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.

TABLE 9. Procedural Anticoagulation Patient-Specific Management Checklist

Procedural Anticoagulation Management Checklist
• Evaluate baseline patient-specific risk factors from history, physical examination, and chart review
• Family history of bleeding disorders
• Physical examination → signs of easy bruising including petechiae, mucosal bleeding, and ecchymoses
• Renal and hepatic disease → order laboratory tests to evaluate coagulation status
• Evaluate coagulation tests if required (complete blood count, PT, aPTT)
• Screening for antiplatelet, antithrombotic, or thrombolytic therapy
• Identify non-ASA NSAID use
Categorize individual reason for ASA utilization
• Primary prophylaxis → absence of established cardiovascular disease or risk factor
• Secondary prophylaxis → presence of cardiovascular disease
Informed decision making involving procedural physician, prescribing medical physician, and patient
Identify and manage pharmacologic coagulopathies
• Understand drug elimination and appropriate discontinuation time
• Recognize other drugs that may alter coagulation (eg, SSRIs, SNRIs)
Process the anatomical location of procedural intervention into decision making
• Cervical/thoracic vs lumbar/sacral neuraxial area
• High-, intermediate-, or low-risk procedures
Review appropriate radiographic imaging to identify/understand anatomical challenges
• Cervical, thoracic, lumbar spinal stenoses that alter spinal canal anatomy
• Epidural fibrosis and significant scar tissue from previous surgical intervention
Appropriate timing for reinitiation of anticoagulation
Appropriate postprocedure surveillance and monitoring

TABLE 8. Summary of Periprocedural Management of Anticoagulants and Antiplatelet Medications

Drug	When to Stop			When to Restart
	High-Risk Procedures	Intermediate-Risk Procedures	Low-Risk Procedures	
ASA and ASA combinations	Primary prophylaxis: 6 d Secondary prophylaxis: shared assessment and risk stratification	Shared assessment and risk stratification*†	No	24 h
NSAIDs	5 Half-lives	No‡	No	24 h
Diclofenac	1 d			
Ketorolac	1 d			
Ibuprofen	1 d			
Etodolac	2 d			
Indomethacin	2 d			
Naproxen	4 d			
Meloxicam	4 d			
Nabumetone	6 d			
Oxaprozin	10 d			
Piroxicam	10 d			
Phosphodiesterase inhibitors				
Cilostazol	2 d	No	No	24 h
Dipyridamole	2 d	No	No	
ASA combinations	Follow ASA recommendations	Shared assessment and risk stratification*		
Anticoagulants				
Coumadin	5 d, Normal INR	5 d, Normal INR	No Shared assessment and risk stratification*	6 h
Acenocoumarol	3 d, Normal INR	3 d, Normal INR	No Shared assessment and risk stratification*	24 h
IV heparin	6 h	6 h	6 h	2 h§
Subcutaneous heparin, BID & TID	24 h	6 h	6 h	2 h (Low-risk procedures) 6–8 h (Intermediate- and high-risk procedures)
LMWH				
Enoxaparin (prophylactic)	12 h	12 h	12 h	4 h (Low risk) 12–24 h (Intermediate-/high-risk procedures)
Enoxaparin (therapeutic)	24 h	24 h	24 h	4 h (Low-risk procedures) 12–24 h (Intermediate-/high-risk procedures)
Dalteparin	24 h	24 h	24 h	4 h (Low-risk procedures) 12–24 h (Intermediate-/high-risk procedures)
Fibrinolytic agents	48 h	48 h	48 h	NA‖

Continued next page

TABLE 8. *(Continued)*

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 5–6 d (Impaired renal function)	4 d 5–6 d (Impaired renal function)	Shared assessment and risk stratification*	24 h
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

Major areas of differences from the ASRA guidelines for regional anesthesia are in yellow boxes.

*See detailed text in the corresponding section.

†Consideration should be given to the discontinuation of ASA for certain intermediate-risk procedures including interlaminar cervical ESIs and stellate ganglion blocks where specific anatomical configurations may increase the risk and consequences of procedural bleeding.

‡Consideration should be given to the discontinuation of NSAIDs for certain intermediate-risk procedures including interlaminar cervical ESIs and stellate ganglion blocks where specific anatomical configurations may increase the risk and consequences of procedural bleeding (refer to the section entitled Anatomical Considerations for Hematoma Development in Spinal and Nonspinal Areas).

§If a moderate- or high-risk procedure was bloody, then a 24-hour interval should be observed.

‖After an intervention, the usual daily dose (75 mg) of clopidogrel can be started 12 hours later. If a loading dose of clopidogrel is given, then the interval should be 24 hours.