

MAY

2004

NON-FORMULARY MEDICATION REQUEST REQUIRES PHYSICIAN APPROVAL

Effective June 1, 2004, the University of Kansas Hospital will be moving from a pharmacist-based approval process for ordering of non-formulary medications to one that requires completion of a request form by the prescribing physician. The Pharmacy and Therapeutics (P&T) Committee has approved this process change.

What is the new process for ordering non-formulary medications?

After receipt of a non-formulary order, a clinical pharmacist will contact the responsible physician to discuss alternatives that are on the formulary. If the physician wishes to proceed with the non-formulary request, the pharmacist will explain that the *Non-Formulary Medication Request Form* must be completed and signed by the prescribing physician before any doses of the medication can be dispensed. The form can be printed at www.formularyproductions.com/kumc (select 'Physician Order Forms') and hard copies will be available on inpatient nursing units. Once the form has been completed, it should be sent to the inpatient pharmacy via the Pyxis® Connect scanning system. The form will be emailed within three business days to the attending physician of the patient to notify them of non-formulary medication use.

Why is this necessary?

– Patient Safety

Non-formulary medication requests cause treatment delays and increase the likelihood of error when healthcare providers use drugs that they are not familiar with. A formulary is a necessity to ensure that appropriate safeguards are in place and that healthcare providers are inserviced and knowledgeable about the medications their patients are receiving. Nurses and pharmacists are less likely to be familiar with the monitoring parameters, dosing, adverse effects, and drug interactions of non-formulary medications.

– JCAHO

The 2004 JCAHO Medication Management standards require each institution to have a process to approve and procure non-formulary medications. Our current process, which requires the approval of a clinical pharmacist or pharmacy administrator, is unlikely to be considered acceptable based on the standard of practice for large academic institutions. The standard of practice, as determined by a recent survey of University Health-System Consortium (UHC) hospitals, involves attending physician approval before any non-formulary medication can be dispensed. Attending physician approval, through completion of a form or CPOE, is the approval method at peer institutions including the University of Missouri Health Center, University Hospital of Arkansas, University of Wisconsin Hospital, Johns Hopkins Hospital, and Yale-New Haven Hospital.

– Formulary Management

Our current process does not in any way deter use of non-formulary items. It is important to minimize non-formulary usage for medication safety and to minimize treatment delay. The University of Kansas Hospital may not routinely stock non-formulary medications (JCAHO Standard MM.2.20), thus each order for a non-formulary drug typically results in the need to acquire the drug from our wholesaler, a process that may take up to 48 hours. The new request form will also serve as a trigger to expedite P&T review of new medications.

Where is the most current formulary listing for the University of Kansas Hospital?

The formulary can be accessed at any hospital workstation by clicking on the 'FORMULARY' icon or by typing in www.formularyproductions.com/kumc.

How do I request P&T Committee review of a medication for potential admission to the formulary?

The *Request for Non-Formulary Drugs* form can be accessed from the formulary home page by selecting 'Formulary Handbook', then 'Request for Non-Formulary Drugs'.

FORMULARY ADDITIONS

Nateglinide (Starlix®) 60, 120 mg tablets

Nateglinide is indicated as monotherapy to lower blood glucose in patients with type 2 diabetes who are inadequately controlled by diet and exercise and who have not been chronically treated with other antidiabetic agents, and for use in combination with metformin in patients who are inadequately controlled by metformin alone. Nateglinide's mechanism of action involves an interaction with the ATP-sensitive potassium channel on beta-cells, which results in depolarization of the cell. Calcium channels are opened, producing an influx of calcium and secretion of insulin. The extent of insulin released is glucose-dependent. Nateglinide demonstrates high tissue selectivity with a low affinity for heart and skeletal muscle.

Peak levels of nateglinide are achieved within one hour after administration. Absorption is delayed when given with food as demonstrated by a decrease in maximum concentration (C_{max}) achieved and an increase in time to peak plasma concentration (T_{max}). Nateglinide is metabolized by the mixed-function oxidase system, primarily hydroxylation and secondarily glucuronide conjugation. In vitro data has shown nateglinide to be predominantly metabolized by cytochrome P450 isoenzymes CYP2C9 (70%) and CYP3A4 (30%).

The efficacy of nateglinide to produce moderate decreases in HbA_{1c} and fasting plasma glucose levels has been proven through many studies.

Nateglinide is contraindicated in patients with type I diabetes, diabetic ketoacidosis, or known hypersensitivity to the drug or its inactive ingredients. Nateglinide, like other systemically absorbed antidiabetics, is capable of producing hypoglycemia. Special caution should be taken in administering nateglinide to patients at higher risk of developing hypoglycemia (e.g., geriatric patients, malnourished patients, patients with adrenal or pituitary insufficiency). Caution should be used in patients with moderate-to-severe liver disease because use of nateglinide has not been studied in this population.

Nateglinide is listed in pregnancy category C. No adequate and well-controlled studies have been performed in pregnant women; therefore, nateglinide is not recommended for use in pregnant women. It is not known whether or not nateglinide is secreted in breast milk, therefore, nateglinide is not recommended for administration in nursing women.

Nateglinide is well-tolerated among patients. The most common adverse events include upper respiratory infection, back pain, flu symptoms, and dizziness.

