

Patient Safety and Blood Conservation Come With Adoption of Blood Component Formulary

By Thomas L. Bernasek, MD, Chief of Staff and
Blood Utilization Committee Chair



According to recent medical studies, linking blood transfusion to specific indications results in decreased blood utilization, improved patient safety, and reduced cost.

To achieve greater blood use efficiency, TGH has published a Blood Component Formulary (Form # B75) which can be found on the TGH Portal. The formulary guidelines were developed by the Blood Utilization Committee, and approved by the Medical Executive Committee on July 18, 2011. The formulary reflects nationally recognized guidelines for ordering all major blood products. It is a concise and useful guide for practitioners.

The new formulary applies only to adult patients (age 18 and older) and should be considered as a guideline for transfusion therapy with the understanding that indications for blood product usage will vary with the patient's specific medical circumstances.

Search for "B75" under **Forms/TGH Forms** to download from the TGH Portal or go to:
<http://employee.tgh.org/Pages/Forms.aspx>

Beginning in October 2011, the Quality Improvement Department will begin auditing for transfusion appropriateness using an indicator of hemoglobin less than 7 g/dl for non-surgical and post-op patients. The indicator for pre-operative surgical patients will be a hemoglobin level of 8 g/dl or less.

Please become familiar with the new guidelines and address any questions or concerns regarding blood utilization with David Robbins, VP Professional Services (drobbins@tgh.org).

New Policy on Urine Cultures from Adults with Indwelling Urinary Catheters

Peggy Thompson, Director, Infection Prevention

A protocol has been approved by the Medical Executive Committee to facilitate best practice when determining if a patient has a significant culture result from an indwelling urinary catheter. The protocol is limited to adult patients who are admitted with an indwelling urinary catheter or have a urinary catheter in place at the time a culture and sensitivity are ordered. Urine will be collected for urinalysis and culture and sensitivity; however the culture will only be performed if the urinalysis results are suspicious for infection. The lab will make that determination based on the following 3 criteria, any one of which will lead to a culture:



1. **Positive urinalysis for leukocyte esterase and/or nitite**
2. **Greater than or equal to 3 WBC on high power field indirect uncentrifuged urine**
3. **Greater than or equal to 10 WBC/mm³ in spun/centrifuged urine**

The above protocol will **not** apply to urine cultures collected from nephrostomy tubes, supra-pubic catheters or ureterostomies. Therefore it is important to indicate the collection site when a specimen is ordered and collected.





Shyam Gelot, PharmD

Equianalgesic Dose Conversions

The need to switch from one opioid to an alternate opioid or changing from one route to another is common clinical practice. Reasons necessitating a switch include the development of adverse effects, drug-drug interactions, poor analgesic effect despite dose titrations, and change in clinical status. There are various formulas, evidence based guidelines, and different equianalgesic dosing conversion tables available to guide prescribing when converting from one opioid to another. Despite the many resources available, appropriately converting from one opioid to another still remains a clinical challenge for many practitioners. This article will provide a review on appropriate conversions based on the American Pain Society's (APS) recommended guidelines.

Converting doses between opioid analgesics is a skill set that requires one to understand the pharmacokinetics and pharmacodynamics of various opioid analgesics to calculate an equianalgesic dose that would produce the desired effect while minimizing side effects. Balanced with clinical judgment, guidelines have been created and supported by the American Pain Society to guide practitioners in converting from one opioid to another and one route to another of the same opioid.

Below is the APS's equianalgesic dosing table. The equianalgesic table is a tool to compare an opioid's relative potency against one another. To convert an opioid from one route to another simply read across the columns. For example, 10 mg of IV morphine is approximately equal to 30mg of oral morphine. To convert from one opioid to another read down the columns, thus 10mg of IV morphine is approximately equal to 1.5mg of IV hydromorphone. While it is convenient to have conversion tables, they are often a simplification of clinical practice. Be mindful, the equianalgesic tables are not an absolute science; patient variability and pharmacologic properties of the different opioids must be taken into consideration when using the table to switch from one opioid to an alternate opioid or changing from one route to another. Conversion tables should only be used to provide an estimate of appropriate opioid conversion and should not replace clinical judgment.

Drug	Equianalgesic Doses (mg)	
	Parenteral	Oral
Morphine	10	30
Codeine	100	200
Fentanyl	0.1	NA
Hydrocodone	NA	30
Hydromorphone	1.5	7.5
Oxycodone	NA	20
Oxymorphone	1	10

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Case Studies of Equianalgesic Dose Conversions: The following are sample cases used to illustrate how one may use the APS's equianalgesic dosing table to switch from one opioid to an alternate opioid or changing from one route to another.

Patient Case Example #1: A patient is consistently taking 10 tablets of Vicodin ES 7.5/750 mg per day for chronic pain. You want to convert him to a long acting product for maintenance dose such as MS Contin.

- Step 1. Calculate total daily dose of hydrocodone (Vicodin ES)

Daily hydrocodone dose = 7.5mg x 10 = 75mg

- Step 2. Convert to morphine dose using equianalgesic dose conversion table

Oral hydrocodone:oral morphine ratio 1:1; therefore, morphine chronic dosing is approximately 75mg qd. Generally use, 1/2 or 2/3 of the calculated total dose and titrate accordingly. Therefore one can start MS Contin 30mg q12h (80% of calculated dose) or MS Contin 15mg q8h (60% of calculated dose). Supplement with MSIR or Vicodin ES as the prn agent for breakthrough pain.

