HOUSTON Methodist LEADING MEDICINE

HOUSTON METHODIST
PHARMACY & THERAPEUTICS NEWS
September 2023

FORMULARY UPDATES

Laura M. Blackburn, PharmD

The following medications and classes were reviewed for formulary status

Medication/Class	Formulary Updates

Tocilizumab (Actemra®)	• Tocilizumab remains restricted to:
	  • Hematology, Oncology, Rheumatology, Critical Care, Pulmonary, Infectious Diseases
	  • Inpatient Setting to: cytokine release syndrome, COVID
	  • Outpatient Setting to: FDA labeling
	•Updates were made to Epic to reflect these restrictions

Therapeutic Interchange 122: GLP-1 Receptor Agonists	• Liraglutide inj (Victoza®) remains the preferred inpatient formulary product • Removed lixisenatide (Adlyxin) from the interchange as it was removed from the market
Therapeutic Interchange 101 : H_2 Antagonists	• Famotidine (Pepcid®) remains HM preferred inpatient formulary product. • Ranitidine formulations and cimetidine inj were removed from H2RA interchange as they were discontinued from the market
Therapeutic interchange 168: Triple Combination Inhalers ICS/ LAMA/LABA	• A new formulary interchange for the triple combination inhalers was approved that converts these orders to their equivalent individual products: Arformoterol (Brovana®) + Budesonide nebulized suspension + Ipratropium nebulized solution • Patients in possession of their own triple inhaler and deemed capable of self-administration may self-administer their triple combination inhaler as ordered. A CPOE order with the specification of "Patient-Supplied" should be placed by the physician/pharmacist.

To request a medication for formulary review, **click here**

Terlipressin (Terlivaz®), an antidiuretic hormone analog indicated for management of hepatorenal syndrome (HRS) was approved for formulary with restriction to transplant nephrologist, hepatologist, or liver transplant surgeons for HRS Type 1/HRS-AKI. It was further restricted to HMH IMU or ICU with continuous pulse oximetry monitoring. Terlipressin will become available for use starting October 18th.

Have a medication-related, cost-saving idea? **Submit your idea here**

The *Pharmacy & Therapeutics News* is dedicated to providing the most current information regarding medication-use policy and formulary issues. Each issue details recently approved actions from the system P&T committee as well as relevant patient safety, pharmacotherapy and drug distribution updates. Entity representatives to the system P&T committee structure can be found here.

Drug Information Resources Updates

On October 1st, Houston Methodist will transition away from the Micromedex drug information platform with the exception of the Redbook and Neofax/Peds modules.

The move comes after an assessment of HM users regarding which drug information platform they most use. The survey showed that Lexicomp was the most regularly used source of drug information across a number of use cases and Micromedex was the least used platform.

The content contained within each platform, Lexicomp and Micromedex, substantially overlap thus creating an unnecessary duplication of resources.

The following links will take you to updated Lexicomp guides and self-training modules for users to gain a better understanding of the content within Lexicomp and efficiency steps to gain more proficiency with the resource.

- Lexicomp User Academy
- Lexicomp Neonatal Content Overview
- Lexicomp Success Center
- Lexicomp Technical Support

FORMULARY UPDATES

Solmaz Karimi, PharmD

High Dose Methotrexate Administration and Leucovorin Dose Adjustment Clinical Practice Guidance Approved

The management of high-dose methotrexate (MTX) administration and leucovorin (LV) rescue in adults at HM has not been standardized. This variability increases the risk of MTX toxicity and adverse effects resulting in increased length-of-stay.

High-dose MTX (any dose > 500 mg/m^2) is used in the treatment of acute leukemias, central nervous system lymphomas, and osteosarcomas.

Hydration Goals
• Urine output of > 150 mL/hour • Maintain urine pH ≥ 7 until MTX systemically cleared (MTX level <0.1 µmol/L or at the discretion of treating MD)
Hydration Options
• Sodium bicarbonate 100-150 mEq/L in dextroxe 5% water or sterile water • Sodium acetate 150 mEq/L in dextrose 5% water or sterile water • Sodium bicarbonate po 650 mg/m2 every 6 hours with lactated ringer at 125-150 mL/hour • Sodium bicarbonate 1 mEq/kg in 50 mL D5W infused over 30 minutes every 4-6 hours

