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DRUG AND THERAPEUTICS NEWSLETTER

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In This Issue...

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Changes to Formulary

Additions

1. Meropenem 500 mg, 1 g vials (Merrem®)

- Carbapenem antibiotic restricted to treatment of documented or suspected infections involving multidrug resistant organisms where other agents (e.g. piperacillin/tazobactam, ceftazidime, imipenem) cannot be used due to intolerance or resistance **OR** for the following indications/populations: **CNS infections; cystic fibrosis; febrile neutropenia; pediatric patients**
- See comparison to imipenem (page 2)

2. Ertapenem 1 g vials (Invanz®)

- Carbapenem antibiotic restricted to treatment of documented or suspected infections involving multidrug resistant organisms in the **outpatient or ambulatory setting**, where other agents (e.g. piperacillin/tazobactam, ceftazidime, imipenem) cannot be used due to intolerance, resistance, or inconvenience in the ambulatory setting
- See comparison to imipenem (page 2)

3. Pentamidine 300 mg/vial (Pentacarinat®)

- Anti-infective agent restricted to prophylaxis of *Pneumocystis (carinii) jiroveci* pneumonia (PCP) in patients allergic or intolerant to cotrimoxazole **OR** to approval by the Centre of Excellence in HIV/AIDS
- Back on the Canadian market

Deletions

1. Meningococcal polysaccharide vaccine (Menomune®)

- Alternative: Meningococcal quadrivalent conjugate vaccine (Menactra®)
- See meningococcal vaccine update for splenectomy patients (page 3)

Updated Policies

1. PRE-PRINTED ORDERS ON-LINE

Pre-printed orders (PPOs) for Vancouver Acute are now available on-line on the VCH connect homepage, Clinical tab. The orders are listed alphabetically and categorically and can be printed directly from this site. Please note that some orders are denoted as double-sided (e.g. VTE prophylaxis orders) so the printer needs to be capable of printing double-sided. Copies of PPOs can still be requested from printing services.

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2. CARBAPENEM COMPARISON

Carbapenems (imipenem, meropenem, ertapenem) are broad spectrum beta-lactam antimicrobial agents with activity against many gram positive, gram negative and anaerobic organisms. Of note, ertapenem does **not** cover *Enterocccus, Pseudomonas* or *Acinetobacter* species.

To prevent emerging resistance to these antibiotics and to manage costs, these agents are reserved for treating documented or suspected infections involving multidrug resistant organisms where other agents (e.g. piperacillin/tazobactam, ceftazidime) cannot be used due to intolerance or resistance. Each drug has its own place in therapy with imipenem being the first-line carbapenem (Table 1). Regarding cross-reactivity with penicillins, there is a low potential for allergy cross-reactivity between penicillins and carbapenems, however, caution is recommended if there is a history of anaphylactic reaction to penicillins or other beta-lactam antibiotics.

Table 1. Comparison of Formulary Carbapenems

	Imipenem	**Meropenem**	**Ertapenem**
Status	Restricted	Restricted	Restricted
Place in Therapy	**First-Line** Carbapenem	CNS Infections; Cystic Fibrosis; Febrile Neutropenia; Pediatrics	Ambulatory/ Outpatients Should not be used as first-line
CSF Distribution (inflamed)	Yes, limited data	Yes	Yes, limited data
Dose	500 mg IV Q6H	500-1000 mg IV Q8H; 2000 mg IV Q8H or 1000 mg IV Q6H for meningitis or cystic fibrosis	1000 mg IV Q24H
Renal Dosing Adjustment	Yes	Yes	Yes
Relative Cost	+	+++	++

3. ADVAIR® AND SYMBICORT® WASTAGE REDUCTION STRATEGY

Many inhalers such as Advair® and Symbicort® are costly and do not come in smaller hospital size packages. Table 2 shows the potential wastage in a typical acute care hospital stay of 5 days.

Table 2. Potential Wastage of Inhalers in Acute Care (5 days)

Drug	**Advair®**	**Symbicort®**
# puffs per inhaler	120	120
Average # puffs used per inhaler	20 (2 puffs BID x 5 days)	20 (2 puffs BID x 5 days)
Average # puffs wasted per inhaler	**100**	**100**

For all Advair® and Symbicort® formulations, the estimated potential waste in Vancouver/Coastal/ Providence/Fraser Health Care is ~$250,000-$300,000 per year, which accounts for almost a quarter of the total acute care inhaler annual expenditure. Unfortunately, there is no safe process for recycling inhalers for reuse between different patients. To reduce wastage and costs, a new initiative has been implemented to relabel patient's own supply of these inhalers, if possible.

Procedure for Processing Advair® and Symbicort® Orders in Acute Care at VA

- On receipt of an Advair® or Symbicort® order, Pharmacy will check the PharmaNet profile for a patient record of this medication.
- If there is no dispensing record in PharmaNet, pharmacy will dispense the prescribed inhaler using hospital supplies.
- If there is a record of Advair® or Symbicort® on PharmaNet, the nursing unit will be called to determine if the patient brought in their own inhaler to hospital.
  - ⇒ If the inhaler was brought with the patient to hospital, the inhaler will be identified as "Patients Own Medication" using standard procedures. If the inhaler cannot be identified within 24 hours, then a hospital supply will be dispensed.
  - ⇒ If the inhaler was not brought in to hospital, then a hospital supply will be dispensed; the family will not be asked to bring in supplies from home.

