APPENDIX 1: Clinical practice standards for anticoagulation. © 2014 Saskatchewan Health Authority Regina. Reproduced by permission.

Appendix 1: Anticoagulation Clinical Practice Standard

Goal: The pharmacist will provide evidence-based pharmaceutical care to patients receiving anticoagulation therapy to achieve desired outcomes and minimize risk of negative outcomes

Standard #1: The pharmacist will assess thromboembolic risk and recommend evidence-based anticoagulation for all patients receiving injectable or oral anticoagulants.

Standard #2: The pharmacist will assess bleeding risk for all patients receiving therapeutic anticoagulation therapy and intervene where possible to reduce bleeding risk.

Standard #3: The pharmacist will assess and provide practical recommendations for management of drug interactions with warfarin and other oral anticoagulants.

Standard #4: The pharmacist will educate patients on therapeutic anticoagulation therapy initiated during the hospital stay.

Standard #5: The pharmacist will review discharge medications/prescription for completeness and accuracy of anticoagulation orders.

	Activity	Descriptor of Expectation	AIM-HIGH
Patient Identification	Admission and prescriber orders	Identify anticoagulant medications (rivaroxaban, dabigatran, apixaban, edoxaban, LMWH, UFH, fondaparinux, warfarin, argatroban, bivalirudin), admitting diagnoses (VTE, Afib, etc) and tests to identify patients requiring anticoagulation therapy Identify patient risk factors increasing risk for VTE to identify patients requiring assessment for VTE prophylaxis (medical patients, orthopedic surgery patients, other surgical patients)	n/a
	Auto generated Centricity Report of Clinical Interventions	Review report of dabigatran, rivaroxaban, apixaban, edoxaban and “warfarin daily” orders on applicable wards	n/a
	Unit Patient Rosters	Identify admitting diagnoses that require anticoagulation (e.g DVT, PE, VTE, Afib, cardiac valve surgery, ACS)	n/a
	Consults	Patients may also be identified through other healthcare professional consults as this clinical priority becomes a known expectation	n/a

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	Activity	Descriptor of Expectation	AIM HIGH

Evidence Based Therapies	Pharmaceutical Care/Medication Management:
	
	• Profile Review
	• Chart Review
	• Patient Interview
		Review all orders for anticoagulation therapy to confirm and assess:
		• Indication
		• Drug
		• Dose - Confirm weight, calculate mg/kg dose, and CrCl when required
		• Frequency
		• Route
		• Duration
		• No cautions or contraindications ☹Pay close attention to the peri-procedural period (eg. surgery bleed risk, hemostasis post op, epidural use)
		
		Follow and complete the "Dabigatran/Rivaroxaban/Apixaban Orders Checklist"
		
		Conduct patient interviews as required to ensure medication regimens are accurate; consult with community pharmacists, review refill history, etc.
		
		Decrease patient's bleed risk by:
		• Confirm need for antiplatelet agents (ASA/NSAIDs/clopidogrel/ticagrelor, etc)
		• Minimize duration of dual or triple therapy to what's necessary based on current evidence (e.g. post cardiac stent placement, recent ACS)
		• Assess need for PPI when high risk for GI bleed
		• Ensuring blood pressure controlled
		• If receiving warfarin, minimize labile INRs. Strategies to minimize labile INRs:
		  ○ address drug interactions, if present
		  ○ provide patient education
		  ○ Refer to RQHR AMS
		  ○ convert to other oral anticoagulant, if appropriate
		
		Possible References:
		CLOT checklists:
		Dabigatran; Rivaroxaban; Apixaban
		Canadian Cardiovascular Society
		Antithrombotic Therapy & Prevention of Thrombosis. 9th ed: American College of Chest Physicians
		Thrombosis Canada
			Pharmaceutical care
			Medication management: if not a full pharmaceutical care plan of the patient
			• Cardiovascular subgrouping
			
			• Input action taken

	Drug-Drug Interactions	Assess for actual and potential warfarin drug interactions using the following tool as a guide: Bungard T et al. Drug interactions involving warfarin Discuss practical and specific management recommendations with the attending or, if less	Pharmaceutical care Medication management: if not a full pharmaceutical care plan of the patient • Cardiovascular

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		urgent, document in the progress notes of medical chart Ensure progress notes are followed up in a timely manner	subgrouping • Input action taken

