioperative Injectable Anticoagulation Guideline

6. Transition Between Anticoagulants
   a. For transitioning between anticoagulants, use the attachment below:
      i. **Attachment 4:** Transition Between Anticoagulants

7. Pregnant Patients
   a. The plan of care for anticoagulation in the pregnant patient will be initiated by the referring provider and will include the duration of anticoagulation during pregnancy, puerperium, and post-partum**.** See attachment below for further guidance on anticoagulation management in pregnant patients:
      i. **Attachment 8:** Peripartum Anticoagulation Management

DOCUMENTATION

1. Documentation of all the following information will be entered into an electronic medical record for all active patients. Documentation will include:
    a. Diagnosed reason for anticoagulation
    b. Other medical conditions
    c. Contact information
    d. Current anticoagulation medication name and tablet strength
    e. Therapeutic INR range (warfarin patients only)
    f. Expected duration of anticoagulant treatment
    g. Referring provider
    h. Daily supervising LIP
    i. Pharmacy Information
    j. Caring Individual's contact information
    k. PT/INR results (warfarin patients only)
    l. Current anticoagulation medication dosage regimen
    m. Education topics covered
    n. Whether the encounter was by telephone or in person
    o. Relevant clinical information obtained from the patient interview:
        i. Signs and/or symptoms of bleeding
        ii. Signs and/or symptoms of thrombosis
        iii. Changes in medications including over the counter medications and/or adverse effects of the medications
        iv. Changes in dietary or alcohol habits
        v. Changes in underlying disease states
        vi. Missed doses since last appointment
        vii. Current anticoagulation medication dosing regimen
        viii. Compliance issues related to current medications
2. Instructions given to the patient
3. Date of follow-up appointment
4. Any reminder or discharge letters provided to the patient and reason for discontinuation
5. Date and Signature of Anticoagulation Specialist providing service

BILLING

1. Patients will be billed a hospital-based clinic facility fee for any in-clinic or scheduled telephone/video visit if any of the following take place:
    a. The patient was interviewed, assessed, or seen in the clinic by an Anticoagulation Clinic staff
    b. A point of care test was performed (e.g., INR)
    c. Recommendations were given to the patient and/or caregiver based on pertinent patient factors or relevant laboratory parameters specific to the anticoagulation therapy
    d. Education was provided to the patient and/or caregiver
2. At each visit, the Anticoagulation Specialist will select the appropriate CPT code in the electronic medical record for billing purposes

PRESCRIPTIONS

1. Prescriptions for anticoagulant drugs for clinic patients will originate from the referring/collaborating provider. Anticoagulation prescriptions should only be electronically sent, faxed, or written and given to patients. Prescriptions may be filled out by Anticoagulation Specialists but must be signed by a licensed prescriber before being transmitted to a pharmacy.

REFERRING PROVIDER CONSULTATION

1. Excluding laboratory values (e.g., INRs) obtained during a perioperative period with specific instructions to hold or bridge anticoagulation, greatly out of therapeutic range routine laboratory values may require referring provider consultation. In patients who receive warfarin, the Anticoagulation Specialist will:
   a. Notify the Anticoagulation Service medical director, daily supervising LIP, referring or primary care provider if the patient has an ***INR > 5.0 and ≤ 8 as soon as reasonably possible***
   b. Actively consult the Anticoagulation Service medical director or referring provider if this occurs in a high bleeding risk patient
   c. Actively consult the Anticoagulation Service medical director, daily supervising LIP, referring provider or PCP on treatment options for all INRs > 8.0
   d. Actively consult the Anticoagulation Service medical director or referring provider if INR<1.5 in a high-thrombotic risk patient with INR range 2.0-3.0 or an INR of <2 in a high-thrombotic risk patient with INR range 2.5-3.5
   e. Actively consult with the Anticoagulation Service Medical director or referring provider if the Anticoagulation Service is unable to maintain an established patient in the recommended INR range of ≥65%. Established patients are defined as patients who have been receiving care at the Anticoagulation Service for ≥1 month
2. In patients receiving any anticoagulation medications, the Anticoagulation Specialist will:
   a. Actively consult the Anticoagulation Service medical director or referring provider for any critical lab values including WBC>100,000cells/ul, platelets>1,000,000/ul or < 50,000/ul, HCT <24% or >60%, HGB<7g/dl or >20g/dl, Total bilirubin >18mg/dl.
   b. Inform the referring provider if pt's SBP is >160mmHg or DBP is >100mmHg.
   c. Actively consult the Anticoagulation Service medical director or referring provider if anticoagulation medication needs to be switched to alternative agent due to cost, clinical, or adherence concerns.
   d. Actively consult with the Anticoagulation Service medical director or referring provider if a patient on warfarin, LMWH, fondaparinux, dabigatran, rivaroxaban, or edoxaban has an increase in serum creatinine of 0.3mg/dl or more within 48 hours or an increase in serum creatinine of 1.5 times baseline or more
   e. Actively consult with the Anticoagulation Service medical director or referring provider if a patient has an active bleeding episode, or has drop in hemoglobin>2g/dl
   f. Actively consult with the Anticoagulation Service medical director or referring provider for an acute medical condition not covered by the clinic's daily functions and protocols, or if patient consistently misses appointments or remains non-compliant with anticoagulation therapy. Established patients are defined as patients who have been receiving care at the Anticoagulation Service for ≥ 1 month
   g. Refer patients with emergent medical issues to call 911 or direct them to go to the nearest emergency department.
   h. Communicate information about all drug-related problems and findings to the primary care or referring provider to ensure the patient receives appropriate medical attention. If the primary care or the referring provider cannot be reached in a reasonable amount of time, the medical director, or daily supervising LIP of

the Anticoagulation Service, will be consulted or the patient will be sent to the nearest appropriate care facility. All adverse drug reactions (ADRs) or drug errors will be reported per the UConn Health protocol.

DISCHARGE GUIDELINES

1. Purpose:
   a. To keep patients on anticoagulation therapy as safe as possible by avoiding serious adverse consequences due to poorly monitored therapy secondary to patient noncompliance.
2. Definitions:
   a. Discharge: The patient will no longer be able to receive care from the UConn Health Anticoagulation Service for anticoagulation medication monitoring due to non-compliance. Patient's anticoagulation management will be transferred back to the referring provider.
   b. Respond: To have an INR, or laboratory parameters specific to the anticoagulation therapy drawn and have the Anticoagulation Service communicate and provide instructions regarding anticoagulation therapy.
   c. Non-compliance: Repeated missed appointments or lab draws, failure to communicate and/or return the clinic's phone calls, or failure to follow clinic instructions.
3. Process:
   a. If the patient misses an appointment or scheduled lab draw, he/she will be rescheduled as soon as possible (within 1-2 weeks of the missed appointment/lab draw, or as appropriate to the patient's monitoring schedule or clinical situation).
   b. If a patient misses an appointment/lab draw with the service, the patient will receive 3 phone calls on 3 separate days (within 10 business days) or until the patient is rescheduled, whichever comes first.
   c. An **Anticoagulation Clinic Reminder letter (Attachment 9)** will be sent certified to the patient the following week if no appointment or lab draw is arranged with the Anticoagulation Service after the phone calls.
   d. If a patient has the appropriate laboratory parameters drawn but fails to communicate with the service to receive instructions, the discharge process will continue.
   e. If, within 10 business days of mailing the Anticoagulation Clinic reminder letter, the patient fails to contact the clinic, the patient will be sent a certified **Anticoagulation Clinic Final Reminder letter (Attachment 10)** stating that the patient will be discharged from the service back to the referring provider if they do not reschedule an appointment/lab draw or follow clinic recommendations.
   f. If the patient fails to respond within 10 business days of mailing the final reminder letter, an **Anticoagulation Clinic Discharge Patient letter (Attachment 12)** will be sent via certified mail informing the patient that he/she has been discharged from the anticoagulation service back to their referring provider. The referring provider will be sent an **Anticoagulation Clinic Discharge to Referring Provider letter (Attachment 13)** regarding the patient's change in status.
   g. It is the referring provider's responsibility to cancel refills for anticoagulant medications prescribed as appropriate for non-compliant patients.
   h. The patient will automatically be discharged from the Anticoagulation Service with a single letter of notification (**Attachment 12**) sent to the patient if the patient receives a reminder letter, fails to respond, AND has received a final reminder letter two times within the last year.
   i. If a patient is new to the service and has never established care with the service, an **Anticoagulation Clinic Initiation of Care letter (Attachment 11)** will be sent to the patient if the following occur:
      i. The clinic has been unable to reach the patient to schedule an appointment to enroll him/her in clinic after 3 phone calls on 3 separate business days after receiving the

referral.

ii. The patient has missed 3 clinic appointments/lab draws and is more than 7 days overdue for laboratory monitoring.

j. Upon enrollment in the Anticoagulation Service, patients will be notified that they need to establish and maintain ongoing care with a UConn Health provider within 30 days of enrollment

k. A copy of each letter will be sent to the patient's referring provider or PCP and will be posted in the patient's electronic medical record (EMR).

l. Each phone call and letter will be documented in the patient's EMR.

m. If a patient misses a rescheduled appointment/lab draw, the discharge process will continue as if the patient had never rescheduled.

n. If a patient is violent, abusive, or exhibits outright failure to comply with the instructions of the Anticoagulation Service staff, the behavior will not be tolerated and will result in immediate discharge from the service.

o. Upon discharge from the clinic, the patient's anticoagulation episode will be resolved by the Anticoagulation Clinic staff and notification will be sent to the referring provider.

NOTE: *If a patient is discharged for any of the above reasons from the Anticoagulation Service at UConn Health, the patient will not be accepted back into the Service.*

QUALITY ASSURANCE

1. Quality assurance will be carried out through monthly reports tracking following statistics:
   a. Percent time in therapeutic range
2. Patient-specific quality indicators will be identified through review of the following data:
   a. Individual patient's defined therapeutic range not consistent with published guidelines.
   b. Patients remaining on anticoagulation therapy after their end date has passed.
3. A random sample of patient records shall be reviewed by the Anticoagulation Clinical Coordinator twice yearly to ensure adherence by the Anticoagulation Specialist(s) to the UConn Health Anticoagulation clinic collaborative practice agreement.

ATTACHMENTS

Attachment 1A	Choosing Between Anticoagulant Agents
Attachment 1B	Duration of Anticoagulant Therapy
Attachment 1C	Assessment of Therapy
Attachment 1D	Education Session
Attachment 1E	Concomitant Asa/Antiplatelet and Anticoagulant Use
Attachment 1F	Determining if GI Protective Agent Indicated
Attachment 2A	Warfarin Dosing Strategy
Attachment 2B	Warfarin Dosing Nomogram For Maintenance Therapy
Attachment 2C	Frequency of Warfarin Therapy Monitoring
Attachment 2D	Optimal Therapeutic Range of Warfarin Therapy
Attachment 3A	Direct Oral Anticoagulant Guideline
Attachment 3B	Direct Oral Anticoagulant Active Management Timeline
Attachment 3C	Direct Oral Anticoagulant-Patient Stratification to Active Surveillance
Attachment 3D	Direct Oral Anticoagulant Active Surveillance/Maintenance Mode Timeline
Attachment 4	Transition Between Anticoagulants
Attachment 5	Guidelines For Very Prolonged INR or Bleeding While on Anticoagulants
Attachment 6A	Thromboembolic Risk Assessment
Attachment 6B	Hemorrhagic Risk Assessment (HAS-BLED Score)
Attachment 6C	Procedural Bleeding Risk Assessment
Attachment 6D	Perioperative Warfarin Management
Attachment 6E	Perioperative Direct Oral Anticoagulants Management
Attachment 6F	Perioperative Injectable Anticoagulation Guideline
Attachment 7	Long-Term Injectable Anticoagulation Guideline
Attachment 8	Peripartum Anticoagulation Management
Attachment 9	Anticoagulation Clinic Reminder Letter
Attachment 10	Anticoagulation Clinic Final Reminder Letter
Attachment 11	Anticoagulation Clinic Initiation Of Care
Attachment 12	Anticoagulation Discharge Patient Letter
Attachment 13	Anticoagulation Clinic Discharge Letter To Referring Provider
Appendix A-1	Anticoagulation Clinic Patient Agreement
Appendix A-2	Anticoagulation Education Waiver
Appendix A-3	Patient Questionnaire

ATTACHMENT 1A: CHOOSING BETWEEN ANTICOAGULANT AGENTS

Choice of Anticoagulant Therapy based on Indication and Patient Characteristics			
Indication	**Agent**		**Notes**
Patients with moderate to severe mitral valve stenosis or who have presence of mechanical heart valve (any position) and require anticoagulation	Warfarin		DOAC use is contraindicated
Rheumatic mitral valve disease w/ left atrial diameter>55mm with or without left atrial thrombus, afib or previous systemic embolism	warfarin		**Rheumatic mitral valve disease pts with normal sinus rhythm and left atrial diameter < 55mm, no VKA is recommended**
Afib with rheumatic mitral stenosis, mechanical heart valves	Warfarin		
Stroke prevention in non-valvular atrial fibrillation	CrCl<15ml/min or Dialysis	Warfarin or Apixaban	Apixaban is approved for use in AF patients receiving hemodialysis
	CrCl 15-95ml/min	Warfarin, Dabigatran, Rivaroxaban, Apixaban, Edoxaban	
	CrCl >95ml/min	Warfarin, Dabigatran, Rivaroxaban, Apixaban	
Note: In patents with high bleed risk. Prior unprovoked bleed, or warfarin-associated bleed, Apixaban, Edoxaban or Dabigatran 110 mg BID preferred over other DOACs. Dabigatran 150 mg BID recommended in pts at high risk of ischemic stroke. **Maintain TTR>70% for pt's on warfarin. Pt's on warfarin with TTR<65% recommend intervention to improve TTR or switch to DOAC**			
Pre-Cardioversion (AF or AFL)>48 hours or unknown duration		Warfarin or DOAC	
Post-Cardioversion		Warfarin or DOAC	
Reduction of risk of major cardiovascular events in chronic CAD or PAD	Rivaroxaban		Reduction of risk of major cardiovascular events in chronic CAD or PAD
Ventricular assist device	Warfarin	DOACs(dabigatran) associated with increased thromboembolic events	Ventricular assist device

Choice of Anticoagulant Therapy based on Indication and Patient Characteristics			
Indication		**Agent**	Notes
Treatment of VTE	CrCl < 15 mL/min or Hemodialysis	Warfarin (preferred), Apixaban	No dose reduction of apixaban is required
	CrCl 15 – 30 mL/min	Warfarin, Rivaroxaban, Apixaban, Edoxaban	
	CrCl 30 – 95 mL/min	Warfarin, Dabigatran, Rivaroxaban, Apixaban, Edoxaban, Enoxaparin, Dalteparin, Fondaparinux	
	CrCl > 95 mL/min	Warfarin, Dabigatran, Rivaroxaban, Apixaban, Enoxaparin, Dalteparin, Fondaparinux	
Note: DOACs preferred over warfarin and warfarin preferred over LMWH during treatment phase (1st 3 months). DOACs preferred with warfarin as alternative in extended phase (≥ 3months) for pt's with unprovoked VTE or VTE provoked by persistent risk factor. For pt's with recurrent VTE on non-LMWH and compliant, LMWH preferred temporarily. For pt's on LMWH and compliant with recurrent VTE, higher dose (one quarter to one third) of LMWH preferred.			
Extended Duration VTE Treatment	CrCl < 15 mL/min or hemodialysis	Warfarin, Apixaban	
	CrCl 15 – 30 mL/min	Warfarin, Rivaroxaban, Apixaban	
	CrCl > 30 mL/min	Warfarin, Dabigatran, Rivaroxaban, Apixaban	
Superficial vein Thrombosis (SVT) of lower limb at increased risk of clot progression to DVT or PE	Fondaparinux (preferred), Rivaroxaban		Use in SVT patients with extensive SVT, involvement above the knee, particularly if close to the saphenofemoral junction, severe symptoms, involvement of the greater saphenous vein, history of VTE or SVT, active cancer and recent surgery.
Prophylaxis of VTE following knee surgery	Warfarin, Rivaroxaban, Apixaban, Enoxaparin, Dalteparin, Fondaparinux		
Prophylaxis of VTE following hip surgery	Warfarin, Dabigatran, Rivaroxaban, Apixaban, Enoxaparin, Dalteparin, Fondaparinux		
VTE prophylaxis after recent hospitalization for acute medical illness	Rivaroxaban		LMWH regimens are shorter in duration however PO administration may be more appealing for patient
VTE prophylaxis in high-risk patients with active cancer	Apixaban, Rivaroxaban		2020 NCCN guidelines recommend apixaban 2.5mg BID or rivaroxaban 10mg daily for patients with Khorana Score ≥2

