

## In This Issue...

We Value Your Opinion	1
Changes to Formulary	1
Neocortef <sup>®</sup> Interchange to Cortisporin <sup>®</sup> Ointment	2
Midazolam Administration and Extended Usage	2
Military Physician Assistants	2
Levonorgestrel	2
Pharmacy Awards	4
Infusion Program Updates	4

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 Therapeutic Newsletters are published on our website at [www.vhpharmsci.com](http://www.vhpharmsci.com)

## We Value Your Opinion!

**Complete a Survey and Receive a Free Café Ami Voucher!**

The Pharmaceutical Sciences CSU is conducting a written survey to determine the perceptions of patients, nurses, physicians and pharmacists regarding the services provided by our CSU at the Vancouver General Hospital. The survey will be distributed directly to patients and to the internal mailboxes of these health care professionals starting in December 2001. The information gathered from this survey will be used to assist us in further enhancing the scope and quality of our services. All responses will remain anonymous.

The survey is voluntary and will require about 15 minutes to complete. Participants will be asked to provide their opinions about four aspects of pharmacy services and will be given the opportunity to provide additional comments.

Completed surveys can be returned via internal mail. Health care workers may also return the survey in person to the general office (CP-G).

To show our appreciation to those who participate, a Café Ami voucher will be provided to the first 1000 respondents!

If there are any questions, please contact:  
Katie Lacaria BSc (Pharm), Pharmacy Resident  
Pharmaceutical Sciences CSU  
Vancouver General Hospital  
Phone: 604-875-4077 Pager: 604-707-3041

## Changes to Formulary

### Additions

#### 1. Cortisporin<sup>®</sup> topical ointment

- To replace Neocortef<sup>®</sup> topical ointment

**Table 1. Comparison of Cortisporin<sup>®</sup> and Neocortef<sup>®</sup> ointments**

Neocortef <sup>®</sup> ung	Cortisporin <sup>®</sup> ung
Hydrocortisone 10mg/g Neomycin 5 mg/g	Hydrocortisone 10 mg/g Neomycin 5 mg/g Polymyxin B 5000 U/g Bacitracin 400 U/g

#### EDITORIAL STAFF:

Karen Shalansky, Pharm.D., FCSHP

Peter Loewen, Pharm.D.

Rubina Sunderji, Pharm.D., FCSHP

Peter Jewesson, Ph.D., FCSHP

Any comments, questions or concerns with the content of the newsletter should be directed to the editors. Write to CSU Pharmaceutical Sciences Vancouver General Hospital, 855 W12th Ave, Vancouver BC V5Z 1M9, send a FAX to 604-875-5267 or email [kshalans@vanhosp.bc.ca](mailto:kshalans@vanhosp.bc.ca)  
Find us on the Web at [www.vhpharmsci.com](http://www.vhpharmsci.com)

## 2. Verteporfin 15mg injection (Visudyne®)

- Treatment of age-related macular degeneration with predominantly classic subfoveal choroidal neovascularization
- To be administered in the Eye Care Centre using only those supplies provided through direct funding by the Ministry of Health
- Cost: \$1800/15mg

## 3. Tranexamic Acid injection and tablets (Cyklokapron®)

- Antifibrinolytic Agent
- To replace Aminocaproic acid (Amicar®)

## 4. Levonorgestrel 0.75mg (Plan B®)

- Progesterone-only agent indicated for post-coital contraception
- For use in Sexual Assault Clinic
- See page 2 for review

## 5. Dorzolamide 2% eye drops (Trusopt®)

- Carbonic anhydrase inhibitor used to manage open-angle glaucoma
- Can be used acutely to lower intra-ocular pressure (to replace IV acetazolamide which has been discontinued from the market)

## 6. Brimonidine 0.2% eye drops (Alphagan®)

- Alpha-2 agonist used to manage open-angle glaucoma
- Can be used acutely to lower intra-ocular pressure (to replace IV acetazolamide)

## Deletions

### 1. Aminocaproic Acid injection and oral tablets (Amicar®)

- Alternative: Tranexamic Acid

### 2. Neocortef® ointment and eye drops

- Discontinued by manufacturer
- Alternatives: Cortisporin® topical ointment, Sofracort® eye drops

## Updated Policies/Procedures

### 1. Neocortef® Interchange to Cortisporin®

Due to the deletion of Neocortef® topical ointment from the market, all prescriptions for Neocortef® topical ointment will be interchanged to Cortisporin® topical ointment.

