Pharmacy & Therapeutics Committee Meeting

Private Dining Room

February 11, 2021 7:00 a.m.

Next Meeting Date: April 15, 2021 at 7:00 a.m. in the Private Dining Room

PHARMACY AND THERAPEUTICS COMMITTEE

DATE: December 10, 2020 CALLED TO ORDER: 7:02 a.m.
LOCATION: Private Dining Room + Zoom conference call ADJOURNED: 8:04 a.m.

Members Present:			**Members Absent**:	**Guests**:
Nathan Chamberlain, MD	Rhonda Hatfield, RN-CNO	Karen Frank, RN-Quality	Allen Atchley, MD	Ruchir Shah, MD
F. Lee Hamilton MD	Patrick Ellis, PharmD	Lori Hammon, RN-Quality	David Dodson, MD	Kevin Hopkins, RT
William Haren, MD	Rachel Kile, PharmD	Shannon Harris, RN	Vimal Ramjee, MD	Kristen Liveris, PharmD
Matthew Kodsi, MD	Karen Babb, PharmD		Mark Anderson, MD	La'Travia Howard, PharmD
Richard Yap, MD	Rodney Elliott		Susan Fuchs, RD	Sierra Detwiler, PharmD
			Daniel Marsh, PharmD	Jeremiah Wojtowicz, Student

This meeting will be convened under the protection of the Tennessee Statute 63-6-219 and the Health Care Quality Improvement Act of 1986, Public Law 99-660. All information, case reviews, meeting minutes, statistics and correspondence are confidential and protected. Included in that protection are those that are involved in the review of the information. Any discussion of this information outside the realm of Peer Review constitutes a breach and violates the protection of the persons involved in the breach.

AGENDA ITEM	FINDINGS OR CONCLUSION	ACTION, RESPONSIBILITY	STATUS
Minutes	The October 2020 minutes were approved as submitted.	Approved	Complete
CSH System P&T Committee	**November 2020 Decision Brief:** The medications that were reviewed at the CommonSpirit Health (CSH) System P&T committee meeting were reviewed. All new system formulary medications or changes were either consistent with existing CHI Memorial formulary decisions or are described in the "Therapeutic Interchanges and Formulary Changes" section of the minutes below, or will be reviewed at an upcoming P&T committee meeting.	Information	Complete
Formulary Decisions & Therapeutic Interchanges	1. **Tenecteplase (TNKase®):** Dr. Ruchir Shah spoke on the role of tenecteplase for acute ischemic stroke (AIS) treatment. Tenecteplase offers substantial prep time and cost advantages over alteplase, and multiple clinical trials have demonstrated benefit. The committee voted to replace alteplase with tenecteplase for AIS treatment, following hospital-wide education, in addition to order set and EHR updates. 2. **CSH Formulary Alignment:** The November 2020 CSH System P&T committee reviewed additional medications for formulary alignment opportunities across the entire CSH system. The below medications represent formulary variances from the current CHI Memorial formulary: a. The following medications were recommended for *non-formulary* status. Each of the medications are very low use: i. Quinidine gluconate: Patients may use home supply. ii. Nebivolol: Patients may use home supply. b. The following medications were recommended for *formulary, restricted* status. **i.** Esmolol: CSH formulary restricts ordering to the following service lines: ED, Cardiology, CT Surgeon, Critical Care, and Anesthesia. However, night-time cardiology admission coverage requires that hospitalists be added to local restrictions. ii. Nitrofurantoin macrocrystals (Macrodantin): It was recommended that use will be restricted to patients requiring medication administration via feeding tube. Otherwise, interchange orders to Macrobid at the same dose with BID interval. 3. **Romosozumab (Evenity®):** For patients at high or very high risk of fracture due to osteoporosis, zoledronic acid is the current formulary agent at CHI Memorial, which is given the same level of	Approved Approved Approved	Complete Complete Complete