Choice of Anticoagulant Therapy based on Indication and Patient Characteristics		
Indication	**Agent**	**Notes**
Heparin Induced Thrombocytopenia (HIT)	Warfarin, DOACs	Although the only FDA-approved treatment for HIT is argatroban, in this setting, the clinician should consider using warfarin, or possibly a DOAC, as a few cases series have demonstrated safety with the later
Antiphospholipid syndrome	Warfarin with INR goal 2-3	DOACs are less effective than warfarin in patients with APS, especially for those with history of arterial events
Treatment of VTE in unusual locations, such as splanchnic veins (portal vein, mesenteric veins, splenic vein), cerebral sinus vein	Warfarin	
Cancer-associated VTE (active cancer or within 6 months of cancer treatment)	Rivaroxaban, Edoxaban, Apixaban preferred over LMWH for the initiation and treatment phases of therapy *Apixaban or LMWH may be the preferred option in patients with luminal GI malignancies to avoid GI major bleeding. Rivaroxaban or Edoxaban for pt's who prefer once daily dosing LMWH has the potential advantage of bypassing the GI system in pt's w/ nausea or mucositis and may be more easily adjusted in pt's with thrombocytopenia due to cancer therapy*	The ISTH SSC 2018 guidance suggests edoxaban or rivaroxaban for cancer associated VTE who have a low risk of bleeding and no drug-drug interactions with current systemic therapy. Shared decision-making with patients to balance potential reduction in VTE recurrence versus higher bleeding rates is required. The 2020 NCCN guidelines recommend apixaban or edoxaban for all patients with cancer associated VTE except for those with GI/GU cancer due to increased risk of GI bleeding CARVAGGIO trial showed no increase in major bleeding with apixaban compared to LMWH in patients with active GI cancer

Choice of Anticoagulant Therapy based on Indication and Patient Characteristics		
Patient Characteristics	**Agent**	**Notes**
Dyspepsia or upper GI symptoms	Rivaroxaban, Apixaban, Edoxaban	Dyspepsia in up to 10% of pt's given dabigatran
Recent GI bleed	Apixaban or low-dose Edoxaban	More GI bleeding with rivaroxaban, high dose dabigatran (150mg twice daily), or edoxaban than with warfarin
Recent ischemic stroke on warfarin	Dabigatran	Dabigatran (150mg twice daily) associated with lower risk of ischemic stroke than warfarin
Recent acute coronary syndrome	Rivaroxaban, Apixaban, or Edoxaban	Small MI signal with dabigatran
Patients on inhibitors or inducers of P-glycoprotein or strong inhibitors or inducers of cytochrome P450 enzymes	Warfarin	
Hemodialysis	Warfarin, Apixaban	Dosing not defined for apixaban in peritoneal dialysis
Child-Pugh Class C hepatic impairment	Warfarin	
Obese	Warfarin (preferred) or DOACs	DOACs have not been extensively studied in patients <50kg or >120kg, although there is growing evidence to suggest their safety in more obese populations. Our practice is to consider DOAC up to weight of 140kg or a BMI ~45
History of gastric bypass (especially Roux En Y)	Warfarin	
Low weight	Warfarin or Edoxaban	Patients <50kg were not adequately represented in DOAC clinical trials, so the safety and efficacy of DOACs in this population is not known and their use should be avoided. The one exception is edoxaban, which can be dose reduced in patients <60kg

ATTACHMENT 1B: DURATION OF ANTICOAGULANT THERAPY

Indication	Duration of Anticoagulation	Notes
Deep Vein Thrombosis (DVT)/Pulmonary Embolism (PE)		
Provoked		
Major transient risk factor (present w/in 3 months before VTE diagnosis)	3 months	
-Minor transient risk factor (present 2/in 2 months before VTE diagnosis)	3 months	
-Persistent risk factor	≥3months and reassess	Patient preference and predicted risk of recurrent VTE or bleeding should influence the decision to continue extended-phase anticoagulation therapy. Reassess need for extended therapy annually.
Unprovoked	≥3months and reassess	Patient preference and predicted risk of recurrent VTE or bleeding should influence the decision to continue extended-phase anticoagulation therapy. Reassess need for extended therapy annually.
Isolated distal DVT of the leg -with severe symptoms or risk factors for extension -with extension within the distal veins -with extension to the promial veins	3 months and reassess	
Subsegmental PE (no involvement of proximal pulmonary arteries and no proximal DVT in the legs) -with high risk for recurrent VTE	3 months and reassess	
Asymptomatic PE	3 months and reassess	
Superficial venous thrombosis (SVT) of the lower limb at increased risk of clot progression to DVT or PE	45 days	
Cancer	Indefinite	Reassess annually
Upper Extremity DVT w/ unremoved central venous catheter	Indefinite	As long as the central venous catheter remains
APAS or 2 or more thrombophilic conditions	Indefinite	
Recurrent DVT/PE	Indefinite	Reassess annually. Pts with high bleeding risk, recommend 3 months therapy over extended therapy.
Atrial Fibrillation (AF) or Atrial Flutter (AFL)		
CHA_2DS_2-VASc Score Males = 0 Females = 1 (Low risk of Stroke)		Anticoagulation not indicated. Risk of bleed greater than risk of thromboembolism
CHA_2DS_2-VASc Score Males ≥ 1 Females ≥ 2		Anticoagulation per provider. Risk benefit regarding bleeding/protection even
CHA_2DS_2-VASc Score Males ≥2 Females ≥3 (Moderate to Severe Risk of Stroke)	Indefinite	
Mitral Stenosis	Indefinite	
Pre-Cardioversion (AF or AFL) >48 hours or unknown duration	At least 3 weeks before	
Post- Cardioversion	At least 4 weeks after	Decisions about anticoagulation beyond 4 weeks should be made in accordance with risk-based recommendations for long-term antithrombotic therapy
Valve Replacement Bioprosthetic		
Mitral	3 months	
Valve Replacement Mechanical		
Aortic	Indefinite	
Bileaflet/Medtronic Hall tilting disk	Indefinite	
Ball and cage	Indefinite	
On-X mechanical valve	Indefinite	
Mitral	Indefinite	
Bileaflet	Indefinite	
Tilting disk	Indefinite	
Ball and cage	Indefinite	

ATTACHMENT 1B: DURATION OF ANTICOAGULANT THERAPY CONTINUED

Indication	Duration	Notes
Orthopedic Thromboprophylaxis		
Hip Fracture Surgery (HFS) or Total Hip Arthroplasty (THA)	At least 10 days and up to 35 days post op	Optimal duration of prophylaxis is unknown, but it is usually given for a minimum of 10 to 14 days and can be extended for up to 35 days; some experts suggest a duration in the higher end of range (30 days) for total hip arthroplasty
Total Knee Arthoplasty (TKA)	10 days and up to 35 days post op	Optimal duration of prophylaxis is unknown, but it is usually given for a minimum of 10 to 14 days and can be extended for up to 35 days; Some experts suggest a duration in the lower end of the range 10-14 for total knee arthroplasty (TKA)
Myocardial Infarction (MI)		
Anterior MI and LV thrombus or at high risk for LV thrombus (ejection fraction <40%, anteroapical wall motion abnormality)	3 months	
Anterior MI and LV thrombus or at high risk for LV thrombus (ejection fraction <40%, anteroapical wall motion abnormality) undergo bare-metal stent placement	3 months	
Anterior MI and LV thrombus or at high risk for LV thrombus (ejection fraction <40%, anteroapical wall motion abnormality) undergo drug-eluting stent	3-6 months	
Systolic left ventricular dysfunction with identified acute LV	3 months and reassess	
Valvular Disease		
Rheumatic mitral valve disease (w/ left atrial diameter >55mm with or without left atrial thrombus, afib or previous systemic embolism)	Indefinite	
Rheumatic mitral valve undergoing percutaneous mitral balloon valvotomy (PMBV) with preprocedural TEE showing left atrial thrombus	Until thrombus resolution is documented by repeat TEE	
Cryptogenic Stroke and Patient Forman Ovale (PFO)		
With recurrent event despite ASA therapy	Indefinite	
With evidence of DVT	3 months	

ATTACHMENT 1C: ASSESSMENT OF THERAPY

1. Compliance (missed/extra anticoagulation doses, correct dose, correct tablet strength/color, correct dosing schedule)
2. Drug access determination and/or resolution. If needed, assist with medication refills, medication procurement including assessment of insurance coverage/affordable copay/long term affordability (donut hole)
3. Diet changes, if applicable (Vitamin K-containing foods, overall oral intake)
4. Disease or general health changes (HTN, acute infection, GI illness, exercise/activity level, etc.)
5. Drug-drug interaction review
    a. P-gp inhibitors/inducers (dabigatran/edoxaban)
    b. Dual P-gp/CYP3A4 inhibitors (rivaroxaban/apixaban)
    c. Other medications that may increase risk of bleeding such as anti-platelets, NSAIDS, or SSRI's.
6. Assess comprehension and provide education as needed
7. Review and assess pertinent laboratory values (or attain if not yet obtained)
8. Social habit changes – alcohol, tobacco, illicit drugs
9. Lab error
10. Signs/symptoms of bleeding
11. Signs/symptoms of thrombosis (i.e., color change, pain, swelling, warmth of area, shortness of breath, weakness, severe headache, chest pain, dizziness, TIA, stroke, etc.)
12. Assess and address potential upcoming procedure or surgery
13. Assess continued need for anticoagulation medication, appropriate dosing, appropriate duration of therapy, laboratory testing
14. Adjust anticoagulation medication dose as needed
15. Potential side effects of medication
16. Consult with the referring provider/LIP, anticoagulation medical director If LFTs are > upper limit of normal for next steps.

ATTACHMENT 1D: EDUCATION SESSION

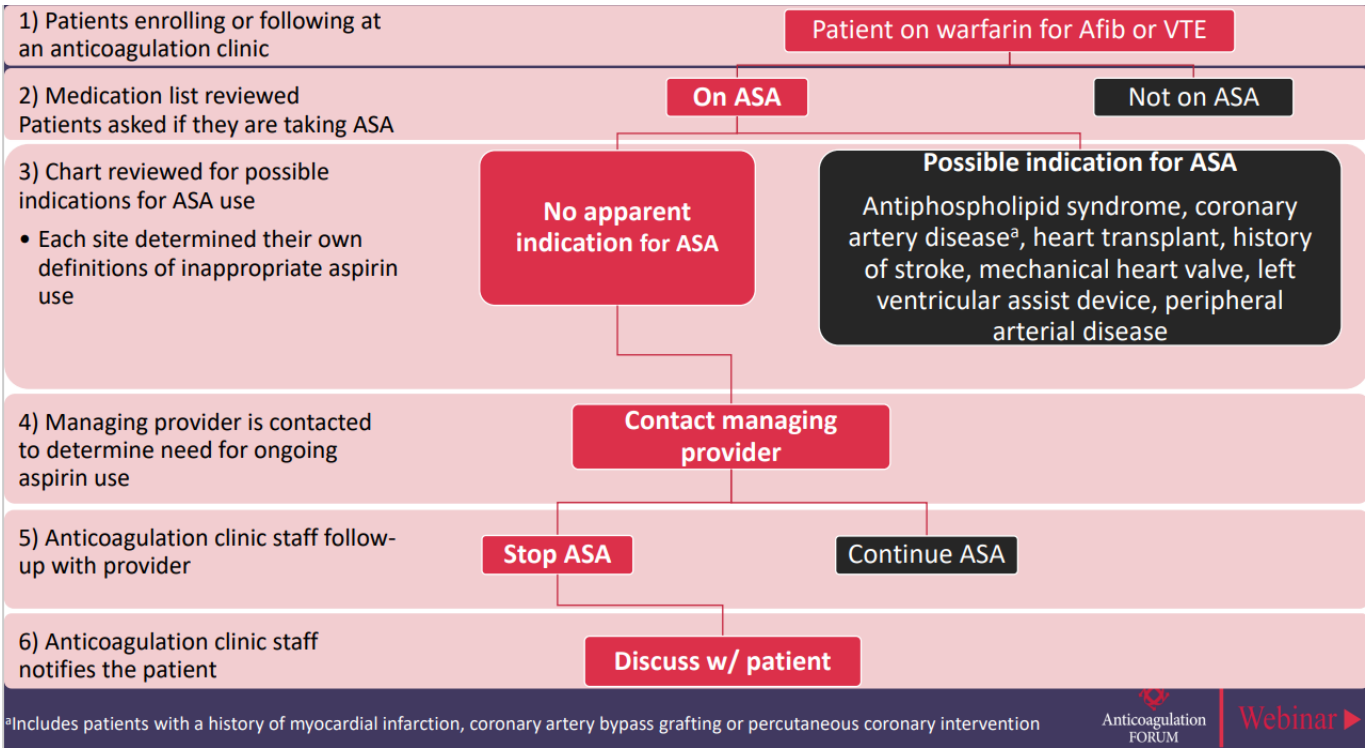
1. An adequate patient education session is an essential process for ensuring safe and effective use of anticoagulation therapy
    a. Each patient education session and the patient's comprehension of the education session will be documented in the patient's medical record.
    b. Patients will be offered and scheduled for at least one 60-minute anticoagulation education visit to occur at the earliest opportunity. Verbal, written, and audio-visual patient information materials will be individualized and available for each patient.
    c. The education process will begin with a formal session involving the patient and any care takers or family members that wish to participate. The process of patient education will be continuous and reinforced at every patient encounter.
    d. The education will focus on the risk and benefits of anticoagulation therapy, adherence, adverse events, when to contact the clinic or referring provider, thromboembolic disorders, and safe medication practices.
    e. Information regarding the clinic's design, working hours, and procedures will also be discussed.
2. Patients will receive education on prescribed anticoagulant medication
3. Patients may elect to refuse the educational session as well as repeat it at any time during their care. Refusal will require the patient to fill out the Anticoagulation Education Waiver Form HCH2430 to be documented in the patient's medical record
4. Topics introduced during the educational session are, but are not limited to the following:
    a. Name, strength, dose, and description of medication
    b. Administration times and method of administration
    c. Indication and mechanism of action of medication
    d. Expected length of therapy
    e. Side effects
    f. What to do in the event of a missed dose
    g. Understanding of disease state
    h. Potential for change in dose
    i. Avoidance of excessive alcohol
    j. Importance of keeping this medication safely away from children/storage
    k. Importance of MedicAlert bracelets
    l. Potential drug-drug and drug-food interactions
    m. Signs and symptoms of bleeding and thrombosis
    n. Procedure if bleeding/thrombosis occur
    o. Travel/Physical activity
    p. Risk of pregnancy
    q. Importance of laboratory monitoring of therapy
    r. Importance of compliance with treatment regimen (including medication dose and schedule) and follow-up visits
    s. Use of medication containers and compliance aids
    t. Importance of notifying Anticoagulation clinic care specialist when changes occur to medication regimen, diet, or health status
    u. Importance of notifying Anticoagulation clinic care specialist about planned medical and dental procedures
    v. Bridging if applicable

ATTACHMENT 1E: INDICATION FOR CONCOMITANT ASPIRIN/ANTIPLATELET & ANTICOAGULANT USE

Indications for concomitant aspirin and warfarin use:

Combination of warfarin and aspirin is used primarily for secondary stroke prevention in patients with Afib who have concomitant coronary artery disease or have had an acute ischemic event. It can also be used in patients with mechanical heart valves or occasionally stroke/TIA patients who are deemed to be at high risk for recurrent events or for patients who have undergone revascularization during the last year.

