Pradaxa® (dabigatran etexilate)
PRESCRIBER GUIDE

Indications & Contraindication

DOSING

SWITCHING

PERIOPERATIVE MANAGEMENT

IN CASE OF OVERDOSE

The recommendations refer to the indications:

- Stroke prevention in atrial fibrillation
- Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), and prevention of recurrent DVT and PE in adults (DVT/PE).

This guide provides recommendations for the use of PRADAXA® in order to minimize the risk of bleeding:

- Indications
- Contraindications
- Perioperative management
- Dosing
- Special patient populations potentially at high risk of bleeding
- Coagulation tests and their interpretation
- Overdose
- Management of bleeding complications
- PRADAXA® Patient Alert Card and counselling

This prescriber guide does not substitute the PRADAXA® Summary of Product Characteristics (SmPC)[1].

Boehringer Ingelheim

Pradaxa® dabigatran etexilate

Closing the Circle

INDICATIONS

- Prevention of stroke and systemic embolism in adult patients with non-valvular atrial fibrillation with one or more risk factors (SPAF), such as prior stroke, transient ischemic attack (TIA); age ≥ 75 years; heart failure (NYHA Class ≥ II); diabetes mellitus; hypertension.

- Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), and prevention of recurrent DVT and PE in adults (DVT/PE)

CONTRAINDICATION

- Hypersensitivity to the active substance or to any of the excipients
- Severe renal impairment (CrCL < 30 mL/min)
- Active clinically significant bleeding
- Lesion or condition, if considered a significant risk factor for major bleeding. This may include:
    - current or recent gastrointestinal ulceration
    - presence of malignant neoplasms at high risk of bleeding
    - recent brain or spinal injury
    - recent brain, spinal or ophthalmic surgery
    - recent intracranial haemorrhage
    - known or suspected oesophageal varices
    - arteriovenous malformations
    - vascular aneurysms or major intraspinal or intracerebral vascular abnormalities
- Concomitant treatment with any other anticoagulant agent e.g.
    - unfractionated heparin (UFH)
    - low molecular weight heparins (enoxaparin, dalteparin etc.)
    - heparin derivatives (fondaparinux etc)
    - oral anticoagulants (warfarin, rivaroxaban, apixaban etc.)

  except under specific circumstances. These are switching anticoagulant therapy, when UFH is given at doses necessary to maintain an open central venous or arterial catheter or when UFH is given during catheter ablation for atrial fibrillation.
- Hepatic impairment or liver disease expected to have any impact on survival
- Concomitant treatment with the following strong P-gp inhibitors: systemic ketoconazole, cyclosporine, itraconazole, dronedarone and the fixe-dose combination glecaprevir/ pribrentasvir
- Prosthetic heart valves requiring anticoagulant treatment

DOSING

DOSING[1]

Dosing in SPAF and DVT treatment and prevention of recurrence

RECOMMENDED DAILY DOSE[4]

DABIGATRAN **150** mg TWICE DAILY

DOSING

	Dose recommendation
Prevention of stroke and systemic embolism in adult patients with NVAF with one or more risk factors (SPAF)	300 mg PRADAXA® taken as one 150 mg capsule twice daily
Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), and prevention of recurrent DVT, and PE in adults (DVT/PE)	300 mg PRADAXA® taken as one 150 mg capsule twice daily following treatment with a parenteral anticoagulant for at least 5 days

DOSING REDUCTION*

for SPAF only please refer to PIL

LOWER DOSE FOR SPECIAL POPULATIONS*2

DABIGATRAN **110** mg TWICE DAILY

	Dose recommendation
Dose reduction recommended	
Patients aged ≥80 years	Daily dose of 220 mg PRADAXA® taken as one 110 mg capsule twice daily
Patients who receive concomitant verapamil	
Dose reduction for consideration	
Patients between 75–80 years	Daily dose of PRADAXA® of 300 mg or 220 mg should be selected based on an individual assessment of the thromboembolic risk and the risk of bleeding
Patients with moderate renal impairment (CrCL 30–50 mL/min)	
Patients with gastritis, oesophagitis or gastroesophageal reflux	
Other patients at increased risk of bleeding	

