
Non-CME Webinar Series
designed with the trainee in mind
second Tuesdays of odd-numbered months

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# Pain Procedures and Anticoagulation:

# ASRA guidelines & other guidelines

Tuesday, November 10, 2020

7-8:15 pm ET


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CHRONIC AND INTERVENTIONAL PAIN

SPECIAL ARTICLE

# Interventional Spine and Pain Procedures in Patients on Antiplatelet and Anticoagulant Medications (Second Edition)

*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*

*Samer Narouze, MD, PhD,* Honorio T. Benzon, MD,† David Provenzano, MD,‡ Asokumar Buvanendran, MD,§ José De Andres, MD,|| Timothy Deer, MD,** Richard Rauck, MD,†† and Marc A. Huntoon, MD‡‡*



**TABLE 1.** Pain Procedures Classification According to the Potential Risk of Serious Bleeding

| High-Risk Procedures | Intermediate-Risk Procedures* | Low-Risk Procedures* |
|---|---|---|
| Spinal cord stimulation trial and implant | Interlaminar ESIs (C, T, L, S) | Peripheral nerve blocks |
| Dorsal root ganglion stimulation | Transforaminal ESIs (C, T, L, S) | Peripheral joints and musculoskeletal injections |
| Intrathecal catheter and pump implant | Cervical† facet MBNB and RFA | Trigger point injections including piriformis injection |
| Vertebral augmentation (vertebroplasty and kyphoplasty) | Intradiscal procedures (C, T, L) | Sacroiliac joint injection and sacral lateral branch blocks |
| Percutaneous decompression laminotomy | Sympathetic blocks (stellate, T, splanchnic, celiac, lumbar, hypogastric) | Thoracic and lumbar facet MBNB and RFA |
| Epiduroscopy and epidural decompression | Trigeminal and sphenopalatine ganglia blocks | Peripheral nerve stimulation trial and implant‡ |
| | | Pocket revision and implantable pulse generator/intrathecal pump replacement |

*Patients with high risk of bleeding (eg, old age, history of bleeding tendency, concurrent uses of other anticoagulants/antiplatelets, liver cirrhosis or advanced liver disease, and advanced renal disease) undergoing low- or intermediate-risk procedures should be treated as intermediate or high risk, respectively.

†There is rich neck vascularity in the vicinity of the target structure(s) (refer to the section entitled Anatomical Considerations for Hematoma Development in Spinal and Nonspinal Areas).

‡Peripheral neuromodulation is low to intermediate risk, depending on the location of the targeted nerve in relation to critical vessels and the invasiveness of the procedure.

C indicates cervical; L, lumbar; S, sacral; T, thoracic.

Narouze S, Benzon HT, Provenzano D, et al. Interventional Spine and Pain Procedures in Patients on Antiplatelet and Anticoagulant Medications (Second Edition): 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. *Reg Anesth Pain Med*. 2018;43(3):225-262. doi:10.1097/AAP.0000000000000700

# High Risk Patient:
# Consider Bridging…

**TABLE 4.** Recommended Intervals of Discontinuation and Resumption of Anticoagulants and Pain Procedures

| Anticoagulant | Discontinuation → Procedure | Procedure → Resumption* |
|---|---|---|
| Coumadin | 5 d, INR normalized (≤1.2) | 6 h |
| IV heparin | 6 h | 2–24 h† |
| Subcutaneous heparin, BID or TID | 6–24 h† | 2–6 h† |
| LMWH | 12–24 h‡ | 4–24 h† |
| Fibrinolytic agents | 48 h | § |
| Fondaparinux | 4 d | 6–24 h† |



**TABLE 5.** Recommended Intervals of Discontinuation and Resumption of the NOACs and Pain Procedures

| Drug | Half-life | Recommended Interval Between Stoppage of Drug and Pain Procedure (5 Half-lives)* | Recommended Interval Between Procedure and Resumption of Drug† |
|---|---|---|---|
| Dabigatran | 12–17 h<br>28 h (renal disease) | 4 d<br>5–6 d (patients with renal disease) | 24 h |
| Rivaroxaban | 9–13 h | 65 h (3 d) | 24 h |
| Apixaban | 15.2 ± 8.5 h | 75 h (3 d) | 24 h |
| Edoxaban | 9–14 h | 70 h (3 d) | 24 h |

