



Lessons Learned- Volume 5

To: All Prehospital Providers

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Date: August 2008

The following information is related to EMS Agency review of Prehospital care. The lessons learned from these reviews are applicable to all paramedic providers. Please review this important information and incorporate it into your practice.

CPAP use and application tips

Since the January 2008 implementation of CPAP in the paramedic scope for Santa Clara County our EMS providers have reported remarkable improvements in the status of CHF patients who present in acute respiratory distress. Their work of breathing decreases, oxygen saturation increases and the need for prehospital Lasix has dramatically decreased. Based on discussions with paramedics who have used the device, here are some tips for applying the masks that you may find useful:

1. A tight seal is necessary for CPAP to be effective however applying a face mask with tight straps to a patient in respiratory distress can cause additional apprehension and fear. You may find it helpful to initially hold the mask firmly to the patient's face before applying the straps to provide time to acclimate to the device. This also gives you the opportunity to coach their breathing and briefly remove the mask to provide initial nitroglycerin treatments without having to undo the straps. Once the patient experiences some relief, then apply the straps.
2. The most fragile part of the Boussignac CPAP system seems to be the clips that hold the straps to the mask. It has been reported that they break easily. Exercise care when applying the straps via the clips. Once the mask is applied try to avoid taking on and off.
3. The Boussignac system comes with three sizes of masks: small, medium and large. Try to size the mask appropriately to the patient's face. This will optimize the seal that the mask provides and improve the effectiveness of the device. We have heard of a tendency for paramedics to reach for the medium mask in all cases which has made it difficult to keep this size in stock.

Intraosseous Fluid and Drug administration

The use of the intraosseous route for medication and fluid administration is also a new and effective procedure for adult use in Santa Clara County since January of 2008. The purpose of this procedure is to improve the ACLS treatment for out-of-hospital cardiac arrest patients and, rarely, other patients in severe distress, by providing an alternate route of administration when an IV line can't be established. Since the IO line is invasive, painful, and expensive it should be reserved only for these types of emergencies.

Our protocol states that IO should be limited to:

Any ALS patient for whom immediate fluid or medication treatment is indicated. In addition, patients must have at least one of the following:

- *An altered mental status*
- *Respiratory compromise*
- *Hemodynamic instability*

Since implementation IO has, appropriately, most often been used for cardiac arrest (64% and 75% quarter 1 and quarter 2 respectively).

An IO line should never be established as a precaution, that is to say, "in case we might need it". A good general rule is that **an IO line should only be used when your treatment plan includes the immediate administration lifesaving fluids and medications.**

An IO line should never be placed before two attempts at establishing an IV have failed. The only exception to this rule is in cardiac arrest, where we encourage you to go directly to the IO route.

Rarely, if ever, will an IO be needed for the treatment of seizures as the protocols allow for various routes of administration for Midazolam (IV/IM/IN) which obviate the need for IO.

COMBITUBE use

The small adult COMBITUBE (SA) will work for most patients in whom an ET cannot be established. Please use the small adult size first. If the assessment of the patient does not indicate adequacy of ventilation with this size tube replace it with the larger tube. The SCCEMS Agency will be reviewing the Equipment requirements for Combitube and may eventually require only the SA size.

TRANSCUTANEOUS PACING for DNR patients

The use of Transcutaneous Pacing in a patient who has a valid DNR is not recommended. Please contact the Base Hospital prior to using TCP should you have a question about its use for this type of patient.

DIABETIC PATIENTS ON ORAL HYPOGLYCEMIC AGENTS

Hypoglycemia is a frequent and dangerous complication for diabetic patients. This is particularly the case for patients who are treated with oral medications.

Hypoglycemia is most often associated with the sulfonylurea oral agents glipizide and glyburide. Glyburide can produce severe, prolonged hypoglycemia that may necessitate intravenous glucose infusion for several days and is the most common cause of hypoglycemia and death related to sulfonylurea use. The risk factors for sulfonylurea-induced hypoglycemia include advanced age (over 65 years), inadequate caloric intake, concomitant drug use (e.g., β -blockers, insulin), recent initiation of sulfonylurea therapy with limited or no prior exposure to sulfonylurea therapy, and long-acting versus short-acting sulfonylurea use.

Table of Oral Hypoglycemic agents, their duration of action and half life:

Agent Name	Half Life	Duration of action
Glipizide (Glucotrol)**	4 hours	12-24 hour duration
Glyburide**(Dia Beta, Glynase Prestab, Micronase)	10 hours	16-24 hours

** Second generation sulfonylurea agents

When you are presented with a diabetic patient on oral medication who has had a hypoglycemic episode, that patient should be transported for further treatment and observation even if the hypoglycemia is corrected in the field. Most oral agents are long acting, and the patient will often have another hypoglycemic event even after treatment. Unfortunately many diabetes patients who have hypoglycemic episodes prefer to sign out AMA after treatment. This is particularly the case with less informed patients who, since they don't require insulin injections, may mistakenly believe that their condition is less serious than someone who requires insulin and therefore does not warrant transportation and evaluation in an emergency department.

If your patient is on oral agents use your best convincing attitude to get the patient to an ED for evaluation. If you are not able to convince the patient to go, be sure to explain in great detail that because of the medications that the patient is taking, they most surely will drop very low again, which can lead to profound shock and death. It is very important to document this information in the PCR. Other common sense treatments are to make sure that the patient has access to enough food to keep the blood sugar from dropping; make sure that the patient can retest their blood sugar frequently, and lastly make sure that the patient will have someone in attendance the next 8-12 hours.