# Ultrasound Transducer for Epidural Needle Guidance

Published date: June 30, 2009

## Technology description

A UBC researcher has developed a new ultrasound transducer tailored for more accurate, image-guided needle insertion for the delivery of epidural anesthesia.

## Description

The UBC researcher has developed a new ultrasound transducer design that enables excellent visualization of the spinal anatomy and the needle during insertion to improve the accuracy and safety of epidural anesthesia.
The transducer design is superior to other available transducers for epidural insertion because the imaging components do not obscure the midline for insertion of the needle into the epidural space. The transducer geometry allows for the needle to be inserted simultaneously while acquiring real-time anatomical images. Moreover, multiple planes are acquired to guide placement with optimal image contrast.

## Background

Epidural anesthesia is administered for millions of births every year in North America, and for many surgical procedures. The market size for an ultrasound transducer for epidural needle guidance is estimated at over $200 million worldwide for obstetrics alone, concentrated primarily in North America. The complication rate for administering epidural anesthesia is reported to be as high as 20% of cases. To administer anesthesia, a needle must be entered into the small epidural space in the spine midline. The placement of the needle is critical to effectively administering pain relief and avoiding nerve damage. Accurate epidural needle insertion is difficult to learn and typically relies on the anesthesiologist to detect a loss of resistance on the needle to determine placement.
The UBC researcher has previously shown that the anatomical components of the spine are distinguishable using ultrasound imaging. Ultrasound is already a common imaging modality used in obstetrics, and a growing tool in anesthesia.

## Advantages

Biplane imaging to enable accurate needle guidance into the epidural space
Improved contrast of needle compared to existing techniques due to image plane orientation
Optimized transducer geometric design enables simultaneous image capture and needle insertion for easy clinical adaption

## Institution

The University of British Columbia


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