AGENDA ITEM	FINDINGS OR CONCLUSION	ACTION, RESPONSIBILITY	STATUS
	guideline treatment recommendation as romosozumab, but at a substantially lower cost. Due to the non-preferential guideline recommendations, current offering of a guideline recommended agent in the same risk category, and financial assessment results, it was recommended that romosozumab be non-formulary at CHI Memorial. Romosozumab formulary status will be reassessed when guideline recommendations are updated.		
	4. **Dehydrated Alcohol:** The cost of dehydrated alcohol has increased from $12.50 to $782 per 5 mL vial, in addition to not being readily available for purchase. The committee voted to adopt the November CSH P&T committee-approved restriction criteria and locally designate dehydrated alcohol as a restricted product, with use limited to the following indications: interventional radiology for use in celiac plexus neurolysis; if doxycycline therapy is unsuccessful after use in sclerotherapy for seroma treatment; and dehydrated alcohol shall **not** be utilized for preventing and treating alcohol withdrawal.	Approved	Complete
	5. **Emergency use authorization (EUA) medications for COVID-19:** Rachel reviewed the current EUA therapies for COVID-19. A multidisciplinary EUA committee has been formed and will convene as needed to review new EUA therapies to determine appropriate use, if any, within our institution. The decisions of that group will be reported at the P&T committee meetings. a. Remdesivir (Veklury): Now FDA approved & is approved to formulary with locally designated restriction criteria. b. Bamlanivimab: Criteria for ordering follows the FDA EUA guidelines, and we are following the EUA instructions for preparation and administration. c. Casirivimab plus imdevimab: The CHI Memorial EUA committee approved use following the FDA EUA criteria, which matches the bamlanivimab EUA. The P&T committee voted to approve therapeutic interchangeability between bamlanivimab and casirivimab plus Imdevimab infusions. d. Baricitinib (Olumiant) in combination w/ remdesivir: The EUA committee recommended *against* use due to safety concerns with baricitinib's immunosuppressant effects in combination with dexamethasone use. This combination will **not** be utilized locally.	Approved	Complete
Medication Use	1. **TPN Utilization:** Rachel reviewed the results of a MUE performed on recent TPN utilization, with emphasis on CLABSI incidence and need for PICC lines directly due to TPN initiation. A separate quality review group will meet to review the data in detail.	Informational	Complete
Protocols & Orders	1. **Opiate Withdrawal Inpatient Order Set:** Rachel presented a draft order set for Opiate Withdrawal that was previously reviewed and approved by the Care for Patients with Addiction workgroup, Drs. Hamilton and Haren, and the opioid stewardship/pain management pharmacist(s). This order set will be submitted for EHR build and education will be planned for providers.	Approved	Complete
	2. **Inhaled epoprostenol (Veletri®):** Rachel presented the "CHI Memorial Standard Operating Procedure for Inhaled Epoprostenol – Adults" document. This was developed by Drs. Mull and Tucker, the Director of RT (Kevin Hopkins), and Rachel Kile. Use will be in the intensive care units and the operating room. The committee approved the document, which will be distributed to approved ordering providers of Veletri. Inhaled epoprostenol will be built for ordering in the EHR.	Approved	Complete
Policies	1. **Titrating Medications:** Discussion and approval of policy updates was tabled to the next meeting.	Information	Complete
	2. **Penicillin Allergy Skin Testing:** The policy was updated to reflect current practice of restricting ordering to infectious disease providers only. No other changes to the policy.	Approved	Complete

There being no further business, the meeting was adjourned at 8:04 A.M. The next P&T meeting is **February 11, 2021 at 7:00 a.m.**

Respectfully submitted,
Patrick N. Ellis, PharmD, Director of Pharmacy
Rachel Kile, PharmD, Pharmacy Clinical Manager

Approved by,
Nathan Chamberlain, MD, Chairman

COMMONSPIRIT HEALTH FORMULARY ALIGNMENT

BACKGROUND:

The February 2020 CommonSpirit System P&T committee reviewed additional medications for formulary alignment opportunities across the entire system. The below medications formulary variances from the current CHI Memorial formulary. As per the system formulary process, local P&T's may approve the below with no changes or approve with more restrictions. Additionally, sites may request an exception or appeal to any formulary decision with accompanying clinical documentation supporting the appeal.

The formulary variances are detailed below:

CARDIOLOGY:

- **ACE Inhibitors: Benazepril**
  - Recommendation/Discussion:
    A class review was performed and concluded that there is evidence based on head-to-head trials of long-term effectiveness only for lisinopril in this class. It was recommended to change benazepril to non-formulary status and add it to our current ACE-I therapeutic interchange table to lisinopril as shown below. Benazepril will be replaced on cardiology order sets with alternative ACE inhibitor formulary options. This recommendation was approved by Cardiology.

ACE Inhibitors	
ORDERED	**DISPENSE**
Benazepril (Lotensin ®) 5 mg	Lisinopril (Prinivil®) 5 mg
Fosinopril (Monopril®) 5 mg	
Moexipril (Univasc®) 3.75 mg	
Perindopril (Aceon®) 2 mg	
Quinapril (Accupril®) 5 mg	
Trandolapril (Mavik®) 0.5 mg	
Benazepril (Lotensin ®) 10 mg	Lisinopril (Prinivil®) 10 mg
Fosinopril (Monopril®) 10 mg	
Moexipril (Univasc®) 7.5 mg	
Perindopril (Aceon®) 4 mg	
Quinapril (Accupril®) 10 mg	
Trandolapril (Mavik®) 1 mg	
Benazepril (Lotensin ®) 20 mg	Lisinopril (Prinivil®) 20 mg
Fosinopril (Monopril®) 20mg	
Moexipril (Univasc®) 15 mg	
Perindopril (Aceon®) 8 mg	
Quinapril (Accupril®) 20 mg	
Trandolapril (Mavik®) 2 mg	
Benazepril (Lotensin ®) 40 mg	Lisinopril (Prinivil®) 40 mg
Fosinopril (Monopril®) 40 mg	
Moexipril (Univasc®) 30 mg	
Perindopril (Aceon®) 16 mg	
Quinapril (Accupril®) 40 mg	
Trandolapril (Mavik®) 4 mg	

- **HMG-CoA reductase inhibitors: Simvastatin**
  - Recommendation/Discussion:
    Simvastatin is a non-formulary medication at Dignity Health. It is recommended to change simvastatin to non-formulary status and add it to the current statin therapeutic interchange table as outlined in the table below. This recommendation was approved by Cardiology.