	Activity	Descriptor of Expectation	AIM HIGH
Patient Education	Warfarin	Prior to discharge for patients newly initiated on warfarin, or in whom further education is warranted (e.g. mechanical valve patients, non-compliance) Follow the warfarin education checklist and use RQHR patient information sheet, or manufacturer's patient booklet. Include: • Intended benefit / Indication • Dose – multiple tablet strengths of warfarin usually required to manage dose adjustments • Target INR & monitoring • Duration • Potential drug and food interactions & management • Side effects and management • Importance of carrying ID indicating on warfarin • Warfarin dosing until follow up INR and INR date post discharge	Pharmaceutical care Medication management: if not a full pharmaceutical care plan of the patient • Cardiovascular subgrouping • Input action taken - Patient Education
	LMWH	For those requiring long-term treatment (i.e. VTE and active cancer), or short-term for cross-coverage/bridging, ensure ability to administer in community ➾Facilitate patient education & administration teaching via nursing staff prior to discharge, or via Home Care/Treatment Centre referral **Dalteparin: www.fragmin.ca** To enter the site, type in an 8-digit DIN for Fragmin. **Enoxaparin:** http://www.lovenox.com/default.aspx Tinzaparin: https://www.leo-pharm.ca/Home/patient-resources.aspx (to enter the site, type in a DIN for tinzaparin) Patient information: LMWH Medication cost and ability to pay - Make patient aware of potential costs and assist with drug coverage if required ➾(e.g. SK drug plan coverage/EDS, NIHB, special support application); ➾If barriers, discuss with attending For bridging send at least a 5 day supply of LMWH prior to discharge ➾Refer to RQHR Pharmacy Procedure for LMWH-Provision for Outpatients	Pharmaceutical care Medication management: if not a full pharmaceutical care plan of the patient • Cardiovascular subgrouping • Input action taken - Patient Education

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	Activity	Descriptor of Expectation	AIM HIGH
	Novel oral anticoagulants (Factor Xa, IIa/Thrombin Inhibitors)	All patients being initiated on novel oral agents for Afib or VTE Patient information: Rivaroxaban, Apixaban, Dabigatran, Edoxaban ● Explain benefit/Indication ● Dose and duration ● Importance of adherence ● Potential drug interactions & management ● Side effects and management ● Importance of carrying ID indicating on anticoagulation Medication cost and ability to pay – Make patient aware of potential costs and assist with drug coverage if required (e.g. SK drug plan coverage/EDS, NIHB, special support application); If barriers, discuss with attending	Pharmaceutical care Medication management: if not a full pharmaceutical care plan of the patient ● Cardiovascular subgrouping ● Input action taken - Patient Education

	Activity	Descriptor of Expectation	AIM HIGH
Seamless Care	Discharge Prescriptions	Review prescription to ensure: ● Anticoagulation medication and doses are correct ● If warfarin, ensure patient aware of warfarin dosing until follow up INR ● Adequate LMWH or newer oral anticoagulant supply to avoid missed doses ● Discontinued medications are not resumed Write stopped orders on outpatient Rx	Pharmaceutical care Medication management: if not a full pharmaceutical care plan of the patient ● Cardiovascular subgrouping ● Input action taken
	Transfers	For transfers to another enhanced/targeted unit, or facility, ensure: ● Monitoring forms are shared ● Outstanding issues are resolved where possible; if not, communicate follow up plans For patients referred to RQHR AMS: ● the AMS pharmacist will contact the ward pharmacist prior to patient discharge if assistance is required	Pharmaceutical care Medication management: if not a full pharmaceutical care plan of the patient ● Cardiovascular subgrouping ● Input action taken

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Documentation	Medical Chart	Document the following in the Progress Notes: • Suggestions for changes in medication • Summary of patient education provided • Supply of LMWH upon discharge has been provided ☮If outpatient Rx, ensure available at community pharmacy to ensure no missed doses For patients initiated on an oral anticoagulant other than warfarin, indicate: • Patient aware to NOT resume warfarin (if on prior) • EDS has been completed, and/or patient is aware of cost and able to pay For CSU/ST/3F, document on cardiac teaching document (if available): initials, medication, and date of education	
	Centricity and New Orders Checklist	Complete the "Dabigatran/Rivaroxaban/Apixaban/Edoxaban Orders Checklist" and attach to corresponding medication order in Centricity for each agent. Discard in confidential recycling once attached	
	Centricity Clinical Interventions	Ensure interventions and outstanding clinical activities documented	
	RQHR Patient Monitoring Form	Complete for more complex patients	

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APPENDIX 2: Captured metrics in AIM High, version 2 (collected in Google Forms).

1) Work hours
   a. Regular: 0730 to 1600 Monday to Friday
   b. Other: any time after 1600 and before 0730 on weekdays, as well as all hours on weekends and stat holidays
2) Select pharmacist team (from drop-down menu)
3) Pharmacist name
4) Ward (including if it has a ward based clinical pharmacist)
5) Type of clinical activity/issue
   a. Multidisciplinary care rounds
   b. Medication management
   c. Transition in care: on admission
   d. Transition in care: on transfer
   e. Transition in care: on discharge
6) Action: Types of pharmacist interventions
   a. Adverse event or drug interaction resulting in change in medication
   b. Change route or drug within class
   c. Drug discontinued
   d. Drug started/restarted
   e. Dose changed (includes interval)
   f. IV to PO
   g. Monitoring ordered (e.g., laboratory test, vital signs, weights)
   h. Patient education
7) Action involved direct patient/caregiver interaction with pharmacist
   a. Yes
   b. No
8) Action documented in patient medical record by pharmacist
   a. Physician order
   b. Progress note
   c. Both physician order and progress note
   d. None
9) Was prescriptive authority used for intervention?
   a. Yes
   b. No
10) High-risk drug?
    a. Yes
    b. No
11) From drop-down list, select clinical practice standard followed (e.g., Anticoagulation)

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