



# Needle Guide Identifies Needle Tip, Reduces Time for Simulated Block

## Improving Needle Visualization by Novice Residents During an In-Plane Ultrasound Nerve Block Simulation Using an In-Plane Multiangle Needle Guide

Rajnish K. Gupta, MD<sup>1</sup>, Jason Lane, MD, MPH<sup>1</sup>, Brian Allen, MD<sup>1</sup>, Yaping Shi, MS<sup>1</sup> and Jonathan S. Schildcrout, PhD<sup>1,2</sup>.

<sup>1</sup>Department of Anesthesiology, Vanderbilt University, 1301 Medical Center Drive, 4648 TVC, Nashville, TN 37232 USA,

<sup>2</sup>Department of Anesthesiology and Biostatistics, Vanderbilt University, 1301 Medical Center Drive, 4648 TVC, Nashville, TN 37232 USA.

Pain Medicine, November 2013

### Summary and Methods

The authors hypothesized the use of an in-plane multiangle needle guide would assist residents with novice ultrasound skills in performing a phantom simulated nerve block.

Volunteers from Vanderbilt University Anesthesiology Department postgraduate year PGY-1 (Intern) and PGY-2 (Clinical Anesthesia Year -1, CA-1) participated in this institutional IRB approved study. Each participant viewed a slide presentation on the basic use of ultrasound and the principals for needle placement while maintaining visualization of the needle under ultrasound guidance. Utilizing a Sonosite S-Nerve™, Blue Phantom™ Regional Anesthesia Ultrasound Training Block Model, Stimplex® needle, and a CIVCO Infiniti™ needle guide, each volunteer performed 4 needle placements with the guide and 4 without the guide in 2 cycles. Each placement was ultrasound video recorded and the time was recorded from needle insertion until the volunteer felt the needle was properly placed.

### Discussion and Results

Using a needle guide, the entire length of the needle or the tip was visualized 76% of the time on the first attempt. In contrast, those who did not use a needle guide, reported acceptable needle visualization 62% of the time.

During the second cycle of simulations, the trend continued with 63% needle visualization without a needle guide. Those who used the needle guide during the second cycle, demonstrated an improvement to 87% with the first attempt and 100% by the last pass of the cycle.

### Conclusions

The authors reported study limitations including the use of a phantom does not translate to in vivo results. Further studies will be needed to evaluate clinical efficacy.

Ultrasound-guided nerve blocks performed with the Infiniti needle guide offer many benefits to patients, physicians and clinics. The study's findings suggest the Infiniti needle guide:

- reduces time to complete a simulated nerve targeting task by 27%
- increases the chance of an acceptable needle view (whole or tip) by 355%
- reduces the likelihood of having no needle visualized at all when compared with not using a needle guide.

### Author Commentary

*"This needle guide greatly increased the chances of an acceptable needle view (whole or tip) and reduced the likelihood of having no needle visualized at all when compared with not using a needle guide. This 355% improved odds of better needle visualization with a needle guide is a significant enhancement for UGRA, inadequate needle visualization can be a dangerous means of performing ultrasound-guided nerve block."*

*"...An in-plane, multiangle ultrasound needle guide, when used by novice anesthesiologists, reduces the time to complete an ultrasound-guided simulated nerve targeting task."*

