



This paper proposes a new vein-visualizing device applying a new penetration method using near-infrared (NIR) light” Kim et al (2017).

Abstract:

Venipuncture is an important health diagnosis process. Although venipuncture is one of the most commonly performed procedures in medical environments, locating the veins of infants, obese, anemic, or colored patients is still an arduous task even for skilled practitioners.

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To solve this problem, several devices using infrared light have recently become commercially available. However, such devices for venipuncture share a common drawback, especially when visualizing deep veins or veins of a thick part of the body like the cubital fossa. This paper proposes a new vein-visualizing device applying a new penetration method using near-infrared (NIR) light. The light module is attached directly on to the declared area of the skin. Then, NIR beam is rayed from two sides of the light module to the vein with a specific angle. This gives a penetration effect. In addition, through an image processing procedure, the vein structure is enhanced to show it more accurately. Through a phantom study, the most effective penetration angle of the NIR module is decided. Additionally, the

feasibility of the device is verified through experiments in vivo. The prototype allows us to visualize the vein patterns of thicker body parts, such as arms.

Full Text

Reference:

Kim, D., Kim, Y., Yoon, S. and Lee, D. (2017) Preliminary Study for Designing a Novel Vein-Visualizing Device. *Sensors*. 17(2). doi: 10.3390/s17020304.

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