## 2. Midazolam Administration

Midazolam may be administered for sedation in palliative care patients (e.g. to manage terminal agitation, acute respiratory distress or major hemorrhage). These patients may reside in any nursing unit and are not necessarily confined to the Palliative Care Unit. Also, the Parenteral Drug Therapy Manual monograph has been revised to indicate that while a designated person must be available to monitor the patient's vital signs and ventilation, this individual may have other responsibilities as well during the procedure. Palliative Care patients are exempt from these monitoring requirements.

## 3. Military Physician Assistants

Canadian Forces Military Physician Assistants (PA) are being placed at VGH as a training site to maintain their clinical competency. Military PAs have been granted the approval to write in-patient drug orders provided these orders are co-signed by the supervising physician at the time of writing. PAs are also authorized to take verbal drug orders from a supervising physician following the policies governing verbal orders taken by nursing personnel.

## New Drug/Drug Products

### Levonorgestrel (Plan B®)

Trana Hussaini, B.Sc. (Pharm), Karen Shalansky, Pharm.D.

Levonorgestrel is a progesterone agent which has recently been marketed in Canada for post-coital contraception. The recommended dose is 0.75mg (1 tablet) taken within 72 hours after unprotected intercourse, followed by a second dose in 12 hours. This drug has been added to formulary for use in the Sexual Assault Clinic.

### Pharmacology

The exact mechanism of action for levonorgestrel in post-coital contraception is not clear.<sup>1</sup> Similar to other hormonal emergency contraceptives, levonorgestrel might work by disrupting ovulation, interfering with fertilization or the transport of the embryo to the uterus, or inhibiting its implantation in the endometrium.<sup>1,2</sup> It has been suggested that levonorgestrel suppresses follicular growth and/or corpus luteum development depending on the day of the cycle that the drug was first taken.<sup>3</sup>

Following oral administration, levonorgestrel is rapidly and almost completely absorbed with serum peak levels reached in 1.6 hours. Its elimination half-life is 9-14 hours. Levonorgestrel is excreted as inactive metabolites in the urine and feces.<sup>1</sup>

#### *Comparable Emergency Contraceptives*

A combined estrogen and progestin preparation (ethinyl estradiol plus dl-norgestrel - Ovral®) has been the most widely used medication for emergency contraception. The recommended dosage regimen is 2 tablets repeated 12 hours later, initiated within 72 hours of unprotected coitus.<sup>4</sup> Frequent gastrointestinal (GI) side-effects associated with this method have led to the development of alternative therapies. Mifepristone, an antiprogestogen, and levonorgestrel, a progestin-only agent are among the newer drugs in this class. Mifepristone is not yet available in Canada. Table 1 compares the available regimens.

**Table 1. Emergency Contraception Methods in Canada**

Drug Product	Levonorgestrel 0.75mg (Plan B®)	Ethinyl estradiol 50mcg + dl-norgestrel 0.5mg (Ovral®)
Drug Class	Progestin	Combined Estrogen plus Progestin
Dose	1 tablet taken within 72 hrs of unprotected coitus, repeated 12 hrs later	2 tablets taken within 72 hrs of unprotected coitus, repeated 12 hrs later
Advantages	Well tolerated, Higher efficacy, No significant contraindications	Readily available, Established safety & efficacy
Disadvantages	72-hour window	72-hour window, ↑ incidence of nausea/vomiting, Contraindicated if thromboembolic disease or active migraine
Cost/Course	\$9.95	\$2.24

#### *Efficacy*

Levonorgestrel has been directly compared to the current combined estrogen/progestin

emergency contraception regimen.<sup>5,6</sup> In a prospective, randomized trial of 834 subjects, Ho and Kwan found the efficacy of levonorgestrel to be similar to that of the combined estrogen/progestin regimen.<sup>5</sup> Failure rates were 2.7% in the combination group and 2.4% in the levonorgestrel group, a non-statistically significant difference. The larger WHO trial involving 1055 women showed greater effectiveness in the levonorgestrel group where the pregnancy rate was 1.1% compared to 3.2% in the combined estrogen/progestin group.<sup>6</sup> The proportion of pregnancies prevented was 85% with levonorgestrel compared to only 57% with the combination hormonal regimen.

