Is the initiation of non-invasive dental hygiene procedures* contra-indicated?  No, assuming patient/client is medically stable.

- Is medical consult advised? Yes, before dental hygiene care is initiated in order to clarify (with the family physician or cardiologist) why the patient/client is taking an NOAC\(^2\), and to confirm medical history and concurrent drug therapy.

Is the initiation of invasive dental hygiene procedures contra-indicated?** Yes.

- Is medical consult advised?
  - Yes, see above.
  - Yes, if there are concerns with the patient/client’s kidney function, which is relevant to the excretion of NOACs\(^3\).

- Is medical clearance required? Yes. Also, given the risk of serious thromboembolic complication (including stroke and even death) with NOAC discontinuation, it should be a physician, and not a dentist, who recommends interruption of an NOAC for a dental hygiene/dental procedure (which usually is not indicated for dental hygiene procedures). The risk of bleeding must be balanced with the risk of a thrombotic event if the anticoagulant is stopped.

- Is antibiotic prophylaxis required? No.

- Is postponing treatment advised? No, in most situations.
  - In patients/clients with normal kidney and liver function taking NOACs (specifically, dabigatran, rivaroxaban, or apixaban), invasive dental hygiene and dental procedures with low bleeding risk\(^4\) can be carried out without interruption of the anticoagulant; ideally, the procedures should be performed as late as possible after the most recent dose (i.e., > 12 hours)\(^5\). These include procedures that involve manipulation of the gingival or periapical region of the teeth or perforation of the oral mucosa, including uncomplicated tooth extractions.
  - For subgingival scaling, a small area should first be scaled to assess the bleeding tendency before instrumentation of larger areas is carried out.

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1. Dabigatran is a direct thrombin inhibitor, whereas rivaroxaban, apixaban, edoxaban, and betrixaban are factor Xa inhibitors. At the time of writing, little data exists regarding dental management of patients/clients treated with edoxaban and betrixaban. Betrixaban is not currently licensed in Canada.
2. Indications for NOACs include non-valvular atrial fibrillation as well as other medical conditions that likely have implications for dental hygiene and dental care.
3. Dabigatran is primarily excreted by the kidneys, whereas rivaroxaban, apixaban, and edoxaban are less renally dependent for elimination.
4. Supragingival scaling has a low presumed bleeding risk, whereas subgingival scaling and root surface instrumentation (such as root planing) are variably categorized as having either low or moderate bleeding risk (depending on the medical or dental reference). The 2016 AF Guidelines of the Canadian Cardiovascular Society classify subgingival scaling or other cleaning in the low risk category (along with dental extractions of 1 or 2 teeth, and endodontic [root canal] procedures).
5. Multiple extractions and minor oral/maxillofacial surgery, which are procedures with a higher risk of bleeding, can also be performed safely without interruption of NOACs, provided they are carried out 12 hours after the last dose of dabigatran and 10 hours after the last dose of apixaban or rivaroxaban. Patients/clients requiring complex oral/maxillofacial surgery may require discontinuation of NOACs for at least 24 hours preoperatively.
# Disease/Medical Condition

## NOVEL ORAL ANTICOAGULANTS

(also known as "NOACs", "NOAs", "new oral anticoagulants", "direct oral anticoagulants", "DOACs", "NOACs/DOACs", "non-vitamin K antagonist oral anticoagulants", and "target-specific oral anticoagulants"; include dabigatran, rivaroxaban, apixaban, edoxaban, and betrixaban)

