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ONE STAGE SALINE LOCK AND INTRAVENOUS CATHETER SET AND METHOD OF USE

This application claims the benefit of U.S. provisional application Ser. No. 60/519,330, filed on Nov. 13, 2003, which is incorporated herein by reference.

I. FIELD OF THE INVENTION

This invention relates to a device and method for allowing medical personnel to simultaneously provide medication and intravenous fluid to a patient through the same catheter.

II. BACKGROUND OF THE INVENTION

Establishing an intravenous (IV) fluid for a hydrated patient is not a difficult task in a hospital setting with plenty of light, the required tools and equipment readily available in an organized arrangement. However, as the setting and environment change from a safe, sterile, low stress environment of a hospital to a combat zone where bullets are whizzing overhead and shells are exploding around a medic, the difficulty increases with the number of changes from the hospital setting. When the level of light is decreased to what is available from the stars, it becomes a bit tricky to locate the required equipment and see where the insertion site on a patient might be. The last thing the medic wants to do is turn on a white light and announce to the enemy where he/she is for target practice. When the patient is wounded and bleeding, locating a usable blood vessel (let alone any blood vessel) becomes even trickier, because the loss of blood leads to a reduced volume of blood circulating that, in turn, constricts the blood vessels and the slippery conditions that might exist around the potential IV sites. If the combat soldier or other individual has been in the field and has not maintained hydration levels, the soldier is likely to be dehydrated, which will further constrict the blood vessels of the patient. If the patient is a combat soldier or other individual with a full set of gear that needs to be removed, then valuable time will be consumed removing the necessary gear prior to beginning the IV, which increases the pressure to efficiently and quickly begin the IV. The ability to establish an IV becomes more difficult for each of the above conditions existing in the environment in which the IV is being established.

The last thing that the medic wants to do is remove (or disconnect) the IV for moving (or evacuating) the patient to a medical facility, because of the difficulty to establish the initial IV. Instead of disconnecting the IV, the alternative is to establish a saline lock, which requires at a minimum a saline lock, an 18 g–1.5" needle, a 10 cc syringe, saline, and a 4"–4" Tegaderm patch to cover it. Assuming that the supplies are available, under the best of circumstances it will take one to three minutes to install and establish the saline lock for transport, which means if any of the conditions describe above exist the time to do this will increase tremendously. Even assuming the saline lock is established, it is inevitable that it will begin to leak where the IV hub connects with the IV catheter, for example, due to vibrations from the evacuation vehicle (such as an HUMVEE ambulance, a civilian ambulance, a helicopter or other vehicle) or the patient being transported over rough terrain.

Furthermore, establishing a saline lock is complicated and not conducive to being performed in the field under environmental pressures such as during a gun battle. A typical IV catheter includes a needle that extends out beyond the IV

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catheter tip to allow the needle to puncture a patient's skin and blood vessel wall. The process begins with inserting the needle through the skin and into a blood vessel such as a vein of the patient, and then threading the IV catheter down the needle further into the blood vessel to secure the IV catheter in the blood vessel. The saline lock then is attached to the back of the IV catheter thus requiring multiple pieces of medical equipment of small size to be interconnect. The alternative is to attach the saline lock to the IV catheter with the insertion needle passing through both pieces, which requires both pieces to have a diaphragm to prevent leakage. In the field in the middle of a battle and/or gunfight, there is not the time or calmness to install a catheter, connect the catheter to an IV (either directly or via a hub), and attach a saline lock in line between the catheter and the IV tube. The size and number of components increase the likelihood that dirt and other environmental containments will become lodge between the pieces and provide a ready contamination source.

Additionally if the IV remains connected to the patient, when the patient is moved particularly in a military setting, no matter how many precautions are taken by the medic when preparing the patient for transport and/or extraction, a branch, vehicle door or some other object ends up catching the attached IV tubing and ripping the IV out of the patient. If the IV tubing is ripped out, then the patient is able to bleed out through the catheter that will likely remain inserted in the patient and providing a pathway for blood to flow out the patient unless plugged/clogged up or removed from the patient. If the patient is not conscious or the medics are distracted, then the bleeding can add to the loss of blood and increase the likelihood of death.

Furthermore, currently used IV plugs (or saline locks) without exception start to leak after any kind of movement, which compromises the IV site on an injured patient both in terms of leakage from the patient and/or IV and containments making there way into the patient via the leak area.

Notwithstanding the usefulness of the above-described methods, a need still exists for a simpler way to install a saline lock and IV catheter including a more compact, simpler device.

III. SUMMARY OF THE INVENTION

This invention provides a device that is compact and easy to use having a hub component with two branches allowing, for example, administration of an IV and/or medication to the patient via a catheter in fluid communication with the two branches. More preferably, the catheter is unitarily formed as one piece with the hub allowing for a simplified use of the invention. The invention also includes a method for using the device.

According to at least one embodiment of the invention, the invention includes an apparatus comprising a hub having a body having a central passageway passing therethrough and a branch passageway passing therethrough in communication with the central passageway, the body having a means for connecting to an IV, the means in communication with the central passageway, a medication port in communication with the branch passageway, and a catheter extending from an end of the body opposite the first port.

According to at least one embodiment of the invention, the invention includes an apparatus comprising a hub having a body having a central passageway passing therethrough and a branch passageway passing therethrough in communication with the central passageway, the body having a first port at one end, the first port in communication with the