

A newsletter for the physicians of Tampa General Hospital

What to do about Hyperkalemia?

Kara Jastemski, Pharm D & Denise Hickey, RN, C

Hyperkalemia is one of the most common electrolyte imbalances. There are a number of treatment options and choice of treatment should be driven by the severity of hyperkalemia, desired time to correction and the patient's clinical condition. There are three basic mechanism of treatment and they are, membrane stabilization, shifting of potassium into cells decreasing serum potassium levels, and removal of potassium from the body.

Membrane stabilization is accomplished by the administration of IV calcium (chloride or gluconate salts can be used), 5-10ml of a 10% solution. Patients with serum potassium level of 6.5mEq/L or greater should receive a dose of IV calcium as soon as possible and before other hyperkalemia treatment is initiated.

In situations where rapid correction of hyperkalemia is desired an agent that shifts potassium from extracellular to intracellular space should be used next. The options include regular insulin 10 units with 50ml of dextrose 25% (25 grams), sodium bicarbonate 7.5%, 50ml, or inhaled albuterol solution 10-20mg. The onset of action for these therapies is within 30 minutes. Insulin and albuterol have been shown to decrease the serum potassium by 0.6 – 1 mEq/L 2 hours after administration. Sodium bicarbonate serum potassium decrease was 0.35mEq/L after 4-6 hours. Refer to the table for onset and duration for each specific therapy.

Agents that remove potassium from the body should be considered after potassium shifting therapy has been administered if hyperkalemia persists or when a more gradual reduction of hyperkalemia is required. Sodium exchange resins, such as, Kayexelate®, have an onset of action of 1-2 hours, although it has been reported to take up to 24 hours to see evidence of potassium lowering. In life threatening hyperkalemia, sodium exchange resins should not be relied on as the sole method of treatment. Other options for potassium removal include diuresis with furosemide or hemodialysis.



The table on page two lists hyperkalemia treatment options, usual doses, the mechanism of action, onset and duration. Tampa General Hospital unit based clinical pharmacists are always available to assist you in selecting the appropriate treatment for hyperkalemia.

2010 Medical Staff Meeting—Sept 22nd (Details on back page!)

What to do about Hyperkalemia? (cont.)

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Treatment Option	Dose	Mechanism	Onset of Action	Duration of Action
Calcium	5-10 mL of 10% solution IV	Stabilizes membrane	1-3 min	30-60 min
Albuterol	10-20mg inhaled	Shifts potassium	30 min	2 hrs
Sodium bicarbonate	1 amp (50mL) of 7.5% solution IV	Shifts potassium	5-10 min	1-2 hrs
Insulin and Dextrose	10 units Regular insulin plus 50g dextrose (ratio of 1 unit/5 g)	Shifts potassium	30 min	4-6 hrs
Furosemide	20-80mg IV bolus	Removes potassium	When diuresis begins	When diuresis ends
Sodium exchange resin	15-50 g PO	Removes potassium	1-2 hrs	4-6 hrs
Hemodialysis	Per hospital protocol	Removes potassium	As soon as started	Until completed



New Test Available for *Clostridium difficile*

Ray Widen, Ph.D., Manager, Esoteric Testing

The test name is **CDTNAT** for *C. difficile* Nucleic Acid Test in Precise and Sunquest.

The *C difficile* PCR assay is a rapid in vitro diagnostic test for qualitative detection of toxin producing *Clostridium difficile* directly from stool specimens of patients suspected of having *Clostridium difficile* infection (CDI). The assay detects the toxin B specific DNA in the bacterium. Relative to direct culture, *C. difficile* PCR Assay has a sensitivity of 98.79%. A single specimen in the vast majority of cases will provide for accurate detection of CDI, eliminating the need for multiple samples being collected for the less sensitive EIA test for toxin protein.

Acceptable specimens: fresh, unformed (liquid or soft) stool. Formed stool or stool in preservative are not acceptable specimens.

As noted, a single specimen is sufficient for efficient detection of CDI. Repeat testing is not recommended for a 7 day period. In addition, since infants may be colonized asymptotically with *C. difficile* it is recommended that testing not be performed on asymptomatic infants less than 1 year of age. The *C. difficile* PCR is not designed to be a test of cure since DNA may be detectable for unknown duration after successful treatment.