DRUG AND FOOD INTERACTIONS

The manufacturer's prescribing information states that absorption is delayed when nateglinide is given with food but the composition of a meal does not affect the pharmacokinetics of nateglinide.

DOSAGE AND ADMINISTRATION

The recommended starting and maintenance dose of nateglinide, alone or in combination with metformin, is 120 mg three times daily before meals. In patients who are near goal HbA_{1c} when treatment is initiated may receive 60 mg three times daily before meals.

Morphine Extended Release Capsules (Avinza®) 30, 60, 90, 120 mg capsules

Avinza® is an extended release formulation of morphine sulfate and is indicated for the management of moderate to severe pain. Avinza® comes in a capsule consisting of two components, an immediate release component and an extended released component that maintains plasma concentrations for once daily oral administration. This formulation offers the unique capability to provide immediate relief as well as sustained relief throughout the 24 hour dose. Avinza® rapidly achieves plateau morphine plasma concentrations through an immediate release component and maintains this plasma concentration through the extended release component of the capsule. The amount of morphine absorbed from Avinza® following oral administration is similar to that absorbed from other morphine formulations. The bioavailability of Avinza® and morphine are equal. A once daily dose of Avinza® provided similar C_{max}, C_{min}, and AUC values as well as peak-trough fluctuations.

The contraindications, warnings and precautions with these special formulations are no different than those for other morphine products already established on the formulary. Avinza® is a Pregnancy Category C drug. Low levels of morphine sulfate have been detected in human milk. Because of the potential for nursing infants to experience adverse reactions, a decisions should be made whether to discontinue nursing or discontinue the drug, taking into account the benefit of the drug to the mother.

Avinza® presents the same adverse reactions and drug interactions as morphine sulfate. The common adverse events seen on initiation of therapy with morphine are dose-dependent and are typical opioid-related side effects. Drug interactions for these formulations are also the same as other morphine products.

DRUG AND FOOD INTERACTIONS

The manufacturer's prescribing information lists no food/drug interactions.

DOSAGE AND ADMINISTRATION

it is necessary to adjust the dosing regimen for each patient's individual analgesic needs. The beads within the capsules should not be chewed, crushed, or dissolved due

to risk of acute overdose. Avinza® is available in 30 mg, 60 mg, 90 mg, and 120 mg capsules. All doses are administered once daily.

Guidelines for Use: The University of Kansas has selected Avinza® for a subset of patients who cannot take oral morphine preparations or solutions. For this reason the medication, when indicated, should be given through a gastrostomy tube. The package insert recommends the contents of Avinza® to be mixed in applejuice to place down the tube, but water will work as well. There is no data to support Avinza® given through any other tube. In rare situations Avinza® may be given with applesauce. The entire contents of the capsule should be sprinkled into a small amount of applesauce and used immediately. The mixture should be swallowed without chewing or crushing the beads and then the mouth rinsed to ensure all beads have been ingested.

Avinza® has been added to the University of Kansas Hospital Formulary with the following criteria:

- Patient requiring continuous, around-the-clock opioid therapy who cannot take tablet formulation of morphine.
- Patient requiring continuous, around-the-clock opioid therapy through a gastrostomy tube.
- Outside criteria requests for Avinza® will be handled by Pain Service at x3692.

Formulary Additions and Deletions (July 1, 2003 - Present)

Generic Name	Trade Name	Therapeutic Class	Action	Date	Comments
Aprepitant	EMEND	Antiemetic	Added	12/25/03	See guidelines for use
Attapulgite	Kaopectate	Antidiarrheal	Deleted	7/16/03	Removed from market
BCNU Wafers	Gliadel	Chemotherapeutic	Added	2/26/04	
Bivalirudin	Angiomax	Anticoagulant	Added	11/27/03	
Carbamazepine	Carbatrol	Anticonvulsant	Added	9/9/03	
Ciprofloxacin	Ciloxan	Topical Antibiotic	Deleted	9/25/03	Ophthalmic solution only
Clemastine	Tavist	Antihistamine	Deleted	8/27/03	
Clemastine/ Phenylpropanolamine	Tavist-D	Antihistamine/ Decongestant	Deleted	8/27/03	
Docusate/ Casanthranol	Peri-Colace	Stool Softener	Deleted	12/16/03	Discontinued by manufacturer
Ezetimibe	Zetia	Antilipemic	Added	8/28/03	
Flurandrenolide	Cordran	Corticosteroid	Deleted	10/8/03	Discontinued by manufacturer
Gemtuzumab Ozogamicin	Mylotarg	Antineoplastic	Added	12/25/03	
Guaifenesin/ Codeine	N/A	Expectorant	Added	1/22/04	
Lidocaine 5%	Lidoderm	Local Anesthetic	Added	8/28/03	
Mivacurium	Mivacron	Neuromuscular Blocker	Added	2/26/04	
Morphine Extended Release	Avinza	Narcotic Analgesic	Added	4/27/04	See guidelines for use
Moxifloxacin	Vigamox	Topical Antibiotic	Added	9/25/03	Ophthalmic solution
Nateglinide	Starlix	Antidiabetic	Added	4/27/04	
Oxybutynin	Oxytrol	Urinary Antispasmodic	Added	8/28/03	
Risperidone Long-Acting	Risperdal Consta	Antipsychotic	Added	2/26/04	See guidelines for use
Zonisamide	Zonegran	Antiepileptic	Added	2/26/04	