

ANTICOAGULATION STEWARDSHIP

Perioperative interruption of anticoagulants and antiplatelets

Reference recommendations for management prior to surgery and invasive procedures

Scope. These suggested, nonprescriptive hold intervals apply to adults when a procedure- or prescriber-specific plan has not already been specified. Individualize for renal function, thrombotic risk, and procedure-specific bleeding risk. For emergent or urgent procedures, or when therapy cannot be safely interrupted, contact the Anticoagulation Stewardship pharmacist or Hematology.

BLEEDING-RISK TIERS

MINIMAL
~0% 30-day major bleed

Cataract with topical anesthesia, minor dermatologic, minor dental, cardiac device implant.

LOW TO MODERATE
<2% 30-day major bleed

Most abdominal, orthopedic, and other soft-tissue surgery of moderate extent.

HIGH
≥2% 30-day major bleed

Major surgery, intracranial or spinal surgery, neuraxial anesthesia, major cardiac, vascular, or urologic surgery.

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1 Anticoagulants: preoperative hold

DRUG	LOW TO MODERATE BLEEDING RISK	HIGH BLEEDING RISK	MONITORING AND NOTES
Warfarin Coumadin, Jantoven	Stop 5 days before Last dose on day -5	Stop 5 days before Target INR <1.4 for intracranial, spinal, or neuraxial	Check PT/INR the day before surgery. If INR ≥1.5, give vitamin K 2.5 mg PO. Proceed when INR <1.5 (may consider <1.4 for high bleeding risk).
Apixaban Rivaroxaban Edoxaban Eliquis, Xarelto, Savaysa	Last dose 2 days before Hold 1 day: no dose the day before or the day of surgery	Last dose 3 days before Hold 2 full days before surgery	No bridging. Routine level testing is not required. May consider LMWH-calibrated chromogenic anti-Xa activity ≤0.2 IU/mL. With CrCl <30 mL/min or extreme weight, extend hold; consult pharmacy.
Dabigatran Pradaxa · renal-dependent	CrCl ≥50: last dose 2 days before CrCl 30 to <50: last dose 3 days before	CrCl ≥50: last dose 3 days before CrCl 30 to <50: last dose 5 days before	CrCl <30 mL/min: consult Hematology or Anticoagulation Stewardship; hold longer. A markedly prolonged aPTT suggests residual effect, but a normal aPTT does not reliably exclude clinically relevant dabigatran.
Enoxaparin Dalteparin Tinzaparin Lovenox, Fragmin, Innohep	Therapeutic: last dose 24 h before Prophylactic: last dose 12 h before	Therapeutic: last dose 24 h before For once-daily therapeutic dosing, give half the total daily dose the morning of day -1	Extend with renal impairment (CrCl <30 mL/min). Peak anti-Xa 3 to 4 h after dose. Routine anti-Xa monitoring is not required.
Fondaparinux Arixtra	Stop 3 to 4 days before	Stop 3 to 4 days before 5 days before with renal impairment	Half-life 17 to 21 h. Neuraxial catheters are not advised while on fondaparinux.

Intervals assume normal or stated renal function. Last-dose day counts backward from the day of surgery.

2 Antiplatelets and NSAIDs: preoperative hold

DRUG	HOLD BEFORE SURGERY	MONITORING AND NOTES
Aspirin	Continue in most If held: 5 to 7 days	Continue aspirin 75 to 100 mg for secondary prevention (coronary disease, prior MI, stroke, or stent) when cardiac risk outweighs bleeding risk. Do not initiate aspirin before surgery in a patient not already taking it. Hold only for intracranial, spinal, or other high bleeding risk surgery; platelet function recovers in about 4 to 5 days.
Clopidogrel Plavix	5 days	Irreversible P2Y12 inhibitor. Continue aspirin through surgery when a stent is present; platelet function recovers in about 5 days.
Ticagrelor Brilinta	3 to 5 days	Reversible; platelet function recovers in 3 to 5 days.
Prasugrel Effient	7 days	Irreversible; platelet function recovers in about 7 days.
Aspirin / dipyridamole Aggrenox	7 to 10 days	Interruption driven by the aspirin component.
Cilostazol Pletal	2 to 3 days 5 preferred	Hold longer with CrCl <25 mL/min.
Ibuprofen	1 day	Reversible COX inhibitors. Hold interval scales with half-life; extend with renal impairment.
Naproxen, meloxicam	3 to 4 days	See ibuprofen note.
Piroxicam	10 days	Long half-life (~50 h); a 10-day hold approximates five half-lives.

