

Background

- Neuraxial blocks traditionally rely on the palpation of surface landmarks for needle insertion.
- Surface landmarks include the iliac crests and spinous processes.
- Landmarks are difficult to palpate in the obese patient.
- Neuraxial ultrasound may minimize difficulty of lumbar neuraxial blockade by assisting in landmark identification and spinal needle insertion.
- Advantages of neuraxial ultrasound include increased accuracy of needle placement, increased first-attempt success rates, and fewer needle insertions.
- This is clinically relevant as multiple needle passes increase the risk of complications.
- Multiple needle passes may increase the procedure time.
- Neuraxial ultrasound may benefit obese patients.

Clinical Question

In the obese patient population, does the use of neuraxial ultrasound-guidance compared to using the landmarks technique result in fewer needle insertions and a shorter time required to complete a lumbar neuraxial block?

Accuro



<https://rivannamedical.com/clinical-value/>

Case Report

- Patient:
 - Age: 76
 - Gender: female
 - Body mass index: 31 kg/m²
 - Diagnosis: osteoarthritis of her right knee
 - Procedure: right total knee arthroplasty
 - Anesthetic: spinal anesthesia
- Traditional landmark palpation method used
- Poorly palpable surface landmarks increased the difficulty
- Introducer and needle redirected 6 times
- Required second provider to achieve spinal needle insertion
- Procedure time not recorded
- Sedation provided through propofol IV infusion

Evidence Based Discussion

- Neuraxial ultrasound does not have many disadvantages and has a favorable risk-benefit profile.
- First attempt success using ultrasound in 92% of neuraxial blocks
- Ultrasound-guided neuraxial blocks use less needle insertions and are more successful on the first attempt compared to landmark palpation.
- In the obese and challenging spinal anatomy patients, ultrasound-guidance had fewer needle insertions.
- First attempt success using ultrasound was 85.7%.
- First attempt success without ultrasound was 74.3%.
- Less anesthesiologist support required when using ultrasound-guidance

