

EMS Best Practices

MARCH 2013



Saving Lives Everyday!



One Person At a Time!



IMPROVED THERAPY FOR ANAPHYLAXIS AND ALLERGY

—By Joe Barger, MD, Medical Director Emergency Medical Services

Anaphylaxis is one of the key disorders in which EMS providers can make a difference in patient outcome. Early administration of epinephrine via IM route is the standard of care for patients with these systemic allergic reactions. In the last couple of years we have increased education efforts and modified our treatment guidelines to encourage more use of epinephrine, and those efforts appear to have made a difference in our treatment of this potentially deadly disorder. Upon review

of AMR data (which includes first-responder paramedic interventions), our use of epinephrine for allergy/anaphylaxis totaled 59 uses in 2012, which was increased from an average of 24 per year in the prior 5 years. In patients with systemic symptoms, 75% of patients who qualified for epinephrine were treated, which is an improvement from around 50% previously. So while there is progress, there are still opportunities to improve. For more detailed information on this study, check out our website www.cccems ■

EMERGENCY MEDICAL SERVICES TO EVALUATE SERVICE DELIVERY

—From the January 2013 issue of the Director's Report

The Contra Costa County Board of Supervisors last month directed our Emergency Medical Services Division to conduct a “re-evaluation” of the EMS system. A variety of factors—including an expiring ambulance contract, health reform and numerous fire station closures—are creating the need for a review of emergency medical services delivery in Contra Costa for the first time in roughly eight years. Our EMS Director Pat Frost said these factors have significant impacts for our county's system of care and threaten the fire-first responder paramedic program. As part of the

re-evaluation, EMS will explore opportunities to improve efficiencies within the current system that will benefit patients. EMS officials will also look at model programs and solicit stakeholder input to create a next-generation EMS system. Pat said the new system needs to reduce costs while improving outcomes by strategically matching patient need to resources deployed, eliminating processes that don't have a patient benefit and focusing on ones that expand bystander CPR efforts, expand the EMS role in health reform and include implementing evidence-based technologies ■

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ASK EMS

Do you have questions for EMS? Not quite sure who to ask? This column will help address those questions. As space permits, we will answer questions you submit. As always, for immediate response please contact EMS.

Q: Why are we titrating oxygen delivery?

A: Oxygen use in prehospital care is aimed at treating or preventing hypoxemia. It is a powerful drug. In the prehospital setting it is commonly delivered without a specific indication. We now direct paramedics to use pulse oximetry to titrate oxygen administration in many situations. For patients with poor perfusion (e.g., shock) or severe respiratory distress, or when carbon monoxide poisoning is suspected, high flow oxygen is recommended, regardless of pulse oximetry. BLS providers do not have pulse oximetry, and should use level of distress to determine oxygen administration until a paramedic arrives.

The pulse oximetry level of 94% utilized in our treatment guidelines represents a level that delivers optimal levels of oxygen to tissues, and maintaining that level is recommended in several national care guidelines, including those for stroke and acute MI. But giving more oxygen than that is not necessarily better, and may be worse.

Elevating the oxygen level higher than normal physiologic levels (pulse oximetry above 98%) causes hyperoxia, which has been shown to cause worsened patient outcomes. For example, in acute MI, delivery of a high concentration of oxygen may actually decrease coronary artery blood flow as a result of increased vascular resistance (vasoconstriction). In stroke, hyperoxia can potentially reduce cerebral blood flow and also worsen the stroke through formation of “free radicals” – chemical reactions caused by oxygen that lead to cellular damage.

Pulse oximetry is not reliable or may not be accurate in patients with shock, hypothermia or suspected carbon monoxide poisoning, so using pulse oximetry levels to guide titration isn't recommended in these situations.

GLUCOSE CHECKS DURING ARREST UNRELIABLE

—By Joe Barger, MD, Medical Director
Emergency Medical Services

You respond to a cardiac arrest with CPR in progress. A few minutes into the resuscitation, a blood glucose is checked by fingerstick and it returns a value of 35. Dextrose is administered, and a few minutes later the patient's fingerstick is even lower at 32, while CPR is still in progress. Do you give more dextrose? Should you have given any at all?

It turns out that glucose testing by fingerstick is highly unreliable cardiac arrest, and also may be quite unreliable in patients with profound shock. It also turns out that the neurologic outcome in patients

who get return of circulation after cardiac arrest is worse when glucose levels are elevated, so elevating blood glucose with dextrose treatment can be deleterious for patients who do survive their cardiac arrest.

So the take-home message here is that blood glucose testing by fingerstick in arrest is virtually meaningless and should not routinely be part of the evaluation in cardiac arrest UNTIL a pulse is restored for a few minutes. In addition, treatment with Dextrose in arrest is not indicated unless a low fingerstick glucose is found after the patient has had a pulse restored.

To learn more, check out an expanded version of this at www.cccems ■



PEDIATRIC MEDICATION ACCURACY IMPROVING

—By Joe Barger, MD, Medical Director
Emergency Medical Services

In 2011, an EMS safety initiative was launched to improve accuracy of pediatric medication administration. This included development of a specific drug administration procedure as well as improvements in drug reference charts. It appears that these efforts have borne fruit, as the error rate in 2012 was decreased by 50% from the prior 2010–2011 study.

So that is good news, but there is still clearly room for improvement. The most common error noted in 2012 was underdosing of

IM morphine, which is not critical in terms of safety but may lead to suboptimal pain relief. Errors in Midazolam dosing have decreased dramatically and that may be due in part to simplified dosing (0.1 mg/kg for both IM and IV usage).

I believe we can make further advances by adhering to the established procedure—in a nutshell, use the length-based tape, use the reference material to find the dosage, and double-check your dosages with another person on scene. Taking a few seconds to address these steps pays off in enhanced patient safety.

For more information on this, check our website at: www.cccems ■

Please send questions for future

ASK EMS columns to:

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