HMG-CoA Reductase Inhibitors (Statins)	
ORDERED	**SUBSTITUTION**
Fluvastatin (Lescol®) 20 mg Daily	Atorvastatin (Lipitor®) 5 mg Daily
Fluvastatin (Lescol®) 40 mg Daily	
Pitavastatin (Livalo®) 1 mg Daily	
Fluvastatin (Lescol®) 80 mg Daily	Atorvastatin (Lipitor®) 10 mg Daily
Pitavastatin (Livalo®) 2 mg Daily	
Simvastatin (Zocor®) 20 mg Daily	
Pitavastatin (Livalo®) 4 mg Daily	Atorvastatin (Lipitor®) 20 mg Daily
Simvastatin (Zocor®) 40 mg Daily	
Simvastatin (Zocor®) 80 mg Daily	Atorvastatin (Lipitor®) 40 mg Daily
Lovastatin (Mevacor®) 10 mg Daily	Pravastatin (Pravachol®) 10 mg Daily
Lovastatin (Mevacor®) 20 mg Daily	Pravastatin (Pravachol®) 20 mg Daily
Simvastatin (Zocor®) 10 mg Daily	
Lovastatin ER (Altoprev®) 20 mg Daily	
Lovastatin (Mevacor®) 40 mg Daily	Pravastatin (Pravachol®) 40 mg Daily
Lovastatin ER (Altoprev®) 40 mg Daily	
Lovastatin ER (Altoprev®) 60 mg Daily	Pravastatin (Pravachol®) 60 mg Daily
Lovastatin (Mevacor®) 80 mg Daily or 40 mg BID	Pravastatin (Pravachol®) 80 mg Daily

- **Fibric acid derivatives: Gemfibrozil**
  - Recommendation/Discussion:
    Gemfibrozil utilization is ~100 doses per month, driven by home medication continuation. Compared to gemfibrozil, fenofibrate has shown significantly greater reductions in triglycerides, LDL and total cholesterol. In addition, gemfibrozil has more drug interactions compared to fenofibrate, and is contraindicated when combined with statins. It is recommended to change gemfibrozil to non-formulary status and develop a therapeutic interchange to fenofibrate 67 mg daily. This recommendation was approved by Cardiology.

Ordered	Provided
Gemfibrozil 600 mg BID	Fenofibrate 67 mg daily

FORMULARY UPDATE

THERAPEUTIC CLASS: Sodium-Glucose Co-transporter 2 (SGLT2) Inhibitors

GENERIC NAME: Empagliflozin

PROPRIETARY NAME: Jardiance®

BACKGROUND/RATIONALE:
The October 2019 local P&T committee reviewed SGLT2 inhibitors and the committee's formulary decision mirrored the CHI formulary decision at that time. Since then, the February 2021 CommonSpirit Health System P&T committee meeting voted to remove all existing ordering restrictions for empagliflozin and maintain empagliflozin as the sole SGLT2 inhibitor on the system formulary.

The expanded use of SGLT2 inhibitors beyond the initial FDA indication (adjunct to improve glycemic control in adults with type 2 diabetes mellitus) prompted CommonSpirit to reevaluate use in cardiovascular indications, specifically Heart Failure with reduced Ejection Fraction (HFrEF). The DAPA-HF and EMPEROR-Reduced trial data are listed for review in the table on the following page, both of which studied patients with HFrEF with and without DM.

Although dapagliflozin is the only agent at this time that with FDA approval for use in HFrEF patients with or without DM to reduce the risk of CV death and hospitalization for HF in adults with HFrEF, evidence for empagliflozin is strengthening and the addition of FDA approval for use in HFrEF patients is anticipated for empagliflozin. Previous CHI/Dignity Health reviews have established the general interchangeability of these agents when used for the treatment of T2DM.

The 2021 ADA Standard for Medical Care in Diabetes states that SGLT2 inhibitors are not recommended for routine in-hospital use. Furthermore, the FDA has recently warned that SGLT2 inhibitors should be stopped 3 days before scheduled surgeries.

PHARMACOECONOMICS/COST:

Product	Cost per tablet	Cost per 7 days of therapy
Jardiance (empagliflozin) 10 mg or 25 mg tablet	$13.54	$94.78

CURRENT CHI MEMORIAL FORMULARY USE CRITERIA:
- All home medication orders for SGLT2 inhibitors will be interchanged to empagliflozin for continuation during admission, if ordered to continue.
- New orders for SGLT2 inhibitors should not be initiated

RECOMMENDATION/DISCUSSION:
It is recommended to revise the current restrictions for empagliflozin to the following:
1. All home medication orders for any SGLT2 inhibitor will be interchanged to empagliflozin for continuation during admission, if ordered to continue.
2. New inpatient orders for empagliflozin will be permitted, given the following patient conditions are met (which will be built into the EHR as ordering instructions to address):
    a. The patient is currently on and compliant with GDMT appropriate to his/her disease state(s) and has indications for additional therapy
    b. eGFR is >= 45 and renal function is stable or improving
    c. Patient does not have recurrent UTIs
    d. Patient does not have history of, or at high risk for, DKA
    e. Patient does not have hypovolemia
    f. Patient does not have severe PAD, foot ulcerations, or at risk of amputation

