

Title

Sonic Flashlight: A New Ultrasound Display System That Makes Vascular Access Easier.

Information**Presented during:** [Angiography - 03/27/2004 \(08:00 - 09:30 AM\)](#)**Abstract Number:** 64**Authors:** W.M. Chang, University of Pittsburgh, Pittsburgh, PA, USA·N.B. Amesur·A.B. Zajko·G.D. Stetten**Purpose:** The Sonic Flashlight (SF) is a new handheld device being developed at our institution that replaces the standard monitor on a conventional ultrasound (CUS) system. It works by using a mirror to reflect real-time ultrasound (US) images into the body, making that body part appear translucent. Accessing vessels and fluid collections, especially to the novice user, are made more intuitive. By viewing the image directly within the body, it does away with the displaced sense of hand-eye coordination that occurs when the operator must look away from the patient to view the CUS monitor. The SF merges the patient, the US image, the instrument, and the operators hands into the same field of view without using a head-mounted display. The SF may thus make accurately placing vascular access catheters, drainage catheters, or biopsy needles easier. For the purpose of this study, we recorded the time for a novice to place a needle accurately into a vascular access phantom using the SF versus the Site-**Materials & Methods:** The SF has been under development at our institution for the past 3 years. The current version consists of a 10Mhz Terason scanner modified by attaching a small flat-panel display (AM550L OLED, Kodak), and a 20x50x1mm half-silvered mirror (Edmund Optics) to the transducer. The study population consisted of 20 individuals with little to no US experience. They used a 21-guage needle to pierce the lumen of a vascular access phantom (Bard) and the time from touching the transducer to piercing the lumen was recorded. This procedure was repeated using the Site-Rite.**Results:** Significantly faster times were recorded using SF for guidance as compared to the Site Rite (5.17 vs. 6.54s, n=20, one tailed paired t-Test p=0.013).**Conclusion:** The results of this study suggest that learning to use the SF for guidance is significantly easier than CUS. Several subjects stated that the SF made more sense, or was more intuitive. Another subject stated that [ldquo]its obvious that this [SF] is so much easier to use.[rdquo] We believe that the SF may have a broad impact on the field of US guidance. Further studies are currently underway to evaluate this device on human subjects.

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