Dehydration is an abnormal depletion of fluids and electrolytes from the body, and first responders are frequently responsible for assessing the patient and initiating treatment. While most emergency medical services personnel are more familiar with the use of IV therapy for treatment of dehydration, there are potential drawbacks.

- Placement of an IV needle or catheter directly into a vein can be difficult
- In one study, 25.5% of dehydrated pediatric patients required 2 or more needle sticks to obtain IV access (21.3% failed IV access altogether)\(^1\)
- Placement of an IV line is often a traumatic experience both for children and adults. IVs are considered one common source of “worst pain” for children during hospitalization\(^2\)

Research shows that the anxiety and pain caused by IV therapy may be unnecessary in many cases.\(^3\) Situations may arise when IV therapy is not practical, available, or feasible.

**An Alternative to IV Therapy: Vein-Free Sub-Q Infusion**

Rehydration therapy can be administered via the subcutaneous (Sub-Q) route with enzyme-facilitated absorption. A catheter is placed in the Sub-Q tissue, then hyaluronidase is injected. Hyaluronidase temporarily breaks down the hyaluronic acid barrier to open access to the lymphatic and capillary vessels, allowing fluids and drugs to enter systemic circulation. Fluid administration is then initiated via the same infusion set/catheter.

In a comparative study of 20 adults accessed by emergency medical technician-paramedics (EMTP) using both IV and Sub-Q methods\(^4\):

- EMTPs underwent 5 minutes of Sub-Q catheter insertion training
- 100% successful catheter insertion and infusion were achieved via Sub-Q route
- EMTPs rated Sub-Q easier to place than IV

With each injection, access to the Sub-Q space remains open for approximately 24 hours. The hyaluronic acid rebuilds naturally and the barrier is completely restored within 24-48 hours.

Sub-Q infusion may be less painful than IV and offers a broad range of alternative insertion sites that can be based on the patient’s anticipated mobility and comfort.

**NOTE:** The healthcare professional who is administering subcutaneous fluids should be knowledgeable about the indications for use, appropriate rates of administration, monitoring parameters, adverse effects, stability of infusate, storage requirements, and potential complications.

**References:**