

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

PRESENTER: Christian Wirawan

BACKGROUND: Artificial Intelligence continues to emerge and integrate into our daily lives. More and more patients are turning to AI to answer health-related questions. Guidelines for withholding anticoagulation differ greatly between various interventional procedures and patients may not specifically remember what recommendations were given. Thus, patients may turn to AI as it 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.

METHODS

- 1. Cross-sectional study design comparing ChatGPT, Google Gemini, and ASRA guidelines
- 2. Question asked “Should I hold my blood thinner before X procedure?”
 - a. Three intermediate pain procedures
 - perioperative epidural placement
 - transforaminal epidurals
 - sympathetic plexus blocks
 - b. Two low-risk procedures
 - sacroiliac joint injections,
 - radiofrequency ablation
- 3. Question queried on each software with four different users and on four different days
- 4. Responses graded as sufficient vs insufficient

Artificial Intelligence could be incorporated into healthcare to provide recommendations on procedural guidelines... in the near future

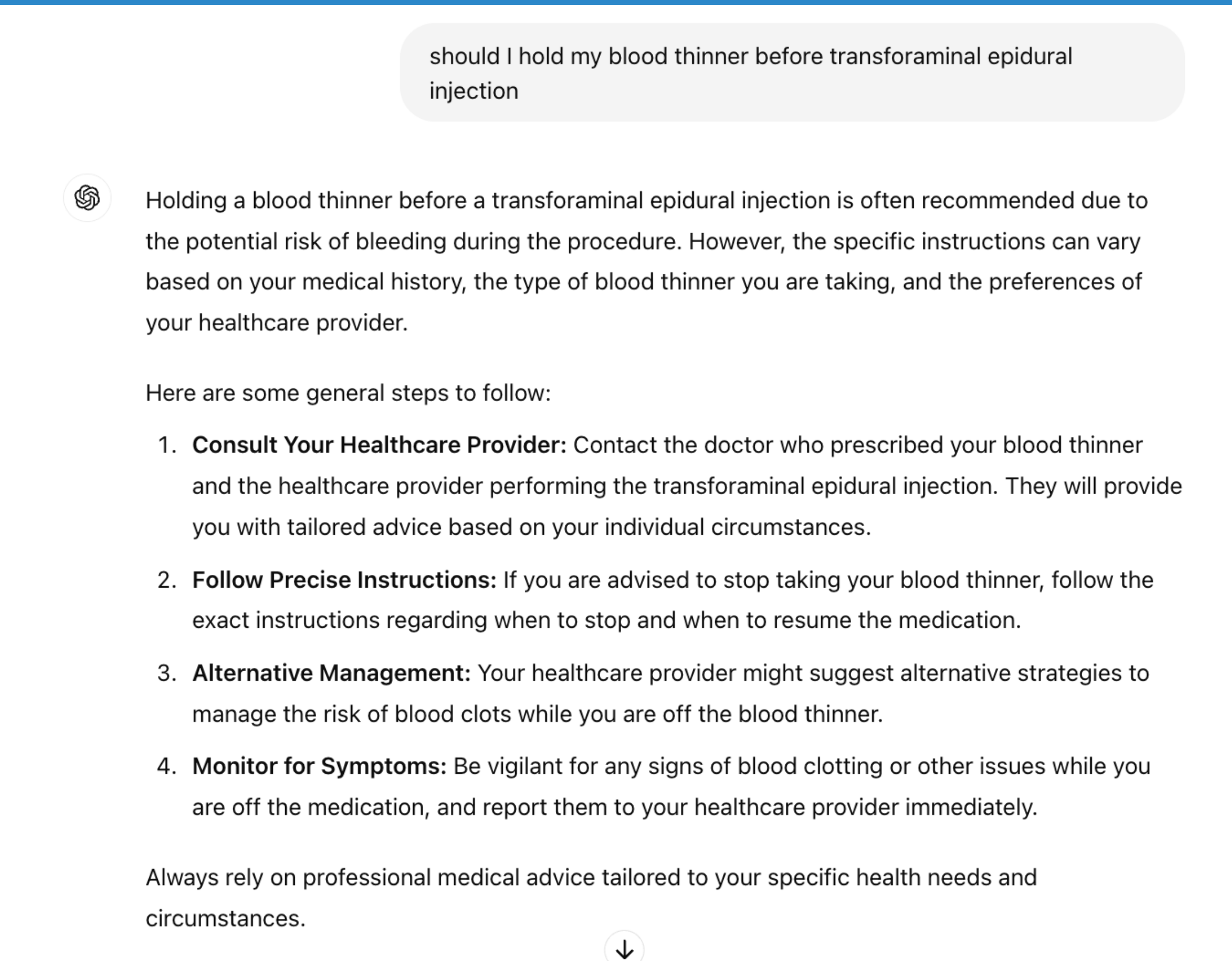


Figure 1: ChatGPT response for transforaminal epidural steroid injection

High-Risk Procedures	Intermediate-Risk Procedures*			Low-Risk Procedures*
Spinal cord stimulation trial and implant Dorsal root ganglion stimulation Intrathecal catheter and pump implant Vertebral augmentation (vertebroplasty and kyphoplasty) Percutaneous decompression laminotomy Epiduroscopy and epidural decompression	Interlaminar ESIs (C, T, L, S) Transforaminal ESIs (C, T, L, S) Cervical† facet MBNB and