Deprescribing aspirin:



Indication for concomitant use of an anticoagulant and antiplatelet:

Combined use of anticoagulant and antiplatelet medications is common for patients with comorbid cardiovascular conditions, including CAD, AF, and VTE. The most common clinical indication for triple therapy (DAPT + anticoagulant) is patients with Afib who have acute coronary syndrome or who have undergone PCI with stent insertion[2]. Low thrombotic and high bleeding risk patients, as well as high-risk patients for both thrombosis and bleeding, should only continue double therapy for six months post-PCI.

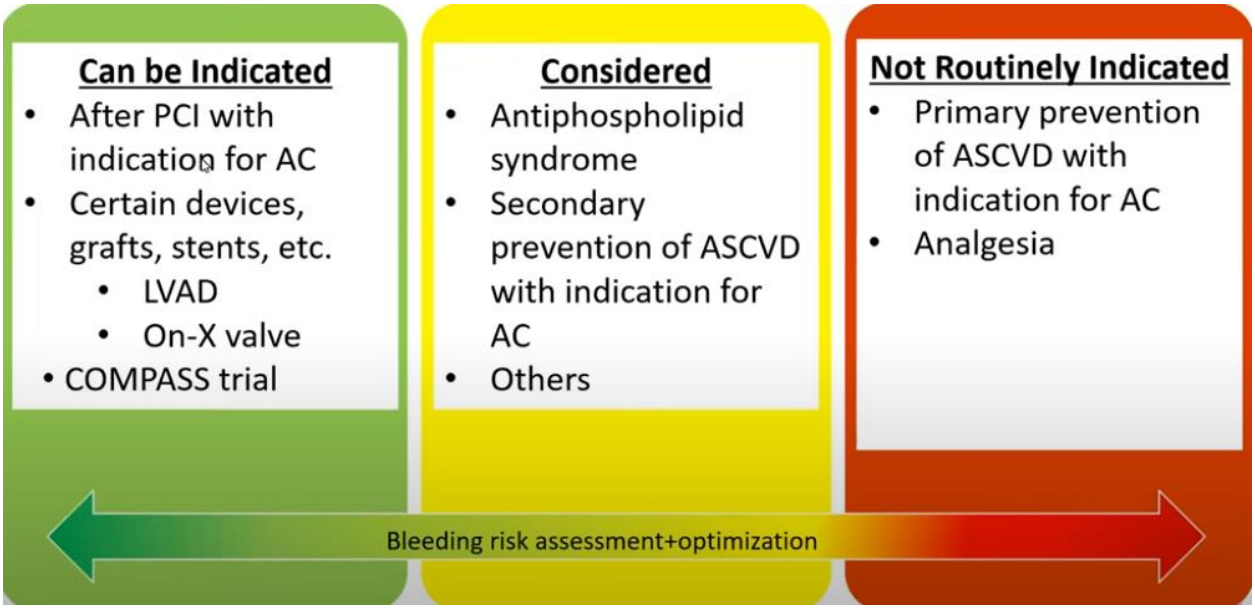
Combination therapy can also be broken down into 3 buckets when considering whether to initiate it or not: patients who will experience net benefit, equivocal, or net harm. Net benefit patients are at high thrombotic risk and low bleed risk, or very high thrombotic risk and any bleed risk. Equivocal patients are those with moderate thrombotic

risk and low bleed risk, or high thrombotic risk with a moderate to high bleed risk. Net harm patients are those with low to moderate thrombotic risk and high bleed risk, or standard bleeding risk with a low to moderate thrombotic risk.

Aspirin and anticoagulation can also be considered in:

1. Mechanical heart valves
2. Acute coronary syndromes with indication for anticoagulation
3. Some cardiac devices
    a. Left ventricular assist devices.
4. Others

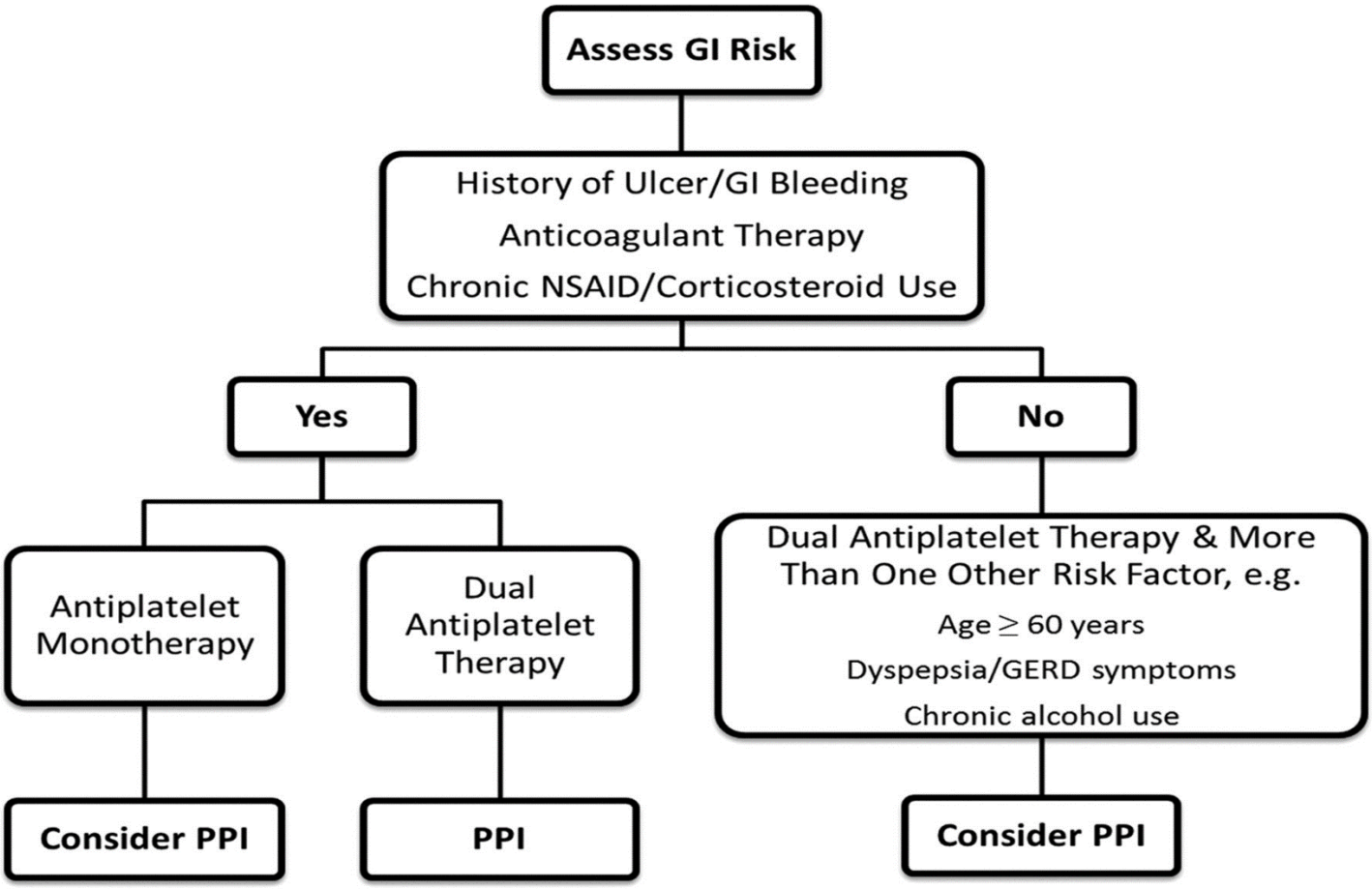
Combining anticoagulation and antiplatelet therapy:



ATTACHMENT 1F: INDICATION/DURATION FOR GI PROTECTION FOR PATIENTS ON ANTIPLATELET/ASA

Indication/duration for protective PPI with an antiplatelet:

West Essex Clinical Commissioning Group:



The PPI should be stopped when the anticoagulant is stopped. You can review and reassess its use at a later date. PPIs have been considered safe for at least 3 years of chronic use but should not be used indefinitely.

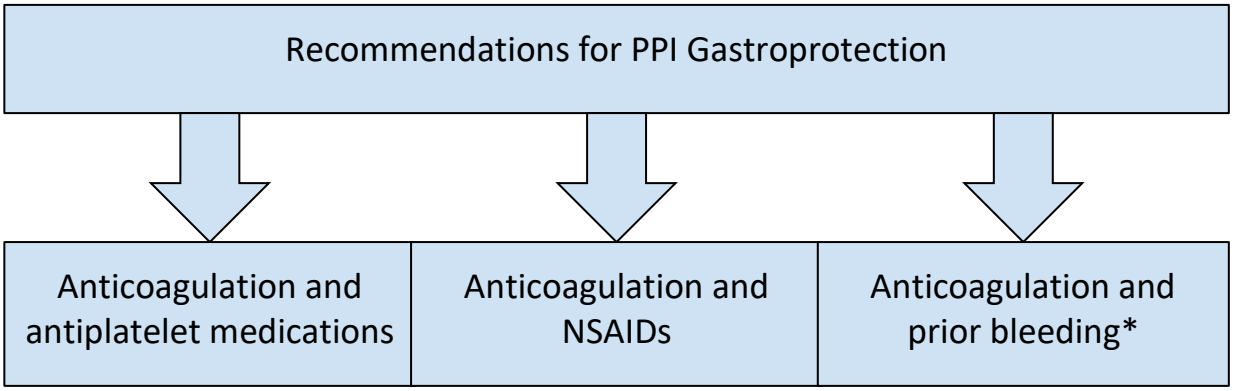
Long term use of PPIs can have adverse effects such as:

- Calcium and magnesium malabsorption
- Vitamin B_{12} deficiency
- *Clostridium difficile* associated disease
- Community acquired pneumonia.
- Increased risk of dementia
- Decreased bone mineral density/osteoporosis
- Increased risk for chronic kidney disease

PPIs vs H2RAs:

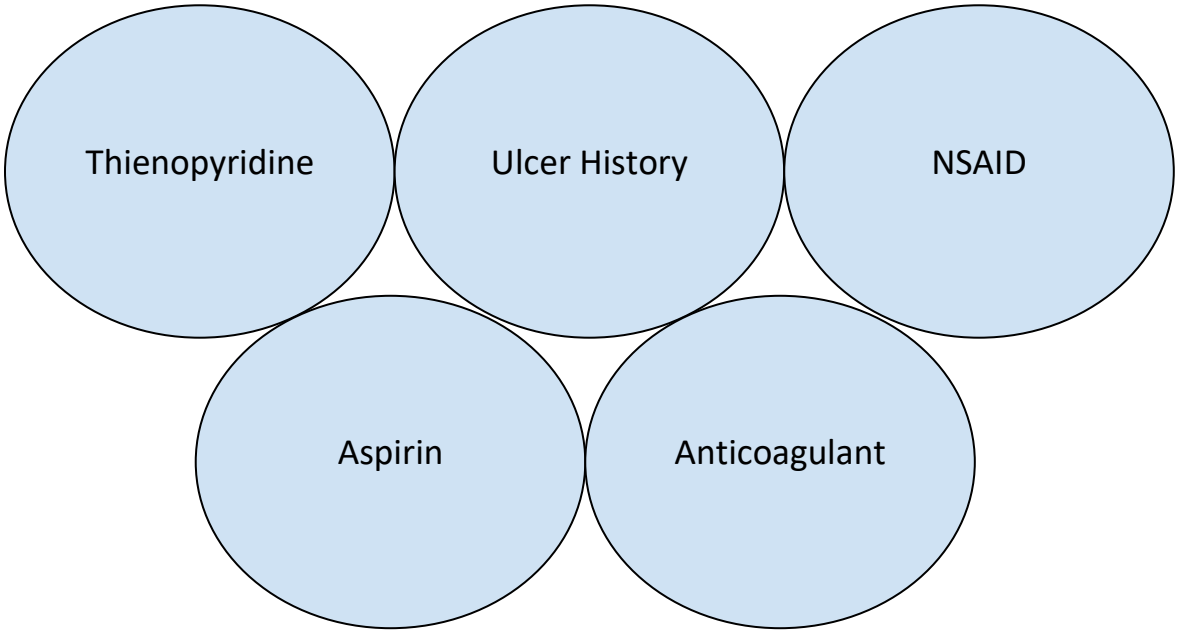
PPIs were superior to H2RAs for reducing the risk of GI complications in patients on DAPT, specifically with clopidogrel. Overall, use of a PPI or histamine H2 receptor antagonist (H2RA) reduces the risk of upper GI bleeding compared with no therapy.

Recommendations for PPI gastroprotection:



*Confirm appropriate testing and treatment for H. pylori if positive

Gastroprotection if two or more:



ATTACHMENT 2A: WARFARIN DOSING STRATEGY

A. Initiation of Warfarin

1. Initiate warfarin therapy at 5 mg by mouth everyday x 2 doses for most patients except as indicated below:
2. Initiate warfarin with a lower dose of 2.5 mg by mouth everyday x 2 doses in the following patients:
    a. Elderly patients > 70 years old
    b. Low body weight patients < 70 kg
    c. Elevated baseline INR > 1.3
    d. Patients with impaired nutritional status (low albumin)/poor po intake (npo>3days)
    e. Patients with hepatic/renal insufficiency (abnormal LFTs, elevated Scr)
    f. Previously documented sensitivity to warfarin
    g. Congestive Heart Failure EF <30
    h. Concurrent drug-drug interactions (ie. Fluconazole, itraconazole, ketoconazole, cimetidine, erythromycin, metronidazole, amiodarone, propafenone, quinolones, sulfamethoxazole-trimethoprim, tamoxifen, etc.)
    i. Asian population
    j. Clinical hyperthyroidism
    k. High bleeding risk
    l. HCT <30
    m. History of falls
3. Initiate warfarin with a higher dose of 7.5mg by mouth everyday x 2 doses in the following patients:
    a. Weight> 85kg
    b. African American
    c. Clinical hypothyroidism
    d. Concomitant drug therapy (i.e., Phenobarbital, rifampin, rifabutin, vitamin k)

***Note**: Regardless of warfarin initiation dose chosen, in the setting of acute anticoagulation (e.g., acute VTE) overlap with a rapid acting anticoagulant (i.e., UFH, LMWH, or fondaparinux) for at least 5* days and until the INR is ≥ 2.0 for 24hrs

B. Days 2-6 of Warfarin Therapy

1. IF <0.2 increase in INR in 1 day, then increase individual dose by 25-50%
2. IF 0.2-0.3 increase in INR in 1 day, give same dose
3. IF >0.3, but <1 increase in INR in 1 day, decrease individual dose by 25-75%
4. Consider holding warfarin if ≥1 increase in INR in 1 day or >2 increase in INR in 2 days even if INR does not meet criteria for hold

C. Key Points:

a. After day 6, calculate the weekly dose and determine further daily and/or weekly dosages using the Warfarin Dosing Nomogram for Maintenance Therapy (see **Attachment 2B**)
b. This protocol allows for consideration of a 30-50% dose reduction or increase when the patient has any of the following risk factors:
    - Initiation or discontinuation of a medication with significant drug interaction with warfarin (e.g., amiodarone, fluconazole, sulfamethoxazole/trimethoprim, ciprofloxacin, metronidazole)
    - Acute exacerbation of congestive heart failure
    - Acute renal failure
    - Severe heart failure (LVEF<30% and/or biventricular failure)
    - Severe chronic obstructive airway disease (steroid dependent)