Hydration

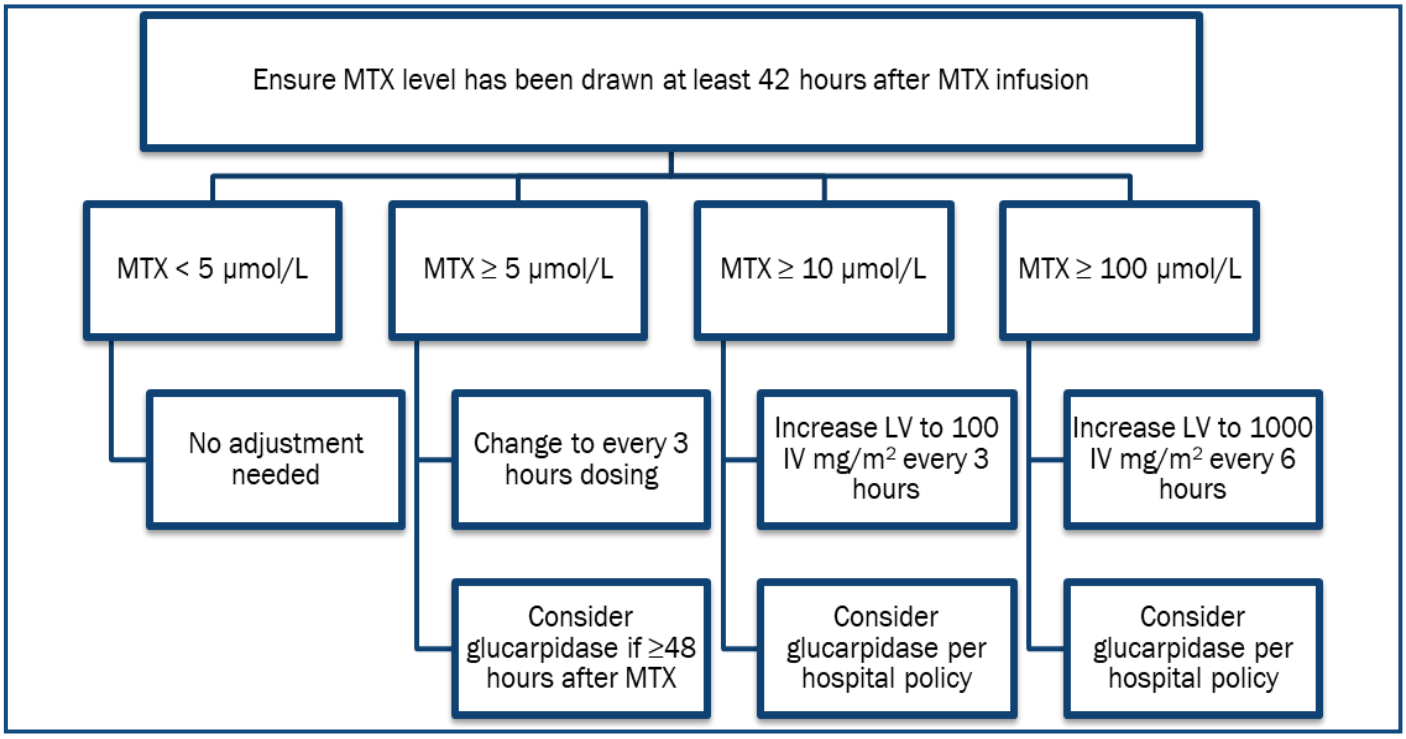
The maintenance of adequate hydration and urine output is essential for appropriate, rapid clearance of MTX. It is recommended to administer at least 2.5–3.5 liters/m^2 of intravenous (IV) fluid hydration per day starting 4-12 hours prior to MTX infusion initiation.

Leucovorin Rescue

LV, a reduced form of folic acid and an essential co-enzyme for nucleic acid synthesis, can be used to "rescue" cells from MTX toxicity, but does not increase clearance of MTX. LV rescue should be initiated according to the standard chemotherapy regimen protocol.

The timing of the first MTX level is dependent on the specific treatment protocol based, but is typically drawn 24 hours after completion of the MTX infusion and repeated every 24 hours until MTX is systemically cleared (< 0.1 µmol/L or at the discretion of treating MD). MTX levels can be obtained earlier as clinically indicated for any rapid changes in renal function or to facilitate early discharge.

System P&T upon the recommendations of the oncology medical staff approved the clinical practice guidance for LV dosing. Doses should be adjusted based on the MTX levels and/or signs of renal toxicity using the following algorithm:



MEDSAFETY MATTERS!

