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All formulary changes and policy/procedure updates have been approved by the Drugs and Therapeutics (D&T) Committee and Medical Advisory Council (MAC).

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## *Changes to Formulary*

### **Additions**

- Rivaroxaban 10 mg tablets (Xarelto®)**
  - Oral anticoagulant (selective factor Xa inhibitor)
  - Restricted to orthopedic surgeons for venous thromboembolism prophylaxis in elective total hip and knee replacement surgery
  - See Table 1 (page 2) for comparison of formulary prophylactic anticoagulants
- Thrombin Topical 6000 unit vial (Recothrom®)**
  - Topical hemostatic agent used to clot whole blood or plasma
  - To control oozing and minor bleeds from capillaries and small venules
  - Available as direct purchase through e-pro (SKU 00084990)
- Hydroxocobalamin 2.5 g vial (Cyanokit®)**
  - Preferred antidote for cyanide poisoning
  - Special Access Program (SAP) drug

## **Deletions**

- Medrol® Acne Lotion**
  - Discontinued by manufacturer
  - Alternative: Neo Medrol® Lotion (contains methylprednisolone 2.5 mg/mL, neomycin 2.5 mg/mL, aluminum 100 mg/mL, sulfur 50 mg/mL)

## *Updated Policies*

### **1. VENOUS THROMBOEMBOLISM (VTE) PREVENTION INITIATIVE**

Venous thromboembolism (VTE) is a common and potentially fatal complication in hospitalized patients. Despite overwhelming evidence that thromboprophylaxis reduces the incidence of VTE and leads to cost savings, compliance with established guidelines in prescribing appropriate thromboprophylaxis remains suboptimal.

As such, an institutional-wide approach to VTE risk assessment and the provision of appropriate thromboprophylaxis has been approved as an important patient safety strategy. In order to promote consistent practice throughout the hospital and improve quality of care for patients (fewer pokes, lower HIT risk), thromboprophylaxis with dalteparin is recommended as the low molecular weight heparin (LMWH) of choice for once daily administration in moderate-high risk surgical and medical patients.

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Hospital-wide education is currently underway to promote this new initiative. A pre-printed order has been created entitled "VTE Risk Assessment and Prophylaxis Orders" which will be available once education has been completed. Note that in patients with major orthopedic trauma and traumatic spinal cord injury, enoxaparin is the

preferred LMWH for VTE prophylaxis. Rivaroxaban, a new oral anticoagulant, may also be used for prophylaxis after elective total hip or knee replacement surgery.

A comparison of formulary anticoagulants used for VTE prophylaxis is shown in Table 1.

**Table 1. Comparison of Formulary Anticoagulants Used for DVT/PE Prophylaxis**

Drug	Dalteparin (Fragmin®)	Enoxaparin (Lovenox®)	Heparin	Fondaparinux (Arixtra®)	Rivaroxaban (Xarelto®)
<b>Prophylactic Dose for DVT/PE</b>	> 40 kg: 5000 units SC daily; ≤ 40 kg: 2500 units SC daily	30mg SC Q12H (major orthopedic trauma or traumatic spinal cord injury)	5000 units SC Q8-12H	2.5 mg SC daily <sup>1</sup>	10mg PO daily (elective total hip or knee replacement)
<b>Classification</b>	Low Molecular Weight Heparin	Low Molecular Weight Heparin	Unfractionated Heparin	Selective Factor Xa Inhibitor	Oral anticoagulant - Direct Factor Xa Inhibitor
<b>Factor Xa:IIa Specificity</b>	2.0-2.7:1	2.7-4.1:1	1:1	Pure Anti-Xa	Pure Anti-Xa
<b>Peak Onset (SC)</b>	4 hours	3 hours	2-4 hours	2-3 hours	2-3 hours (PO)
<b>Plasma Half-Life (anti-Xa activity)</b>	2-2.3 hours	3.5-4.2 hours	30-150 minutes	17-21 hours	5-9 hours
<b>Elimination</b>	Renal	Renal	Reticuloendothelial system and Renal	Renal	Hepatic and Renal
<b>When to Hold SC Prophylactic Dose Prior to Surgery</b>	at least 12 hrs	at least 12 hrs	Not necessary	at least 24 hrs	24 hours (PO)

<sup>1</sup> non-formulary indication at Vancouver Acute; however, may be used in patients with heparin-induced thrombocytopenia

## 2. MALARIA UPDATE - AVAILABILITY OF ARTESUNATE AND QUININE

Tim TY Lau, Pharm.D., William Bowie, M.D., FRCP(C)

The Canadian Malaria Network (CMN) was established in collaboration with Health Canada and the Public Health Agency of Canada due to the potential for adverse outcomes associated with delays in obtaining parenteral malaria therapy for the treatment of severe *Plasmodium falciparum*. Intravenous artesunate and quinine are not marketed in Canada, but are made readily accessible through the CMN.

VGH is designated as the depot centre for BC, with satellite sites located at the Royal Jubilee and Kelowna General Hospitals. At VGH, an Infectious Diseases (ID) consult should be obtained to establish the need for IV artesunate

or quinine in severe malaria treatment.

The procedure to access IV artesunate or quinine at other Lower Mainland hospitals is as follows:

1. Requesting physician calls VGH switchboard (604-875-4111) to contact ID physician on-call.
2. VGH ID physician reviews patient case and approves IV artesunate or quinine, if appropriate.
3. VGH ID physician then informs VGH Pharmacy.
4. Requesting physician contacts their local hospital pharmacy and informs them of the approval.
5. Local hospital pharmacy contacts VGH Pharmacy and arranges delivery of drug.