D. Special Situations - Treatment of Subtherapeutic INR in Patient with High Thrombotic Risk

1. Definitions:
   a. Subtherapeutic INR is defined as INR < 1.5 (for patients with INR goal range 2 to 3) or INR < 2 (for patients with INR goal range 2.5 to 3.5)
   b. Patients with "high" risk for thromboembolism:[26]
      - Mechanical heart valve
        - Mitral mechanical valve
        - Aortic mechanical valve with caged-ball or tilting disc
        - Any mechanical valve with recent stroke or TIA (within 3 months)
      - Atrial fibrillation
        - CHA_2DS_2 VASc score ≥7
        - Recent stroke or TIA (within 3 months)
        - Rheumatic valvular heart disease
      - VTE
        - Recent VTE (within 3 month)
        - Severe thrombophilia (e.g., Protein C or S deficiency, antithrombin deficiency, APAS, or multiple thrombophilias)
2. Patients at high risk for thromboembolism with an INR range 2-3 presents with an INR <1.5, or a patient with an INR range 2.5-3.5 presents with an INR <2.0:
   a. Evaluate patient for new, sudden onset signs or symptoms of anticoagulation:
      - Stroke –weakness on one side of the body, difficultly speaking, vision changes, headache, dizziness, syncope
      - Pulmonary embolism – difficulty or painful breathing, chest pain, back pain, shoulder pain, dyspnea, hemoptysis, upper abdominal pain, syncope
      - Deep vein thrombosis – sharp pains in leg (or arm), skin discoloration, edema, tenderness, skin warm to the touch or erythematous
      - If strong clinical suspicion of thromboembolism, contact the referring provider, or if unavailable, refer patient to the ER for evaluation and notify Anticoagulation Service Medical Director.
   b. Evaluate lab result for possible error and adjust warfarin dose as appropriate (see **Attachment 2B:** Warfarin Dosing Nomogram for Maintenance Therapy).
   c. Evaluate patient for LMWH, fondaparinux, or heparin SC bridge therapy or if contraindicated, other appropriate antithrombotic therapy (see **Attachment 6F:** Perioperative Injectable Anticoagulation Guideline).
      a. Evaluate renal function—calculate creatinine clearance for patient using a serum creatinine within the past 6 months.
      b. Evaluate patient's ability to pay for LMWH, fondaparinux, heparin SC and obtain any necessary insurance authorization or consider unmonitored SC UFH.
      c. Evaluate the patient's CBC with platelets to rule out contraindications to LMWH/ fondaparinux/heparin SC therapy.
      d. Evaluate patient's or caregiver's ability to administer injections and provide education if needed.
      e. Contact referring provider to call in prescription for LMWH/fondaparinux/heparin SC to the patient's pharmacy and ensure the LMWH/fondaparinux/heparin SC is in stock at the pharmacy.
         - Document action taken in the patient's electronic medical record (EMR).
         - Recheck INR every 2-4 days until therapeutic and continue LMWH/fondaparinux/heparin SC therapy until INR in therapeutic range for two consecutive readings.
         - Contact Anticoagulation Service Medical Director or referring provider as needed for

consultation.

ATTACHMENT 2B: WARFARIN DOSING NOMOGRAM FOR MAINTENANCE THERAPY

Warfarin Dosing Nomogram for Maintenance Therapy		
Target INR 2 - 3	**Dosing Adjustment**	**Target INR 2.5-3.5**
INR< 1.7	• Consider 1 booster dose of 1.5-2 times daily maintenance dose • Consider resumption of prior maintenance dose if factor causing decreased INR is transient, (i.e., missed warfarin doses) • If dosage adjustment is needed, increase maintenance dose by 5-15%	INR < 2.2
INR 1.8-1.9	• No dosage adjustment may be necessary if the last two INRs were in range, if there is no clear explanation for the INR to be out of range, and if in the judgment of the Anticoagulation Specialist, the INR does not represent an increased risk of thromboembolism for the patient • Consider 1 booster dose of 1.5-2 times daily maintenance dose • Consider resumption of prior maintenance dose if factor causing decreased INR is transient, (i.e., missed warfarin doses) • If dosage adjustment is needed, increase maintenance dose by 5-10%	INR 2.3-2.4
INR 2-3	• Desired range - no dosing adjustment needed. • Dose may be adjusted as determined by Anticoagulation Specialist (i.e., drug interactions, labile INRs, etc.)	INR 2.5-3.5
INR 3.1-3.2	• No dosage adjustment may be necessary if the last two INRs were in range, if there is no clear explanation for the INR to be out of range, and if in the judgment of the Anticoagulation Specialist, the INR does not represent an increased risk of hemorrhage for the patient • Consider continuation of prior maintenance dose if reason for elevated INR is transient (i.e., acute alcohol ingestion) • If a dosage adjustment is needed, decrease maintenance dose by 5-10%	INR 3.6-3.7
INR 3.3-3.4	• Consider holding ½ to 1 dose (Held doses shouldn't be included in weekly dose adjustment) • Consider resumption of prior maintenance dose if reason for elevated INR is transient (i.e., acute alcohol ingestion) • If a dosage adjustment is needed, decrease maintenance dose by 5-10%	INR 3.8-3.9
INR 3.5-4.0	• Consider holding 1 dose (Held doses shouldn't be included in weekly dose adjustment) • Consider resumption of prior maintenance dose if reason for elevated INR is transient (i.e., acute alcohol ingestion) • If a dosage adjustment is needed, decrease maintenance dose by 5-15%	INR 4.0-4.4
INR 4.1-4.9	• Hold 1-2 doses (Held doses shouldn't be included in weekly dose adjustment) • Consider resumption of prior maintenance dose if reason for elevated INR is transient (i.e., acute alcohol ingestion) • If a dosage adjustment is needed, decrease maintenance dose by 10-15% • Venous INR draw is warranted for any finger stick INR>4	INR 4.5-4.9

ATTACHMENT 2B: WARFARIN DOSING NOMOGRAM FOR MAINTENANCE THERAPY CONTINUED

Warfarin Maintenance Dosing Protocol with INR Goal of 1.5 – 2.0**

Warfarin Dosing Nomogram for Maintenance Therapy	
Target INR 1.5 – 2	**Dosing Adjustment**
INR ≤ 1.2	• Consider 1 booster dose of 1.5-2 times daily maintenance dose • Consider resumption of prior maintenance dose if factor causing decreased INR is transient, (i.e., missed warfarin doses) • If dosage adjustment is needed, increase maintenance dose by 5-15%
INR 1.3 – 1.4	• No dosage adjustment may be necessary if the last two INRs were in range, if there is no clear explanation for the INR to be out of range, and if in the judgment of the Anticoagulation Specialist, the INR does not represent an increased risk of thromboembolism for the patient • Consider 1 booster dose of 1.5-2 times daily maintenance dose • Consider resumption of prior maintenance dose if factor causing decreased INR is transient, (i.e., missed warfarin doses) • If dosage adjustment is needed, increase maintenance dose by 5-10%
INR 1.5 – 2	• Desired range - no dosing adjustment needed. • Dose may be adjusted as determined by Anticoagulation Specialist (i.e., drug interactions, labile INRs, etc.)
INR 2.1 – 2.2	• No dosage adjustment may be necessary if the last two INRs were in range, if there is no clear explanation for the INR to be out of range, and if in the judgment of the Anticoagulation Specialist, the INR does not represent an increased risk of hemorrhage for the patient • Consider continuation of prior maintenance dose if reason for elevated INR is transient (i.e., acute alcohol ingestion) • If a dosage adjustment is needed, decrease maintenance dose by 5-10%
INR 2.3 – 2.4	• Consider holding ½ to 1 dose (Held doses shouldn't be included in weekly dose adjustment) • Consider resumption of prior maintenance dose if reason for elevated INR is transient (i.e., acute alcohol ingestion) • If a dosage adjustment is needed, decrease maintenance dose by 5-10%
INR 2.5 – 3.0	• Consider holding 1 dose (Held doses shouldn't be included in weekly dose adjustment) • Consider resumption of prior maintenance dose if reason for elevated INR is transient (i.e., acute alcohol ingestion) • If a dosage adjustment is needed, decrease maintenance dose by 5-15%
INR 3.1 – 4.0	• Hold 1-2 doses (Held doses shouldn't be included in weekly dose adjustment) • Consider resumption of prior maintenance dose if reason for elevated INR is transient (i.e., acute alcohol ingestion) • If a dosage adjustment is needed, decrease maintenance dose by 10-15%
INR 4.1- 4.9	• Hold 1-2 doses (Held doses shouldn't be included in weekly dose adjustment) • Consider resumption of prior maintenance dose if reason for elevated INR is transient (i.e., acute alcohol ingestion) • If a dosage adjustment is needed, decrease maintenance dose by 10-15% • Venous INR draw is warranted for any finger stick INR>4

*on-X valve-INR goal 2-3 for 1st 3 months after valve replacement then decrease INR goal to 1.5–2.5 with concomitant aspirin.

ATTACHMENT 2C: FREQUENCY OF WARFARIN THERAPY MONITORING

INR Monitoring for Warfarin Maintenance Therapy	
Significant Dose alteration in patient with INR substantially outside of target INR range	2-5 days
Modest dose change today	1-3 weeks
Dose change < 2 weeks ago	2-4 weeks
Routine follow-up of medically stable patients who have had at least two consecutive INRs, separated by at least two weeks, in therapeutic range	Every 4 weeks
Follow up of reliable, medically stable patients who have had therapeutic INRs maintained on the same warfarin dose for the past 6months and have been interviewed every 4 weeks	Every 12 weeks
Routine follow-up of medically unstable or unreliable patients and those who have not had consecutive therapeutic INRs	Every 1-2 weeks

ATTACHMENT 2D: OPTIMAL THERAPEUTIC RANGE OF WARFARIN THERAPY

Indication	Target INR
Deep Vein Thrombosis (DVT)/Pulmonary Embolism (PE)	
Provoked	2.5 (2.0-3.0)
Unprovoked	2.5 (2.0-3.0)
Isolated distal DVT of the leg -with severe symptoms or risk factors for extension -with extension within the distal veins -with extension to the promial veins	2.5 (2.0-3.0)
Subsegmental PE (no involvement of proximal pulmonary arteries and no proximal DVT in the legs) -with high risk for recurrent VTE	2.5 (2.0-3.0)
Asymptomatic PE	2.5 (2.0-3.0)
Cancer	2.5 (2.0-3.0)
Upper Extremity DVT w/ unremoved central venous catheter	2.5 (2.0-3.0)
APAS or 2 or more thrombophilic conditions	2.5 (2.0-3.0)
Recurrent DVT/PE	2.5 (2.0-3.0)
Atrial Fibrillation (AF) or Atrial Flutter (AFL)	
CHA_2DS_2-VASc Score Males = 0 Females = 1 (Low risk of Stroke)	No therapy
CHA_2DS_2-VASc Score Males = 1 Females = 2	2.5 (2.0-3.0)
CHA_2DS_2-VASc Score Males ≥2 Females ≥3 (Moderate to Severe Risk of Stroke)	2.5 (2.0-3.0)
Mitral Stenosis	2.5 (2.0-3.0)
Pre-Cardioversion (AF or AFL) >48 hours or unknown duration	2.5 (2.0-3.0)
Post- Cardioversion	2.5 (2.0-3.0)
Valve Replacement Bioprosthetic	
Mitral	2.5 (2.0-3.0)
Valve Replacement Mechanical	
Aortic	2.5 (2.0-3.0)
Bileaflet/Medtronic Hall tilting disk	2.5 (2.0-3.0)
Ball and cage	3.0 (2.5-3.5)
With added risk factors (hypercoagulable state, LV dysfunction, prior thromboembolism or older generation prosthesis)	3.0 (2.5-3.5)
On-X mechanical valve	2.5(2.0-3.0) for 1st 3 months then (1.5-2.0)
Mitral	3.0 (2.5-3.5)
Bileaflet	3.0 (2.5-3.5)
Tilting disk	3.0 (2.5-3.5)
Ball and cage	3.0 (2.5-3.5)
Orthopedic Thromboprophylaxis	
Hip Fracture Surgery (HFS) or Total Hip Arthroplasty (THA)	2.5 (2.0-3.0)
Total Knee Arthoplasty (TKA)	2.5 (2.0-3.0)
Myocardial Infarction (MI)	
Anterior MI and LV thrombus or at high risk for LV thrombus (ejection fraction <40%, anteroapical wall motion abnormality)	2.5 (2.0-3.0)
Anterior MI and LV thrombus or at high risk for LV thrombus (ejection fraction <40%, anteroapical wall motion abnormality) undergo bare-metal stent placement	2.5 (2.0-3.0)
Anterior MI and LV thrombus or at high risk for LV thrombus (ejection fraction <40%, anteroapical wall motion abnormality) undergo drug-eluting stent	2.5 (2.0-3.0)
Systolic left ventricular dysfunction with identified acute LV	2.5 (2.0-3.0)
Valvular Disease	
Rheumatic mitral valve disease (w/ left atrial diameter >55mm, left atrial thrombus, afib or previous systemic embolism)	2.5 (2.0-3.0)
Rheumatic mitral valve undergoing percutaneous mitral balloon valvotomy (PMBV) with preprocedural TEE showing left atrial thrombus	3.0 (2.5-3.5)
Cryptogenic Stroke and Patient Forman Ovale (PFO)	
With recurrent event despite ASA therapy	2.5 (2.0-3.0)
With evidence of DVT	2.5 (2.0-3.0)

ATTACHMENT 3A: DIRECT ORAL ANTICOAGULANT GUIDELINE

	NVAF	VTE Treatment and Secondary Prevention	VTE prophylaxis in THR/TKR
Apixaban	▪ Including post-percutaneous coronary intervention with stent placement ▪ 5 mg twice/day ▪ If 2 of the following 3 criteria are present (age≥ 80 yrs., weight ≤ 60 kg, Scr ≥ 1.5 mg/dl): Reduce dose to 2.5 mg twice/day	▪ 10 mg twice/day for 7 days, then 5 mg twice daily for duration of treatment ▪ Reduce dose to 2.5 mg twice/day after 6 months of treatment ▪ Concomitant use of strong dual inhibitors of P-gp and CYP3A4: Reduce dose by 50% if taking 10-mg or 5-mg dose. Avoid use if taking 2.5-mg dose ▪ MAY be used in patients with active cancer (e.g., metastatic disease or receiving chemotherapy)	▪ 2.5 mg twice daily beginning 12 to 24 hours postoperatively ▪ No dosage adjustment is recommended by the manufacturer for any degree of reduced kidney function.
Edoxaban	▪ Including post-percutaneous coronary intervention with stent placement ▪ 60 mg/day ▪ CrCl > 95 ml/min: Avoid use ▪ CrCl >50 to 95 mL/minute: No dosage adjustment necessary. ▪ CrCl 15 to 50 mL/minute: Oral: 30 mg once daily. ▪ CrCl <15 mL/minute: Avoid use ▪ Hemodialysis, intermittent (thrice weekly) or Peritoneal dialysis: Avoid ▪ Avoid concurrent use with P-gp inducers (e.g., Rifampin)	▪ After at least 5 days of initial therapy with a parenteral anticoagulant ▪ Patient weight >60 kg: 60 mg once daily. ▪ Patient weight ≤60 kg: 30 mg once daily. ▪ CrCl >50 mL/minute: No dosage adjustment necessary. ▪ Note: Some experts recommend not using edoxaban for VTE treatment if CrCl is >95 mL/min although specific data regarding increased risk of recurrent VTE is lacking (Hull 2018). ▪ CrCl 15 to 50 mL/minute or P-gp inhibitors*: Oral: 30 mg once daily ▪ CrCl <15 mL/minute: Use is not recommended ▪ Hemodialysis, intermittent (thrice weekly) or Peritoneal dialysis: Avoid use ▪ MAY be used in patients with active cancer (e.g., metastatic disease or receiving chemotherapy); however, avoid use in patients with upper GI tract cancers due to increased bleeding risk	
Dabigatran[a]	• 150 mg twice daily • CrCl >30 mL/minute: No dosage adjustment necessary. • CrCl 15 to ≤30 mL/minute: Oral capsule: 75 mg twice daily. • CrCl <15 mL/minute: Avoid use • Hemodialysis, intermittent (thrice weekly) or Peritoneal dialysis: Avoid	• 150 twice daily after transitioning from UFH/LMWH after 5 days • CrCl ≤ 30 ml/min or on dialysis: Avoid use, recommended switching to different anticoagulant • CrCl < 50 ml/min with use of P-gp inhibitors*: Avoid co-administration, recommend switching to different anticoagulant	Total Hip Arthroplasty only ▪ Initial: 110 mg given 1 to 4 hours after surgery and establishment of hemostasis OR: when dabigatran is not initiated on day of surgery, give an initial dose of 220 mg after hemostasis has been achieved; then continue maintenance dose of 220 mg once daily ▪ CrCl ≤ 30 ml/min or on dialysis: Avoid use ▪ CrCl < 50 ml/min with use of strong P-gp inhibitors*: Avoid co-administration, recommend switching to different anticoagulant

a. Bleeding risk increases with age. Use extreme caution or consider other treatments options in patient's ≥75 years. Avoid use in geriatric patients ≥ 65yrs with CrCl<30 ml/min