CORONARY STENTS AND DUAL ANTIPLATELET THERAPY

Do not interrupt dual antiplatelet therapy inside the minimum required duration. Delay elective noncardiac surgery at least 6 months after a drug-eluting stent for chronic coronary disease, at least 12 months after a drug-eluting stent placed for acute coronary syndrome, and at least 14 days after balloon angioplasty without a stent. When surgery cannot wait, continue aspirin through the procedure, hold the P2Y12 inhibitor for the agent-specific interval above, and coordinate with Cardiology.

3 Resumption after the procedure

AGENT	LOW TO MODERATE BLEEDING RISK	HIGH BLEEDING RISK	CONDITION
Warfarin	Resume 12 to 24 h after surgery at the usual maintenance dose	Resume 12 to 24 h after surgery once hemostasis is achieved	Hemostasis achieved
DOACs	Resume ~24 h after surgery (day 1) at the full treatment dose	Resume 48 to 72 h after surgery (day 2 to 3). Consider prophylactic-dose VTE prophylaxis in the interim	Hemostasis achieved
Therapeutic UFH / LMWH	Resume ~24 h after surgery	Resume 48 to 72 h after surgery	Hemostasis achieved
Antiplatelets	Resume once hemostasis is achieved; continue aspirin without interruption whenever possible	Resume P2Y12 inhibitor once hemostasis is achieved, with a loading dose if rapid effect is needed and bleeding risk allows	Hemostasis achieved

BRIDGING: NOT ROUTINE

Do not use routine periprocedural heparin bridging. In warfarin-treated atrial fibrillation, the BRIDGE trial (n=1,884) found forgoing bridging was noninferior for arterial thromboembolism (0.4% no-bridge vs 0.3% bridge) and roughly halved major bleeding (1.3% vs 3.2%). PERIOP-2 (n=1,471) was consistent. DOACs never require bridging because their short half-lives give predictable offset and onset.

Reserve therapeutic bridging for the highest thrombotic risk on a vitamin K antagonist: a mechanical mitral valve, a caged-ball or tilting-disk aortic valve, VTE or arterial thromboembolism within the prior 3 months, or severe thrombophilia. When bridging is used, hold the last preoperative LMWH dose 24 h before surgery and resume 24 h (low to moderate bleeding risk) to 48 to 72 h (high bleeding risk) after surgery.

4 Neuraxial and deep block anesthesia

ASRA, fifth edition

AGENT	HOLD BEFORE NEURAXIAL PLACEMENT OR CATHETER REMOVAL	NOTES
Warfarin	Stop 5 days before; confirm INR is normalized before placement	Remove indwelling neuraxial catheters when the INR is <1.5.
Apixaban, rivaroxaban, edoxaban	72 h	May consider using a LMWH-calibrated chromogenic anti-Xa activity ≤ 0.1 IU/mL if needed. Do not use reversal solely for placement.
Dabigatran	72 h (CrCl ≥ 50) 120 h (5 days) if CrCl <50	Renal clearance dominates; extend with declining CrCl.
LMWH enoxaparin	Prophylactic: 12 h Therapeutic: 24 h	First postoperative prophylactic dose no sooner than 12 h after placement or removal; therapeutic dosing 24 h after.
Fondaparinux	Avoid with indwelling catheter	Neuraxial placement only with a single atraumatic needle pass and no catheter.
Aspirin alone	No hold required	Aspirin monotherapy does not preclude neuraxial technique. Hold P2Y12 inhibitors per the intervals above.

References

1. Douketis JD, Spyropoulos AC, Murad MH, et al. Perioperative Management of Antithrombotic Therapy: An American College of Chest Physicians Clinical Practice Guideline. *Chest*. 2022;162(5):e207-e243.
2. 2024 AHA/ACC/multisociety Guideline for Perioperative Cardiovascular Management for Noncardiac Surgery. *Circulation*. 2024;150:e351-e442.
3. Douketis JD, Spyropoulos AC, Duncan J, et al. Perioperative Management of Patients With Atrial Fibrillation Receiving a Direct Oral Anticoagulant (PAUSE). *JAMA Intern Med*. 2019;179(11):1469-1478.
4. Douketis JD, Spyropoulos AC, Kaatz S, et al. Perioperative Bridging Anticoagulation in Patients with Atrial Fibrillation (BRIDGE). *N Engl J Med*. 2015;373(9):823-833.
5. Kovacs MJ, Wells PS, Anderson DR, et al. Postoperative low molecular weight heparin bridging treatment for patients at high risk of arterial thromboembolism (PERIOP-2). *BMJ*. 2021;373:n1205.
6. Douketis JD, Spyropoulos AC. Perioperative Management of Anticoagulant and Antiplatelet Therapy. *NEJM Evid*. 2023;2(4).
7. ASRA Pain Medicine. Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic Therapy: Evidence-Based Guidelines (Fifth Edition). *Reg Anesth Pain Med*. 2025.

Reviewed July 2026. Next scheduled review July 2027. **This is a guidance document; it does not replace clinical judgment or a documented order.**