

Is Deficiency in the Electrical Current of Injury a Barrier to Healing in Hard-to-Heal Wounds? A Systematic Review with Implications for the TIMERS Paradigm

Endogenous bioelectric signaling (including **trans-epidermal potential [TEP]** and the **current of injury**) plays a fundamental role in normal wound repair. Despite this, commonly used wound management frameworks, such as the TIMERS framework, do not consider this important driver of healing

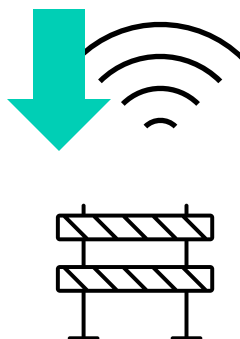
The aims of this review: to explore whether patient characteristics common in delayed healing are associated with weakened electrical properties of the skin; whether compromised currents of injury are a barrier to healing; whether electrical stimulation therapy (EST) could be incorporated into existing frameworks

What was assessed?



- Any type of study relating to skin or skin models
- Published up to October 2024
- Twelve papers with relevant data were identified

What was found?

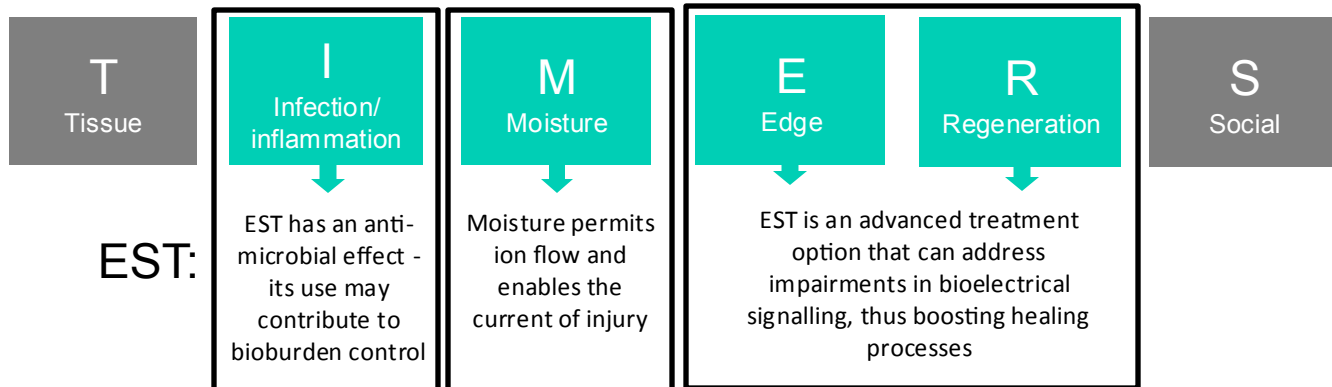


TEP in older or diabetic people is significantly lower, and the current of injury is approximately half that of young, healthy controls.

Lower currents of injury are associated with slower wound healing and are a **barrier to healing**

How this information can be used:

Electrical Stimulation Therapy (EST) is designed to boost the weakened current of injury, back up to normal levels, stimulating a healing response. [This incorporation of EST into the TIMERS wound management frameworks is therefore proposed :](#)



Endogenous bioelectrical signalling in the wound healing process appears to be compromised particularly in older people and those with diabetes. Patients may benefit from incorporating treatment with EST, which boosts bioelectrical signalling, into relevant wound treatment frameworks.