*P-gp inhibitors: amiodarone, clarithromycin, cobicistat, cyclosporine, dronedarone, erythromycin, itraconazole, ketoconazole, lapatinib, lopinavir and ritonavir, quinidine, ranolazine, saquinavir and ritonavir, verapamil

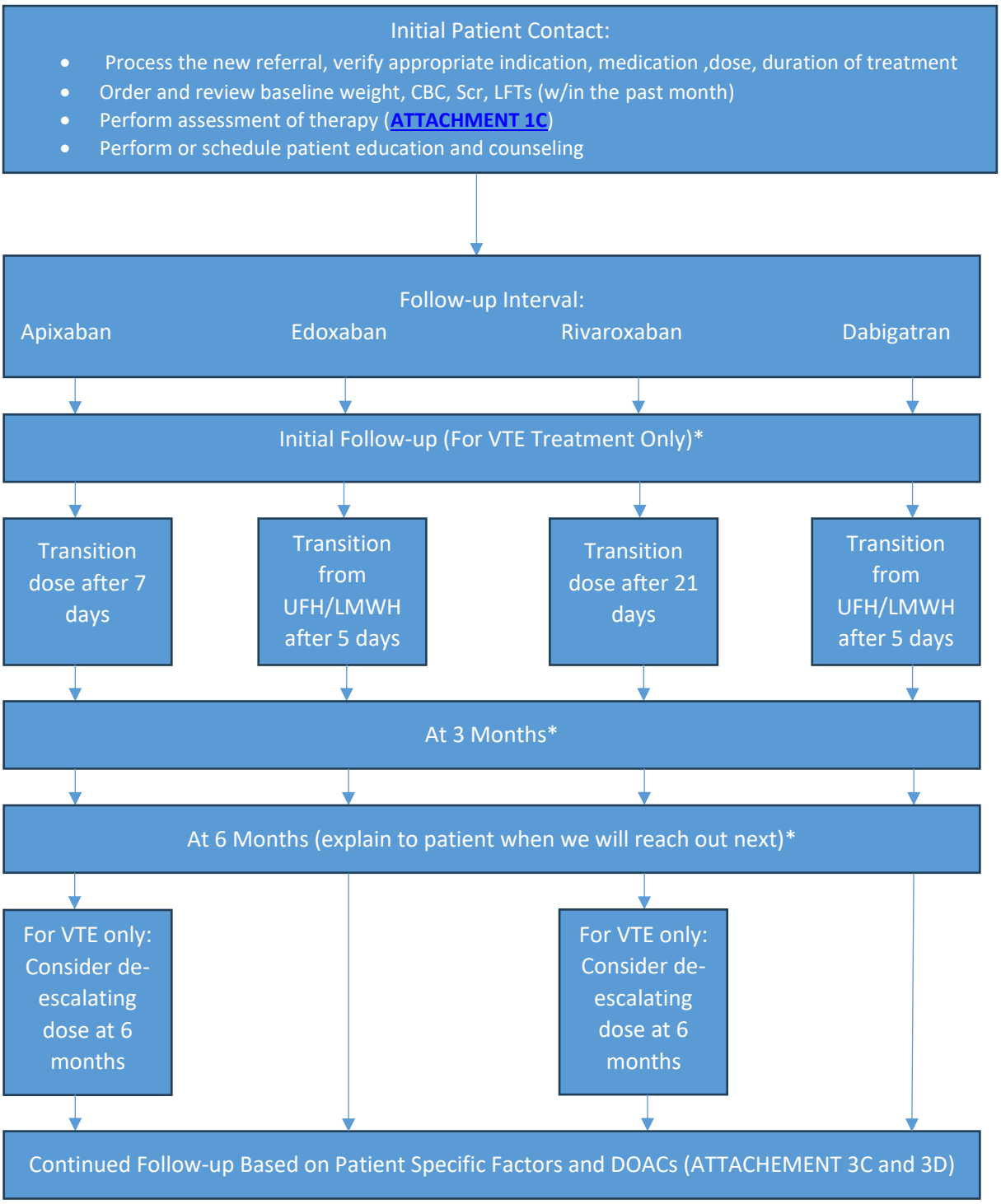
	NVAF	VTE Treatment and Secondary Prevention	VTE prophylaxis in THR/TKR
Rivaroxaban	▪ 20 mg/day with evening meal ▪ CrCl 15–50 ml/min: 15 mg/day with evening meal ▪ CrCl < 15 ml/min: Avoid use; apixaban or warfarin is preferred ▪ Concomitant use of strong dual inhibitors of P-gp and CYP3A4: Avoid use	▪ 15 mg twice/day for 21 days, then 20 mg/day with food for remaining duration of treatment ▪ Reduce dose to 10mg/day after 6 months of treatment ▪ CrCl < 30 ml/min: Avoid use, recommend switch to another anticoagulant ▪ Concomitant use of strong dual inhibitors of P-gp and CYP3A4: Avoid use	• 10 mg once daily initiated ≥6 to 10 hours after surgery or when hemostasis established ▪ CrCl ≥30 mL/minute: No dosage adjustment necessary. ▪ CrCl <30 mL/minute: Avoid use. ▪ Hemodialysis, intermittent (thrice weekly) or Peritoneal dialysis: Avoid use Patients at low risk of VTE who are undergoing elective, unilateral THA or TKA, an alternative approach to prophylaxis is to give rivaroxaban 10 mg once daily for 5 days then switch to aspirin for an additional 30 days for THA or 9 days for TKA
	Coronary artery disease, stable	**Peripheral artery disease, stable**	**Superficial venous thrombosis (SVT) of lower limb at increased risk of clot progression to DVT or PE**
Rivaroxaban	▪ 2.5 mg twice daily; administer in combination with daily low dose aspirin. ▪ CrCl ≥15 mL/minute: No dosage adjustment necessary; use with caution in severe impairment ▪ CrCl <15 mL/minute: Avoid use. ▪ Hemodialysis, intermittent (thrice weekly) or Peritoneal dialysis: Avoid use ▪ Note: May consider for use in patients who are at high risk of cardiovascular events and low risk of bleeding if therapeutic anticoagulation is not required for another indication	▪ 2.5 mg twice daily; administer in combination with daily low dose aspirin. ▪ CrCl ≥15 mL/minute: No dosage adjustment necessary; use with caution in severe impairment ▪ CrCl <15 mL/minute: Avoid use. Hemodialysis, intermittent (thrice weekly) or Peritoneal dialysis: Avoid use ▪ Note: May consider for use in patients who are at low risk of bleeding and at high risk of major thrombotic vascular events, including after recent lower extremity revascularization. When starting after lower extremity revascularization, initiate when hemostasis is achieved. Do not use if dual antiplatelet therapy is planned or therapeutic anticoagulation is required for another indication	• Rivaroxaban 10mg daily (alternative to fondaparinux)

DOACS are generally NOT recommended in the following groups of patients:

1. Any patient with a mechanical heart valve (contraindicated) or Atrial fibrillation with rheumatic moderate to severe mitral stenosis
2. Strong thrombophilias (Antiphospholipid antibody syndrome, protein C deficiency, protein S deficiency, antithrombin deficiency)
3. Cancer patients with gastrointestinal/genitourinary cancer types (increased risk of GI bleeding)
4. End-stage kidney disease on hemodialysis or CrCl < 15 mL/min except apixaban
5. Morbidly obese (weight > 120kg, BMI > 40 kg/m^2 due to lack of clinical data in this population)
6. History of gastric bypass (especially Roux En Y)
7. Child-Pugh Class C hepatic impairment

ATTACHMENT 3B: DIRECT ORAL ANTICOAGULANT ACTIVE MANAGEMENT TIMELINE

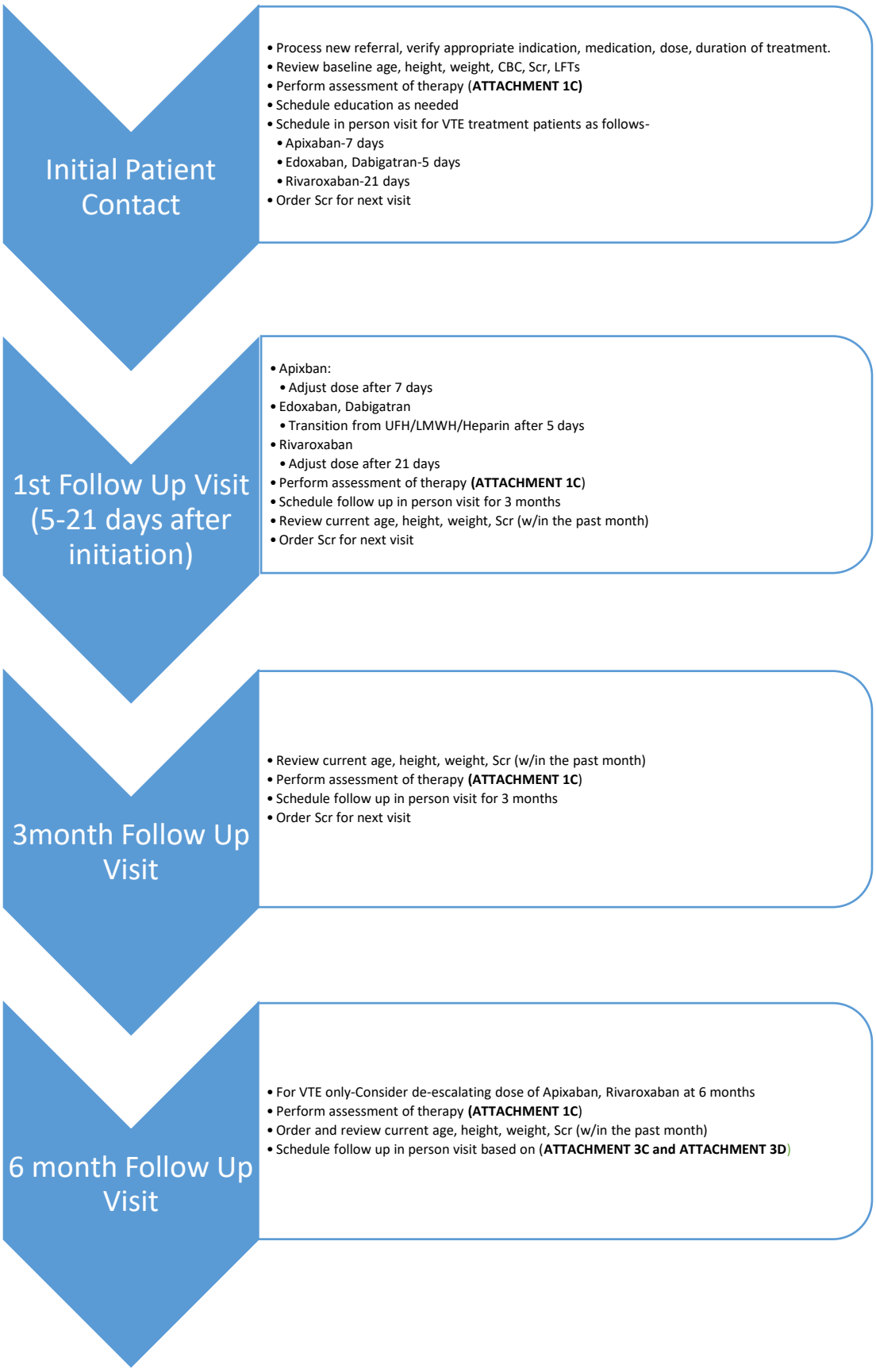
(First 6months of enrollment in Anticoagulation Service)



*At all subsequent visits, (active management being the first 6 months of enrollment at AMS) the anticoagulation specialist will:

- Order and review pertinent labs
- Perform assessment of therapy (**ATTACHMENT 1C**)
- Adjust DOAC dose as needed
- Schedule follow up telephone/video or in person visit based on the patient characteristics listed.
- Consult with the referring provider/LIP, anticoagulation medical director If LFTs are > upper limit of normal for next steps.

ATTACHMENT 3B: DIRECT ORAL ANTICOAGULANT ACTIVE MANAGEMENT TIMELINE



ATTACHMENT 3C: DIRECT ORAL ANTICOAGULANT-PATIENT STRATIFICATION TO ACTIVE SURVEILLANCE

After patients have been followed in the clinic for 6 months, the anticoagulation specialist will determine if patient requires active surveillance based on the criteria below. Patients not requiring active surveillance will move into maintenance mode.

DOAC	Indication	Required active surveillance	Reason for active surveillance
Apixaban	Nonvalvular atrial fibrillation	On apixaban 5mg twice daily and has at least 1 of the following characteristics: • Age>80years • Weight≤60kg • Cr≥1.5mg/dl	Assess for meeting 2nd criteria and needing a dose adjustment to apixaban 2.5mg twice daily
	VTE	N/A: no dose adjustments required	N/A
	Extended duration VTE	N/A: no dose adjustments required	N/A
Rivaroxaban	Nonvalvular atrial fibrillation	On rivaroxaban 20mg once daily and CrCl≤60ml/min or fluctuating	Assess for drop in CrCl to ≤50ml/min requiring dose adjustment to rivaroxaban 15mg once daily
	VTE	On rivaroxaban 20mg once daily and CrCl≤30ml/min or fluctuating	Assess for drop in CrCl <15ml/min requiring switch to another anticoagulant (package insert states to avoid use with CrCl<15ml/min)
	Extended duration VTE	On rivaroxaban 10mg once daily and CrCl≤30ml/min or fluctuating	Assess for drop in CrCl <15ml/min requiring switch to another anticoagulant (package insert states to avoid use with CrCl<15ml/min)
	CAD/PAD	N/A: no dose adjustments required	N/A
Edoxaban	Nonvalvular atrial fibrillation	On edoxaban 60mg and CrCl ≤60ml/min or fluctuating Note: edoxaban is contraindicated for NVAF if CrCl>95ml/min	Assess for drop in CrCl≤50ml/min requiring dose adjustment to edoxaban 30mg once daily. If CrCl drops to <15ml/min, consider changing anticoagulant agent.
	VTE	On edoxaban 60mg and any of the following: • CrCl≤60ml/min • Weight≤75kg	Assess for drop in CrCl≤50ml/min or weight ≤60kg requiring dose adjustment to edoxaban 30mg once daily If CrCl drops to <15ml/min, consider changing anticoagulant agent.
Dabigatran	Nonvalvular atrial fibrillation	On dabigatran 150mg twice daily and CrCl≤40ml/min	Assess for drop in CrCl≤30ml/min requiring dose adjustment to dabigatran 75mg twice daily If CrCl drops to <15ml/min or on dialysis, consider changing anticoagulant agent.
		On dabigatran 150mg twice daily and CrCl≤60ml/min with concomitant use of a P-gp inhibitor (dronedarone/ketoconazole)	Assess for drop in CrCl≤50ml/min requiring dose adjustment to dabigatran 75mg twice daily If CrCl drops to <30ml/min while concomitant use of a P-gp inhibitor, consider changing anticoagulant agent.
	VTE	On dabigatran 150mg twice daily and CrCl≤40ml/min	Assess for drop in CrCl≤30ml/min requiring a switch to another anticoagulant (prescribing information recommendation is to avoid use with CrCl<15ml/min)
		On dabigatran 150mg twice daily and CrCl≤60ml/min with concomitant use of a P-gp inhibitor (dronedarone/ketoconazole)	Assess for drop in CrCl≤50ml/min and if requires continued administration of P-gp inhibitor, switch to another anticoagulant.
	Extended duration VTE	Same as above for treatment of VTE	Same as above for treatment of VTE

ATTACHMENT 3D: DIRECT ORAL ANTICOAGULANT ACTIVE SURVEILLANCE/MAINTENANCE MODE TIMELINE

***Note: May consider more frequent follow up with patient after adverse thromboembolic or bleeding events to assess for signs/symptoms of bleeding or clotting, for perioperative management or for all patient's non-adherent with their DOAC medications to ensure improvement in adherence.**

Active Surveillance: For patients with moderate or high risk of requiring a dose adjustment due to DOAC specific manufacturer recommendations, move into active surveillance after 6 months of active management.