RFA Intradiscal procedures (C, T, L) Sympathetic blocks (stellate, T, splanchnic, celiac, lumbar, hypogastric) Trigeminal and sphenopalatine ganglia blocks			Peripheral nerve blocks Peripheral joints and musculoskeletal injections Trigger point injections including piriformis injection Sacroiliac joint injection and sacral lateral branch blocks Thoracic and lumbar facet MBNB and RFA Peripheral nerve stimulation trial and implant‡ Pocket revision and implantable pulse
Drug	When to Stop			When to Restart
	High-Risk Procedures	Intermediate-Risk Procedures	Low-Risk Procedures	
Fondaparinux	4 d	4 d	Shared assessment and risk stratification	6 h (Low-risk procedures) 24 h (Intermediate- and high-risk procedures)
P2Y12 inhibitors				
Clopidogrel	7 d	7 d	No Shared assessment and risk stratification	12–24 h*
Prasugrel	7–10 d	7–10 d	No Shared assessment and risk stratification	24 h
Ticagrelor	5 d	5 d	No Shared assessment and risk stratification	24 h
Cangrelor	3 h	3 h	Shared assessment and risk stratification	24 h
NOACs				
Dabigatran	4 d	4 d	Shared assessment and risk stratification*	24 h
	5–6 d (Impaired renal function)	5–6 d (Impaired renal function)		
Rivaroxaban	3 d	3 d	Shared assessment and risk stratification*	24 h
Apixaban	3 d	3 d	Shared assessment and risk stratification*	24 h
Edoxaban	3 d	3 d	Shared assessment and risk stratification*	24 h
GP IIb/IIIa inhibitors				
Abciximab	2–5 d	2–5 d	2–5 d	8–12 h
Eptifibatide	8–24 h	8–24 h	8–24 h	8–12 h
Tirofiban	8–24 h	8–24 h	8–24 h	8–12 h
Antidepressants and SRIs	See text and Table 7	No	No	See text and Table 7

Figure 3: Pain Procedures Classification According to the Potential Risk of Serious Bleeding and Anticoagulation Recommendations from ASRA guidelines

