New Formulary Drugs

Iodixanol (Visipaque™)
Iodixanol is a nonionic, isosmolar dimeric radiographic contrast medium. It was added to the formulary with restriction to Radiology department. It has a lower osmolality than current second-generation contrast media, suggesting the propensity for reduced toxicity. Adverse effects include discomfort at the injection site, mild decreases in glomerular function, and increases in excretion of N-acetylglucosaminidase and alkaline phosphatase after intravascular administration.

Other Formulary Issue

Formulary deletion
- Maalox Plus Extra Strength – discontinued by manufacturer
- Didanosine powder – no usage

CLARIFICATION of once daily tobramycin
The use of once daily tobramycin is restricted to neonates in the Infant Intensive Care Unit and to patients with cystic fibrosis over one year of age. Other patients may be prescribed once daily tobramycin only with Infectious Disease approval. See June 2005 issue for details of this policy.

AVOID MEDICATION ERRORS- How to SAFELY give patient’s own medicines during hospital stay

In an effort to prevent medication errors, we must follow the CHRMC policy regarding patient’s own medications. Children’s Pharmacy provides ALL medications to patients during their inpatient stay and using patients’ own medications are only allowed under limited conditions:

- Use of home medication may be allowed if it is a non-formulary item that pharmacy cannot acquire within a reasonable period of time or when no other alternative is available.
- A pharmacist needs to inspect and approve these medications before use. Only those medications that can be positively identified are permitted. They will not be allowed if pharmacist has concerns about the cleanliness, storage, or contents of medications.
- An active order from a Children’s provider stating the use of a home medication is necessary. As with any other medication order, prescribers need to indicate pertinent instructions such as drug, dosage, route and frequency.
- Exceptions to the above criteria include research medications, medications for patient teaching, drug products from foreign countries, insulin pumps, and parenteral nutrition (patient may use their home supply of PN the first day/night of admission ONLY. A pharmacist has to inspect and approve the product along with an order of the exact composition of the PN and infusion instructions).

Please refer to Clinical P&P, patient’s own medications and patients’ self administered medications, for further details.
**Critical Drug Shortages**

*Erythromycin injection* – unavailable from manufacturer but pharmacy still has some supply

*Gonadorelin injection* – temporarily unavailable

*Lorazepam 2 mg/ml oral liquid* – unavailable from manufacturer; consider tablet or compounded liquid (0.1 mg/ml)

*Tylenol brand liquid* - generic available

**Watch List:**

All brands of IVIG, WinRho, Zosyn (Zosyn is likely to be in short supply through early 2006)

**Shortage Resolved:**

Meropenem, Methotrexate

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**Transdermal Drug Precautions**

*by Kristin Veal, PharmD*

Patches are very popular drug delivery devices. Many drugs, including fentanyl, clonidine, estrogen, testosterone, and scopolamine are available in this form.

Transdermal drug delivery has many advantages. It provides an alternative to oral medications in patients who are unable to swallow tablets. It also allows for a steady drug level that could not be achieved with oral forms. In addition, patches are a more convenient dosage form for many patients. Instead of taking multiple tablets, some patches can be applied for up to several days at a time.

However, when prescribing patches, there are a couple of precautions to point out to your patients.

Heat can increase skin permeability, thus allowing for more rapid absorption of drug. Heat can also increase the solubility of the drug within the patch as well as the skin, thus leading to a ‘dumping’ effect as the drug is released more rapidly. Once the patch is applied, exposing it to a heat source such as a warming blanket, sauna, or sun bathing, could lead to high drug levels and possible overdose. There have been case reports of fentanyl overdose in patients using heating pads or warming blankets at the patch site. A case report also described a female who experienced hot flashes after several days of sun bathing while wearing an estrogen patch, as well as skin discoloration after removing the patch. Most likely, the heat caused a ‘dumping’ effect, leading to skin discoloration and early emptying of the drug from the patch (leaving the patient with no estrogen during the end of the patch cycle).

Patients should also be warned to remove patches prior to an MRI. Some patches contain metals within the patch matrix that could cause burns during an MRI. Advise patients to remove patches prior to the MRI, and apply a new patch after the procedure is complete.

References:

Vincristine is a chemotherapy agent used to treat a variety of malignancies. Vincristine binds tubulin, the building block of the mitotic spindle, thereby preventing the process of mitosis. Its main toxic effects are neurologic including peripheral neuropathy (both sensory and motor), constipation, and jaw pain.