### Oral management implications

- Novel oral anticoagulants are increasingly being preferentially used instead of warfarin for prevention of ischemic (i.e., clot-induced) stroke in patients/clients with nonvalvular atrial fibrillation (NVAF) or venous thromboembolism. Other uses include prevention and treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE); postoperative thromboprophylaxis after hip or knee replacement surgery; and reduction of risk of death, reinfarction, and thromboembolic events post-myocardial infarction.⁶
- Compared with warfarin, NOACs have a broader therapeutic window, reduced bleeding risk, and shorter drug half-life. They have fewer potential food interactions, have fewer interactions with medications, and do not require routine coagulation monitoring for dose adjustments. They are typically taken once or twice daily at a fixed dose and have a relatively rapid onset.
- Unlike warfarin, some NOACs lack a specific reversal agent in Canada.¹⁰
- The patient/client should be advised not to take an NOAC 1 to 3 hours immediately before dental hygiene treatment.
- The patient/client taking an NOAC (or other anticoagulant or antiplatelet agent) should be informed that minor bleeding or oozing from gingival mucosa might be more common when not (appropriately) interrupting the drug regimen during dental hygiene/dental procedures.
- Transexamic acid mouth rinse, in addition to application of local pressure, is useful to encourage clotting in patients/clients taking NOACs.
- Non-steroidal anti-inflammatory drugs (NSAIDs, including ibuprofen and naproxen) and aspirin (ASA) should not be used as analgesics in patients/clients taking NOACs. Acetaminophen is generally preferred.

### Oral manifestations

- Anticoagulants (NOACs or warfarin) may result in increased and/or prolonged bleeding tendency in the oral cavity.

### Related signs and symptoms

- Spontaneous bleeding, prolonged bleeding, and bruising are the main adverse effects.
- Intracranial bleeds (i.e., hemorrhagic stroke) and gastrointestinal bleeds are two of the more serious forms of spontaneous bleeding.
- Bleeding risk is increased in patients/clients > 75 years of age.
- Compared with warfarin, NOACs carry a 50% lower risk of intracranial hemorrhage.
- Dyspepsia (“upset stomach”) is a side effect of dabigatran.

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⁶ Warfarin is generally preferred for AF patients/clients with mechanical prosthetic heart valves, rheumatic mitral stenosis, or poor kidney function.
⁷ Grapefruit juice may increase the levels of rivaroxaban and apixaban.
⁸ Dabigatran may interact with P-glycoprotein 1 inhibitors (e.g., ketoconazole and possibly itraconazole, clarithromycin, and erythromycin) - thereby increasing anticoagulation - or inducers (e.g., rifampicin, carbamazepine, and dexamethasone) - thereby decreasing anticoagulation. Rivaroxaban may interact with cytochrome P450 (CYP) 3A4 inhibitors (e.g., ketoconazole, itraconazole, voriconazole, and posaconazole) or inducers (clarithromycin and rifampin), as well as inhibitors and inducers of P-glycoprotein. With apixaban, similar to rivaroxaban, administration of potent CYP3A4 and P-glycoprotein inhibitors should be avoided.
⁹ Specifically, international normalized ratio [INR] titration is neither needed nor relevant for NOACs. When a patient/client is taking a vitamin K antagonist (VKA) such as warfarin, it is prudent to check the INR at least 24 to 72 hours before the invasive procedure.
¹⁰ Idarucizumab is a selective reversal agent for dabigatran, and it has been licensed for use in Canada. Andexanet is reversal agent for rivaroxaban, apixaban, and edoxaban, but it is not yet approved for use in Canada. Vitamin K is the specific antidote for warfarin.
Disease/Medical Condition

NOVEL ORAL ANTICOAGULANTS

(also known as "NOACs", "NOAs", “new oral anticoagulants”, “direct oral anticoagulants”, “DOACs”, “NOACs/DOACs”, “non-vitamin K antagonist oral anticoagulants”, and “target-specific oral anticoagulants”; include dabigatran, rivaroxaban, apixaban, edoxaban, and betrixaban)

References and sources of more detailed information

- American Dental Association http://www.ada.org/en/member-center/oral-health-topics/anticoagulant-antiplatelet-medications-and-dental-
- RDH Magazine (Anticoagulants and Antiplatelet Drugs in Dentistry: Stop the Interruption) http://www.rdhmag.com/content/dam/rdh/print-articles/Volume%2033/Issue%208/1307cei_Wahl_web.pdf

* Includes oral hygiene instruction, fitting a mouth guard, taking an impression, etc.

** Ontario Regulation 501/07 made under Dental Hygiene Act, 1991. Invasive dental hygiene procedures are scaling teeth and root planing, including curetting surrounding tissue.

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