Patient Case Example #2: A patient is receiving a hydromorphone infusion at 0.5mg/hr and you wish to convert to an oral morphine maintenance and breakthrough.

- Step 1. Record the total amount of opioid given in a 24-hour period.

Total dose in last 24 hours= 12mg of hydromorphone

- Step 2. Calculate total amount of morphine needed based on equianalgesic table

1.5mg IV hydromorphone is approximately equal to 30mg of oral morphine, thus, 12mg of hydromorphone = 240mg of oral morphine/day

- Step 3. Calculate the oral maintenance dose

For your maintenance dose, choose a long acting agent such as MS Contin (available as 15mg, 30mg, 60mg, 100mg, and 200mg tablets). One option would be to start MS Contin 100mg PO every 12 hours, which is approximately 80% of the total calculated dose.

- Step 4: Calculate the breakthrough dose

The PRN rescue dose is approximately 10% of total daily dose given every 3 hours. So 10% of 240mg of morphine = 24mg of immediate release morphine (available as 15mg and 30mg tablets). Thus, 15mg or 30mg of immediate release morphine every 3 hours can be used as needed.

In addition to considering equianalgesic dose conversions, providers should also remember some general pain management principles when treating patients with pain:

- Base initial therapy on pain scores: non-opioids, such as NSAIDs, for mild to moderate pain (pain score 1-4), opioids in combination with a non-opioid for moderate to severe (pain score 5-10)
- There is no ceiling dose for opioids. If initial calculated dose did not achieve pain relief and the patient is not experiencing adverse effects, one should consider increasing the initial dose. Conservative increases by 10-20% may be warranted within the first few days of therapy; however, cancer patients may require an increase equal to that of their prn dose or a 30-50% dose increase.
- If initial doses provide adequate analgesia but the patient is experiencing adverse effects, a dose decrease may be warranted.

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- Most patients will experience common side effects including nausea, constipation or sedation and/or pseudo-allergies (flushing, hives and itching) which are NOT true allergies. Pseudo-allergies can be pretreated with a histamine-blocker, such as diphenhydramine. A true morphine allergy is one that causes anaphylaxis, angioedema, hypotension or severe skin reactions. It is important to note that true opioid allergies are rare and must be distinguished from side affects and/or pseudo-allergies so one does not eliminate viable treatment options. If a patient has a true allergy to one agent, avoid using another agent in the same pharmacologic class.
- Use oral opioid agents when possible; avoid intramuscular injections
- For chronic pain, provide analgesics around the clock with breakthrough prn rather than only relying on prn dosing.
- Avoid using multiple prn analgesics and multiple non-opioids at the same time.
- In terms of pharmacokinetics, it is important to remember to try to increase doses only when steady state is reached, or 4-5 half-lives.



SAVE THE DAY!



The 2011 Annual Medical Staff Meeting is scheduled for:
Wednesday, September 21, 2011
at the Hyatt Regency Hotel (Downtown) at 6 PM.

Guest Speaker: Wayne Sotile, MD



“From Risk to Physician Resilience: Practice Strategies that Work”

Dr. Sotile will also be offering a workshop entitled:
“Physicians and Their Loved Ones: Keeping the Flame Alive”.

The workshop will be held in MacInnes Auditorium at 12 noon on
September 21st and again at the Hyatt Regency at 4 PM.
Spouses/significant others are highly encouraged to attend



WE'RE ON THE WEB
WWW.TGH.ORG

TGH Welcomes our new Physicians

The physicians below were added to TGH staff: 7/31/2011

Ryan J. Adami, DO	Hospital Medicine
Renee M. Bassaly, DO	Obstetrics/Gynecology
Joseph J. Castellano, MD	General Surgery
Uylee Choe, MD	Infectious Diseases
Pedro J. Hernandez-Rivera, MD	General Surgery
Patricia L. Judson, MD	Obstetrics/Gynecology
Wayne C. Lee, MD	Plastic Surgery
John H. Marston, MD	Obstetrics/Gynecology
Angela L. McClanahan, DO	Cardiology
Jaime A. Montes, DO	Family Practice
Rajan Narula, DO	Hospital Medicine
Ahn H. Nguyen, MD	Plastic Surgery
Khurram Pervalz, MD	Orthopaedic Surgery
Peter J. Sunenshine, MD	Radiological Services
Krishna Tewari, MD	Hospital Medicine
Shyam J. Uttamchandani, MD	Nephrology



This newsletter is produced by Tampa General Hospital's Quality Improvement Department. All comments, responses or suggestions are welcome and should be directed to:

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### **KUDOS TO OUR PHYSICIANS!**

**Congratulations to the following physicians who were recognized by their patients in the form of personal letters to TGH leadership.**

**Dr. Cedric Sheffield, Dr. Thomas Freeman, Dr. Steven Goldin,  
Dr. Peter Berman, Dr. James Huang, Dr. Steven Goldin,  
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