* Pradaxa 110 mg is only approved for SPAF and it is not locally approved to be used for DVT/PE treatment in HK

Pradaxa dabigatran etexilate

Closing the Circle

Duration of use

Indication	Duration of use
SPAF	Therapy should be continued long term.
DVT/PE	The duration of therapy should be individualised after careful assessment of the treatment benefit against the risk for bleeding. Short duration of therapy (at least 3 months) should be based on transient risk factors (e.g. recent surgery, trauma, immobilisation) and longer durations should be based on permanent risk factors or idiopathic DVT or PE.

RECOMMENDATION FOR KIDNEY FUNCTION MEASUREMENT IN ALL PATIENTS

- Renal function should be assessed by calculating the creatinine clearance (CrCL) by the Cockcroft-Gault* method **prior to initiation of treatment with PRADAXA®** to exclude patients with severe renal impairment (i.e. CrCL <30 mL/min)
- Renal function should also be assessed when a decline in renal function is suspected **during treatment** (e.g. hypovolaemia, dehydration, and in case of concomitant use of certain medicinal products)
- In elderly patients (>75 years) or patients with renal impairment, the renal function should be assessed at least once a year

***Cockcroft-Gault formula**

For creatinine in mg/dL

$$\frac{(140 - \text{age } [\text{years}]) \times \text{weight } [\text{kg}] \ (\times 0.85 \text{ if female})}{72 \times \text{serum creatinine } [\text{mg/dL}]}$$

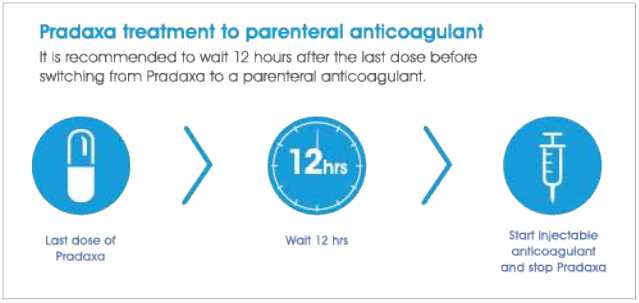
For creatinine in µmol/L

$$\frac{1.23 \times (140 - \text{age } [\text{years}]) \times \text{weight } [\text{kg}] \ (\times 0.85 \text{ if female})}{\text{serum creatinine } [\mu\text{mol/L}]}$$

SWITCHING

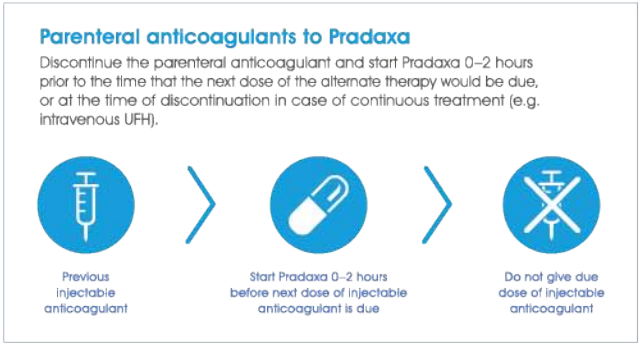
PRADAXA® treatment to parenteral anticoagulant

It is recommended to wait 12 hours after the last dose before switching from PRADAXA® to a parenteral anticoagulant.



Parenteral anticoagulants to PRADAXA®

The parenteral anticoagulant should be discontinued and PRADAXA® should be started 0-2 hours prior to the time that the next dose of the alternate therapy would be due, or at the time of discontinuation in case of continuous treatment (e.g. intravenous Unfractionated Heparin (UFH)).