M. Tatjana Ramos, PharmD, MPH & Amaris Fuentes, PharmD

ISMP Medication Safety Newsletter Links: Acute Care & NurseERR & Community/ Ambulatory

Assessing Risk & Addressing Potential Harms of Opioid Use

The CDC Opioid Prescribing Guidelines describe 3 recommendations (#8,9,10) for patient assessment of risk from opioids and addressing their potential harm including:

- Evaluate risk for opioid-related harms and discuss risk with patients before starting therapy and periodically
- Work with patients to incorporate strategies to mitigate risk, including offering a naloxone prescription
- Review the patient's history of controlled substances prescriptions using state prescription drug monitoring program (PDMP) date to determine if at high risk for overdose
- Exercise caution when prescribing pain medications and benzodiazepines concurrently and provide education regarding risks of concomitant use of opioids and benzodiazepines, if deemed necessary

At HM, a number of ways exist to support review of the Texas PMP to support these assessments as outlined in the table.

	Advantages	Disadvantages
Texas PMP Aware Website	• Easily toggle patient specific data • Can choose to include additional states • Update your profile	• Requires manual entry of patient information • Separate browser
Illumicare Smart Ribbon – Controlled Substances Button	• Automatically imports patient information • Immediately available within chart • PIN-based log-in	• Limited to Texas and contiguous states (if PMP defaults not set) • Different views (provider vs. pharmacist)
NaRx Score Epic Storyboard Integration	• One-click availability • Automatically imports PMP report • Prescription report available within Epic	• Limited to Texas prescriptions • Requires provider NPI to Texas PMP Aware account

Naloxone should be considered for patients who are prescribed opioid medications and provided relevant education:

- Prescribed medicines to treat opioid use disorder
- Prescribed opioid pain medications who are at increased risk for overdose:
- Concomitant use of benzodiazepines or other CNS depressants
- Chronic opioid treatment with total daily opioid >50 MME
- History of opioid use disorder
- History of opioid overdose
- Have household members or other close contacts who may be at risk for accidental ingestion or opioid overdose

Patient Education: How to Respond to an Overdose

If someone is not breathing or you think they may have overdosed:

- Check for response to yelling and shaking
- Call 911
- Administer 1 spray of naloxone in 1 nostril. If no reaction in 2 to 3 minutes, administer a second dose in the other nostril
- Give rescue breaths or administer CPR Follow 911 dispatcher instructions
- Stay with the person until help arrives

MEDICATION SAFETY

Amaris Fuentes, PharmD

Inhaled Epoprostenol (Flolan®) Quality and Safety Review

A continuous quality review was conducted on the efficacy and safety of inhaled epoprostenol used for the management of pulmonary hypertension at Houston Methodist. Most patients were started on quad strength formulation (51%) followed by double strength (39%). Overall, improvement in the PaO2/FiO2 (P/F) ratio was observed within the first 24 hours and was similar between quad vs double strength. Peak change in P/F was observed within 6 hours in most patients and up to 24 hours in COVID patients. Half of the safety events were due to misunderstanding of the administration process. To optimize delivery an inhaled epoprostenol, an order panel was developed with timed arterial blood gas and options for inhaled epoprostenol ordering. Patients deemed unresponsive to epoprostenol should have therapy discontinued to avoid waste.

MEDICATION PRESCRIBING

Place Medications on Hold for Specific Time

Timing medication holds can be complex (e.g., placing blood thinning medications on hold for a specified time before a patient's scheduled surgery to reduce bleeding risk, then resuming them at a certain time post-surgery). In these situations, you can place inpatient medications on hold for a certain time frame, by specifying a discrete duration, such as a number of doses, hours or days, or you can choose a time to end the hold. Starting 9/29/2023, you can also schedule a future hold, such as indicating a medication should be held. Link here for a tip sheet.

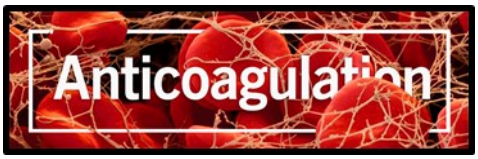
Entering Orders After Discharge Medication Reconciliation

Review this tip sheet for guidance on how to enter additional orders *after* **Discharge Medication Reconciliation** has been completed. Correctly managing these medications in Epic can reduce errors when patients leave the hospital.

New BPA: Complete PTA Medication Reconciliation

When a patient has been admitted for four hours and the PTA (prior to admission) medication review is complete, but the PTA medication reconciliation is not, this BPA will display alerting you that PTA reconciliation is needed/incomplete. Go into the **Admission Medication Reconciliation** process, and act on every home medication to ensure each one is accurately continued, discontinued or further modified.