	DAPA-HF	EMPEROR Reduced
Patients enrolled, N	4744	3730
Drug, Dose	Dapagliflozin 10mg Daily	Empagliflozin 10mg Daily
Median duration of follow up (months)	18.2	16
Baseline prevalence of HF	100%	100%
Medical history of DM	41.8%	49.8%
Mean age (years)	66	67
Male	76%	76%
Race: White, Asian, Black, Other	70.0%, 23.3%, 5.1%, 1.6%	71.1%, 18.1%, 6.6%, 4.2%
NYHA Class	II (67.7%), III (31.5%), IV (0.8%)	II (75.1%), III (24.4%), IV (0.5%)
LVEF inclusion	40% or less	40% or less
Mean LVEF	31%	27%
N-terminal pro-B-type natriuretic peptide, inclusion criteria	600 pg/mL	600 pg/mL or greater if EF 30% or less
	400 pg/mL or greater if hospitalized for HF within last 12 months	1000 pg/mL or greater if EF 31 - 35%
	900 pg/mL or greater if atrial fibrillation	2500 pg/mL or greater if EF greater than 35%
N-terminal pro-B-type natriuretic peptide, median	1428 (857 - 2655)	1887 (1077 - 3429) (79% 1000 pg/mL or greater)
Hospitalization for HF or CV death HR (85% CI)	0.74 (0.65 - 0.85)	0.75 (0.65 - 0.86)
HF hospitalization, HR (95% CI)	0.70 (0.59 - 0.83)	0.69 (0.59 - 0.81)
CV death, HR (8=95% CI)	0.82 (0.69 - 0.98)	0.92 (0.75 - 1.12)
All cause mortality, HR (95% CI)	0.83 (0.71 - 0.97)	0.92 (0.77 - 1.10)
Renal composite endpoint, HR (95% CI)#	0.71 (0.44 - 1.16)	0.50 (0.32 - 0.77)
# Composite renal endpoint:		
Dapagliflozin: Sustained decline in eGFR of 50% or greater, ESRC, renal transplantation, renal death, and death from any cause		
Empagliflozin: Chronic hemodialysis or renal transplatation or a sustained reduction of 40% or more in eGFR or a sustained eGFR of less than 15mL/min/1.73m2 in pts with a baseline eGFR of 30 mL/min/1.73m2 or more or a sustained eGFR of less than 10 mL/min/1.73m2 in those with a baseline eGFR of less than 30 mL/min/1.73m2		

Impact of pharmacist-driven 4T score calculation for streamlining heparin-induced thrombocytopenia (HIT) lab tests

Andrea Wilkinson, Pharm.D.

BACKGROUND:

Heparin-induced thrombocytopenia (HIT) is an adverse drug reaction characterized by thrombocytopenia and a high risk for venous or arterial thrombosis in patients with heparin exposure. The "4 T's" are a clinical scoring system that can be used for estimating the probability of HIT based on its characteristic features: **T**hrombocytopenia, **T**iming, **T**hrombosis, and the absence of o**T**her explanation(s). The purpose of this evaluation is to determine if pharmacist calculation of the 4T score for patients with suspected HIT, prior to sending an order to the lab for a heparin antibody test, will result in decreased heparin antibody tests performed.

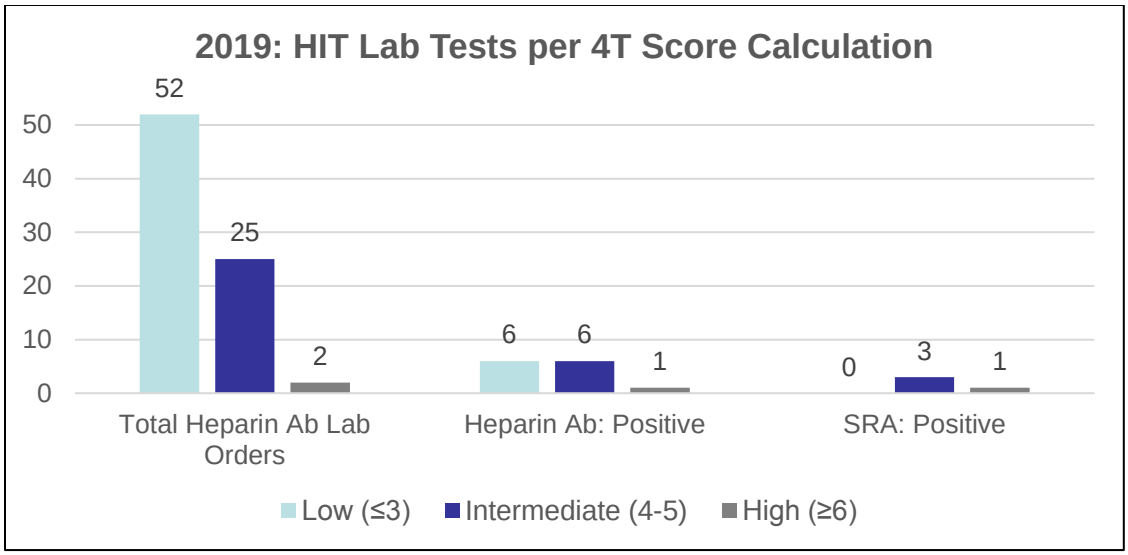
In November 2019, our institution implemented a pharmacist-driven 4T score calculation to streamline heparin antibody testing. When a provider orders a Heparin Antibody (HIT Assay) Panel, a consult to the pharmacy to calculate a 4T score is required within the electronic health record (EHR). Previous studies suggest low probability (< 5%) for heparin antibodies with a score ≤3, and high probability (>80%) with a score ≥6. A score of 4 or 5 indicates a clinical profile compatible with HIT but with another plausible explanation. If the pharmacist calculates a score ≤3, the provider is called with the recommendation to cancel the lab test. If the pharmacist calculates a score ≥4, the pharmacist sends the order to the lab. This retrospective chart review identified patients admitted to the hospital from March through August 2020, with orders for a Heparin Antibody (HIT Assay) Panel. Data was collected from the EHR. This was compared to data from March through August 2019, prior to the initiation of the pharmacist-driven 4T score calculation. The main outcome evaluated was the number of heparin antibody tests performed. Other data evaluated included calculated 4T score, heparin antibody test results, SRA results, provider specialty, HIT treatment, length of treatment, length of hospital stay, mortality rate, any additional pharmacist interventions made, and acceptance rate of pharmacist interventions.