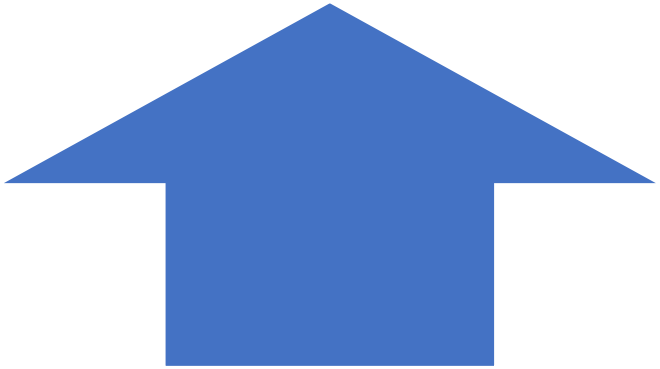
*In view of the added risks involved in chronic pain patients (elderly, spinal stenosis) and the surgical nature of some of our interventional procedures, we recommend an interval of 5 half-lives between the last dose of the drug and moderate and high-risk procedures.

†The procedures include medium- and high-risk interventional pain procedures. For low-risk procedures, a shared decision making should be followed; 2-half-life interval may be considered.

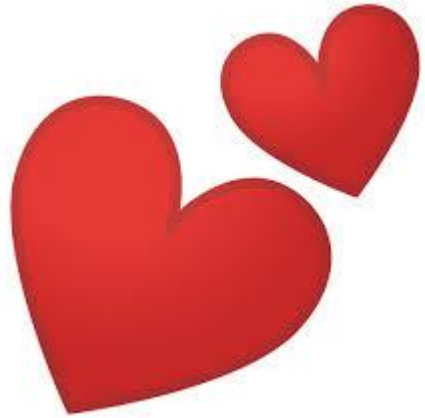
Narouze S, Benzon HT, Provenzano D, et al. Interventional Spine and Pain Procedures in Patients on Antiplatelet and Anticoagulant Medications (Second Edition): Guidelines From the American Society of Regional Anesthesia and Pain Medicine, the European Society of Regional Anaesthesia and Pain Therapy, the American Academy of Pain Medicine, the International Neuromodulation Society, the North American Neuromodulation Society, and the World Institute of Pain. *Reg Anesth Pain Med*. 2018;43(3):225-262. doi:10.1097/AAP.0000000000000700

Bleeding

Clotting



- Primary Prophylaxis: prevent 1st occurrence of CV event
- Secondary Prophylaxis: for CV disease
  - Low dose ASA 81 mg: has been show to reduce risk of stroke & MI 25-30%
  - Stopping ASA for secondary prophylaxis is not without risk
  - **10%** of acute cardiovascular syndromes preceded by stopping ASA



# NSAIDS

- These medications are not indicated for cardiac and cerebral protection and may be discontinued
- *should be discontinued for cervical epidural steroid injections (ESI)
- Time interval: 5 t1/2 lives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SPINE INTERVENTION SOCIETY
FACTFINDERS FOR PATIENT SAFETY

# Anticoagulants for Lumbar Epidural Steroid Injections

Byron J. Schneider, MD[1], David C. Miller, MD, MA[2], Ryan Mattie, MD[3], Zachary L. McCormick, MD,[4] and Clark C. Smith, MD, MPH[5] on behalf of the Spine Intervention Society's Patient Safety Committee

[1]Vanderbilt University Medical Center, Department of Physical Medicine & Rehabilitation, Nashville, Tennessee, U.S.A.;
[2] Napa Pain Institute, Napa, California, U.S.A.;
[3]Synovation Medical Group, Interventional Pain & Spine, Los Angeles, California, U.S.A.;
[4]University of Utah, Division of Physical Medicine and Rehabilitation, Salt Lake City, Utah, U.S.A.;
[5]Columbia University Medical Center, Rehabilitation and Regenerative Medicine, New York, New York, U.S.A.