#### *Side Effects*

In both randomized clinical trials, levonorgestrel was found to be better tolerated than combined estrogen/progestin.<sup>5,6</sup> Nausea (23.1% vs. 50.5%), vomiting (5.6% vs. 18.8%), dizziness (11.2% vs. 16.7%) and fatigue (11.2% vs. 28.5%) were all significantly less common among women who received levonorgestrel.<sup>6</sup> The relatively high incidence of GI side-effects may result in low acceptability and contribute to lower efficacy because of vomiting.<sup>7</sup> It has been suggested that the side-effect profile of combined hormonal emergency contraception may be improved by administering antiemetics before both doses or taking the pill with a snack, although there is no data to support this practice.<sup>3,8</sup>

#### *Contraindications*

Six cases of serious venous and arterial thrombosis have been linked to the use of combined estrogen/progestin emergency contraception in the United Kingdom, where it has been used on more than 4 million occasions.<sup>8</sup> Although the incidence of thrombosis is very low for the combined hormonal regimen, it is considered to be even less frequent for an estrogen-free method.

Women who experience active migraine with focal neurologic deficit should not use combination estrogen-progestin; migraine is not a contraindication for progestin-only emergency contraception.<sup>2,9</sup> Progestin-only oral contraceptives are contraindicated in conditions of unexplained vaginal bleeding and porphyria.<sup>1</sup>

#### *Conclusions*

Levonorgestrel has been shown to be equal or superior to combined hormonal emergency contraception with a significantly lower incidence of

GI side effects such as nausea and vomiting. Even though levonorgestrel is more expensive than the combined hormonal emergency contraceptive, due its lower failure rate, fewer side effects, minimal contraindications, and low estimated usage (~225 patients/year at VGH), this drug has been added to formulary for use in the Sexual Assault Clinic.

### References

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## Pharmacy Awards

Several members of Pharmaceutical Sciences CSU were recent recipients of awards for academic or professional excellence.

1. **Erica Greanya.** (Dupont/CSHP BC Branch Interhospital Competition for Highest Ranked Resident). Erica is currently working as a clinical pharmacist in Alberta.
2. **Nancy Cherry.** (Pharmacia/CSHP BC Branch Award for highest ranked B.C. residency project). Her project, coordinated by Karen Shalansky, Pharm.D. is entitled: "Intradialytic Parenteral Nutrition: Assessment of Outcomes". Nancy is currently a clinical pharmacist at VGH.
3. **Vivian Leung.** (BC Pharmacy Association 2001 New Horizons Award for Community Practice). Vivian is currently completing a residency program at VGH.

## Infusion Program Updates

The members of the Infusion Program, Pharmaceutical Sciences CSU held their first provincial conference focusing on home antibiotic therapy. This September 21, 2001 event was entitled: Outpatient Intravenous Antibiotic Program - Maintaining the Flow from Acute Care to the Community". The conference was attended by 75 members of nursing, pharmacy and medical professions from around the province. The presentations included:

Outpatient Intravenous Antibiotic Programs: Maintaining the Flow from Acute Care to the Community (Opening Remarks) - Dr. P Jewesson, Director VGH Infusion Program, Pharmaceutical Sciences CSU

New Antibiotics for Resistant Bacteria and their Impact on Home IV Therapy - Dr. G Stiver, VHHSC Division of Infectious Diseases

Issues for the Chemically Dependent Patient who Requires Home IV Antibiotics - Dr. G Dickson, VGH CDRT, J King V/RHB Home IV Program Manager, M Tanner V/RHB Home IV Clinical Educator

The VGH Home IV Antibiotic Program: A 6-year Experience and Patient Quality of Life Survey - A Wai, Clinical Pharmacist and R Nicol, Clinical Educator, VGH Home IV Program

Peripherally Inserted Central Catheters (PICC): Advanced Care and Management: Selection Criteria, Anatomy, and Troubleshooting - S Tomlinson, Clinical Educator, VGH Infusion Program

Total Joint Replacement Infections and the Prostalac Program - B Ferreira, Clinical Educator, VGH Infusion Program

Choosing the Best Vascular Access Device - C Leong, Clinical Educator, VGH Infusion Program

Use of a Cellulitis Treatment Protocol in the Emergency Department - Dr. P Zed, Paramcotherapeutic Specialist, VGH Emergency Department

If you are interested in a repeat presentation of any of these topics, please contact us.