SWITCHING

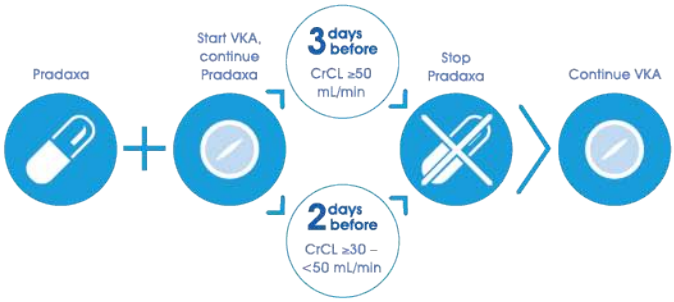
VKA to Pradaxa

The VKA should be stopped. Pradaxa can be given as soon as the INR is <2.0.

Pradaxa treatment to Vitamin K antagonists (VKA)

Adjust the starting time of the VKA based on CrCL as follows:

- CrCL ≥50 mL/min, start VKA 3 days before discontinuing Pradaxa
- CrCL ≥30 – <50 mL/min, start VKA 2 days before discontinuing Pradaxa



Because PRADAXA® can impact International Normalized Ratio (INR), the INR will better reflect VKA's effect only after Pradaxa has been stopped for at least 2 days. Until then, INR values should be interpreted with caution.

PERIOPERATIVE MANAGEMENT

Surgery and interventions

Patients on PRADAXA® who undergo surgery or invasive procedures are at increased risk of bleeding. Therefore, surgical interventions may require the temporary discontinuation of PRADAXA®. Clearance of dabigatran in patients with renal insufficiency may take longer. This should be considered in advance of any procedures. Please see also section 'SPECIAL PATIENT POPULATIONS POTENTIALLY AT HIGHER RISK OF BLEEDING'.

Emergency surgery or urgent procedures

PRADAXA® should be temporarily discontinued. When rapid reversal of the anticoagulation effect of dabigatran is required the specific reversal agent (idarucizumab) to PRADAXA® can be used.[9] Reversing dabigatran therapy exposes patients to the thrombotic risk of their underlying disease. PRADAXA® treatment can be re-initiated 24 hours after administration of (idarucizumab), if the patient is clinically stable and adequate haemostasis has been achieved.

Subacute surgery/interventions

PRADAXA® should be temporarily discontinued. A surgery/intervention should be delayed if possible until at least 12 hours after the last dose. If surgery cannot be delayed the risk of bleeding may be increased. This risk of bleeding should be weighed against the urgency of intervention (for cardioversion see below).

Elective surgery

If possible, PRADAXA® should be discontinued at least 24 hours before invasive or surgical procedures. In patients at higher risk of bleeding or in major surgery where complete haemostasis may be required consider stopping PRADAXA® 2–4 days before surgery. For discontinuation rules see Table 2.

Table 2: Discontinuation rules before invasive or surgical procedures

Renal function (CrCL mL/min)	Estimated half-life (hours)	Stop dabigatran before elective surgery	
		High risk of bleeding or major surgery	Standard risk
≥80	~13	2 days before	24 hours before
≥50 – <80	~15	2–3 days before	1–2 days before
≥30 – <50	~18	4 days before	2–3 days before (>48 hours)

Spinal anaesthesia/epidural anaesthesia/lumbar puncture

The risk of spinal or epidural haematoma may be increased in cases of traumatic or repeated puncture and by the prolonged use of epidural catheters. After removal of a catheter, an interval of at least 2 hours should elapse before the administration of the first dose of PRADAXA®. These patients require frequent observation for neurological signs and symptoms of spinal or epidural haematoma.

COAGULATION TESTS AND THEIR INTERPRETATION

PRADAXA® treatment does not need routine clinical monitoring.[3,4] In cases of suspected overdose or in patients treated with PRADAXA® presenting in emergency departments, it may be advisable to assess the anticoagulation status.

- **International Normalised Ratio (INR)**

  The INR test is unreliable in patients on dabigatran and should not be performed.