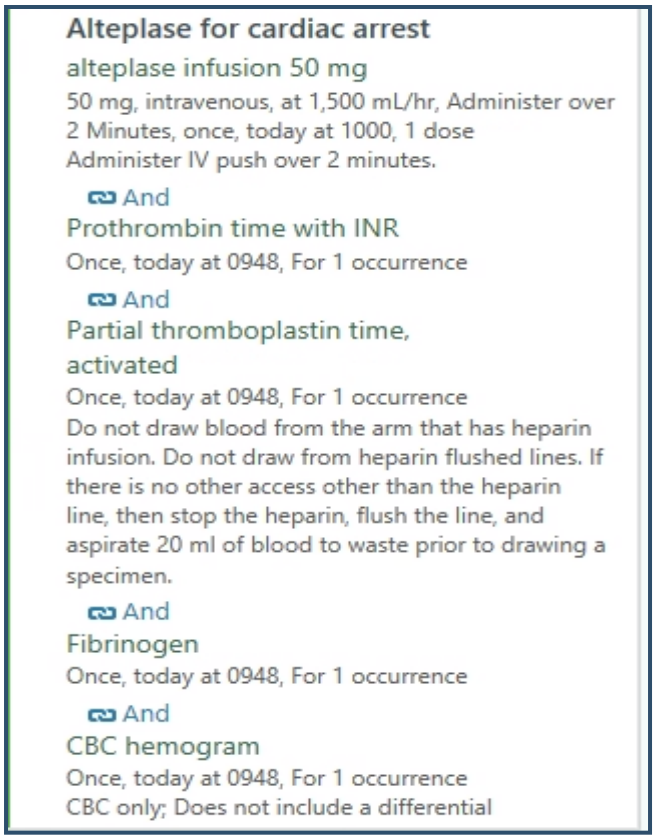
ANTICOAGULATION USE SAFETY

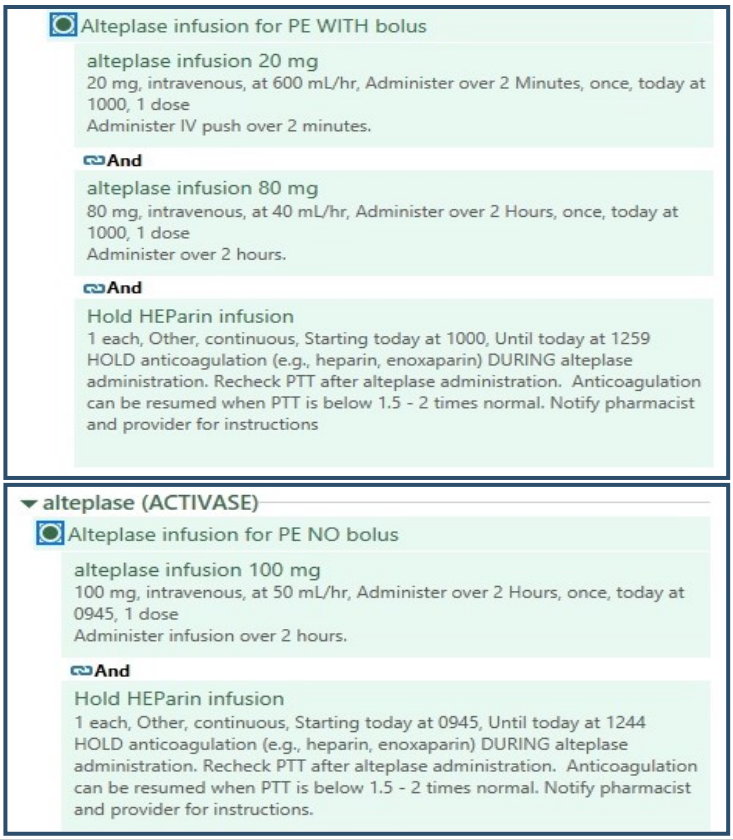


Michael Sirimaturos, PharmD

Alteplase for Pulmonary embolism & Cardiac Arrest Enhancements

Changes approved in April went live September 6th. Updates include separating alteplase for pulmonary embolism (PE) and alteplase for cardiac arrest into separate order sets. The alteplase order set for PE now contains pre-built options for standard dosing with NO bolus (100mg over 2 hours) as well as alternative dosing WITH bolus (20mg over 2 minutes followed by 80mg over 2 hours). Radio buttons for optional imaging are also available in the order set.