It has long been known that intrathecal administration of vincristine results in progressive neurologic toxicity that almost always resulting in death. Specifically, such administration leads to ascending paralysis resulting from marked loss of neurons in the spinal cord as well as diffuse axonal degeneration and myelin loss. The time course for progression to death is variable, but generally occurs within the first few weeks of administration.

Several case reports outline procedures attempted to prevent death in these patients. Most commonly, efforts are made to completely exchange the cerebrospinal fluid and/or to continuously irrigate the system with replacement fluids such as Lactated Ringers or PlasmaLyte. Unfortunately, such attempts are largely ineffective, with only a few patients surviving. Those that do survive live with severe neurologic compromise.

Despite attempts at improving awareness around this issue, cases of inadvertent intrathecal administration of vincristine continue to be reported around the world. JCAHO has recently released a sentinel alert about this issue, asking institutions to evaluate practices they have in place to prevent such an error.

At CHRMC, we take several precautions to prevent inadvertent intrathecal administration of vincristine.

- Vincristine is dispensed from pharmacy in a syringe labeled with a bright yellow “fatal if given intrathecally; for intravenous use only” warning sticker.
- Intrathecal medications are dispensed from pharmacy in vials so as to be visually distinct from medications intended to be given IV.
- As part of our routine practice for chemotherapy medications, two people check that the intrathecal medication matches what was prescribed and what should be given based on the treatment plan (roadmap). The medication vial is also shown to the patient’s caregiver so they are aware of what will be given.
- Only the medication to be given intrathecally is allowed in the hem/onc procedure room or brought to the OR/PACU by the provider. Only hem/onc providers (attendings, fellows, ARNPs or PA-Cs) are permitted to administer the intrathecal dose.
- In the procedure room, the “time out” policy is followed and the provider giving the dose of intrathecal medication reads the name of the drug from the medication label aloud immediately prior to giving the drug.
- Once the lumbar puncture is complete, patients are moved to a separate room to recover from anesthesia. If they are scheduled to receive vincristine that same day, it is only given after the patient has been moved from the procedure room to another location and only after the same two person/caregiver double-check described above has occurred.

References:
Valerian is a perennial plant native to Europe and Asia and colonized to North America. It has a distinctive odor that some may find unpleasant. *Valeriana officinalis* is the species most often used in the United States and Europe, although the genus Valerian includes over 250 species.

Valerian root has been used as a mild sedative-hypnotic. In the United States, valerian is a dietary supplement and is regulated as a food, not a drug. Its physiologic activity is believed to be due to direct sedative effects (valepotriates, valeric acid) and also interaction with neurotransmitters such as GABA. Valerian reduces sleep latency when used in the treatment of insomnia. It is well tolerated and has low abuse potential in usual therapeutic doses. The adult valerian dose for insomnia ranges from 400-900mg of an aqueous or ethanolic root extract, roughly equivalent to 1.5-3gm of dried herb, usually given 1/2 to 1 hour before bedtime.

A randomized multicenter study compared valerian extract to oxazepam 10mg for nonorganic insomnia. Both agents were equally effective in increasing sleep quality during the six week trial. Other comparative studies of valerian have used a wide range of methodologies and study parameters, and have reported inconclusive results. No clinical trials have demonstrated efficacy in children. More rigorous trials are necessary to justify its use.

The most common side effects reported with valerian are headache, dizziness, pruritis and gastrointestinal disturbances. Dependence and withdrawal reactions have not been observed with usual doses. Although valerian has not been reported to interact with any drugs or to influence laboratory tests, this has not been rigorously studied. Women who are pregnant or nursing should not take valerian without medical advice because the possible risks to the fetus or infant have not been evaluated. Use caution when taking valerian due to possible additive sedative effects from alcohol or sedative drugs, such as barbiturates, benzodiazepines, or antihistamines.

Valerian is available as teas or tinctures, capsules and tablets. Follow the recommended dose on the valerian container for the intended usage.

Reference:


Some useful online resources for dietary supplements:

- [www.herbalgram.org](http://www.herbalgram.org) (American Botanical Council)
- [www.herbmed.org](http://www.herbmed.org) (Alternative Medicine Foundation)
- [www.naturaldatabase.com](http://www.naturaldatabase.com) (Natural Medicines Comprehensive Database)