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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).

This and other Drug and Therapeutics Newsletters are on the Web at www.vhpharmsci.com

Changes to Formulary

Additions

1. Cefoxitin 1 g, 2 g injection

- Second generation cephalosporin antibiotic
- Restricted to treatment of pelvic inflammatory disease, post-partum endometritis, & *Mycobacterium abscessus*

2. Bupropion XL and SR - all strengths (XL= 150mg, 300mg, SR= 100mg, 150mg)

- All bupropion formulations and strengths are available on formulary

Deletions

1. Nifedipine PA tablets (Adalat PA®)

- Alternative: nifedipine XL

2. Ascorbic Acid 250 mg tablets

- All orders for ascorbic acid 250 mg will be interchanged to the 500 mg strength

Updated Policies

1. THERAPEUTIC INTERCHANGE POLICY: EPROSARTAN TO CANDESARTAN

Losartan and candesartan are the angiotensin II receptor blockers (ARB) on formulary. All ARBs other than losartan are therapeutically interchanged to candesartan as per Table 1. Eprosartan has now been added to this interchange policy.

Table 1. Dose Comparison of ARBs

Drug	Dose Equivalence	Maximum Daily Dose
Candesartan (Atacand®)	8 mg	32 mg
Eprosartan* (Teveten®)	600 mg	800 mg
Irbesartan (Avapro®)	150 mg	300 mg
Losartan (Cozaar®)	50 mg	100 mg
Telmisartan (Micardis®)	40 mg	80 mg
Valsartan (Diovan®)	80 mg	160mg (160 mg BID evaluated in heart failure studies)

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2. EPIDURAL SOLUTION PREPARATION

All epidural solutions will be prepared by pharmacy only. Epidural solutions that are wardstock in PAR are listed in Table 2. These are available for emergency use when pharmacy is closed (2400-0630). If there are requests for epidural solutions after hours that are not available as wardstock in the PAR, the nursing unit is to call the anesthesiologist on call to change the order to a plain bupivacaine solution overnight until Pharmacy reopens.

Table 2. Wardstock Epidural Solutions in PAR

Local Anesthetic	Plus	Narcotic	Volume in NS (mL)
Bupivacaine 0.1%	+	Hydromorphone 20 mcg/mL	300
Bupivacaine 0.2%	+	Hydromorphone 10 mcg/mL	300
Bupivacaine 0.2%	+	Morphine 25 mcg/mL	300
Bupivacaine 0.1%		-	300
Bupivacaine 0.2%		-	300
Ropivacaine 0.2%		-	100

3. FAT EMULSION HANGING DURATION

The maximum recommended hang time for IV Fat Emulsion is 12 hours. This policy reflects ASPEN and CDC recommendations to reduce the risk of microbial growth. Note that 3 in 1 solutions will continue to be infused over 24 hours as these solutions are acidic, thus not an ideal medium for growth of microorganisms. Please refer to the Clinical Practice Document: Parenteral Nutrition, Nursing Care and Management (N-095).

4. HEPARIN PROPHYLAXIS DOSING TIMES

Dosing times for heparin 5000 units subcutaneous TID or Q8H will be interpreted to administration at the following times: 0800-1600-2200. This change is to consolidate the dosing times for both TID and Q8H orders, and to improve patient comfort by not waking them up at 0600 (as per Q8H traditional dosing). Dosing times for heparin Q12H or BID will remain unchanged at 0800-2000.

5. HEPARIN PREMIXED BAGS

Commercially premixed bags of heparin 25,000 units in 500mL D5W (50 units/mL) are on indefinite backorder. As a result, Pharmacy is now compounding these bags; however, they only have a 4 day expiry date (refrigerated). To reduce wastage, only high usage nursing units (Emerg Acute, CCU, C10A, T5A, T8A, T8B, ICU, Cath Lab) will receive the compounded bags as wardstock for the duration of the backorder. Orders from all other nursing units will be dispensed as personal medication. If the first dose is needed urgently, please call Pharmacy to advise that the order is being faxed. If this occurs when the Pharmacy is closed, please obtain the first bag from one of the aforementioned high usage areas. Subsequent doses will be compounded and sent from Pharmacy.

6. HEPARIN POTENCY CHANGE

In 2008-09, unfractionated heparin (UFH) contaminated with oversulfated chondroitin sulfate resulted in increased adverse events and death. In response to the contamination, the United States Pharmacopoeia (USP) adopted a new assay for heparin potency which aligns with international standards. Starting in early 2010, all UFH formulations have been re-formulated to comply with the new USP standards. These changes will result in an average 10% reduction in heparin potency compared to UFH brands manufactured to previous USP standards. Health Canada advises that the change in potency is not expected to have a clinically significant impact in most situations; they recommend to report any unusual outcomes with the new heparin products.