Every 3 Months

- Clinic visit with chart review, order labs as needed, obtain age, height, weight, Scr, CrCl to assess for a need for dose change.
- Order creatinine more frequently if fluctuating or near the limit of a dose change requirement
- Obtain, review CBC, LFT yearly
- Perform Assessment of Therapy using ATTACHMENT 1C
- Adjust DOAC dose as needed, and schedule follow up in-clinic visit based on patient characteristics

Yearly Clinic Visit – For chart review as described under Maintenance Mode is also required for these patients

Maintenance Mode: For patients at low risk of requiring a dose adjustment due to DOAC specific manufacturer recommendations, move into maintenance mode after 6 months of active management

Yearly clinic visit with chart review,

- Confirm referring MD still actively managing patient at UConn John Dempsy Hospital
- Ongoing need for anticoagulation
  - Risk of bleeding and thrombosis
- Assess need for prescription renewals (and renewal of prior authorizations) and lab order renewal (if standing orders)
- Assess that yearly labs have been obtained: AST/ALT, Creatinine, CBC
- Assessment of new meds
- Perform Assessment of Therapy using ATTACHMENT 1C

- Provide perioperative management plans
- Provide patient support with education, on-call emergency questions, etc.
- If any changes to the patient's clinical status are noted on the yearly clinical review the patient may be moved from maintenance mode to active surveillance

ATTACHMENT 4: TRANSITION BETWEEN ANTICOAGULANTS

Drug Name	Dabigatran	Rivaroxaban	Apixaban	Edoxaban
Conversion FROM Warfarin	Discontinue warfarin, start dabigatran when INR < 2.	Discontinue warfarin, start rivaroxaban when INR < 3.	Discontinue warfarin, start apixaban when INR < 2	Discontinue warfarin, start Edoxaban when INR < 2.5
Conversion TO Warfarin	Option 1: Discontinue dabigatran, start warfarin and IV anticoagulant bridge when next dabigatran dose due until desired INR reached. Option 2: Overlap dabigatran with warfarin as follows: CrCl >50mL/min: Initiate warfarin 3 days before discontinuation of dabigatran. CrCl 31 to 50mL/min: Initiate warfarin 2 days before discontinuation of dabigatran. CrCl 15-30mL/min: Initiate warfarin 1 day before discontinuation of dabigatran. CrCl <15mL/min: Dabigatran should not be used	Option 1: Discontinue rivaroxaban, start warfarin and IV anticoagulant bridge when next rivaroxaban dose due until desired INR reached. Option 2: Overlap rivaroxaban with warfarin for ≥2 days until INR is therapeutic	Option 1: Discontinue apixaban, start warfarin and IV anticoagulant bridge when next apixaban dose due until delivered INR reached. Option 2: Overlap apixaban with warfarin for ≥2 days until INR is therapeutic	Oral Option: Reduce Edoxaban dose by 50%, start warfarin, and continue Edoxaban until stable INR ≥2 achieved. Measure INR at least weekly and just prior to Edoxaban dose. Parenteral Option: Discontinue Edoxaban and initiate parenteral anticoagulant and warfarin at next scheduled Edoxaban dose.
Conversion FROM parenteral anticoagulant	Start dabigatran ≤ 2 hours before next scheduled dose of LMWH or fondaparinux Initiate dabigatran when iv heparin stopped	Initiate rivaroxaban ≤ 2 hrs. before the next scheduled evening dose of LMWH or fondaparinux Initiate rivaroxaban when iv heparin, argatroban or bivalirudin stopped	Initiate apixaban at the time of the next scheduled dose of LMWH or fondaparinux. Initiate apixaban when iv heparin infusion stopped	General transition recommendation: Initiate Edoxaban at the time of next scheduled dose of LMWH or fondaparinux. VTE initial treatment transition recommendation: For acute VTE start edoxaban within 6-12hrs after last twice daily LMWH and within 12-24hrs after once daily regimen Initiate edoxaban when iv heparin infusion stopped
Conversion TO parenteral anticoagulant	CrCl ≥30ml/min: Wait 12 hours after the last dose of dabigatran before initiating. CrCl<30ml/min: Wait 24hrs after the last dose of dabigatran before initiating.	Start the IV anticoagulant when the next dose of rivaroxaban was scheduled to be given	Start the parenteral anticoagulant when the next dose of apixaban was scheduled to be given	Start parenteral anticoagulant when next dose of edoxaban was scheduled to be given

ATTACHMENT 5: GUIDELINES FOR VERY PROLONGED INR OR BLEEDING WHILE ON ANTICOAGULANTS

Warfarin		
INR	**Clinical Presentation**	**Treatment Options**
Above upper limit of therapeutic range but <5	No Significant bleeding	Give lower warfarin dose or hold warfarin dose, then adjust warfarin dose as appropriate. Monitor INR more frequently
5-<6 *Consider Vitamin K 2.5mg PO x1 dose after consulting with provider	No significant bleeding	Hold 1 or 2 warfarin doses. Adjust warfarin dose by 10-15%. Monitor INR more frequently Notify referring provider or day LIP supervisor if referring provider n/a
	Rapid reversal required for urgent surgery	Hold warfarin dose. Consult referring provider or day LIP supervisor if referring provider n/a
6-8 *Any minor or major bleeding consider Vitamin K administration *Consider Vitamin K 5mg PO x1 dose after consulting with provider	No significant bleeding	Hold 1 or 2 warfarin doses. Adjust warfarin dose by 20-25% Monitor INR more frequently Notify referring provider or day LIP supervisor if referring provider n/a
	Rapid reversal required for urgent surgery	Hold warfarin dose Consult referring provider or day LIP supervisor if referring provider n/a
≥8	No significant bleeding	Hold warfarin dose Consult referring provider or day LIP supervisor if referring provider n/a Adjust warfarin dose as appropriate and monitor INR more frequently.
All Anticoagulant Medications		
Any or no INR	Serious or Life-threatening Bleeding	Hold all anticoagulant medications Anticoagulation Specialist will consult referring provider or day LIP supervisor if referring provider n/a regarding any patients on anticoagulation therapy experiencing bleeding Those requiring reversal will be referred to the emergency department for further management
	Rapid reversal required for urgent surgery	Hold all anticoagulant medications Consult referring provider or day LIP supervisor if referring provider n/a

ATTACHMENT 6A: THROMBOEMBOLIC RISK ASSEMENT

Risk Category	Atrial Fibrillation	Mechanical Heart Valve	Venous Thromboembolism	Recommend
Low	CHA_2DS_2-VASc score of 1-4 (and no prior stroke or TIA)	Bileaflet aortic valve replacement WITHOUT major risk factors for stroke[b]	VTE > 12 months ago	Suggest no bridging
Intermediate	CHA_2DS_2-VASc score of 5-6 or score of 2-3(regardless of sex)	Bileaflet aortic valve replacement with major risk factors for stroke[b]	VTE within past 3-12 mo. Recurrent VTE Non-severe thrombophilia (heterozygous factor V Leiden or prothrombin gene mutation) Active cancer or recent history of cancer[c]	Assess need for bridging based on patient-specific and surgery related factors Note: CHEST Guidelines suggest no bridging unless pt. factors warrant
High	CHA_2DS_2-VASc score ≥ 7 (regardless of sex) Recent (< 3 mo.) stroke or TIA Rheumatic valvular heart disease	Any mechanical mitral valve Caged ball or tilting-disc valve in mitral/aortic position Recent (< 3 mo.) stroke or TIA	Recent (< 3 mo. and especially 1 mo.) VTE Severe thrombophilia (deficiency of protein C, protein S or antithrombin; homozygous factor V Leiden or prothrombin gene mutation or double heterozygous for each mutation, multiple thrombophilias) Antiphospholipid antibodies Associated with vena cava filter Active cancer associated with high VTE risk[a]	Suggest bridging

[a] Includes pancreatic cancer, myeloproliferative disorders, primary brain cancer, gastric cancer, and esophageal cancer

[b] Atrial fibrillation, prior stroke or transient ischemic attack (TIA), hypertension, diabetes, congestive heart failure, and age > 75 years

[c] Within 5 years if history of cancer, excluding non-melanoma skin cancer

CHA_2DS_2-VASc: 1 point for presence of

- Congestive heart failure
- Hypertension
- Diabetes
- Vascular disease
- Age 65-74 and female sex
- Age ≥75 and prior Stroke or TIA (2 points)

The thromboembolic risk classification can be overridden based on individual patient characteristics.

Patients may be also considered high thromboembolic risk in the following scenarios and bridging should be considered

- Prior stroke or TIA occurring >3 months before the planned surgery and a CHA_2DS_2 VASc score <5
- Prior thromboembolism during temporary interruption warfarin
- Patient with remote (>1 year ago), severe VTE with resultant pulmonary hypertension
- Surgery associated with an increased risk for stroke or other thromboembolism (i.e., cardiac valve replacement, CABG, carotid endarterectomy, major vascular surgery)

** In patients at high risk for thromboembolism AND undergoing high-bleeding risk procedures (major cardiac surgery, carotid endarterectomy surgery), it is not unreasonable to consider no bridging**

Note: Thromboembolic risk assessment may be less important in patients undergoing a procedure that does not require anticoagulant interruption or in patients receiving DOAC therapy since the perioperative time period where such patients are not anticoagulated is short (1-3 days)

ATTACHMENT 6B: HEMORRHAGIC RISK ASSEMENT

HEMORRHAGIC RISK ASSEMENT (HAS-BLED SCORE)

Letter	Clinical Characteristic	Points Awarded
H	Hypertension[a]	**1**
A	Abnormal renal &/or liver function (1 pt each)[b]	**1 or 2**
S	Stroke history	**1**
B	Bleeding[c]	**1**
L	Labile INR[d]	**1**
E	Elderly ≥ 65 yr.	**1**
D	Drugs or alcohol (1 point each)[e]	**1 or 2**
		Maximum Score 9

a Hypertension= SBP ≥ 160 mmHg;

b Abnormal renal function = presence of chronic dialysis or renal transplantation or serum creatinine ≥ 200 µmol/L; Abnormal liver function= chronic liver disease (eg. Cirrhosis) or biochemical evidence of significant hepatic derangement (eg. Bilirubin > 2X upper normal limit, in association with AST/ALT/ALP > 3X upper limit normal etc.);

c Bleeding= previous bleeding history or predisposition to bleeding (eg. Bleeding diathesis, anemia, etc.);

d Labile INRs = unstable/ high INRs or poor time in therapeutic range (eg. <60%); INR= international normalized ratio

e Drugs or alcohol = concomitant use of drugs, such as antiplatelet agents, non-steroidal anti-inflammatories, or alcohol abuse->8drinks/week, etc.;

Risk stratification for HAS-BLED: Relatively low: 0–1-point Moderate: 2 points High: 3-5 points Very high: >5 points

Use HAS-BLED score to assess hemorrhagic risk in pt's with Afib and cardiac indication for anticoagulation.

HEMORRHAGIC RISK ASSEMENT (VTE-BLEED SCORE)

Clinical Characteristic	Points Awarded
Age≥60 years	1.5 points
History of Bleeding (ISTH Major or non-major clinically relevant bleeding)[a]	1.5 points
Active cancer	2 points
Renal Dysfunction (CrCl 30-60ml/min)	1.5 points
Anemia (Hgb<130g/L Male. Hgb<120g/L Female)	1.5 points
Male pt. with uncontrolled HTN (SBP≥140mm Hg)	1 point
	Maximum Score 9

a Major Bleeding: Fatal bleeding and/or Symptomatic bleeding in a critical area or organ, such as intracranial, intraspinal, intraocular, retroperitoneal, intra-articular or pericardial, or intramuscular with compartment syndrome, and/or

Bleeding causing a fall in hemoglobin level of 2 g/dL or more or leading to transfusion of two or more units of whole blood or red cells.

Risk stratification for VTE-BLEED: Low risk <2 points High risk ≥2 points

Use VTE Bleed Score to assess hemorrhagic risk in pt's with stable anticoagulant treatment (>30 days) with previous VTE

ATTACHMENT 6C: PROCEDURAL BLEEDING RISK ASSESSMENT

High risk procedure Hold anticoagulants	Low-Moderate risk procedure MD to determine whether to hold anticoagulants	Minimal bleeding risk procedures Do not hold anticoagulants
• Major surgery with extensive tissue injury or procedure duration >45minutes • Major cancer surgery (Neurosurgical/urologic/head and neck/abdominal/breast) • Cancer surgery especially solid tumor resection (lung, esophagus, gastric, colon, hepatobiliary, pancreatic) • Major orthopedic surgery, including shoulder replacement surgery • Reconstructive plastic surgery • Major thoracic surgery • Urologic or GI surgery, especially anastomosis surgery • Transurethral prostate resection, bladder resection, or tumor ablation • Nephrectomy, kidney biopsy • Bowel or colonic polyp resection • Gastric polypectomy • Percutaneous endoscopic gastrostomy placement, endoscopic retrograde cholangiopancreatography • Surgery in highly vascular organs (kidneys, liver, spleen) • Intracranial, or spinal surgery • Aortic aneurysm repair • Neuraxial anesthesia • Epidural injections • Peripheral artery bypass and other major cardiovascular surgery	• Arthroscopy • Cutaneous/lymph node biopsies • Foot/hand surgery • Coronary angiography • GI endoscopy or colonoscopy ±biopsy • Abdominal hysterectomy • Laparoscopic cholecystectomy • Abdominal hernia repair • Hemorrhoidal surgery • Bronchoscopy ±biopsy	• Minor dermatologic procedures (eg. Excision of basal and squamous cell skin cancers, actinic keratoses, and premalignant or cancerous skin nevi) • Minor ophthalmologic procedures (eg. Cataract) • Minor dental procedures (eg. dental extractions, restorations, prosthetics, endodontics, dental cleanings, or fillings) • Pacemaker or cardioverter-defibrillator device implantation

ATTACHMENT 6D: PERIOPERATIVE WARFARIN MANAGEMENT

Thromboembolic Risk	Prior to procedure [c]	Post procedure: LMWH	Post procedure: Warfarin [e]
Intermediate Risk	**Minimal bleeding risk procedure**: Do not hold warfarin **Low to Moderate bleeding risk procedure** [a]: Hold warfarin 2-5 days prior to procedure as determined by proceduralist **High bleeding risk procedure** [b]: Hold warfarin ≥ 5 days prior to procedure as determined by proceduralist –Referring physician to determine if LMWH bridging needed. –Check INR 1 day prior and inform proceduralist.	– Referring physician/proceduralist to determine if LMWH bridging needed.	– Resume warfarin approximately 12-24 hours after procedure and when adequate hemostasis achieved as determined by proceduralist. Warfarin may be initiated the evening of the procedure at the patient's previously determined maintenance dose
High Risk	**Minimal bleeding risk procedure**: Do not hold warfarin **Low to Moderate bleeding risk procedure** [a]: Hold warfarin 2-5 days prior to procedure as determined by proceduralist **High bleeding risk procedure** [b]: Hold warfarin ≥ 5 days prior to procedure as determined by proceduralist – LMWH or Heparin treatment dosing to commence 24-48hrs after pt's last warfarin dose [d]. – For the last pre-procedure dose, administer half the treatment dose of LMWH or heparin SC at least 24 hours prior to the surgery/procedure or as determined by proceduralist. – Check INR 1 day prior and inform proceduralist.	**Post Minor Surgery/Low bleeding risk:** Resume LMWH or heparin SC treatment dosing [d] 12-24 hours after the procedure or as determined by proceduralist and referring provider **Post-Surgery/Moderate bleeding risk:** Resume LMWH or heparin SC treatment dosing [d] to commence 48 hrs. after the procedure or as determined by proceduralist and referring provider **Post-Surgery/High bleeding risk:** LMWH or heparin SC prophylactic dosing [d] to start 24-72 hours after the procedure or as determined by proceduralist and referring provider **Post-Surgery/Very high bleeding risk:** No post-procedure LMWH or as determined by proceduralist and referring provider	– Resume warfarin approximately 12-24 hours after surgery and when adequate hemostasis is achieved. -Post procedure LMWH, heparin SC orders will be discontinued after 5 days of overlap with warfarin and when patient's INR is within the established therapeutic range on two consecutive days or as determined by proceduralist and referring provider.

