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# Anticoagulation for Interventional Pain Procedures: A Comparative Analysis between ASRA Guidelines, ChatGPT, and Google Gemini

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## Introduction

Anticoagulation recommendations for interventional pain procedures differ widely between each specific procedure. Despite increasing evidence and the updated guidelines from the American Society of Regional Anesthesia and Pain Medicine, the European Society of Regional Anaesthesia and Pain Therapy, the American Academy of Pain Medicine, the International Neuromodulation Society, the North American Neuromodulation Society, and the World Institute of Pain, patients may not fully understand the importance of withholding anticoagulation or remember the recommendations of their physician. Artificial intelligence (AI) is becoming increasingly utilized by patients to understand treatment recommendations and inform decision making. Here, we present a comparative analysis of anticoagulation recommendations for interventional pain procedures between guidelines from multiple pain societies and responses from artificial intelligence including ChatGPT 4.0 and Google Gemini.

## Materials and Methods

IRB was obtained and waived for this observational research study. As this study is devoid of patient health information, it is IRB exempt as determined by the University of Chicago Medicine policy. Cross-sectional study design was conducted for this study with the question phrased as “Should I hold my blood thinner before X procedure?” Three intermediate pain procedures (perioperative epidural placement, transforaminal epidurals, sympathetic plexus blocks), and two low-risk procedures (sacroiliac joint injections, radiofrequency ablation) were inputted for X. Each question was queried on each individual software with four different users and on different days of the week. Responses were graded as “sufficient” if it corresponded with guidelines in revealing specific guidance on timing for withholding medications or “insufficient” if it failed to provide relevant information.

## Results/Case Report

There were 80 overall artificial intelligence-produced responses based on five questions asked over two artificial intelligence softwares, and between four different users on two separate days. 5 of the total 80 responses were deemed sufficient – 6.25% of the overall responses. These five responses were generated by ChatGPT and cited actual ASRA guidelines in the response when queried about withholding anticoagulation for each specified procedure. These responses were only yielded with one user and on one out of two days. Of note, this user did perform a google search about ASRA guidelines regarding anticoagulation prior to inputting each respective question

into the artificial intelligence software. The other 75 responses yielded by artificial intelligence were general in recommendation and simply encouraged users to discuss with their physician, instead of providing specific recommendations.

## Discussion

Artificial Intelligence responses are highly personalized based on the users' past searches. Therefore, we found that answers regarding withholding anticoagulation differed widely between users as well as between days for a given user. While artificial intelligence can incorporate responses based on established guidelines used in practice, results demonstrated it was unlikely to do so without previous inquiry by users. In the future, artificial intelligence could potentially be incorporated into patient education; however, at this current time, physicians should continue to educate patients on correct guidelines and be aware of the challenges when facing misinformation that could be further spread by artificial intelligence.

## References

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## Disclosures

No

## Tables / Images

## should I hold my blood thinner before transforaminal epidural injection



Holding a blood thinner before a transforaminal epidural injection is often recommended due to the potential risk of bleeding during the procedure. However, the specific instructions can vary based on your medical history, the type of blood thinner you are taking, and the preferences of your healthcare provider.

Here are some general steps to follow:


1. **Consult Your Healthcare Provider:** Contact the doctor who prescribed your blood thinner and the healthcare provider performing the transforaminal epidural injection. They will provide you with tailored advice based on your individual circumstances.
2. **Follow Precise Instructions:** If you are advised to stop taking your blood thinner, follow the exact instructions regarding when to stop and when to resume the medication.
3. **Alternative Management:** Your healthcare provider might suggest alternative strategies to manage the risk of blood clots while you are off the blood thinner.
4. **Monitor for Symptoms:** Be vigilant for any signs of blood clotting or other issues while you are off the medication, and report them to your healthcare provider immediately.

Always rely on professional medical advice tailored to your specific health needs and circumstances.




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should I hold my blood thinner before my transforaminal epidural steroid injection

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 This is for informational purposes only. For medical advice or diagnosis, consult a professional.

## Holding Blood Thinners Before a Transforaminal Epidural Steroid Injection

**Yes, it's highly likely you will need to hold or adjust your blood thinner medication before a transforaminal epidural steroid injection.**

This procedure involves injecting medication near the spinal area, increasing the risk of bleeding. Blood thinners can significantly elevate this risk.

**However, it's crucial to discuss this with your doctor.** They will assess your specific situation and determine the best course of action. This might involve:

- **Temporarily stopping** your blood thinner. 
- **Adjusting the dosage.**
- **Switching to a different medication.**
- **Continuing the blood thinner** with close monitoring.

**Never stop taking your blood thinner without your doctor's approval.** Doing so could increase your risk of blood clots.

Your doctor will weigh the risks and benefits of continuing or stopping your blood thinner based on your medical history, the type of blood thinner you're taking, and the specific details of your procedure.