NorthShore University HealthSystem

The ___?___

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Sequencing of Medications in Hyperkalemia

Great review of common diagnosis

Excerpted from Journal of Emergency Nursing July 2009

Hyperkalemia is usually defined as serum potassium >5.5mEq/dl. This potentially life-threatening condition is commonly encountered in the ED setting. High potassium levels should always be correlated with an EKG and considered for confirmation with a 2nd draw before treatment is begun. It is possible to cause lysis of the red blood cells if blood is drawn with a small needle, hits the side of the tube forcefully, or the tube gets dropped. This can cause potassium levels to be falsely elevated. Once hyperkalemia is confirmed, a series of medications are administered with the intent of stabilizing the myocardium by promoting movement of potassium from the extracellular fluid back into the cell and facilitating excretion of potassium from the body.

Calcium does not lower the potassium level, but it does stabilize the myocardium. Not every hyperkalemic patient needs calcium. It is indicated

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Heparin Update

Pharmacy Critical Care Drug Guidelines

As Northshore University Health Systems continues to improve upon the Heparin Order Nomogram, the ED nurse should keep the following guidelines in mind:

DOSAGE AND ADMINISTRATION (Adult)
Summary of initial doses for indication specific nomograms (built in EPIC)
Use of indication specific nomograms is encouraged. However, the decision to treat and with which doses needs to be individualized taking into consideration the risks and benefits of anticoagulation.

Indication	**Initial Bolus (units/kg)**
1. DVT/PE	80 (max 12,000 units)
2. ACS *without* adjunt** or Afib	60(max 4,000 units)
3. ACS *with* adjunct$^{\Delta}$ or Afib	50 (max 4,000 units)
4. Ischemic Stroke	None
5. Surgical Services	None
Initial Infusion (units/kg/hr) (numbers correlate w/indications above)	**Therapeutic Range (aPTT)**
1. 18 (max 2,500 units/hr)	69-100*
2. 12 (max 1,000 units/hr)	69-100*
3. 10 (max 1,000 units/hr)	61-80
4. 10 (max 1,000 units/hr)	69-85
5. 10 (max 1,000 units/hr)	69-100*

* The therapeutic range is established by the NorthShore coagulation lab according to national guidelines. The range may change. Please follow the ranges provided in EPIC within the heparin nomograms for the most accurate therapeutic range.
** ***Without adjunct* (i.e. *lower bleeding risk*)** refers to *without* concomitant medications or medical issues which predispose the patient to bleeding in the ACS or Afib setting such as: recent groin stick (< 12 hours), glycoprotein IIB/IIIA inhibitors, thienopyridienes, higher risk of bleeding due to concomitant disease states, recent

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only if the patient has a wide QRS, sine wave pattern (S and T waves merge together), or if the patient is in cardiac arrest. Calcium can be ordered as chloride or gluconate.

Calcium Chloride is very irritating to the veins and should be diluted in an equal amount of sterile saline prior to injection. It should be given no faster than 1ml/minute unless the patient is in cardiac arrest in which case it is pushed undiluted.

Calcium gluconate is gentler on the veins; but is less potent. Typically 3-30ml of 10% solution are administered no faster that 2ml/minute. This should also be diluted minimally in an equal amount of sterile saline. Patients who are on digoxin should not receive calcium due to the risk of serious/fatal cardiac arrhythmias.

Glucose and insulin begin working immediately so if the EKG is stable, treatment should begin with these agents. Insulin can lower the potassium level by 0.5mEq in 20minutes and by 1mEq in an hour. Glucose is given to prevent hypoglycemia and should be pushed first. The usual dose is 25-50g of glucose followed by 10units regular insulin IV.

Albuterol 10-20mg via neb can reduce levels by 0.5mEq in minutes with peak effect in 90 minutes

Sodium Bicarbonate is effective only if the patient is acidotic and is not needed in every hyperkalemic patient. It begins working in 30-60 minutes and the effect can last for several hours. The typical dose is 50mEq pushed or over 10-20 minutes. Keep in mind that if the patient is not acidotic, bicarb will not lower the potassium and may harm the patient.

Sodium Polystyrene Sulfonate binds with potassium in the gut so that it is eliminated in the feces. It is best when mixed with sorbitol. The usual dose is 15-45g orally which begins working in 1-2 hours. This is about when the effect of the IV drugs begins to wear off.

Furosemide is a potassium-wasting diuretic that can be used with hydration in selected patients to eliminate through the urine. This would only be used as an adjunct and never as primary therapy for hyperkalemia.

Dialysis provides immediate removal of potassium by about 1 mEq/L in the first hour and another 1 mEq/L over the next two hours. It is the gold standard, especially for patients with renal failure. ❖

Pediatric Pain Intervention

We have recently added 24%Sucrose solution to the Pyxis. Dip a pacifier into this and allow a baby to suck on it prior to a painful procedure. This technique has been used in pediatrics for years and should be a good intervention for infants when you are getting ready to attempt an IV start, cath, or LP.