OBJECTIVE:

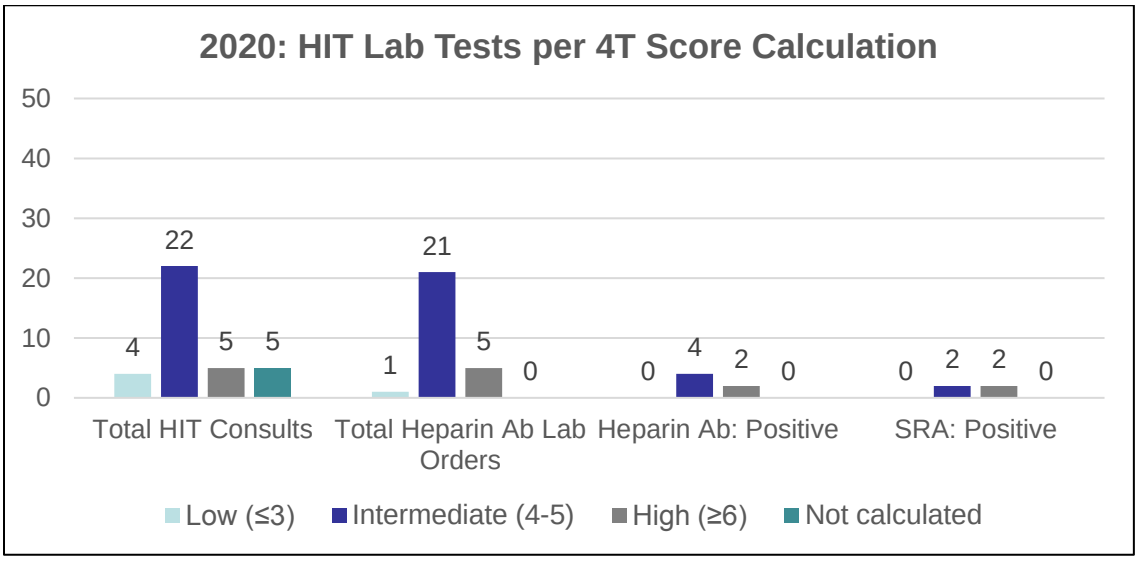
To determine if pharmacist calculation of the 4T score for patients with suspected HIT will result in decreased heparin antibody tests performed

RESULTS:

	2019	**2020**
Total Heparin Antibody (Ab) Panel Orders	N/A	42
Orders included in Study, n	N/A	36
Total Heparin Ab Lab Orders	79	27
Positive, n (%)	13 (16.5%)	6 (22.2%)
Negative, n (%)	66 (83.5%)	21 (77.8%)
Total SRA Lab Orders	13	6
Positive, n (%)	4 (30.8%)	4 (66.7%)
Negative, n (%)	9 (69.2%)	2 (33.3%)



Of the 79 total lab orders, only 4 (5%) resulted in a positive SRA test and were truly HIT, all of which had a 4T score of 4 or more.



Of the 36 HIT consults, 27 had lab tests completed.

Only 4 resulted in a positive SRA test, indicating only 11% of the HIT consults were truly HIT.

HIT Treatment (2020)			
	# of Patients	**Average length of treatment (days)**	**Cost per vial**
Argatroban (removed from formulary Sept 2020)	7	2.14	50 mg = $116.63
Bivalirudin (Angiomax)	13	7.23	250 mg vial = $76.75
Fondaparinux (Arixtra)	4	5.5	10 mg syringe = $51.48 7.5 mg syringe = $24.27 5 mg syringe = $33.09

Pharmacist Interventions (2020)	
Total Pharmacist Interventions	**13**
• Recommend D/C Heparin Ab lab order (prior to 4T score calculation)	5
• Recommend alternate anticoagulation while waiting for HIT results	4
• Recommend D/C HIT treatment following negative Heparin Ab	2
• Recommend HIT Panel	2

REFERENCES

- LO GK, Juhl D, Warkentin TE, et al. Evaluation of pretest clinical score (4 T's) for the diagnosis of heparin induced thrombocytopenia in two clinical settings. J Thromb Haemost. 2006;4:759 765.
- Warkentin TE. Heparin induced thrombocytopenia: diagnosis and management. Circulation. 2004;110:e454 e458

DISCUSSION/CONCLUSIONS:

66% (52/79) of the calculated 4T scores from the 2019 data were ≤3, indicating low probability of HIT. These lab tests likely could have been prevented had a 4T score been calculated beforehand. In the 2020 group, 25% (9/36) of the Heparin Ab Panel orders did not go on to lab, indicating pharmacists played a role in decreasing heparin antibody tests being performed in patients unlikely to have HIT.