Note: Recommend inpatient heparin infusion or outpatient heparin SQ as an alternative to LMWH in pt's with CrCl < 20-30mL/min

[a] Warfarin needs to be held for 5 days if pre-procedural goal is to normalize INR.

[b] Warfarin may need to be held longer than 5 days in pt's with higher INR goal range or for pt's whose INRs are expected to drop slowly

[c] Proceduralist to determine how many days to hold warfarin depending on pt's bleeding risk

[d] Refer to Attachment Perioperative Injectable anticoagulation guidelines for dosing

e Patients with Protein C or S deficiency should not resume warfarin without overlap with parenteral anticoagulation

Dental Procedures:

- Continuing warfarin with pro-hemostatic agents is recommended over alternative management options (i.e., discontinuation of warfarin with or without heparin bridging)
    - Pro-hemostatic options include pre- and post-procedure administration of oral tranexamic acid mouthwash, two to three times daily, and intervention-specific measures (i.e., extra sutures, gauze soaked in tranexamic acid)
- If warfarin treatment must be held, the recommended duration is 2-3 days prior to the dental procedure
- Patients with prior stroke(s) history undergoing dental procedures should routinely continue warfarin

ATTACHMENT 6E: PERIOPERATIVE DIRECT ORAL ANTICOAGULANT MANAGEMENT

Given the DOAC short half-lives holding DOACs 1-4 days prior to surgery as described below should result in minimal to no residual anticoagulant effect at the time of surgery.

No need for bridging with short-acting anticoagulants such as UFH, Heparin SC or LMWH due to the rapid offset and rapid onset of action of DOACs in a perioperative setting.

In patients undergoing neuraxial anesthesia or a very high bleeding risk procedure, a longer period of interruption may be warranted. In rare cases bridging may be required (e.g., use prophylactic dose LMWH/heparin SC) in individuals such as those who have a high thromboembolic risk and are unable to take oral medications postoperatively due to intestinal ileus from gastrointestinal surgery.			
Perioperative plan determined in collaboration with referring provider and proceduralist. If high bleeding risk procedure, proceduralist to check hemostasis on morning of procedure.			
Medication	**Calculated CrCl ml/min**	**Low/Moderate Bleeding Risk**	**High Bleeding Risk**
Apixaban **Edoxaban** **Rivaroxaban**		Stop 1 day prior	Stop 2 days prior
Dabigatran	≥50mL/min	Stop 1 day prior	Stop 2 days prior
	<50mL/min	Stop 2 days prior	Stop 4 days prior

Post-Procedure:

DOAC's have rapid onset of action (1-4 hours; depending on the agent) and can be resumed as soon as adequate hemostasis has been established as determined by proceduralist and referring provider. DOACs can generally be resumed:

- 1 day after a low bleed risk procedure
- 2-3 days after a high bleed risk procedure.

Dental Procedures

For dental procedures with no clinically important bleeding risk or when adequate local hemostasis is possible

- The procedure may be performed at DOAC trough concentration (12 hours after the last dose for twice-daily dosing; 24 hours after the last dose for daily dosing)
- The procedure should NOT be performed at peak concentration
- The procedure may be scheduled 18 to 24 hours after the last dose
- DOAC should be restarted 6 hours after the procedure (skipping 1 dose for twice-daily dosing); patients should not leave the clinic until bleeding is completely stopped.

- For dental procedures with a minor bleeding risk (i.e., extraction of 1 to 3 teeth, periodontal surgery, incision of abscess, implant positioning)
  - The last DOAC dose may be taken 24 hours before the procedure in patients with normal kidney function
  - Discontinuation of DOAC for a longer period of time may be required for renal impairment (see table above).

ATTACHMENT 6F: PERIOPERATIVE INJECTABLE ANTICOAGULATION GUIDELINE

Drug	Dosing/Monitoring
LMWH	**Enoxaparin[b]:** Treatment Dosing: 1mg/kg SC every 12 hours or 1.5mg/kg SC every 24 hours (use every 12-hour dosing schedule in mechanical valve patients, cancer patients in active treatment for a VTE, patients in active treatment for an acute PE, pregnant patients) Prophylactic Dosing[a]: 40mg SC qday **Dalteparin[b]:** Treatment Dosing: 100unit/kg SC every 12 hours or 200unit/kg SC every 24hours (use every 12-hour dosing schedule in mechanical valve patients, cancer patients in active treatment for a VTE, patients in active treatment for an acute PE, pregnant patients) Prophylactic Dosing[a]: 5,000 units SC qday ~12 hours before surgery (or the evening prior to surgery) and then 5,000 units SC once daily thereafter
	Monitoring: Baseline CBC, PT/aPTT, creatinine, weight and periodically as determined by the Anticoagulation Specialist and/or referring provider or LIP.
Heparin SC	Treatment Dosing: SC: Initial 333 units/kg SC x1, followed by 250 units/kg SC every 12 hours Prophylactic Dosing[a]: 5,000 units SC q12hrs
	Monitoring: Not monitored by aPTT. Baseline CBC, weight, and creatinine and periodically as determined by the Anticoagulation Specialist and/or referring provider or LIP
Fondaparinux	5 days hold prior to procedure required to assure full clearance Bridging contraindicated for pre-procedural bridging due to long elimination half life

[a] Prophylactic dosing used post-surgery in pt's who have undergone high bleeding risk procedures

[b] Enoxaparin use not recommended in pt's with CrCl<20ml/min, Dalteparin use not recommended for pt's with CrCl<30ml/min-recommend inpatient heparin infusion or heparin SC as an alternative

Periprocedural plan to be developed in collaboration with proceduralist and referring provider

ATTACHMENT 7: LONG-TERM INJECTABLE ANTICOAGULATION GUIDELINE

	Indication/Dosing		Laboratory Monitoring	Management Consideration	Contraindications
Enoxaparin	**VTE Treatment:** -1mg/kg SC q12 hours (preferred) or 1.5mg/kg SC q24 hours <u>Severe renal impairment:</u> -CrCl 20-30ml/min: 1mg/kg SC q24h -CrCl <20ml/min or dialysis: avoid use, UFH preferred. -Consult covering LIP or anticoagulation medical director	**VTE Prophylaxis:** -Orthopedic surgery (Hip or Knee Replacement): 30mg q12 hours for 7-10 days -Acute medical illness, general surgery: 40mg daily for 6-10 days or 7-10 days respectively <u>Severe renal impairment:</u> CrCl < 30ml/min:30mg daily	-Baseline: CBC, creatinine, weight -1 week after initiation: CBC -Every Month: CBC, creatinine, Wt. -As Needed: fecal occult blood, Anti Xa levels in pt's with suspected therapy failures or over-anticoagulation, unstable creatinine, weight < 45kg or BMI > 50kg/m^2 -Repeat CBC, creatinine and weight periodically as determined by the Anticoagulation Specialist and/or referring provider or LIP	-Monitor for signs and symptoms of bleeding -Draw anti Xa levels 4 – 6 hours after dosing, beginning after the 3rd or 4th dose when steady state has been achieved. **<u>Anti-Xa activity target:</u>** **VTE Treatment** Once daily dosing: 1-2 units/ml Twice daily dosing: 0.6-1 unit/ml -If platelet level decreases by 50% or are less than 50 k/µl, actively consult the Anticoagulation Specialist for further plan of care and consult with referring provider	History of serious hypersensitivity reaction to enoxaparin, heparin, pork products, or any component of the formulation, history of HIT in the past 100 days or in the presence of circulating antibodies; active major bleeding
Dalteparin	**VTE Treatment:** SC: 200 units/kg once daily or 100u/kg twice daily	**VTE Prophylaxis:** SC: 5,000units once daily	Follow Enoxaparin laboratory monitoring guideline above	Follow Enoxaparin management consideration above	Active major bleeding, unstable angina, non-Q-wave MI, or prolonged VTE prophylaxis undergoing epidural/neuraxial anesthesia, serious hypersensitivity reaction to dalteparin, heparin, pork products, history of HIT
Fondaparinux	**VTE Treatment:** <50kg: 5mg once daily, 50-100kg: 7.5mg once daily, >100kg: 10mg once daily <u>Renal impairment:</u> -CrCl 30-50ml/min: Use cautiously monitor for bleed as accumulation can occur. Consider switching agents -CrCl<30ml/min: Contraindicated	**VTE Prophylaxis**: <50kg: Contraindicated, ≥50kg: 2.5mg once daily <u>Renal impairment:</u> CrCl 30-50ml/min use with caution; Consider using 50% reduction in dose or switch to another agent **SVT of lower limb at increased risk of clot progression to DVT/PE**: 2.5mg qday	-Baseline: CBC, Creatinine, Weight - 1-3 months: CBC, Weight - As Needed as determined by the Anticoagulation Specialist and/or referring provider or LIP: Weight, CBC, Creatinine, Fecal occult blood, Anti Xa levels (if assay is specifically calibrated for fondaparinux) If bleeding or thrombocytopenia is suspected or confirmed	-Monitor for signs/symptoms of bleeding -Draw anti Xa levels 3 hrs. after dosing, beginning after the 4th dose when steady state has been achieved. **<u>Anti-Xa activity target:</u>** **VTE Treatment** -50-100kg :7.5mg once daily, 1.2-1.26mg/L (per manufacturer; dose adjustments based on this concentration has not been established) -If platelets decrease by 50% or are less than 50 k/µl, actively consult the Anticoagulation Specialist for plan of care in consultation with referring provider	Active major bleeding, bacterial endocarditis, thrombocytopenia associated with a positive in vitro test for anti-platelet antibody in the presence of fondaparinux, history of serious hypersensitivity reaction to fondaparinux
Heparin SC	**Fixed Dose VTE Treatment:** SC: Initial 333 units/kg, followed by 250 units/kg every 12 hours	**VTE Prophylaxis**: 5,000units SC q12hrs	**Monitoring for fixed dose VTE Treatment:** -Baseline: CBC, creatinine 1-3 days of initiation, 1 week after initiation, every month: CBC -As Needed: CBC as determined by the Anticoagulation Specialist and/or referring provider or LIP	Monitor for signs and symptoms of bleeding	Hypersensitivity to heparin or any component of the formulation, severe thrombocytopenia, history of HIT, uncontrolled active bleeding

****See "Monitoring Pregnant Patients on Anticoagulation" for guidance on use in pregnant patients****

ATTACHMENT 8: PERIPARTUM ANTICOAGULATION MANAGEMENT

Definitions

1. Antepartum: In or during the period that precedes childbirth; before delivery
2. Postpartum (aka puerperium): The period of about 6 weeks after childbirth during which the mother's reproductive organs return to their original nonpregnant condition
3. Peripartum: The period shortly before, during, and immediately after giving birth

The plan of care for anticoagulation in the pregnant patient will be initiated by the referring provider. The plan will include the duration of anticoagulation during pregnancy, puerperium, and post-partum.

Anticoagulation Choice in Pregnancy

UFH and LMWH do not cross the placenta and are safe for the fetus

1. LMWH is the preferred anticoagulation option in pregnant patients
    a. Prophylactic dose:
        i. Enoxaparin 40mg SC every 24hours
        ii. Dalteparin 5000units SC every 24hours
        Note: prophylactic dosing may require modification for extremes of bodyweight
    b. Intermediate dose:
        i. Enoxaparin 40mg SC every 12hours or 1mg/kg SC every 24hours
        ii. Dalteparin 5000units SC every 12hours or 100units/kg SC every 24hours
    c. Therapeutic Dose
        i. Enoxaparin 1mg/kg SC every 12hours
        ii. Dalteparin 100units/kg SC every 12 hours
2. Heparin is preferred if CrCl<30ml/min, when rapid reversal is needed and in patients with cost concerns
    a. Prophylactic dose:
        i. Heparin 5,000units SC every 12hours
    b. Intermediate dose:
        i. First trimester: 5,000-7,500 units SC every 12hours
        ii. Second trimester: 7,500-10,000 units SC every 12hours
        iii. Third trimester: 10,000 units SC every 12hours
    c. Therapeutic dose:
        i. 5,000 units SC initial dose followed by 17.500 units SC every 12hours
        ii. 333 units/kg SC bolus (omit if previously therapeutically anticoagulated), then 250units/kg SC every 12 hours
3. Fondaparinux is the preferred anticoagulation option in pregnant patients in the setting of HIT or other heparin allergy

Treatment of Acute VTE

1. Outpatient treatment of a low-risk acute VTE can be considered for patients who are clinically stable
2. Hospitalization is indicated in hemodynamic instability, extensive VTE, or maternal co-morbidities that limit tolerance to recurrent VTE or increase risk of major bleeding
3. Therapeutic dose LMWH is the preferred agent for acute VTE treatment in pregnant patients for the first 3 trimesters and during late pregnancy when delivery is imminent
4. UFH SC is used as an alternative for pt's with CrCl<30ml/min
5. Duration of treatment-Continue anticoagulation for at least 6 weeks postpartum (for a minimum total duration of therapy of 3 months)
6. Stop LMWH at least 24 hours prior to induction of labor or cesarean section (or expected time of neuraxial anesthesia) in patients with planned delivery

Prevention of Recurrent VTE

1. Use of prophylaxis is not recommended for women undergoing cesarean section without additional thrombosis risk factors
2. Pregnant women with prior VTE or clinical risk factors (e.g., strict bedrest with pre-pregnancy BMI>25 or prior history of VTE) should be given prophylaxis
3. Pregnant women receiving long-term VKAs
    a. 75% of a therapeutic dose of LMWH throughout pregnancy followed by resumption of long-term anticoagulants postpartum
4. Antepartum:
    a. Prophylactic or intermediate dose LMWH recommended for pt's with moderate to high risk of recurrent VTE (pregnancy-or estrogen-related VTE, or multiple prior unprovoked VTE not receiving long-term anticoagulation)
    b. For pregnant women at low risk of recurrent VTE (single episode VTE associated with a transient risk factor note related to pregnancy or use of estrogen), can consider clinical vigilance rather than antepartum prophylaxis.
5. Postpartum:
    a. Prophylactic or intermediate dose LMWH or warfarin INR goal of 2-3 for 6 weeks postpartum recommended for patients with prior VTE
6. Thrombophilias
    a. The following table applies to women who **do not** have a personal history of VTE
    b. ASH Recommendations
        i. For pregnant women who require prophylaxis during antepartum period, prophylactic LMWH dose is recommended.
        ii. For women who require prophylaxis during the postpartum period, prophylactic **or** intermediate-dose LMWH is recommended.

