

## Letter to the Editor

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# Prospect of Intraosseous Access Technology

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At the disaster site, traumatic hemorrhagic shock is the most common acute and critical illness. Prehospital first aid is an important means to ensure the timely admission of traumatic shock victims. Scientific prehospital first aid can effectively shorten the preparation time of the injured for admission, buy more time for doctors to treat the injured, and greatly improve the survival rate of the injured. The key to the success of the treatment of traumatic hemorrhagic shock is whether the infusion pathway can be established in time. To quickly establish an infusion channel for the injured with traumatic shock such as peripheral vein contraction and collapse and serious limb damage, it has become an important first-aid technology in the modern emergency medical system to establish an effective fluid resuscitation channel through the establishment of intraosseous access (IO).<sup>1</sup>

The bone marrow cavity is called the “never collapsing vein.” There are many highly differentiated microvenous networks, which can quickly absorb a large amount of liquid and drugs, flow into the central bone vein channel through the medullary venous sinus, and quickly transfer to the systemic circulation. IO is a method to deliver blood, fluids, and medications directly into the marrow of the bone.<sup>2</sup> At present, the widely used bone marrow cavity injection devices mainly include bone marrow puncture needles and corresponding equipment, and their mechanisms of action are mostly similar. There are 3 representative first-aid tools for bone marrow cavity infusion: First Access for Shock and Trauma (FAST), Bone Injection Gun (BIG), and EZ-IO.<sup>3</sup>

With the rapid development of artificial intelligence technology, the technology of IO in disaster site based on artificial intelligence is proposed to better solve the problem of intravenous catheter infusion. The application of various rescue robots and medical robots can provide a reliable idea for the automation of IO. The intraosseous access devices are small in size, light in weight, and easy to carry. They can be loaded into various rescue robots to achieve unmanned rescue in a narrow space at the disaster site.

## References

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