**Myth: Therapeutic anticoagulation (AC) should be discontinued prior to all lumbar epidural steroid injections (ESIs).**

**Fact: Published literature demonstrates a non-zero risk of thrombotic events when stopping therapeutic AC for spine interventions. The decision to continue AC, temporarily discontinue therapeutic AC prior to a lumbar ESI, or withhold the intervention should be a shared decision with the patient that accounts for the risk of epidural hematoma, the risk of a thrombotic event, and the patient-specific medical indication for therapeutic AC. If the decision to hold therapeutic AC is made, this should also be approved by the prescribing physician.**

Schneider BJ, Miller DC, Mattie R, McCormick ZL, Smith C. Anticoagulants for Lumbar Epidural Steroid Injections. *Pain Med*. 2020;21(6):1294-1295. doi:10.1093/pm/pnaa087

Pain Medicine 2017; 18: 403–409
doi: 10.1093/pm/pnw108

OXFORD

## SPINE SECTION

*Original Research Article*

# The Risks of Continuing or Discontinuing Anticoagulants for Patients Undergoing Common Interventional Pain Procedures

Stephen Endres, MD,* Allison Shufelt,† and Nikolai Bogduk‡

**Conclusions.** Lumbar transforaminal injections, lumbar medial branch blocks, trigger point injections, and sacroiliac joint blocks appear to be safe

The number of patients who continued to take anticoagulants during the procedures listed; and the number of complications encountered, their prevalence, and the 95% confidence intervals of that prevalence

| Procedure | Number | Complications | | |
|---|---|---|---|---|
| | | Number | Prevalence | 95% CI |
| **Lumbar transforaminal injections** | 1,601 | 0 | 0% | 0.0–0.2% |
| **Lumbar medial branch blocks** | 1,836 | 0 | 0% | 0.0–0.2% |
| **Trigger point injections** | 456 | 0 | 0% | 0.0–0.8% |
| **Sacroiliac joint blocks** | 261 | 0 | 0% | 0.0–1.5% |

CI = confidence intervals.

Table 5
The morbidities suffered by patients who discontinued anticoagulants, the indication for anticoagulants, and when the morbidity occurred in relation to the procedure that they were scheduled to undergo

| Morbidity | Anticoagulant | Indication | When | Procedure |
|---|---|---|---|---|
| Fatal myocardial infarction | Warfarin | IHD | 7 days after | Cervical epidural |
| Fatal stroke | Warfarin | AF | Morning of | Lumbar RFN |
| Non-fatal stroke | Warfarin | AF | 2 days after | Cervical MBB |
| Non-fatal stroke | Warfarin | AF | 5 days after | Cervical epidural |
| Non-fatal stroke | Warfarin | AF | 3 days after | Lumbar TFI |
| Non-fatal stroke | Warfarin | AF | 4 days after | Lumbar interlaminar |
| Non-fatal stroke | Warfarin | AF | 3 days after | Lumbar interlaminar |
| Pulmonary embolism | Warfarin | PE | 2 days after | Lumbar intrathecal injection |
| Myocardial infarction | Warfarin | IHD/AF | 5 days after | Cervical epidural |

IHD = ischemic heart disease; AF = atrial fibrillation; PE = pulmonary embolism; RFN = radiofrequency neurotomy; MBB = medial branch block; TFI = transforaminal injection.