Hereditary Thrombophilia in Patient	Family History of VTE	Antepartum Prophylaxis	Postpartum Prophylaxis
Heterozygous Prothrombin Gene Mutation (PGM) Or Heterozygous Factor V Leiden	(+)	No	No
	(-)	No	No
Protein S Deficiency Or Protein C Deficiency	(+)	No	Yes
	(-)	No	No
Antithrombin Deficiency	(+)	Yes	Yes
	(-)	No	No
Homozygous PGM	(+)	No formal recommendation**	Yes
	(-)	No	Yes
Homozygous Factor V Leiden	(+)	Yes	Yes
	(-)	Yes	Yes
Combined Thrombophilia	(+)	Yes	Yes
	(-)	Yes	Yes

Antepartum prophylaxis preferred given VTE risk estimates despite lack of family studies in homozygous PGM

7. Mechanical heart valves
    a. Recommend one of the following options for thromboembolic prevention in pregnant women with mechanical heart valves:
        i. Adjusted dose bid LWMH throughout pregnancy. Adjust dose to achieve the manufacturer's peak anti-Xa LMWH 4 hours post SC-injection
        ii. Adjusted dose UFH throughout pregnancy administered SC every 12 hours in doses adjusted to attain anti-Xa heparin level of 0.35-0.70 units/ml
        iii. UFH or LMWH (as above) until the 13th week, with substitution by VKAs until close to delivery when UFH or LMWH is resumed
    b. Women judged to be at very high risk of thromboembolism in whom concerns exist about the efficacy and safety of UFH or LMWH as dosed above (eg. older generation prosthesis in the mitral position or history of thromboembolism)
        i. VKA throughout pregnancy with replacement by UFH or LMWH (as above) close to delivery
    c. Women with prosthetic heart valve at high risk of thromboembolism
        i. Add low dose aspirin 75-100mg/day

Management of Peri-Partum Anticoagulation

1. All pregnant patients should be advised to discontinue anticoagulant therapy upon the onset of spontaneous labor
2. For planned deliveries, discontinue therapeutic LMWH at least 24 hours prior to the expected time of epidural delivery
    a. IV UFH should be stopped at least 4-6 hours prior to expected epidural or delivery and aPTT should be checked for normalization
3. Anticoagulation and neuraxial anesthesia
    a. Separate as shown below to reduce likelihood of hematoma:

Anticoagulant	Dose	Time Before Puncture
Unfractionated Heparin	Prophylaxis (≤ 15,000 units/day)	4-6 Hours
	Treatment (IV)	4-6 hours
	Treatment (SQ)	24 hours
LMWH	Prophylaxis	12 hours

4. Resumption of anticoagulation
    a. LMWH should be resumed no sooner than 4 hours after epidural catheter removal
        i. Prophylactic LMWH may be resumed 6-12 hours after delivery
        ii. Therapeutic LMWH may be resumed 24 hours after delivery
5. Breast feeding women
    a. Warfarin, UFH, or LMWH recommended

Monitoring

6. SC LMWH
    a. Therapeutic LMWH SC Dosing
        i. Baseline-CBC, PT/aPTT, creatinine, weight
        ii. 1 week after initiation-CBC
        iii. Monthly-CBC, creatinine, weight
        iv. Routine anti-Xa level monitoring is not required Measure anti-Xa levels as determined by the Anticoagulation Service Specialist in high risk patients
    b. Prophylactic/Intermediate LMWH SC Dosing
        i. Baseline-CBC, PT/aPTT, creatinine, weight
        ii. 1 week after initiation-CBC
        iii. Every 3 months-CBC, creatinine, weight
        iv. Routine anti-Xa level monitoring is not required but may be periodically checked in pregnant patients with renal impairment, higher/lower body weight, or other complicating factors, such as recurrent VTE
    c. Anti-Xa
        i. Frequency of anti-Xa levels will be determined by the Anticoagulation Service Specialist in high-risk patient.
        ii. In the high-risk patient, frequency of anti-Xa level monitoring will be determined by the Anticoagulation Service Specialist and may range from every 2 weeks to 3 months
            1. First and Second trimester- at each trimester (every 3 months)
            2. Third trimester-every 2 weeks
            3. More frequent monitoring may be considered if not in expected range
            4. Levels to be drawn 4-6 hours after enoxaparin or dalteparin administration and after patient has received 3-4 doses
            5. Expected anti-Xa levels:
                a. 0.6-1.0 U/ml- twice daily therapeutic dosing
                b. 1.0-2.0U/ml-once daily therapeutic dosing
                c. 1.1-2.0U/ml-patients with mechanical mitral valve
                d. 0.8-1.0U/ml-patients with mechanical aortic valve
    d. Platelets
        i. Platelet monitoring may not be necessary in pregnant patients due to the low risk of HIT
        ii. If platelet level decreases by 50% or are less than 50,000 µl, actively consult the referring provider for further plan of care

Monitoring continued

7. Heparin
    a. Therapeutic Dose Heparin SC
        i. Baseline-CBC, PT/aPTT, creatinine, weight
        ii. 1 week after initiation-CBC
        iii. Monthly-CBC, creatinine, weight
            a. During the last 10 weeks of pregnancy, more frequent monitoring is warranted as determined by the referring provider and the Anticoagulation Specialist
    b. Prophylactic Dose Heparin SC
        i. Baseline-CBC, PT/aPTT, creatinine, weight
        ii. 1 week after initiation-CBC
        iii. Every 3 months-CBC, creatinine, weight

8. Warfarin
    a. Patients with mechanical heart valves
        i. INR goal range-Refer to **Attachment 2D**: Optimal Therapeutic Range of Warfarin Therapy
        ii. Frequency of INR monitoring-once or twice weekly

ATTACHMENT 9: ANTICOAGULATION CLINIC REMINDER LETTER

mm/dd/yyyy

First name Last Name
Address
City, State Zip

Subject: Anticoagulation Clinic Reminder Letter

T00:

Dear Mr./Ms.,

You have been under the care of our UConn Health Anticoagulation Clinic staff for anticoagulation management for XXXX. Our records show you were either due for a clinic visit or bloodwork on mm/dd/yyyy. We have made three attempts during the past two weeks to reach you by phone regarding your anticoagulation therapy but have not received a return call from you.

We would like to ensure that your dose is optimal and that you are not experiencing any side effects from the medicine. Anticoagulation therapy can be a very dangerous medication if used improperly, or if your bloodwork is not checked regularly. We are not able to instruct you on your anticoagulation dosage without recent bloodwork or if we are unable to contact you.

Your health is very important to us, and we want to ensure that you receive the best possible care, but effective communication is essential in helping us achieve this goal. It is important for you to participate in your own care.

Our clinic staff is available Monday through Friday 8:00am to 4:30pm. Please contact us at (860) 679-3470 as soon as possible regarding your anticoagulation therapy. We look forward to hearing from you soon and helping you maintain a healthy lifestyle while on anticoagulation.

Sincerely,

Heiko Schmitt, M.D., Ph.D.
Ritika Vankina, M.D.
Anticoagulation Medical Directors

cc: referring provider

ATTACHMENT 10: ANTICOAGULATION CLINIC FINAL REMINDER LETTER

First Name Last Name
Address
City, State Zip Code

Date: mm/dd/yyyy

Subject: Anticoagulation Clinic Final Reminder Letter

T00:

Dear Mr./Ms.:

You have been under the care of our UConn Health Anticoagulation Clinic staff for anticoagulation therapy management for XXX. Our records show you were either due for a clinic visit or bloodwork on mm/dd/yyyy.

We have attempted to contact you multiple times regarding your anticoagulation therapy but have not received a return call from you.

The optimal anticoagulation therapy for you may change from time to time. To keep you safe and healthy, the ideal therapy should be determined by the Anticoagulation Specialist. If your anticoagulation is not optimal, serious bleeding or hemorrhage can occur. If the regimen is not evaluated properly, blood clots can form and lead to a heart attack, stroke, or a pulmonary embolism (blood clot in the lung).

Your health is very important to us, and we want to ensure that you receive the best possible care. While we are responsible for informing you about anticoagulation management strategies, it is up to you to follow through with our recommendations. Effective communication is essential in helping us achieve this goal.

Please contact the clinic staff at (860) 679-3470 Monday through Friday 8:00am – 4:30pm regarding your anticoagulation therapy. We look forward to hearing from you.

If you are no longer taking anticoagulation therapy, are being followed by another health care provider, or are unable to have your blood checked due to unforeseen circumstances please notify the clinic staff.

If we do not hear from you within 10 days from the date of this letter, we will assume that you wish to be discharged from the clinic. You will not receive care beyond that date.

Sincerely,

Dr. Heiko Schmitt, M.D., Ph.D.
Dr. Ritika Vankina, M.D.
Anticoagulation Medical Directors

cc: referring provider

ATTACHMENT 11: ANTICOAGULATION CLINIC INITIATION OF CARE

mm/dd/yyyy

First Name Last Name
Address
City, State Zip

Subject: Anticoagulation Clinic Initiation of Care

T00

Dear Mr./Ms.,

We received a referral to manage your anticoagulation therapy for XXX on mm/dd/yyyy from Dr. XX's office. We have made three attempts during the past week to reach you by phone but have not received a return call from you.

Please contact the UConn Health Anticoagulation Clinic office as soon as possible to establish care. If we do not hear from you within 10 days from the date of this letter, we will assume that you no longer wish to receive care from the clinic. You will not receive care beyond that date.

Our clinic staff is available Monday through Friday 8am-4:30pm. Please contact us at (860) 679-3470 as soon as possible to schedule your appointment. We look forward to serving you.

Sincerely,

Heiko Schmitt, M.D., Ph.D.
Ritika Vankina, M.D.
Anticoagulation Medical Directors

cc: referring provider

ATTACHMENT 12: ANTICOAGULATION DISCHARGE PATIENT LETTER

mm/dd/yyyy

First Name Last Name
Address
City, State Zip

Subject: Anticoagulation Clinic Discharge Patient Letter

T00:

Dear Mr./Mrs.,

You have been discharged from the UConn Health Anticoagulation Clinic for failure to either contact the clinic to initiate anticoagulation care or follow clinic staff recommendations despite reminder calls and follow up letters from our office.

We regret to advise you that, as a result of your lack of cooperation, we can no longer share responsibility with you for the management of your anticoagulation therapy.

In accordance with our non-compliance policy, we have transferred your anticoagulation care back to Dr. XXXX.

Please don't hesitate to contact the Anticoagulation Clinic office at 860-679-3470 if you have any questions or concerns.

Sincerely,

Heiko Schmitt, M.D., Ph.D.
Ritika Vankina, M.D.
Anticoagulation Medical Directors

cc: referring provider

ATTACHMENT 13: ANTICOAGULATION CLINIC DISCHARGE LETTER TO REFERRING PROVIDER

mm/dd/yyyy

Dr. First name Last Name
Address
City, State Zip

Subject: Anticoagulation Clinic Discharge Letter to Referring Provider

T00:

Dear,

Your patient, XXXX has failed to contact the clinic to either initiate anticoagulation care or follow clinic staff recommendations despite reminder calls and follow up letters from our office.
We have notified XXXXXX that we are unable to manage anticoagulation therapy for non-compliant patients. Therefore, in accordance with our non-compliance policy, we will be discharging the patient from our service back to yours.

Thank you for allowing us to work with you and your patients. We look forward to meeting your future needs. Please don't hesitate to contact the UConn Health Anticoagulation Clinic office at 860-679-3470 if you have any questions or concerns.

Sincerely,

Heiko Schmitt, M.D., Ph.D.
Dr. Ritika Vankina, M.D.
Anticoagulation Medical Directors

cc: referring provider

APPENDIX A-1: ANTICOAGULATION CLINIC PATIENT AGREEMENT

UCONN HEALTH Anticoagulation Clinic

(Patient Identification)

Anticoagulation Clinic Patient Agreement

- I understand that in order to be a participant in the anticoagulation clinic, I will need to have regular blood testing done as directed by the clinical staff.
- I understand that if I miss more than 3 appointments or scheduled blood draws, I may be discharged from the clinic.
- I will notify the clinic regarding any planned medical, surgical or dental procedures.
- I understand that I need to keep my scheduled yearly appointment with the UConn provider who prescribed my anticoagulation therapy (blood thinner medication).
- I understand that I need to keep my scheduled appointment with the Anticoagulation Clinic as frequently as directed by the Anticoagulation Clinic Staff.
- I will call the anticoagulation clinic if I do not receive instructions within 48 hours after a blood test or if my medical condition (including medications) changes.
- I am able to travel to the clinic or arrange for transportation for my appointments.
- I am willing to take the prescribed medication as directed by the Anticoagulation Clinic Staff and follow instructions given to me by the Anticoagulation Clinic staff regarding dosage and diet.
- I will notify the clinic regarding all medications that I am taking (even over the counter & herbals).
- I have access to a telephone and can be reached by telephone if necessary.
- I am taking a medicine that must be followed closely in order to protect me from any complications. I understand that not following clinic recommendations can result in serious health risks and/or termination with the program.

In some cases when we are unable to speak with you directly, we may need to send secure e-mail, leave a voice mail with detailed information about your condition or treatment (such as the results of tests or the scheduling of procedures). You should be aware that other individuals who have access to your e-mail, or voice mail could read/hear these messages. At home, this may mean that other members of your family could read/hear these messages. At work, it may mean that your employer could read/hear these messages. ***Please tell us where we MAY leave a DETAILED message:***

☐ Home ☐ Work ☐ Mobile ☐ E-mail

☐ None, do not leave detailed messages by secure e-mail, or on my voice mail.

_____ _____

Signature of Patient/Authorized Representative Date/Time

_____ _____ _____

Staff Print Name Staff Signature Date/Time

White-Chart Yellow-Patient

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UCONN HEALTH Anticoagulation Clinic

(Patient Identification)

Anticoagulation Education Waiver

I understand that I am currently taking or have been prescribed to take _____ which is an anticoagulant (blood thinner) medication. I understand that the University of Connecticut Health Center (UCHC) Anticoagulation Clinic has offered to provide me education on this medication. I understand that this education is intended to improve my understanding of my therapy and associated disease state and is important for ensuring safe and effective use of the prescribed medication therapy.

By signing below, I am indicating that I decline the anticoagulation education session provided by the UCHC Anticoagulation Clinic.

I understand that I can choose to request anticoagulation education at any time, even after signing this form.

_____ _____

Signature of Patient/Authorized Representative Date/Time

_____ _____ _____

Staff Print Name Staff Signature Date/Time

White-Chart Yellow-Patient

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APPENDIX A-3: ANTICOAGULATION PATIENT QUESTIONNAIRE

UCONN HEALTH Anticoagulation Clinic

(Patient Identification)

ANTICOAGULATION PATIENT QUESTIONNAIRE

MEDICATION

1. Please mark which anticoagulant medication are you taking?
   ☐ Warfarin ☐ Dabigatran ☐ Apixaban ☐ Rivaroxaban ☐ Edoxaban
   ☐ Enoxaparin ☐ Fondaparinux ☐ Dalteparin ☐ Heparin SQ ☐ Other
2. What is the dose and frequency of the anticoagulant medication you have been taking since your last visit?
3. Did you miss any doses of your anticoagulant medication since your last visit? **YES/NO**
4. Did you take any extra doses of your anticoagulant medication since your last visit? **YES/NO**
5. Have you started/stopped or had dose change in any of your medications since your last visit? **YES/NO**
6. Please provide us a copy of the list of medications you're currently taking including over the counter medications, natural products and food supplements.

HEALTH

1. Have you experienced any bleeding or bruising since your last visit? **YES/NO**
2. Have you gained or lost weight since your last visit? **YES/NO**
3. Have you been sick (eg. vomiting/diarrhea/fever) since your last visit? **YES/NO**
4. Have you experienced any chest pain, severe headache, dizziness, slurred speech, weakness, difficulty breathing, swelling or confusion since your last visit? **YES/NO**
5. Has your level of activity changed since your last visit? **YES/NO**

DIET

1. Has there been a change in your diet (eg. more or less greens) since your last visit? **YES/NO**
2. Have you used any tobacco products or marijuana since your last visit? **YES/NO**
3. Please state how many glasses of wine, beer, hard liquor or other alcoholic beverages you have consumed since your last visit: _____

PROCEDURES (MEDICAL/DENTAL/SURGICAL)

1. Do you have any upcoming procedures planned? **YES/NO**
2. Date of Procedure: _____

_____ _____

Signature of Patient/Authorized Representative Date/Time

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HISTORICAL INFORMATION

ORIGIN DATE: **REVIEW DATES**: 03/27/2013, 4/8/2019

REVISION DATES: 6/26/2019, 11/30/2022, 6/2/2023, 11/29/2023

APPROVAL DATES:

(more historical information can be obtained from the P&T Minutes)

OWNER:

APPROVAL BODY: Pharmacy and Therapeutics Committee