

SEPTEMBER

2004

**FORMULARY PRODUCT TRANSITION:  
HUMULIN BRAND INSULIN TO NOVOLIN BRAND INSULIN**

The KU Hospital Formulary will soon reflect a change from the Humulin brand insulin products to Novolin products. Included in this change will be a therapeutic substitution from Humalog to Novolog, previously approved by the committee in April. This product switch will potentially decrease expenses for the institution. The following table reflects the insulin products that will be affected by this change in the formulary

Old Formulary	New Formulary
Humulin R	Novolin R
Humulin N	Novolin N
Humulin 70/30	Novolin 70/30
Humulin L	Novolin L
Humalog	Novolog
Humulin U	(No brand switch is available)
Humulin 50/50	(No brand switch is available)

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**STATIN FORMULARY FINAL RECOMMENDATIONS**

The Medication Use and Policy Management Committee received final approval on an autosubstitution policy for the HMG CoA drug class. Effective on September 1, **simvastatin** and **atorvastatin** remain on the formulary while **pravastatin** was added. All non-formulary statins will be therapeutically substituted. Pravastatin is not part of the auto substitution policy and will not be therapeutically substituted. This policy will eliminate multiple non-formulary agents being used in this institution.

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**LANSOPRAZOLE IV**

Lansoprazole IV, released in mid-June of 2004, was added to our formulary. Pricing for the new formulation is significantly cheaper compared to pantoprazole IV at \$3.79/30mg. Guidelines for the use of IV lansoprazole have been developed.

EFFECTIVE DATE: 7/04	<u>DEPARTMENT OF PHARMACY</u>	SECTION:
REVISION DATE: 7/04	<b>POLICY &amp; PROCEDURE</b>	Page 1 of 1

GUIDELINES FOR USE OF IV LANSOPRAZOLE

**POLICY**

1. GUIDELINES FOR CONTINUOUS INFUSION DOSING

Approved for use in patients with bleeding ulcer (active bleeding, visible vessel, or adherent clot). Indication for us should be confirmed via endoscopy within 24 hours of initiation of continuous infusion. Evidence does not exist to justify use of continuous intravenous proton pump inhibitors for durations exceeding 72 hours.

2. GUIDELINES FOR DAILY (NON-CONTINUOUS) DOSING

Patient must be NPO in order to receive non-continuous dosing of intravenous lansoprazole. Multiple references exist indicating that enteral proton pump inhibitors are superior to intravenous forms in terms of acid suppression for up to five days of treatment.

**PROCEDURE**

1. Upon receiving an order for intravenous lansoprazole, follow the appropriate guidelines listed above depending on the requested dosing regimen.
2. If intravenous lansoprazole is found to be inappropriate based on the above guidelines, contact the requesting physician and notify them that an alternate form of lansoprazole will need to be used (e.g., suspension).
3. A member of the P&T Medication Use and Policy Management Subcommittee should be contacted on the next business day in all cases where these guidelines are not followed.

**REFERENCES**

Armstrong et al. demonstrated that esomeprazole suspension produces greater acid suppression than intravenous pantoprazole (43.4% of patients with pH > 4 vs. 25.0% on day 1; 59.2% vs. 33.9% on day 5). [Armstrong D., et al. Oral esomeprazole vs. intravenous pantoprazole: a comparison of the effect on intragastric pH in healthy subjects. *Aliment Pharmacol Ther* 2003;18:705-11.]

Taubel et al. have shown that a 30mg dose of simplified lansoprazole suspension produces a higher intragastric pH when compared to 40mg of intravenous pantoprazole. [Taubel, J., et al. A comparison of simplified lansoprazole suspension administered nasogastrically and pantoprazole administered intravenously: effects on 24-h intragastric pH. *Aliment Pharmacol Ther* 2001;15:1807-1817.]

Lau et al. demonstrated that a continuous infusion of IV omeprazole (80mg bolus, then 8mg/hr for 72 hours) results in a 94.2% probability that bleeding will not recur after endoscopy versus 78.3% in the placebo group. [Lau et al. Effect of intravenous omeprazole on recurrent bleeding after endoscopic treatment of bleeding peptic ulcers. *NEJM* 2000;343:310-6.]

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DIRECTOR OF PHARMACY

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CHAIR OF PHARMACY & THERAPEUTICS COMMITTEE

REVIEW:

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INITIAL & DATE

## FORMULARY ADDITIONS

### Tiotropium Bromide (Spiriva®) 18 mcg capsules for Oral Inhalation

Tiotropium bromide is indicated for the long-term, once-daily, maintenance treatment of bronchospasm associated with chronic obstructive pulmonary disease (COPD). It is an anticholinergic; its pharmacological effects come from inhibition of M3-receptors at the smooth muscle in airways, which leads to bronchodilation. Derived from ipratropium, tiotropium has a 6- to 20-fold greater affinity for muscarinic receptors than ipratropium. Tiotropium has demonstrated a slower onset and longer duration of action than ipratropium and atropine.

The contraindications, warnings, and precautions for tiotropium should be similar to ipratropium and are related to its anticholinergic activity. It may potentially worsen symptoms and signs associated with narrow-angle glaucoma, prostatic hyperplasia or bladder-neck obstruction and so should be used with caution in patients with any of these conditions. As a predominantly renally excreted drug, patients with moderate to severe renal impairment (creatinine clearance  $\leq$  50 mL/min) require closer monitoring.