ANTIMICROBIAL STEWARDSHIP

Shivani Patel, PharmD

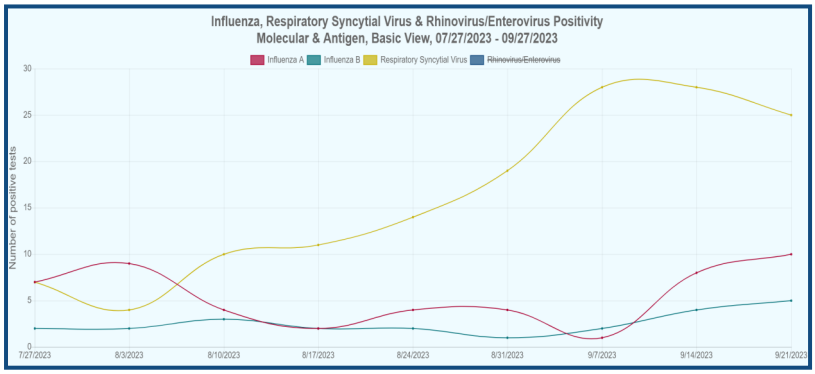
COVID-19 Vaccine Update

- The CDC recommends, that everyone who is eligible, stay up-to-date on vaccinations by getting an updated booster dose of the 2023-2024 formulation. Either the Moderna or Pfizer-BioNTech COVID-19 vaccines are recommended. These vaccines are effective against BA.2.86, a lineage with concern that may more effectively evade the immune system.
- Given the widespread availability of vaccine in the outpatient setting, the infrequent use of covid vaccine products for inpatients recently, and the lack of urgency to vaccinate a patient during an inpatient hospitalization, the COVID-19 vaccine will not be supplied for Houston Methodist *in*patients at this time. There will not be an order item in epic for *in*patient administration. Providers should direct patients to the outpatient care setting to receive their vaccination.

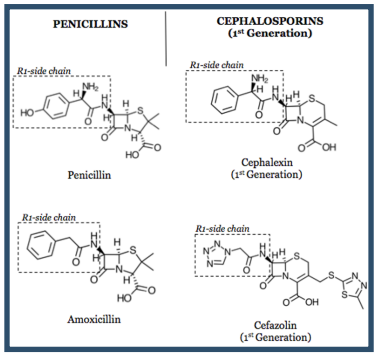
2022-2023 Influenza Season

Houston Methodist tracks the incidence of influenza cases circulating in the community. You can follow the trends at our Houston Methodist Respiratory Pathogen Tracker here.

Providers are encouraged to order influenza vaccination for outpatients. Hospitalized patients are assessed and vaccinated per-policy by nursing staff according to our established standing orders for treatment.



Update on Penicillin Cross-Reactivity with 1st Generation Cephalosporins and Carbapenems



Outdated literature reports 10% of patients with reported penicillin (PCN) allergy may react to alternative beta-lactam exposure. However, cross-reactivity is based on antibiotic side-chain activity and differences in side chains between PCN and 1st generation cephalosporins and/or carbapenems confer a low risk of cross-reactivity. In 2021, JAMA Surgery published a systematic review and meta-analysis of 77 trials with 6,000 patients assessing the incidence of dual penicillin and cephalosporin allergies. The frequency of Cefazolin allergy in patients with a history of PCN allergy was 0.7%. The conclusion is that most patients with a penicillin allergy history may safely receive cefazolin. Macy et al. looked at the impact of electronic allergy alerts on prescribing practices from over 4,000,000 patients in the Kiser Permanente Health System. Removing PCN allergy alerts when prescribing cephalosporins resulted in a 47% increase in cephalosporin use compared to baseline with no change in adverse effects including anaphylaxis.

At HM today, prescribers are alerted with high-risk allergy/contraindication warnings when ordering a 1st generation cephalosporins and/or carbapenems in patients with a documented PCN allergy. Based on the data reviewed and the joint positions statement from the American Academy of Allergy, Asthma, and Immunology (AAAAI) and the American College of Allergy, Asthma, and Immunology (ACAAI), HM will remove the PCN allergy cross-reactivity warning with 1st generation cephalosporins and carbapenems. The change will be implemented in Epic within the next 6-8 weeks and moves HM toward a clinical practice situation where the use of optimal beta-lactam based regimens to treat or prevent infections are not unnecessarily re-directed to less effective or less safe alternatives based on outdated electronic prompts.

NEWSLETTER STAFF
Editor-in-Chief: Michael G. Liebl, PharmD
Managing Editor: Laura M. Blackburn, PharmD
Contributors: Alexis Hyman, PharmD
System P&T Committee Roster is available to view here.