# Novice ultrasound users seem to benefit most and great potential lies in education. Future research should focus on reporting relevant clinical parameters to learn which technique will benefit patients most in terms of success and safety" Scholten et al (2017).

Summary:

Ultrasound guidance is becoming standard practice for needle-based interventions in anaesthetic practice, such as vascular access and peripheral nerve blocks. However, difficulties in aligning the needle and the transducer can lead to incorrect identification of the needle tip, possibly damaging structures not visible on the ultrasound screen. Additional techniques specifically developed to aid alignment of needle and probe or identification of the needle tip are now available.

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In this scoping review, advantages and limitations of the following categories of those solutions are presented: needle guides; alterations to needle or needle tip; three- and four-dimensional ultrasound; magnetism, electromagnetic or GPS systems; optical tracking; augmented (virtual) reality; robotic assistance; and automated (computerised) needle detection. Most evidence originates from phantom studies, case reports and series, with few randomised clinical trials. Improved first-pass success and reduced performance time are the most frequently cited benefits, whereas the need for additional and often expensive hardware is the greatest limitation to widespread adoption. Novice ultrasound users seem to benefit most and great potential lies in education. Future research should focus on reporting relevant clinical parameters to learn which technique will benefit patients most in terms of success and safety.

Reference:

Scholten, H.J., Pourtaherian, A., Mihajlovic, N., Korsten, H.H.M. and Bouwman, R.A. (2017) Improving needle tip identification during ultrasound-guided procedures in anaesthetic

practice. Anaesthesia. 22nd May. .

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