7. PDTM UPDATES

- **Ketorlac IV is no longer a restricted drug.** It is indicated for short-term pain management in patients when the oral route is not feasible, and in whom narcotic analgesia or additional narcotic, or a suppository form of a non-steroidal anti-inflammatory drug (NSAID) are not considered desirable.
- **Cosyntropin 250 mcg IV (preferred) or IM** is the standard dose used to assess adrenal function. The previously recommended dose of 1 mcg has not been shown to be superior to the standard 250 mcg dose.
- **Mannitol** concentrations of 15% or more must be administered using a **0.22 micron filter**.

- **Magnesium sulphate IV replacement dosage** has been updated as follows:

Table 3. Hypomagnesemia IV General Replacement Dosing Guidelines

Indication	Magnesium Dose ¹ (GFR 30 mL/min or above)
Mild to moderate hypomagnesemia (0.5-0.69 mmol/L)	5 g (20 mmol) IV Q24H x 1-3 doses PRN for repletion ^{2,3}
Severe non-life threatening hypomagnesemia (less than 0.5 mmol/L)	5 g (20 mmol) IV Q12-24H x 3-4 doses PRN for repletion ^{2,3}

¹if GFR less than 30 mL/min, give 5 g (20 mmol) IV x 1 dose and re-measure serum magnesium
²may check serum magnesium levels 4-6 hours after the end of a dose or the last dose in a series
³dilute 5 g dose in 50-250 mL NS or D5W and administer over 3-4 hours

8. DILTIAZEM ONCE DAILY THERAPEUTIC INTERCHANGE

Three once daily diltiazem formulations are available in Canada: diltiazem CD, TIAZAC[®], and TIAZAC XC[®]. Diltiazem CD and TIAZAC[®] both peak at between 6 and 11 hours whereas TIAZAC XC[®] has release characteristics peaking at 11 to 15 hours. TIAZAC XC[®] is recommended to be given at bedtime so that the highest concentrations are achieved in the morning. Only diltiazem CD is on formulary at VA and orders for TIAZAC[®] are automatically interchanged to diltiazem CD at the same dosage. For TIAZAC XC[®] orders, Pharmacy will use patient's own medication or clarify the order with the physician to authorize to change to diltiazem CD.

9. MINERAL OIL ENEMAS

Mineral oil enemas have been moved from Stores to Pharmacy to avoid potential medication administration errors due to mix-up between the sodium phosphate and mineral oil enemas. Sodium phosphate enema is often referred to and ordered as FLEET[®] enema. However, only the mineral oil enema is labeled with the brand name "FLEET[®]" since sodium phosphate is now a generic product. These 2 products are also generally stored in close proximity.

As a result, supplies of mineral oil enemas on most nursing units have been removed from wardstock.

For high usage wards, mineral oil enema will be supplied in the Omnicell and for low usage wards, the Pharmacy will dispense it as a personal order. Stores will continue to supply sodium phosphate enema. All orders for "FLEET[®]" enema will be interpreted as sodium phosphate enema.

Pharmacy Awards

Karen Shalansky and **Victoria Su** are the 2009 recipients of the Canadian Society of Hospital Pharmacists Specialty Practice Award (Hospira Healthcare Award) for their research project entitled "Evaluation of parenteral vitamin B12 administration in hemodialysis patients." Co-authors are Dr. J Jastrzebski, Dr. G Li, Dr. A Martyn, F Snider, Dr. CK Yeung, and Dr. N Zalunardo.

Regional Guideline Update

CLOSTRIDIUM DIFFICILE INFECTION (CDI) GUIDELINE - UPDATE

Tim TY Lau, Pharm.D. & the *Clostridium difficile* Stakeholder Group

The Vancouver Coastal Health CDI Guideline (page 4) has been updated to reflect the most recent recommendations published by SHEA and IDSA.¹ The main changes are as follows:

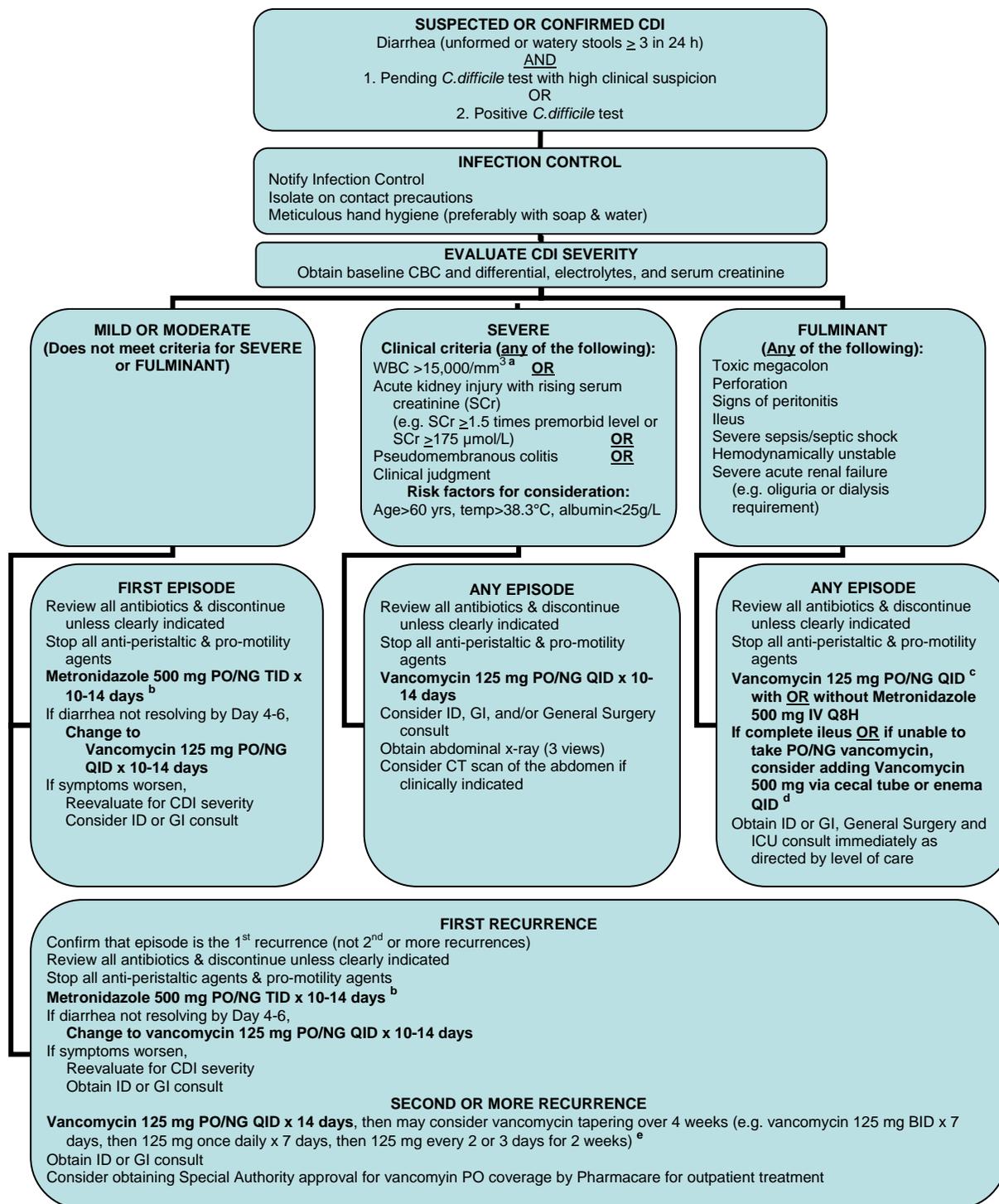
- For severe CDI, the clinical criteria have been changed to include WBC > 15, 000/mm³ **OR** acute kidney injury with rising serum creatinine **OR** pseudomembranous colitis **OR** clinical judgement;
- For fulminant CDI, severe acute renal failure is defined as oliguria or dialysis requirement;
- For the treatment of fulminant CDI, oral vancomycin may be given with **OR** without intravenous metronidazole;
- For the treatment of second or more recurrences, a tapering regimen may be considered after a treatment course of oral vancomycin;
- Pharmacare approval should be considered for outpatient therapy.

The CDI guideline can be accessed on the VCH intranet under "Infection Control" or in PCIS by clicking on "show VTB" or "Start Here" (at top of page), then "Policy Links", then "Infection Control".

Reference

1. Cohen SH et al. Clinical practice guidelines for *Clostridium difficile* infection in adults: 2010 update by the Society of Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). *Infect Control Hosp Epidemiol* 2010;31(5).

Figure 1. Clostridium difficile Infection Guideline - updated



^a In patients unable to mount a WBC response $>15,000/\text{mm}^3$, an increasing WBC with pronounced left shift may also be considered in these criteria; threshold of $>15,000/\text{mm}^3$ is based on expert opinion.

^b May change to vancomycin if patient intolerant to metronidazole

^c Doses of 125 to 500 mg may be considered; appropriate dose has not been established in clinical trials.

^d Vancomycin IV is not effective for the treatment of CDI.

^e Tapering regimens may vary considerably, as clinical data is limited.

Note: Physician assessment for perforation risk is required prior to rectal tube placement.
Prophylactic treatment for patients on antibiotics who have previously had *C.difficile* is not recommended. Consider ID consult.