There is still room for improvement, as 78% of the orders sent to lab in the 2020 group resulted in negative heparin antibody tests. One potential improvement would be to adjust the 4T score calculation in patients who recently had surgery, as this would likely not be HIT.

Limitations of this study that may contribute to decreased panel orders in 2020 compared to lab orders in 2019 include the global SARS-CoV-2 pandemic which caused decreased hospital census during 2020. Also, since implementing this process, provider education on the 4T score may have prevented some providers from ordering a Heparin Antibody Panel if they realize HIT is unlikely. An additional limitation is that our institution changed EHRs in November 2019 preventing additional data collection within the 2019 group outside of what was previously collected.

Future directions include evaluating costs savings due to pharmacist interventions that could have resulted in decreased length of stay and decreased inpatient drug costs for HIT treatment with IV direct thrombin inhibitors.

RECOMMENDATIONS

Adjusting the 4T score calculation to assign 1 point to patients who had surgery in the past 3 days instead of 2 points was considered as a recommendation for improvement. However, after further review of the data, only 5 patients of the 36 HIT consults (14%) were within 3 days of having heart surgery. 1 of those patients resulted with a positive SRA test. Adjusting the score for surgery would have changed the 4T score to a 3, and the lab order would not have been sent for this patient.

Therefore, rather than adjusting the 4T score calculation, recommendations going forward are to provide additional pharmacist education on the 4T score calculation, particularly in regards to the timing of the platelet fall from heparin exposure.

FORMULARY UPDATE

GENERIC NAME: Collagenase ointment

PROPRIETARY NAME: Santyl®

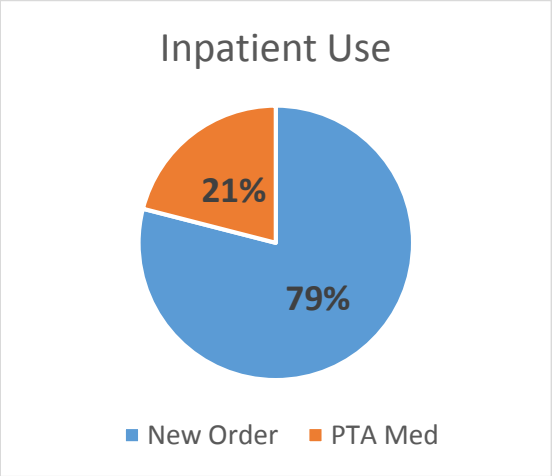
BACKGROUND/RATIONALE:
Collagenase is an enzyme formed from the fermentation of Clostridium histolyticum. In contrast to other proteolytic enzymes, collagenase is highly specific for native and denatured collagen. Collagenase contributes towards the formation of granulation tissue and subsequent epithelization of dermal ulcers and severely burned areas. Collagen in healthy tissue or in newly formed granulation tissue is not attacked. Santyl (collagenase) is topically applied and used for the debridement of wounds without harming viable tissue, but has a slow onset of action. There are no current restrictions for ordering Santyl.

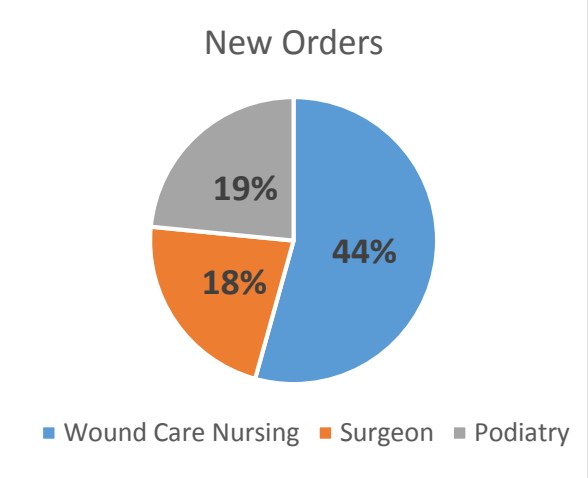
CHI approved inpatient restriction criteria for Santyl, which is as follows:

- Necrotic tissue or severe burns in need of enzymatic therapy, or
- Not a candidate for other debridement therapy (if available); assess cost-effectiveness of debridement therapy:

Autolytic Debridement	Mechanical Debridement
• Hydrocolloids • Hydrogels • Alginates • Iodosorb • Mesalt • Antiseptics • Silver dressings	• Larval therapy • Pulsatile Lavage and Hydrotherapy • Ultrasound therapy • Ultrasonic Mist • Debrisoft • Wet to dry gauze dressings (not recommended)

MEDICATION UTILIZATION:
Inpatient utilization of Santyl (collagenase) ointment has recently averaged in cost greater than $5,300 per month. From May through December 2020, accounting for 120 patient admissions, 189 tubes of Santyl were dispensed, for a total cost of $42,929.46 over 8 months.





