

April 12, 1995

**TO: Each Kern County EMT-Paramedic
through each Kern County EMT-Paramedic Provider**

**FROM: Robert Barnes M.D.
Medical Director**

**SUBJECT: Directive - Kern County EMT-Paramedic Use of Saline Locks for
Intravenous Catheters**

The purpose of this memorandum is to issue a directive regarding EMT-Paramedic use of Saline Locks for prehospital patient intravenous therapy in Kern County. In many cases, Saline Locks provide an effective and more cost efficient alternative to conventional use of IV Tubing and IV solution infusion through IV catheters for patients requiring precautionary IV access.

Upon completion of training in Saline Lock use by an authorized instructor in accordance with this directive, Kern County EMT-Paramedic personnel are authorized to use Saline Locks in compliance with the following procedures:

I. Overview:

The Saline Lock provides an alternative to conventional IV therapy using infusion of IV solution through IV tubing for patients that require precautionary IV access. The purpose of these procedures is to define the indications for use, contraindications, insertion and maintenance procedures, and training requirements for EMT-Paramedic personnel.

The Saline Lock is a plastic male adapter with a rubber hub at the end and a plastic tip that is inserted directly into an IV catheter. The Saline Lock is primarily indicated for precautionary venous access only, but may also be used for blood draw and limited volume IV solution infusion by puncture of a needle through the rubber hub. IV push medications should only be given through an IV infusion setup (IV solution and IV tubing). In normal circumstances, a Saline Lock should never be used for IV push medication administration unless an IV infusion is connected into the Saline Lock.

The Saline Lock must be flushed with 2 cc's of Normal Saline for Injection after initial attachment and each blood draw. If used properly, the Saline Lock will not require additional flushing during the prehospital phase of care to maintain patency. Current standard of care for flushing of a Saline Lock to prevent clot blockage is once every eight (8) hours.

II. Indications:

- A. Use of a Saline Lock is indicated when patient condition requires intravenous access on a precautionary basis, but does not require continuous infusion of an intravenous solution or IV push medication administration (example - hemodynamically stable patient presenting with CVA).
- B. A Saline Lock may be used for venous blood draw. A Saline lock may also be used for limited volume IV solution infusion, but it is not recommended for patients that may require rapid IV solution infusion.
- C. In some cases, a patient that initially only required precautionary IV access with a Saline Lock may require an IV push medication administration. In this situation, an IV infusion shall be used. The Saline Lock may be removed, followed by IV infusion attachment directly to the IV catheter hub; or the IV infusion may be done through the Saline Lock by using an 18 gauge needle attached to the IV tubing.
- D. The Department acknowledges that certain situations may warrant immediate IV push medication administration directly through a Saline Lock without sufficient time for setup of an IV infusion (such as a witnessed cardiac arrest). The Saline Lock shall be immediately flushed after the medication is administered. An IV infusion should be attached as soon as practical afterward. Each of these situations will be reviewed in regard to time and patient care necessity.

III. Contraindications:

- A. If the patient is at risk for (or presenting with) hypoperfusion, a Saline Lock shall not be used (examples - cardiac arrest cases, trauma patients, patients with any sign of physiological shock of any origin, burn patients).

IV. Procedures:

- A. After successful IV cannulation, the open end plastic tip of the Saline Lock is inserted into the IV catheter hub using aseptic technique. The Saline Lock should be placed securely into the IV catheter to prevent accidental removal and loss of blood.**
- B. Once the Saline Lock is secured, it must be immediately secured with tape and flushed with 2.0 cc of Normal Saline for Injection from a single dose vial or prefilled syringe. Prepare the syringe, cleanse the Saline Lock rubber hub with an alcohol or betadine prep and insert the needle gently through the rubber hub. Once inserted, draw back on the syringe plunger to observe venous blood return (verifies patency), then slowly administer the 2 cc's of Normal Saline for Injection.**
- C. The flushing procedure in B. is repeated with each medication administration or blood draw using the Saline Lock. In normal circumstances, the Saline Lock will not require re-flushing to maintain patency (standard to maintain patency - flush every 8 hours).**
- D. A continuous infusion of an IV solution may be done through a saline lock by attaching an 18 gauge needle to the end of the IV tubing and inserting the needle into the Saline Lock using aseptic technique. For patients that may require rapid IV solution infusion, a Saline Lock should not be used or should be removed if already in place (causes more resistance to rapid infusion of IV solutions).**
- E. Conventional IV site monitoring is indicated to ensure patency during flushing, medication administration or IV solution administration. If resistance is felt during administration, do not force administration of the IV solution or medication. A check of common problems is indicated (tourniquet still in place, swelling in tissues around catheter tip or puncture site). If the problem is not resolved, the catheter is likely occluded by a clot, up against a valve, or has infiltrated. In this case, the catheter and Saline Lock should be left in place and another attempt should be made at venous access. The bad catheter and Saline Lock should be removed as soon as possible.**

- F. **If a venous blood draw is to be done, it is ideally done prior to attachment of the Saline Lock. A venous blood draw may also be done after initial insertion but preferably before flushing of the Saline Lock (flushing will dilute the initial blood sample). For venous blood draw via the Saline Lock, an 18 gauge needle is needed to prevent hemolyzing the blood samples. If a blood draw is needed after flushing of the Saline Lock, evacuate the solution from the Saline Lock by withdrawing 2 cc's with a syringe; discard the syringe according to standard procedure; then do the blood draw and reflush the Saline Lock.**
 - G. **In some cases, a patient that initially only required precautionary IV access with a Saline Lock may require an IV push medication administration. In this situation, an IV infusion shall be used. The Saline Lock may be removed with IV infusion tubing attached directly to the IV catheter hub; or the IV infusion may be done through the Saline Lock by using an 18 gauge needle attached to the IV tubing.**
 - H. **Certain situations may warrant immediate IV push medication administration directly through a Saline Lock without sufficient time for setup of an IV infusion (such as a witnessed cardiac arrest). The Saline Lock shall be immediately flushed after the medication is administered and an IV infusion shall be used as soon as possible. Each of these situations will be reviewed in regard to time and patient care necessity.**
- V. **Training of EMT-Paramedic Personnel:**
- A. **All EMT-Paramedic personnel accredited to operate within Kern County shall be trained in proper Saline Lock use in accordance with these procedures.**
 - B. **Initially, Saline Lock training shall be provided by Kern County EMS Department authorized instructors of each EMT-Paramedic Provider. After the required training is completed to implement Saline Lock use within Kern County, the authorized instructor shall send to the Department the name of each EMT-Paramedic that successfully completed the training. This training is pre-approved for 1.0 Category II EMT-Paramedic continuing education units.**
 - C. **After implementation, Saline Lock training shall be added to the Kern County EMT-Paramedic Accreditation Procedure.**

Please call the Department at (805) 861-3200 for any questions.