The test has a projected turn around time of 120 minutes after receipt in the Esoteric Testing section on first and second shift M-F and is run same day on weekends. If you have any questions please contact Molecular Diagnostics in the Esoteric Testing Section at extension 65737 (844-7284, ext 65737).



New Diet Manual Available on TGH Portal Diet Services

Paul Harvey, Director, Hospital-

As Morrisons has departed as our Dietetic Services Department manager, they have taken all proprietary material with them. One important item that was removed is their Diet Manual which is the reference manual for all therapeutic diets. The Diet Manual is a requirement of The Joint Commission and as a result we must put another in place of the Morrison Diet Manual. The chosen replacement is the American Dietetic Association Diet Manual. Approval for the new Diet Manual was given by the Medical Executive Committee and Dr. Houston, CMO.

The new manual is no longer paper based and in a binder at each Nurses Station. It is now a Web based manual that, effective immediately, can be accessed on the TGH Employee Portal home page. There are two blue icons "NCM" on the right hand side of the home page. One icon will allow you access to the adult Diet Manual. As a new addition, we have also subscribed to the Pediatric Diet Manual to address this special population's needs. By clicking on either icon, you will be brought to the Web edition of your choice and there is no need for either a user name or password. At the top of the manual page, there are multiple choices for accessing the Diet Manual information. For example, you can access by Disease/Condition and you can get to meal plans, types of foods allowed, and sample menus. In addition, you can access patient education materials, review and compare oral and tube feeding nutritional solutions, and review nutritional research and other nutritional web links. As always, our Dietitians are available to answer your nutritional questions. We hope you find this to be an expanded and useful tool.



TGH has "Ephiphany" ECG System

Deborah Martin, RN Clinician, NIC

The current ECG workflow at Tampa General Hospital is paper-based and takes many steps for each ECG performed including scanning the final copy for storage. This system of workflow is inefficient, slow, and expensive. Tampa General has purchased Ephiphany, a web based storage and reporting solution for ECGs. We also purchased Motara ECG carts that will replace the current GE ECG 12 lead carts. Through Ephiphany, studies can be viewed, printed, and reported on digitally within minutes of being performed. The new system will transform our paper process into a digital process that will be a part of our EPIC EMR in the future. The Non-Invasive Cardiology department will also become a "green" department by almost completely eliminating paper, reducing costs, as well as having an overall positive environmental impact. Watch for more information on this project. Scheduled "go live" is November 1.



SAVE THE DAY!



*The Medical Staff 2010 Annual Meeting
will be held **Wednesday, September 22nd***

at the Westin Harbor Island Hotel beginning at 6:00 pm.

Headlining the meeting will be:

Voting for Medical Staff Officers and Medical Staff Recognition!

MARK YOUR CALENDAR NOW!



WE'RE ON THE WEB
WWW.TGH.ORG

TGH Welcomes our new Physicians



The physicians below were added to TGH staff: 7/31/2010

Ira B. Azneer, MD	Hospital Medicine	Michelle L. Mattingly, PHD	Psychology
Maya Ballakrishan, MD	Pediatrics	Brian L. Puskas, MD	Orthopaedic Surgery
James K. Bartruff, MD	Internal Medicine	Shikha Sharma, MD	Hospital Medicine
Michael S. Berlowitz, MD	Cardiology	Hatem H. Soliman, MD	Radiation/Oncology
Robert G. Brooks, MD	Infectious Diseases	Paul J. Tan, MD	Anesthesiology
Tabitha A. Campbell, MD	Emergency Medicine	Sreelatha Varkala, MD	Nephrology
Sanders S. Chae, MD	Cardiology	Suresh Vemuri, MD	Hospital Medicine
Karolina Dembinski, DO	Pediatrics	Stephen R. Zavoyski, MD	Orthopaedic Surgery
Dennis P. Deruelle, MD	Hospital Medicine		
John R. Gaughen, Jr. MD	Radiological Services		
Brian D. Knox, MD	Pediatrics		
John M. Koval, MD	Radiation Oncology		

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. Mitchell Hoffman, Dr. Arthur Walling, Dr. Siviero Agazzi,
Dr. Lukasz Janeczek & Dr. Mark Rolfe**