- **Activated Partial Thromboplastin Time (aPTT)**

  The aPTT test provides an approximate indication of the anticoagulation status but is not suitable for precise quantification of anticoagulant effect.

- **Dilute Thrombin Time (dTT), Thrombin Time (TT), Ecarin Clotting Time (ECT)**

  There is a close correlation between plasma dabigatran concentration and degree of anticoagulant effect.[1,2] For a quantitative measurement of dabigatran plasma concentrations, several dabigatran calibrated assays based on dTT have been developed.[5-8] A diluted TT measure 1 (dTT) of **>200 ng/mL dabigatran plasma concentration prior to the next medicinal product intake** may be associated with a higher risk of bleeding[1]. A normal dTT measurement indicates no clinical relevant anticoagulant effect of dabigatran. TT and ECT may provide useful information, but the tests are not standardized.

Table 3: Coagulation test thresholds at trough (i.e. prior to the next medicinal product intake) that may be associated with an increased risk of bleeding.
Please note: in the first 2–3 days after surgery, false prolonged measures may be detected.[2,3]

Test (trough value)	
dTT [ng/mL]	>200
ECT [x-fold upper limit of normal]	>3
aPTT [x-fold upper limit of normal]	>2
INR	Should not be performed

Time point: Anticoagulant parameters depend on the time when the blood sample was taken relative to the time when the previous dose was given. A blood sample taken 2 hours after PRADAXA® ingestion (~peak level) will have different (higher) results in all clotting tests compared with a blood sample taken 10–16 hours (trough level) after ingestion of the same dose.

Cardioversion

Patients with non-valvular atrial fibrillation treated for prevention of stroke and systemic embolism can stay on PRADAXA® while being cardioverted.

Catheter ablation for atrial fibrillation

Catheter ablation can be conducted in SPAF patients on 150 mg twice daily PRADAXA® treatment. PRADAXA® treatment does not need to be interrupted. There are no data available for 110 mg twice daily PRADAXA® treatment.

Percutaneous coronary intervention (PCI) with stenting

SPAF patients with non valvular atrial fibrillation who undergo a PCI with stenting can be treated with PRADAXA® in combination with antiplatelets after haemostasis is achieved.

Method of administration

PRADAXA® is for oral use.

- The capsules can be taken with or without food. PRADAXA® should be swallowed whole with a glass of water, to facilitate delivery to the stomach.
- Do not break, chew, or empty the pellets from the capsule since this may increase the risk of bleeding.

Special patient populations potentially at higher risk of bleeding:

Patients with an increased bleeding risk (see Table 1) should be closely monitored for signs or symptoms of bleeding or anaemia, especially if risk factors are combined. An unexplained fall in hemoglobin and / or hematocrit or blood pressure should lead to a search for a bleeding site. Dose adjustment should be decided at the discretion of the physician, following assessment of the potential benefit and risk to an individual patient (see above). A coagulation test (see section Coagulation tests and their interpretation) may help to identify patients with an increased bleeding risk caused by excessive dabigatran exposure. When excessive dabigatran exposure is identified in patients at high risk of bleed, a dose of 220 mg given as one 110mg capsule twice daily is recommended**.When clinically relevant bleeding occurs,treatment should be interrupted.

For situations of life-threatening or uncontrolled bleeding, when rapid reversal of the anticoagulation effect of dabigatran is required, the specific reversal agent (idarucizumab) can be used.[9]

