Ground level Falls on Eliquis, Xarelto, and Pradaxa Work up and Treatment for Bleeding

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Purpose

The purpose of this guideline is to provide an evidence-based approach for the reversal of direct oral anticoagulants (DOACs) – specifically **Eliquis (apixaban)**, **Xarelto (rivaroxaban)**, and **Pradaxa (dabigatran)** – in patients who present following a ground-level fall with potential trauma. This guideline includes the recommended reversal agents, dosing, timing, and trauma workup to ensure appropriate management.

Scope

This guideline applies to all healthcare providers involved in the emergency and trauma care of patients including physicians, trauma surgeons, emergency medicine providers, and nursing staff.

Definitions

- **Eliquis (Apixaban)**: A direct oral anticoagulant (DOAC) used for stroke prevention in atrial fibrillation, treatment of venous thromboembolism, and other indications.
- **Xarelto (Rivaroxaban)**: Another DOAC, used for similar indications as Eliquis, including prevention of stroke and treatment of venous thromboembolism.
- **Pradaxa (Dabigatran)**: A direct thrombin inhibitor, used for similar indications as Eliquis and Xarelto.
- **4-Factor PCC**: A 4-factor prothrombin complex concentrate (PCC) used for the rapid reversal of anticoagulation in patients on warfarin or DOACs.
- **DOAC Reversal**: The process of counteracting the anticoagulant effects of DOACs using appropriate reversal agents or strategies.

Mechanism of Action

Eliquis (Apixaban):

Mechanism: Apixaban is an oral direct factor Xa inhibitor. It works by binding directly to factor Xa, preventing its activation and inhibiting the conversion of prothrombin to thrombin, which is essential for clot formation. By inhibiting factor Xa, apixaban reduces thrombin generation, thus preventing clot formation in conditions like atrial fibrillation and venous thromboembolism (VTE).

Xarelto (Rivaroxaban):

Mechanism: Like apixaban, rivaroxaban is an oral direct factor Xa inhibitor. It selectively inhibits the activity of factor Xa, which is a key enzyme in the coagulation cascade. By inhibiting factor Xa, rivaroxaban prevents the formation of thrombin and the subsequent formation of fibrin, reducing the risk of clot formation in patients with atrial fibrillation or other thrombotic conditions.

Pradaxa (Dabigatran):

Mechanism: Dabigatran is a direct thrombin inhibitor, which means it binds directly to thrombin (factor IIa), inhibiting its ability to convert fibrinogen into fibrin, the main component of a blood clot. By directly inhibiting thrombin, dabigatran prevents thrombus formation and the propagation of clots in conditions such as atrial fibrillation and acute VTE.

Evidence-Based Guidelines

Initial Management of Trauma Patient (Ground-Level Fall)
The trauma workup for patients who present following a ground-level fall includes:

- **CT Head, Non-Contrast**: To rule out intracranial hemorrhage (ICH).
- **CT C-Spine, Non-Contrast**: To evaluate for cervical spine injuries.
- **Chest X-ray**: To rule out rib fractures, pneumothorax, or other thoracic injuries.
- **Pelvis X-ray**: To evaluate for pelvic fractures.
- **FAST (Focused Assessment with Sonography for Trauma)**: To check for any intra-abdominal bleeding.

Reversal of Eliquis (Apixaban) and Xarelto (Rivaroxaban)
Both Eliquis and Xarelto are Factor Xa inhibitors. Their effects can be reversed with:

- **4-Factor PCC (Balfaxar/Kcentra)**: 4-Factor PCC is used for rapid reversal of the anticoagulation effect of Factor Xa inhibitors.
- **Dosing**: The recommended dose of 4-Factor PCC is based on body weight and INR (International Normalized Ratio), as follows:
- **Initial Dosing**: 25-50 units/kg (maximum 5000 units) of 4-Factor PCC (use actual body weight).
- **Timing**: Administer 4-Factor PCC as soon as possible after determining the need for reversal. Initiate Kcentra infusion over 30 minutes.
- **Timing of 4-Factor PCC Administration**: For patients who present with significant bleeding or require urgent surgery, Kcentra should be administered immediately after the decision to reverse the anticoagulant.
- **Other Reversal Agents**: In the absence of 4-Factor PCC, activated charcoal may be considered for patients within 2 hours of ingestion.

Reversal of Pradaxa (Dabigatran)
Dabigatran is a direct thrombin inhibitor, and its effects are reversed with the specific reversal agent **Idarucizumab**:

- **Idarucizumab (Praxbind)**: The FDA-approved reversal agent for dabigatran.
    - **Dosing**: Administer 5 grams (2.5 grams IV push x 2) of idarucizumab. This agent acts rapidly and can restore normal hemostasis within minutes to hours.
    - **Timing**: Idarucizumab should be administered as soon as possible if the patient presents with life-threatening bleeding or requires urgent surgery. Consideration of renal function is important, as it affects idarucizumab dosing.
- **Post-Reversal Management**
    - **Monitoring**: Following reversal, patients must be closely monitored for thromboembolic complications (e.g., deep vein thrombosis, pulmonary embolism, or stroke) due to the rapid restoration of coagulation.
    - **Further Intervention**: If bleeding continues or worsens after reversal, additional interventions may be required, such as surgical consultation or additional reversal agents.

Use of 4-Factor PCC for Other Anticoagulation Reversal

- **Monitoring**: INR should be monitored after 4-Factor PCC administration to assess the reversal of anticoagulation.
- **Additional Support**: If INR is still elevated or bleeding persists, additional doses of 4-Factor PCC or adjunctive therapies such as tranexamic acid may be required.

Roles and Responsibilities

- **Trauma Surgeons**: Supervise the reversal of anticoagulation and ensure appropriate management of the trauma work-up.
- **Emergency Medicine Providers**: Initiate the trauma work-up and determine the need for anticoagulant reversal based on clinical findings.
- **Pharmacy**: Ensure appropriate dosing and rapid availability of Kcentra, idarucizumab, and other necessary agents for anticoagulation reversal.
- **Sonographers and Radiologists**: Perform imaging studies promptly to rule out internal injuries that could be exacerbated by anticoagulation therapy.

Documentation and Reporting

- All administration of and idarucizumab, along with any resulting clinical outcomes, should be documented thoroughly in the patient's medical record, including indication, dosing, and response to treatment.
- Adverse events or complications should be reviewed in a quality improvement meeting.

Version Control Record			
Version	**Date**	**Author / Reviewer**	**Description of Changes**
2	**01/21/2026**	**Paul Wisniewski, D.O.**	**Initial review and update to reflect latest evidence/practice**

Work Cited

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