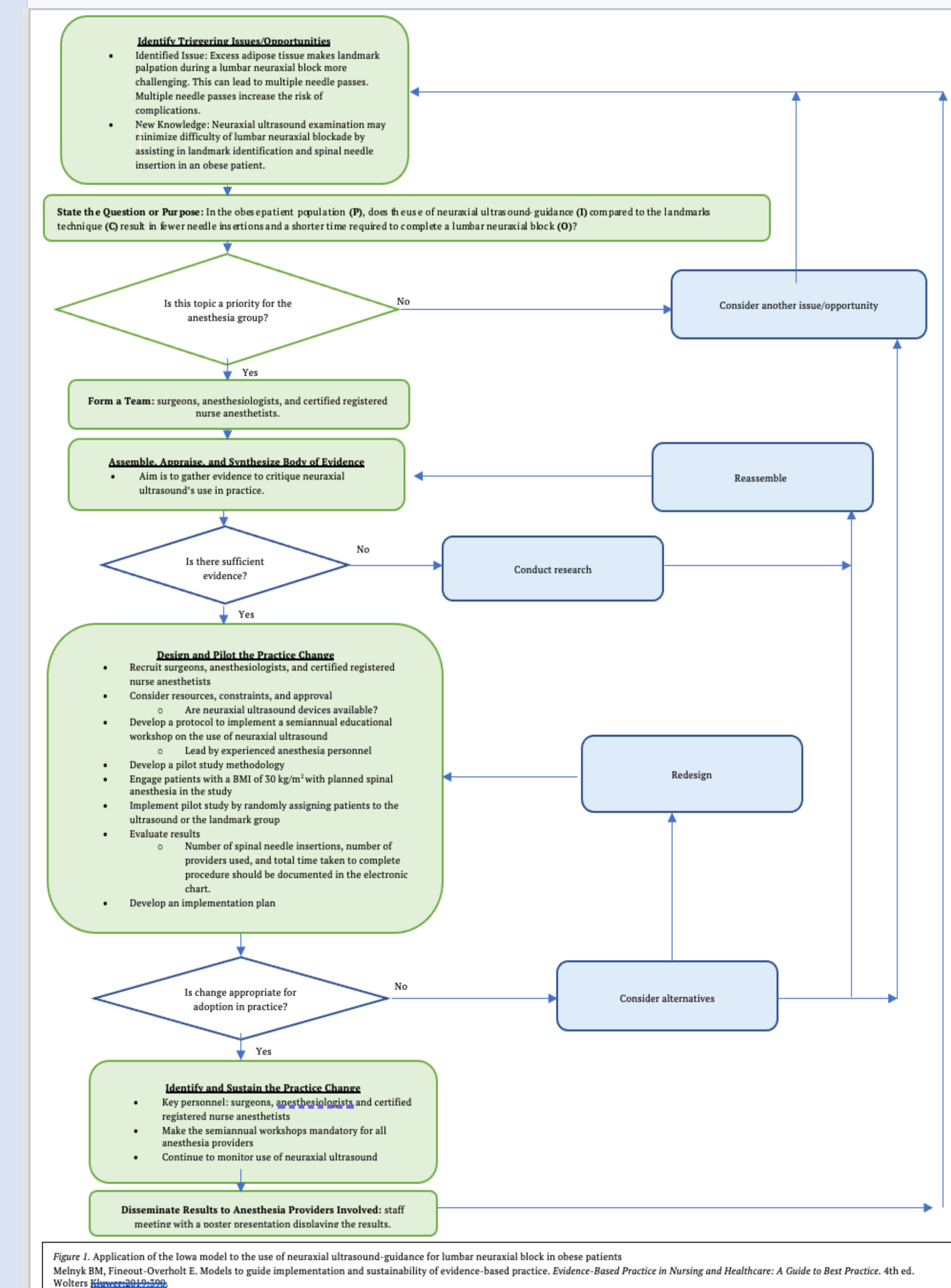
Translation to Practice

- **Step 1:** Recruit an interprofessional group of surgeons, anesthesiologists, and certified registered nurse anesthetists to collaborate on the development of a protocol.
- **Step 2:** Educate anesthesia practitioners on the proper use of neuraxial ultrasound through hands on training.
- **Step 3:** Implement a pilot study using patients with a BMI of 30 kg/m² or greater who are undergoing spinal anesthesia for orthopedic surgery.
 - Randomly allocate patients to the neuraxial ultrasound-guidance or the landmark palpation method group
 - Record number of spinal needle insertions, number of providers used, and procedure time
- **Step 4:** Standardize protocol for patients meeting the criteria or implement further education and training.

Evidence Based Discussion (cont.)

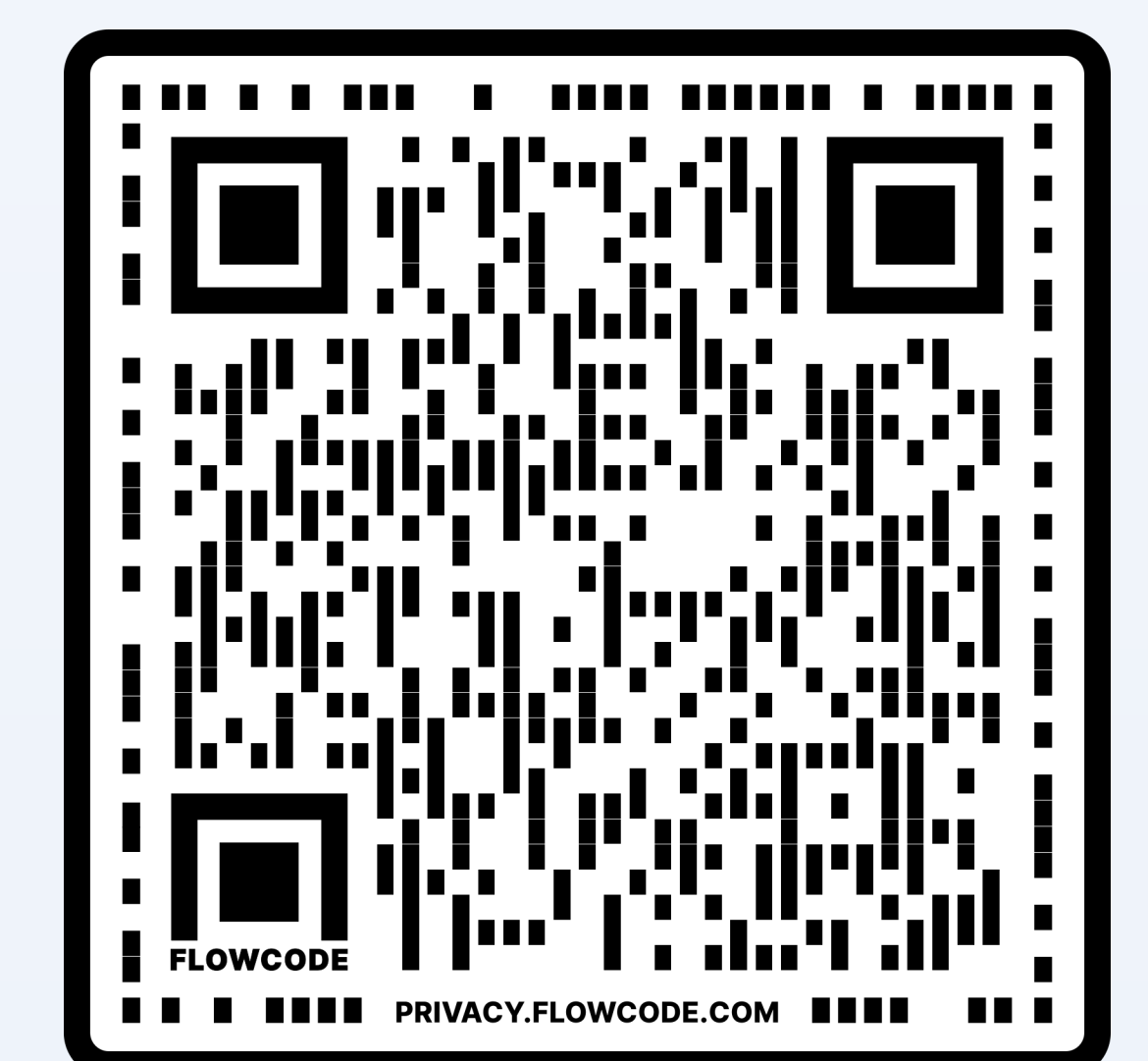
- Less needle passes allow the patient to avoid increased risk of complications.
- Evidence regarding procedural times was conflicting
- Ultrasound-guided group used less time to complete the procedure
- No differences in procedural times
- Ultrasound assisted neuraxial anesthesia required a significantly longer time to complete the procedure.
- Conclusion: use of neuraxial ultrasound can decrease number of needle insertions
- More research needed regarding procedure time

Implementation



EBP Framework Algorithm and References

Scan this QR code for the algorithm and a complete reference list.



Questions?

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