Medication	Dose
24% Sucrose (Sweet Ease) One pacifier dip = 0.2 ml	Maximum Dosing Guidelines: • Pre-term Infant (less than 37 weeks gestation) – 1 ml or 5 pacifier dips prior to a painful procedure • Term Infant (greater than 37 weeks) -2 ml or 10 pacifier dips prior to a painful procedure. Administer Sucrose Solution orally two minutes before procedure: • Dip pacifier (or gloved finger) into solution • Offer pacifier (or gloved finger) with Sucrose • Sucrose can be used 3-4 times a day as needed for painful procedures
• This solution in combination with sucking is thought to have an additive effect on pain relief. • Sucrose can be administered to any infant greater than 26 weeks gestation with no signs of Necrotizing Enterocolitis or feeding intolerance.	

You will need to enter the order for this, otherwise it will flow into the MAR due to the override. If you pull it as an override, you need to enter an order so that the override can be cancelled and discontinued.

Remember that the Pediatric N-Pass pain scale is available in the triage navigator.❖

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Education Council

Check out the new educational binders placed in the breakroom. They have current reference articles in them for your reading pleasure.

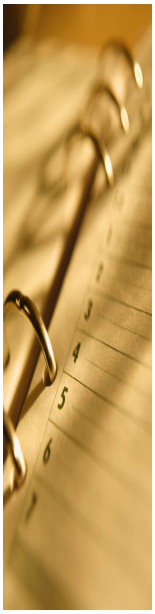
The **Pharmacy** binder has copies of the monthly Pharmacy newsletter updates as well as copies of the Nurses RX .

The **Cardiac Care** binder has monthly newsletters about current issues in cardiac care as well as case studies and rhythm reviews.

There is a **Policy and Procedure** binder out by the charge desk that lists all the policies that have been revised along with a summary of the changes. Review this to stay informed of changes that may affect your practice.

Remember that you now have access to the online **Mosby Nursing Skills** web site. This is accessed on the Pulse under Policy Manuals>Mosby Nursing Skills. You can select Emergency Nursing or Pediatric Emergency Nursing from among the many specialties listed. This site is very complete with illustrated guides, text review, and supply lists.

Try it; you will be surprised at how much information is here.



Calendar of Events

Emergency Nurses Week

October 11-17

Thank you

ED Case Review

October 20 Time and Place TBD

Fall Skills Day

Place: Evanston Sim Lab
Time: Tuesday Nov. 3 07-11a
Tuesday Nov. 17 11a-3p

Falls Skills Day

Place: Highland Park Sim Lab
Time: Weds., Nov. 4 10a-2p
Monday, Nov. 16 07-11a

You can attend whichever of these sessions is most convenient for you. See information sheets posted in the breakroom. Sign up sheets to follow.

administration of thrombolytics.
[Δ] ***With adjunct*** **(i.e.** ***higher bleeding risk*****)** refers to *with* concomitant medications or medical issues which predispose the patient to bleeding in the ACS or Afib setting such as: recent groin stick (< 12 hours), glycoprotein IIB/IIIA inhibitors, thienopyridienes, higher risk of bleeding due to concomitant disease states, recent administration of thrombolytics, recent invasive or percutaneous procedures.

- **Weight:** Scaled weight (actual), ideal or adjusted body weight (if > 30% above ideal) is used to calculate the initial bolus and hourly infusion rates. Thus each nomogram may vary slightly. Refer to patient's MAR for weight used in calculations.
- **Maximum Doses:** The max doses specified are for the *initial dosing only.* Responding to the aPTT may result in higher doses.

Note that adjunct therapy includes an immiment groin stick, ie. cath lab patient so the heparin dose should be a maximum of 4000 units.
All patients that receive or will receive Heparin in the ED must have a baseline PTT sent. Oftentimes this will have to be SIL'd if an extra blue top was already sent. It is usually not necessary for the PTT to be resulted prior to starting the Heparin.
Heparin boluses and infusions are high risk meds and thus require a 2nd nurse to verify the dose and rate. This nurse's name must be entered in the MAR under comments.

Hope that this helps to clarify the question over with or without adjunct therapy when Heparin is ordered. ❖

What is next?

This newsletter needs a name!

Please think of a good name we can call this newsletter. Submit it to Joan Casey at jcasey@northshore.org The Education Council will then select the best name and award an appropriate prize to the winner. All entries will be considered as long as they are in good taste (per ED standards).

H1N1 Update

There is a web site with extensive information on H1N1 available at www.northshore.org/flu This site has information specific for treating different population, recommendations on antivirals, and links to the CDC for the most current information.

In general, remember that any patient who presents to the ED and is suspected of having influenza should be placed on **Droplet isolation**. This means that a mask is placed at triage and visitors, as well as health care workers, should wear masks when in the patient's room. An employee who comes within 6 feet of a patient with confirmed H1N1 is considered to be exposed if they were not wearing a mask.

N 95's or a PAPR must be worn if an airway procedure that generates aerosol is done.

The patient must wear a mask when being transported outside of their room.

The H1N1 vaccine is not yet available. Seasonal influenza vaccine is available via Employee Health.

See the information sheets in the breakroom and elsewhere for further information regarding vaccine and treatment recommendations.