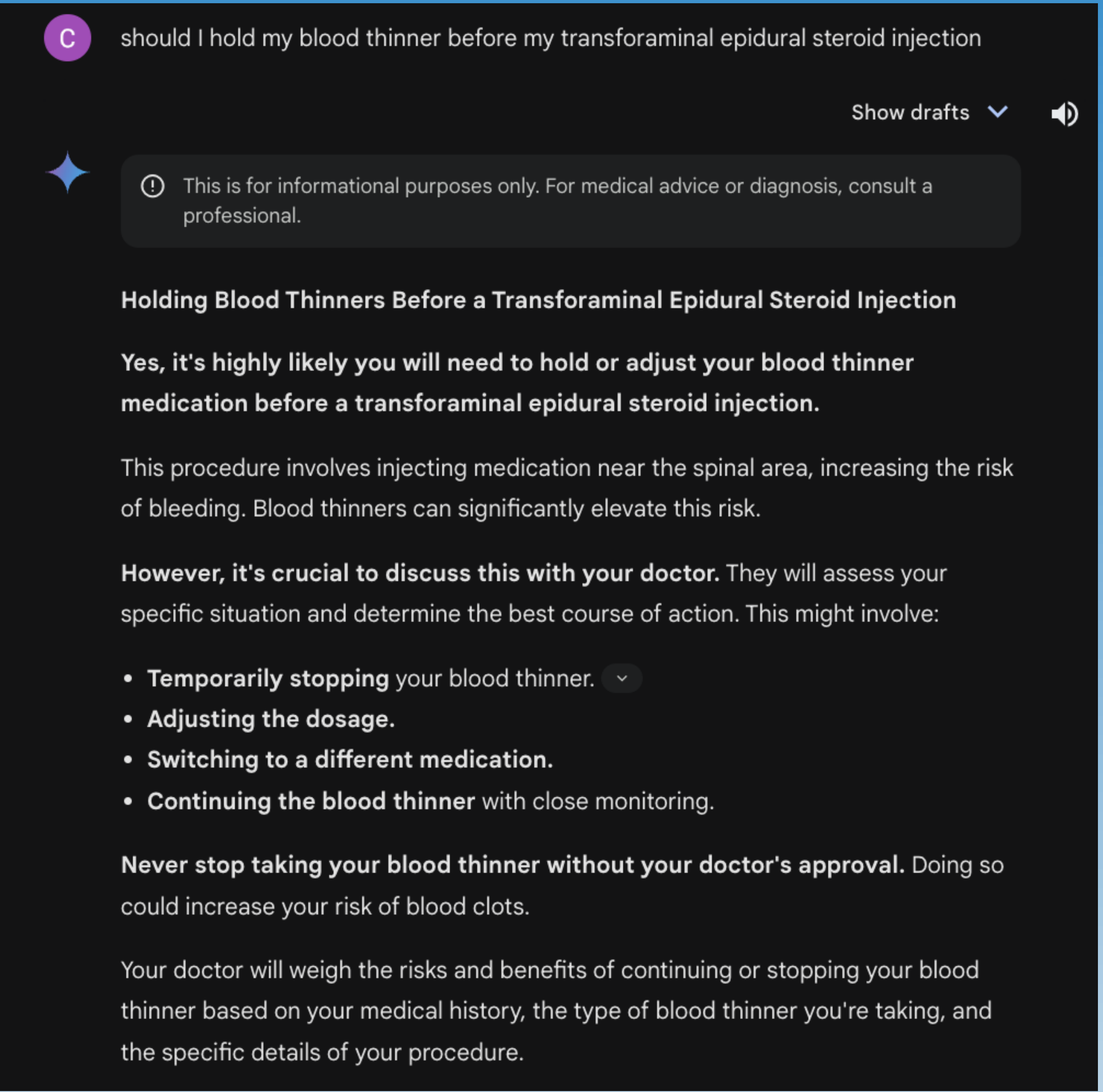


Figure 2: Gemini response for transforaminal epidural steroid injection

Physicians should continue to educate patients and be aware of the spread of misinformation that can come from Artificial Intelligence

- Results
- 80 responses total
 - 6.25% of the responses were deemed sufficient
 - However, results occurred based on user’s past search
 - Other 75 responses were insufficient and general in recommendation
 - Main recommendation stated to discuss with their physician and did not give specific duration for withholding anticoagulation

Christian Wirawan, DO, Steven Le, MD, Magdalena Anitescu, MD, PhD



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23rd Annual Pain Medicine Meeting
November 21-23, 2024 | #ASRAfall24