Table 1:Risk factors which may increase the haemorrhagic risk*

Pharmacodynamic and kinetic factors	• Age ≥75 years
Factors increasing dabigatran plasma levels	**Major:** •Moderate renal impairment (30-50 mL/min CrCL)† •Strong P-gp† inhibitors (see section Contraindications) •Mild to moderate P gp inhibitor co medication (e.g. amiodarone, verapamil, quinidine and ticagrelor) **Minor:** •Low body weight (<50 kg)
Pharmacodynamic interactions	•Acetylsalicylic acid and other platelet aggregation inhibitors such as clopidogrel •NSAID •SSRIs or SNRIs† •Other medicinal products which may impair haemostasis
Diseases/procedures with special haemorrhagic risks	•Congenital or acquired coagulation disorders •Thrombocytopenia or functional platelet defects •Esophagitis, gastritis, gastroesophageal reflux •Recent biopsy, major trauma •Bacterial endocarditis

* For special patient populations requiring a reduced dose, see section Dosing. † CrCL: Creatinine clearance; P-gp: P-glycoprotein; ICH: Intracranial hemorrhage;SSRIs: selective serotonin re-uptake inhibitors; SNRIs: serotonin norepinephrine re-uptake inhibitors.

** Pradaxa 110 mg is only approved for SPAF and it is not locally approved to be used for DVT/PE treatment in NZ

IN CASE OF OVERDOSE

OVERDOSE [1,2]

In case of an overdose suspicion, coagulation tests may help to assess the coagulation status. Excessive anticoagulation may require interruption of PRADAXA®. Since dabigatran is excreted predominantly by the renal route, adequate diuresis must be maintained. As protein binding is low, dabigatran can be dialysed; there is limited clinical experience to demonstrate the utility of this approach in clinical studies. PRADAXA®overdose may lead to haemorrhage. In the event of haemorrhagic complications, treatment must be discontinued and the source of bleeding investigated (see section Management of bleeding complications). General supportive measures such as application of oral activated charcoal may be considered to reduce absorption of dabigatran.

PRADAXA® Patient Alert Card and counseling

A Patient alert card is provided to your patient. The patient should be instructed to carry the Patient alert card at all times and present it when seeing a health care provider. The patient should be counseled about the need for compliance and signs of bleeding and when to seek medical attention.

MANAGEMENT OF BLEEDING COMPLICATIONS

For situations when rapid reversal of the anticoagulant effect of dabigatran is required (life-threatening or uncontrolled bleeding or for emergency surgery/urgent procedures) the specific reversal agent (idarucizumab) can be used.
Depending on the clinical situation appropriate standard treatment, e.g., surgical haemostasis and blood volume replacement, should be undertaken.
Consideration may be given to the use of fresh whole blood, fresh frozen plasma and /or platelet concentrates in cases where thrombocytopenia is present or long-acting antiplatelet medicinal products have been used. Coagulation factor concentrates (activated or non-activated) or recombinant Factor VIIa may be taken into account. However, clinical data are very limited.

Pradaxa®
dabigatran etexilate

Experienced Protection

References
1-PRADAXA® Summary of Product Characteristics. Boehringer Ingelheim.2-van Ryn J et al. Thromb Haemost 2010; 103:1116–1127. 3-Liesenfeld K-H et al. Br J Clin Pharmacol 2006; 62:527–537.4-Stangier J et al, Br J Clin Pharmacol 2007; 64:292–303.5- Hemoclot® thrombin inhibitor assay (Hyphen BioMed, Neuville-sur-Oise, France). www.clottingtesting.com 6-HemosIL® assay (Instrumentation Laboratory, Werfen Group, Barcelona, Spain). www.instrumentationlaboratory.com 7-Technoclot® DTI Dabigatran assay (Technoclone GmbH, Vienna, Austria). http://www.technoclone.com/products/coagulation/control-plasma/dabigatran-cont 8-INNOVANCE® DTI Assay (Siemens Healthineers GmbH, Erlangen, Germany) https://www.healthcare.siemens.com/hemostasis 9-Pollack C et al. NEJM 2015; 373: 511-20

Adverse events should be reported to Iraqi pharmacovigilance center on: iqphvc@yahoo.com, iraqiphvc@moh.gov.iq
Adverse events should also be reported to Boehringer Ingelheim Drug Safety on: PV_local_Egypt@boehringer-ingelheim.com

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