PHARMACOECONOMICS/COST:

Product	Cost per tube	Cost per 2.5 gm unit dose (12/tube)
Collagenase (Santyl) ointment 30 gm tube	$238.43	$19.87

RECOMMENDATION/DISCUSSION:
It is recommended to adopt the current CHI approved restrictions as listed above. These restrictions will be built into the EHR. To prevent unnecessary waste, Santyl will no longer be dispensed as a 30 gm tube and will be dispensed as a unit dose (2.5 gm each). These recommendation have been reviewed and are supported by Dr. John Gwin.
If utilization decreases by 25% and Santyl is unit-dosed, there is an expected cost savings of $3800 per month, or ~$46,000 annually.

CHI Memorial

POLICY

Title: RESPIRATORY DISTRESS PROTOCOL - PULMONARY SERVICES			
		Page 1 of 1	
Policy Number: PUL-01928		Date Last reviewed/Revised: 12/20	Valid Until: 12/23
Campus: ☒ CHI Memorial Glenwood ☒ CHI Memorial Hixson ☒ CHI Memorial Georgia *Check all that apply*			
Department(s) Affected: Pulmonary Services		Review Period: every 3 years	

OUTCOME: To open and maintain obstructed airways.

PERSONNEL: Registered Respiratory Therapists.

POLICY:
When a patient is having respiratory distress hospital personnel may notify the Respiratory Therapist for that area stat to evaluate the patient.

PROCEDURE:
Respiratory Therapist will evaluate the patient and initiate treatment for wheezing and/or signs of bronchospasm, or stridor.

RESPIRATORY DISTRESS PROTOCOL:

1. Notify Respiratory Therapist STAT to evaluate patient.
2. Respiratory Therapist to initiate treatment:
   a. Oxygen:
      i. SpO2 or SaO2 < 90%
      ii. PaO2 < 60 mmHg
      iii. Respiratory Distress
      iv. AMI, Acute Coronary Syndrome, or Angina
      v. Altered mental status, or suspected stroke
   b. Bronchodilator:
      i. For wheezing and/or signs of bronchospasm administer Albuterol 2.5mg/NS via nebulizer.
      ii. For signs of stridor administer *Racemic Epinephrine 1.125mg (0.5ml 2.25%) via nebulizer, if no signs of cardiac rhythm disturbances.
   c. Arterial Blood Gas (ABG)
      i. SpO2 < 90%
      ii. Respiratory rate (f) > 30 breaths per minute
      iii. Altered mental status
      iv. Change in level of consciousness (LOC)
      v. Hemodynamic instability
2. Respiratory Therapist to notify physician/Licensed Independent Practitioner (LIP)

Key Contact: Pulmonary Management Team
Approved/Reviewed by: Pulmonary Medical Director; P&T Committee
Related Forms: PSO #1726
Date First Effective & Revision/Review dates: 1/12 (4/15) (1/16) (11/18) (04/19)

CHI Memorial

POLICY

Title: TITRATING MEDICATIONS			
		Page **1** of **1**	
Policy Number: MM-05405		Date Last reviewed/Revised: 2/2021	Valid Until: 2/2024
Campus: ☒ CHI Memorial Glenwood ☒ CHI Memorial Hixson ☒ CHI Memorial Georgia *Check all that apply*			
Department(s) Affected: All Clinical Areas		Review Period: Every 3 years	

OUTCOME:
Patient will receive adequate medication for desired outcome.

POLICY:
Medications will be titrated in a safe and accurate manner as established by Pharmacy recommendations from appropriate drug information sources, physician order and clinical assessment. In the absence of specific MD/Practitioner orders for titrating and tapering certain IV medications, the attached guidelines will be followed and titration instructions will be defined on the EHR. Unless otherwise specified by the physician, all the required titration order elements below will be included within the medical record (EHR) as defined by this policy.

Standard concentrations listed in the attachment will be routinely followed. If standard concentrations are utilized, the nurse can document the rate on the MAR without specifying the concentration. When non-standard concentrations are used, the nurse must have the concentration per ml and rate documented on the MAR.

All titration orders should contain the following:

- Medication name
- Medication route
- Initial infusion rate
- Incremental units the rate can be increased or decreased
- Frequency of incremental dose adjustments
- Maximum infusion rate
- Objective clinical endpoint, to be specified at the time of order*

*Any order without an objective clinical endpoint (BP target, RASS goal, etc.) as defined by the ordering practitioner must be clarified with the prescriber and clarified via order in electronic health record (EHR).

Key Contact: Pharmacy Clinical Manager
Approved/Reviewed by: Medication Management Chapter Leader, Nursing Professional Practice Council
Reference(s): Clinical Pharmacology
Joint Commission Standard: MM 04.01.01
Attachment(s): IV Drug Standards Chart
Date First Effective/Revisions: 1/04, 9/08, 11/09, 3/13, 01/15, 02/15, 10/15, 12/15, 1/16, 4/16, 8/16, 9/17, 9/18, 2/19, 5/19, 6/20, 2/21 |