If any questions, please contact Dr William Bowie at L-54588 or Dr Tim Lau at L-63361. Additional details can be found at: <http://www.phac-aspc.gc.ca/tmp-pmv/quinine/index-eng.php>.

## 2. CALCIUM CHANNEL BLOCKER THERAPEUTIC INTERCHANGE

To consolidate long-acting dihydropyridine calcium channel blockers (CCBs) on the provincial formulary, nifedipine XL has been deleted from all B.C. formularies other than during pregnancy. Effective Nov 1, 2010, CCBs will be therapeutically interchanged to amlodipine as per Table 2.

**Table 2. Dihydropyridine Calcium Channel Blockers Equivalent Dose**

Ordered Drug	Interchanged to
nifedipine XL 20 mg	amlodipine 2.5 mg daily
nifedipine XL 30 & 40 mg	amlodipine 5 mg daily
nifedipine XL <sup>1</sup> 60 and 90 mg	amlodipine 10 mg daily
felodipine	amlodipine dose is equivalent to felodipine (e.g. felodipine 5 mg = amlodipine 5 mg)

<sup>1</sup> Prescriber to be contacted for nifedipine XL doses that do not appear in this table

## 3. FORMULARY STATUS CHANGES

- **Ursodeoxycholic acid** (Ursodiol<sup>®</sup>) is **no longer** a restricted drug.
- **Buspirone** is **no longer** a restricted drug.
- **Nifedipine XL** will be **restricted to Obs/Gyne**
- **Basiliximab** (Simulect<sup>®</sup>) is **restricted to SOT and BMT** patients
- **Valgancyclovir** (Valcyte<sup>®</sup>) is **restricted to SOT and BMT** patients.
- **Amitriptyline 2%-Ketamine 1% cream** (and amitriptyline 4%-ketamine 2% cream) are **no longer restricted** creams. This cream is an option for management of patients with neuropathic pain with allodynia.
- **Lamivudine** is **restricted to GI, SOT, BMT** and patients receiving **high dose chemotherapy** or those on this drug **prior to admission**.
- **Mycophenolate mofetil** (MMF, Cellcept<sup>®</sup>) is **restricted to SOT and BMT** patients.

## 4. NARCOTIC AUTOMATIC STOP ORDER

Narcotic and controlled drugs (except phenobarb) have an autostop of 7 days. However, a specific time limit on any medication order will override the automatic stop date if desired. A definite number of doses or duration must be specified and may not exceed 90 days, except for straight narcotics (e.g. hydromorphone, morphine, fentanyl patch) which may not exceed 6 weeks.

## 5. MULTIVITAMIN AUTOSUBSTITUTION

Vitamin A in doses greater than 3000 units/day has been associated with increased bone fragility and fracture risk<sup>1</sup>. Beta-carotene, another form of vitamin A, does not seem to influence bone fractures. All general multivitamin preparations contain a minimum vitamin A content of 5000 units. Centrum Forte<sup>®</sup>, a multivitamin with minerals, contains vitamin A 1000 units. Thus, effective Nov 1, 2010, all orders for multivitamins will be dispensed as Centrum Forte<sup>®</sup> or Centrum Select<sup>®</sup> Chewable (for residential care or those with NG tubes), unless "no substitution" is written. A comparison of multivitamins and Centrum Forte/Select is shown in Table 3. Note that Renavite<sup>®</sup> (vitamin B with C), Z-Bec<sup>®</sup> (multivitamin with zinc), and liquid multivitamins (Infantal<sup>®</sup>, Maltlevol-12<sup>®</sup>) will still be dispensed if ordered as such.

**Table 3. Comparison of Multivitamins**

	Multivitamin	Centrum Forte <sup>a</sup> /Select <sup>a</sup>
Vitamin A	5000 units	1000 units/same
Beta-Carotene	-	3000 units/same
Thiamine (B <sub>1</sub> )	1.5 mg	2.25 mg/same
Riboflavin (B <sub>2</sub> )	1.7 mg	3.2 mg/same
Niacinamide	20 mg	15 mg/same
Pantothenic A	-	10 mcg/25 mcg
Pyridoxine (B <sub>6</sub> )	2 mg	5 mg/8 mg
Vitamin B12	6 mcg	20 mcg/25 mcg
Biotin	-	45 mcg/same
Folic Acid	0.1 mg	0.6 mg/0.4 mg
Vitamin C	60 mg	90 mg/same
Vitamin D	400 units	600 units/same
Vitamin E	10 units	50 units/75 units
Vitamin K <sub>1</sub>	-	25 mcg/same
Iron	-	20 mg/4 mg
Calcium	-	200 mg/same
Phosphorus	-	125 mg/same
Magnesium	-	50 mg/same
Potassium	-	80 mg/-
Zinc	-	7.5 mg/3 mg

<sup>a</sup> also contains iodine 0.15mg/same, copper 1mg/0mg, manganese 5mg/same, chromium 35mcg/100mcg, molybdenum 45 mcg/same, selenium 55 mcg/same, lutein 500mcg/same

### Reference

<sup>1</sup>Michaelsson K et al. NEJM 2003;348:287-94.