4. MENINGOCOCCAL VACCINE POST-SPLENECTOMY GUIDELINES

The BC Centre for Disease Control has updated the information on meningococcal prophylaxis for splenectomy. Neisvac C® (meningococcal C conjugate vaccine) is no longer required. Menactra® (meningococcal quadrivalent conjugate vaccine) is recommended to be given 14 days prior to surgery (elective splenectomy) or 14 days post-surgery (emergency splenectomy).

a) Menactra® vs Menomune®:
Both Menactra® and Menomune® are quadrivalent (groups A, C, Y, W135) vaccines. Menactra® is a conjugated vaccine resulting in higher immunogenicity and as such has replaced Menomune®. The generic name for Menactra® is meningococcal (groups A, C, Y and W-135) polysaccharide diphtheria toxoid conjugate vaccine. It is covalently linked to diphtheria toxoid, but is NOT indicated for immunization against diphtheria.

b) Vaccines for splenectomy patients:
Pre-splenectomy (elective):
Administer 14 days prior to elective splenectomy:
1) Pneumococcal polysaccharide vaccine (Pneumovax®) 0.5 mL IM (preferred) or SC
2) Meningococcal quadrivalent conjugate vaccine (Menactra®) 0.5 mL IM
3) Hemophilus conjugate B vaccine (HIB®) 0.5 mL IM

Post-Splenectomy (emergency, non-elective):
(Elective splenectomy patients should have received pre-op)
1) Pneumococcal polysaccharide vaccine (Pneumovax®) 0.5 mL IM (preferred) or SC
2) Meningococcal quadrivalent conjugate vaccine (Menactra®) 0.5 mL IM
3) Hemophilus conjugate B vaccine (HIB®) 0.5 mL IM

Vaccines should ideally be given 2 weeks post-splenectomy, however, if the patient is discharged earlier, vaccination should be given before discharge.

Repeat of vaccines in splenectomy patients:
Splenectomised patients need to have **pneumococcal** vaccine repeated **once in 5 years** and **meningococcal** vaccine repeated **every 5 years**. There is no need to repeat the Hemophilus conjugate B vaccine.

5.PEDIATRIC INFORMATION IN PDTM

The current VA Parenteral Drug Therapy Manual (PDTM) contains limited information regarding pediatric dosage and administration. To improve access to pediatric information, the BC Children's Hospital's PDTM (BCCH PDTM) is now available as a link on the VA PDTM site. Pediatric information will be removed from the VA PDTM monographs *as time permits*.

How to access the BCCH PDTM
On the VCH homepage, click on "Parenteral Drug Therapy Manual", then click on PDTM for Vancouver Acute. On the left hand side of this page, there is a link entitled: "External link to Parenteral Drug Manual - BC Children's Hospital".

6. ALENDRONATE DOSING PRESCRIPTION INTERPRETATION

Bisphosphonates are synthetic analogs of pyrophosphate that bind to the hydroxylapatite found in bone and act as specific inhibitors of osteoclast-mediated bone resorption. The terminal half-life of the bisphosphonate alendrondrate (Fosamax®) is estimated to exceed 10 years (reflecting release of alendronate from the skeleton).

Alendronate is dosed either 70 mg once weekly or 10 mg once daily for the treatment of osteoporosis. Most orders are written as once weekly. Given the long half-life of alendronate, a Prescription Interpretation for administration of the first hospital dose of alendronate has been implemented to prevent multiple calls to the nursing unit to determine when the last dose was given. For patients who have been on this drug prior to admission, once weekly orders will be initiated 7 days from the date the order is written. For new starts, the once weekly dose will be processed when the order is written.

7. SORT ORDER OF MEDICATION REPORTS

To comply with medication safety standards, the order in which medications appear on medication reports changed in April 2011. The new sort order applies to:

- Medication Administration Records (MARs)
- Medication Profiles
- Transfer Medication Orders
- Discharge Prescriptions
- Automated Unit Dose (AUD)
- Multi-dose (MUD) medication packaging strips

Exception - PCIS on-line medication profile

Medications are now grouped by therapeutic classification per the American Hospital Formulary System (AHFS), which is consistent with the listing in the VA formulary. Within each grouping, medications are sorted by numeric drug name, alphabetical drug name, then strength.

Below is an example of the new sort order for analgesic type medications:

222 Equiv tab
Hydromorphone 1 mg tab
Meperidine 100 mg/mL amp
Morphine 0.1 mg/mL 500 mL bag
Morphine 10 mg tab
Morphine long acting 200 mg cap
Tylenol # 1 Equiv tab
Tylenol # 3 Equiv tab

8. RIVAROXABAN RESTRICTIONS

Formulary use of rivaroxaban is restricted to orthopedic surgeons for venous thromboembolism (VTE) prophylaxis following elective total knee replacement (TKR) or total hip replacement (THR) as follows:

- Up to 14-days following TKR
- Up to 35-days following THR

These restrictions reflect those applied by Pharmacare for outpatient coverage. Hospital supplies of rivaroxaban are considered non-formulary if ordered post-TKR or THR for longer than 14 or 35 days, respectively, or for any other indication.

9. METHADONE ADAPTOR TO MEASURE DOSE

Each bottle of methadone comes with an oral syringe adaptor in the Omnicell. When opening a new bottle, remove the cap and press the adaptor firmly into the bottle neck, then screw the bottle cap back on for storage. To measure a dose of methadone:

1. Remove the methadone bottle cap.
2. Using an oral syringe, pull back the syringe plunger to the desired dosing volume.
3. Insert the tip of the oral syringe into the adaptor and depress the plunger to introduce the volume of air into the bottle. This is to equalize the pressure and avoid leakage.
4. Turn the bottle upside down while holding the oral syringe in place, and withdraw the correct volume of methadone into the syringe.
5. Return the bottle and syringe to the upright position, and remove the syringe from the adaptor.
6. Replace the cap on the bottle for storage.