The primary adverse effect has been dry mouth. Dry mouth was usually mild and often resolved with continued treatment. Other possible reactions related to the anticholinergic effects include constipation, increased heart rate, blurred vision, glaucoma, urinary difficulty, and urinary retention.

There are no adequate well-controlled studies of tiotropium in pregnant women, nursing mothers, or pediatric patients. Tiotropium is listed in pregnancy category C.

#### **DRUG AND FOOD INTERACTIONS**

The manufacturer's prescribing information lists no food/drug interactions. Tiotropium is poorly absorbed from the gastrointestinal tract; thus food is not expected to influence absorption.

#### **DOSAGE AND ADMINISTRATION**

The recommended dosage of Spiriva HandiHaler is the inhalation of the contents of one Spiriva capsule, once-daily with the HandiHaler inhalation device. Spiriva capsules are for inhalation only and must not be swallowed.

The HandiHaler is an inhalation device specifically designed for use with Spiriva capsules. The device consists of a base with a center chamber and a piercing button, a mouthpiece over the center chamber and a dust cap over the mouthpiece. Spiriva capsules are packaged in a blister card. Capsules should remain stored in their sealed blister packs until immediately before use with the Handihaler. The drug should be used immediately after the sealed blister packaging is opened otherwise the effectiveness may be reduced.

For patients to self-administer a dose, they must first pull up to open the dust cap and then the mouthpiece on the Handihaler. The center chamber should be exposed. The capsule must then be placed into the center chamber. It does not matter which capsule end is placed into the device. Next, the mouthpiece is closed firmly until a click is heard, leaving the dust cap open. The HandiHaler is then held with the mouthpiece pointing upwards. The piercing button is pressed completely in once, and released (this leaves holes in the capsule to allow medication to be breathed in). The patient must then breathe out completely, but not into the HandiHaler mouthpiece. Lips are then placed tightly around the mouthpiece, and the head remains in an upright position as a slow deep breath is taken in. The rate of inhalation should be sufficient to hear the capsule vibrate. Breath should be held as long as comfortable. A second round of exhalation and inhalation is necessary to ensure that the full dose of Spiriva is delivered. Both times, there should be an audible vibration of the capsule in the chamber. The capsule should then be disposed. Daily cleaning of the HandiHaler is not necessary.

No dosage adjustment is required for geriatric, hepatically-impaired, or renally-impaired patients. However, patients with moderate to severe renal impairment given Spiriva should be closely monitor

<b>Formulary Additions and Deletions (January 1, 2004 - Present)</b>					
<b>Generic Name</b>	<b>Trade Name</b>	<b>Therapeutic Class</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>
BCNU Wafers	Gliadel	Chemotherapeutic	Added	2/26/04	
Brompheniramine	N/A	Antihistamine	Deleted	3/19/04	
Brompheniramine/ Phenylpropanolamine	N/A	Antihistamine/ Decongestant	Deleted	3/19/04	
Darbepoetin Alfa	Aranesp	Hematopoietic Agent	Deleted	06/24/04	
DTaP, Hep B (Recombinant), and IPV Combined	Pediarix	Vaccine	Added	5/27/04	
Doxorubicin HCl Liposomal	Doxil	Chemotherapeutic	Added	5/27/04	
Guaifenesin/ Codeine	N/A	Expectorant	Added	1/22/04	
Halothane	N/A	Inhalational Anesthetic	Deleted	3/25/04	
<b>Insulin</b>	<b>Humulin</b>	<b>Antidiabetic</b>	<b>Deleted</b>	<b>7/27/04</b>	<b>See Sept Pharmacy Key</b>
<b>Insulin</b>	<b>Novolin</b>	<b>Antidiabetic</b>	<b>Added</b>	<b>7/27/04</b>	<b>See Sept Pharmacy Key</b>
<b>Lansoprazole IV</b>	<b>Prevacid</b>	<b>Proton Pump Inhibitor</b>	<b>Added</b>	<b>7/27/04</b>	<b>See guidelines for use</b>
Lidocaine 5%	Lidoderm	Local Anesthetic	Added	8/28/03	
Mivacurium	Mivacron	Neuromuscular Blocker	Added	2/26/04	
Morphine Extended Release	Avinza	Narcotic Analgesic	Added	4/29/04	See guidelines for use
Moxifloxacin	Avelox	Antibiotic	Deleted	6/24/04	
Nateglinide	Starlix	Antidiabetic	Added	4/29/04	
Olanzapine for Injection	Zyprexa IntraMuscular	Antipsychotic	Added	6/24/04	See guidelines for use
Oseltamivir	Tamiflu	Antiviral	Added	3/25/04	
<b>Pravastatin</b>	<b>Pravachol</b>	<b>HMG-CoA Reductase Inhibitor</b>	<b>Added</b>	<b>7/24/04</b>	<b>See Sept Pharmacy Key</b>
Risperidone Long-Acting	Risperdal Consta	Antipsychotic	Added	2/26/04	See guidelines for use
<b>Tiotropium</b>	<b>Spiriva</b>	<b>Anticholinergic</b>	<b>Added</b>	<b>7/27/04</b>	<b>See Sept Pharmacy Key</b>
Zonisamide	Zonegran	Antiepileptic	Added	2/26/04	