Endres S, Shufelt A, Bogduk N. The Risks of Continuing or Discontinuing Anticoagulants for Patients Undergoing Common Interventional Pain Procedures. *Pain Med*. 2017;18(3):403-409. doi:10.1093/pm/pnw108

# Update of a Study of Not Ceasing Anticoagulants for Patients Undergoing Injection Procedures for Spinal Pain

**Stephen Endres, MD,* Karlee Hefti, CMA,* Erika Schlimgen, BS,* and Nikolai Bogduk, MD, PhD, DSc†**

*Pain Clinic of Northwestern Wisconsin, Eau Claire, Wisconsin, USA; †Faculty of Medicine and Health Sciences, The University of Newcastle, New South Wales. Australia

**Table 4.** The number of patients who continued to take anticoagulants during the procedures listed and the number of complications encountered, their prevalence, and the 95% confidence intervals of that prevalence

| Drug Discontinued | Procedure | Number | Complications | | |
|---|---|---|---|---|---|
| | | | Number | Prevalence, % | 95% CI, % |
| Warfarin | Lumbar transforaminal injections | 1,666 | 0 | 0 | 0.0–0.3 |
| | Lumbar facet blocks | 1,928 | 0 | 0 | 0.0–0.3 |
| Clopidogrel | Lumbar transforaminal injections | 1,168 | 0 | 0 | 0.0–0.4 |
| | Lumbar facet blocks | 1,394 | 0 | 0 | 0.0–0.3 |

CI = confidence interval.

**transforaminal epidural steroid injection



Endres S, Hefti K, Schlimgen E, Bogduk N. Update of a Study of Not Ceasing Anticoagulants for Patients Undergoing Injection Procedures for Spinal Pain. *Pain Med*. 2020;21(5):918-921. doi:10.1093/pm/pnz354




- Estimate bleeding risk ILESI> TFESI
- Estimate clotting risk due to stopping AC

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- It is likely, but not founded in published data, that this risk of hematoma is greater if therapeutic AC is continued for this procedure; therefore, alternative treatments to lumbar interlaminar ESI should be considered in patients with high thrombotic risk for whom discontinuation of therapeutic AC may be ill-advised.
- Based on data from lumbar TFESI studies, the risk of a serious thromboembolic event is approximately 0.4-0.5% if therapeutic AC is discontinued for the period of time necessary to complete this procedure [3,4].
- There is insufficient evidence to quantify the relative risk of stopping versus continuing therapeutic AC for this procedure.

Schneider BJ, Miller DC, Mattie R, McCormick ZL, Smith C. Anticoagulants for Lumbar Epidural Steroid Injections. *Pain Med*. 2020;21(6):1294-1295. doi:10.1093/pm/pnaa087

Guidelines

# Responsible, Safe, and Effective Use of Antithrombotics and Anticoagulants in Patients Undergoing Interventional Techniques: American Society of Interventional Pain Physicians (ASIPP) Guidelines

Alan D. Kaye, MD, PhD[1], Laxmaiah Manchikanti, MD[2], Matthew B. Novitch[3], Imran N. Mungrue[4], Muhammad Anwar, MBBS[5], Mark R. Jones, MD[6], Erik M. Helander, MBBS[7], Elyse M. Cornett, PhD[8], Matthew R. Eng, MD[9], Jay S. Grider, DO, PhD[10], Michael E. Harned, MD[11], Ramsin M. Benyamin, MD[12], John R. Swicegood, MD[13], Thomas T. Simopoulos, MD[14], Salahadin Abdi, MD, PhD[15], Richard D. Urman, MD[16], Timothy R. Deer, MD[17], Cyrus Bakhit, MD[18], Mahendra Sanapati, MD[19], Sairam Atluri, MD[20], Ramarao Pasupuleti, MD[21], Amol Soin, MD[22], Sudhir Diwan, MD[23], Ricardo Vallejo, MD, PhD[24], Kenneth D. Candido, MD[25], Nebojsa Nick Knezevic, MD, PhD[26], Douglas Beall, MD[27], Sheri L. Albers, DO[28], Richard Latchaw, MD[29], Hari Prabhakar, MD[30] , and Joshua A. Hirsch, MD[31]

Kaye AD, Manchikanti L, Novitch MB, et al. Responsible, Safe, and Effective Use of Antithrombotics and Anticoagulants in Patients Undergoing Interventional Techniques: American Society of Interventional Pain Physicians (ASIPP) Guidelines. *Pain Physician*. 2019;22(1S):S75-S128.

# Epidural Hematoma:

- Pain at site
- Rapid Neurologic Decline
- MRI
- Surgical Decompression- to avoid neurologic sequelae