Drug Name Brand *(Generic)*	Drug Category	Mixing & Concentration	Pyxis	Dosing *(Titrating & Tapering)*	Precautions or Special Instructions	Dosed as
Narcan *Naloxone*	Opioid Reversal	4 mg/250 ml NS Concentration = 16 mcg/ml		Starting Dose: 0.4 mg bolus, then 2.5 mcg/kg/hr Maximum Dose: variable Increase or decrease by 0.5 mcg/kg/hr every 15-30 minutes as needed for signs of opioid over-sedation or respiratory depression	• If patients require repeated intermittent IVP doses for initial reversal larger initial infusion rates may be necessary (10-15 mcg/kg/hr)	mcg/kg/hr
Neosynephrine *Phenylephrine*	Vasopressor	10 mg/250 ml D_5W Concentration = 40 mcg/ml Should not be given undiluted. All bolus doses should be mixed in 50 ml NS prior to administration		Starting Dose: (severe hypotension): 20 mcg/min if MAP ≤ 65 or 40 mcg/min if MAP ≤ 55 Maximum Dose: generally 360 mcg/min Increase or decrease by 10 mcg/min. If MAP ≤ 55, may increase by 20 mcg/min. Titrate at 10-minute intervals based on parameters as determined by physician	• Avoid extravasation ** • Use with caution in elderly, bradycardia, partial heart block, hyperthyroid, myocardial disease, severe atherosclerosis • Correct volume deficiency before considering this drug	mcg/min
Nimbex Cisatracurium	Neuromuscular Blocker (paralytic)	200 mg/100 ml D5W Concentration = 2 mg/ml		Bolus: 150-200 mcg/kg per MD Orders Initial maintenance Dose: 1 mcg/kg/min Normal maintenance dose range 0.5-10 mcg/kg/min (max dose generally 10 mcg/kg/min) Monitor depth of blockade every 20 mins initially until stable dose (increase or decrease by 0.5 mcg/kg/min), then every 1 hr according to patient's clinical response with peripheral nerve stimulator or BIS based on parameters as determined by physician.	• Preferred NMBA for patients with multi-system organ failure – organ independent metabolism. • Patients must have sedation and medication for analgesia while on paralytic	mcg/kg/min
Nitroglycerin	Anti-hypertensive Antianginal Vasodilator	50mg/250 ml D_5W Premix Concentration = 200 mcg/ml		**CARDIAC TELEMETRY ONLY:** Starting Dose: 5 mcg/min. Maximum Dose: 50 mcg/min For chest pain: increase rate by 5 mcg/min every 3-5 minutes until pain free & to maintain SBP greater than 90. **ER, ICU, IMCU, SSU or PACU ONLY:** Starting Dose: 5 mcg/min Maximum Dose: usually 200 mcg/min Increase by 5 mcg/min every 3-5 minutes up to 20 mcg/min based on parameters determined by physician. If no response once rate is 20 mcg/min, increase by 10 mcg/min every 3-5 minutes. Taper per MD order.	• Headache, hypotension, tachycardia • Do not filter (Gahart, 2004) • Tolerance may develop if administered over 12 hr. • Use extreme caution with inferior MI c/ RV involvement	mcg/min

CHI Memorial

Look Alike/Sound Alike Drug List

Drug Name	Drug Name	Potential Errors	Prevention Strategies
CeleBREX®	CeleXA® and CereBYX®	Similar names	1. Tall man lettering in Pyxis, Epic & Talyst. 2. Pyxis pop-up warning. 3. Do NOT store next to each other. 4. Name alert on MAR
cloniDINE	KlonoPIN®	Similar names	1. Tall man lettering in Pyxis, Epic & Talyst. 2. Pyxis pop-up warning. 3. Do NOT store next to each other. 4. Name alert on MAR
Diamox®	Diuril®	Similar names	1. Pyxis pop-up warning. 2. Do NOT store next to each other. 3. Name alert on MAR
DOBUTamine	DOPamine	Similar names	1. Tall man letting in Pyxis, Epic & Talyst. 2. Pyxis pop-up warning. 3. Do NOT store next to each other. 4. Name alert on MAR
DOXOrubicin *Liposomal*	DOXOrubicin *Conventional* and DAUNOrubicin	Similar names	1. Tall man lettering in Pyxis, Epic & Talyst. 2. Do NOT store next to each other. 3. Name alert on MAR
hydrOXYzine	hydrALAzine	Similar names	1. Tall man lettering in Pyxis, Epic & Talyst. 2. Pyxis pop-up warning. 3. Do NOT store next to each other. 4. Name alert on MAR
Keppra®	Ketamine®	Similar names	1. Pyxis pop-up warning. 2. Do NOT store next to each other. 3. Name alert on MAR 4. Witness required for ketamine
metroNIDAZOLE	metFORMIN	Similar names and strengths	1. Tall man lettering in Pyxis, Epic & Talyst. 2. Pyxis pop-up warning. 3. Do NOT store next to each other. 4. Name alert on MAR
MuciNEX®	MucoMYST®	Similar names	1. Tall man lettering in Pyxis, Epic & Talyst. 2. Pyxis pop-up warning. 3. Do NOT store next to each other. 4. Name alert on MAR
oxyCODONE controlled-release	oxyCODONE immediate-release	Similar names	1. Tall man lettering in Pyxis, Epic & Talyst. 2. Pyxis pop-up warning. 3. Do NOT store next to each other. 4. Name alert on MAR
Plavix®	Pradaxa®	Similar names and strengths	1. Pyxis pop-up warning. 2. Do NOT store next to each other. 3. Name alert on MAR
Remicade®	Rituxan®	Similar names	1. Tall man lettering in Epic. 2. Do NOT store next to each other. 3. Name alert on MAR
Versed®	Vecuronium®	Similar names	1. Tall man lettering in Pyxis 2. Pyxis pop-up warning. 3. Do NOT store next to each other. 4. Name alert on MAR