**Table 1. Characteristics of different NOACs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Dabigatran**  | **Rivaroxaban**  | **Edoxaban**  | **Apixaban**  |
| Mechanism of action | anti-thrombin  | anti-factor Xa  | anti-factor Xa  | anti-factor Xa  |
| Bioavailability  | 7%  | 66%  | 50%  | 60%  |
| T max (hours)  | 1.5  | 2.5  | 3  | 1-5  |
| T ½ (hours)  | 9 – 17  | 6 – 13  | 12  | 12  |
| Dosing  | b.i.d  | once daily  | b.i.d  | once daily  |
| Renal excretion  | high  | moderate  | moderate  | moderate  |
| Hepatic metabolism  | low  | moderate  | moderate  | moderate  |
| Reversal agents  | idarucizumab \*aripazine  | andexanet alfa aripazine  | andexanet alfa aripazine  | andexanet alfa aripazine  |

**\*** Idarucizumab is the only FDA-approved specific reversal agent currently

T max, time to peak plasma level; T½, half-life; GIB, gastrointestinal bleeding

**Table 2. Risk factors for NOAC-related GIB**

|  |  |
| --- | --- |
| **Risk factors** | **Definition** |
| Higher dose of dabigatran and edoxaban  | Dabigatran: a dose of 150 mg b.i.d Edoxaban: a dose of 60 mg daily |
| Concomitant use of ulcerogenic agents  | Antiplatelet agents, NSAIDs or steroid  |
| Older age  | Age ≥ 75 years  |
| Renal impairment  | Creatinine clearance <50 ml/min  |
| Prior history of peptic ulcers or GIB |  |
| *Helicobacter pylori* infection |  |
| Pre-existing GI tract lesions | Examples like diverticulosis, angiodysplasias |
| Ethnicity | Western population  |
| HAS-BLED score  | Score of ≥ 3  |
| **Protective factors** | **Definition** |
| Gastroprotective agents  | Proton pump inhibitors or histamine H2-receptor antagonists  |

NOAC, novel oral anticoagulant; GIB, gastrointestinal bleeding; NSAIDs, non-steroidal anti-inflammatory drugs

**Table 3. Components of HAS-BLED bleeding risk score**

|  |  |  |
| --- | --- | --- |
| **Clinical characteristics** | **Definition** | **Points** |
| **H**ypertension  |  Systolic blood pressure > 160 mmHg  | 1  |
| **A**bnormal liver or renal function  | Chronic liver disease (eg, cirrhosis) or biochemical evidence of significantly impaired liver function (eg, bilirubin >2 times the ULN plus one or more liver enzymes > 3 times the ULN Chronic dialysis, renal transplantation, or serum creatinine ≥ 200 micromol/L  | 1 or 2  |
| **S**troke  | Previous history of stroke  | 1  |
| **B**leeding tendency or predisposition  | Bleeding disorder or previous bleeding episode requiring hospitalization or transfusion  | 1  |
| **L**abile INRs  | Labile INRs in patients taking warfarin(failure to maintain a therapeutic range at least 60% of the time)  | 1  |
| **E**lderly  | Age > 65 years  | 1  |
| **D**rugs  | Concomitant antiplatelet agents or NSAIDsExcessive alcohol use (≥ 8 units per week) | 1 or 2  |

 \* Maximum score is 9

 ULN, upper limit of normal; INR, international normalized ratio; NSAIDs,

 non-steroidal anti-inflammatory drugs