Anticoagulation Prescribing Patterns and Direct Oral Anticoagulants
Dosing in Patients with Non-Valvular Atrial Fibrillation

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Background
- Direct oral anticoagulants (DOACs) have been shown to be at least equally effective to warfarin for stroke prevention in non-valvular atrial fibrillation (NVAF).\(^1\)\(^2\)
- Although DOACs have been on the market in Canada for several years, their uptake in practice has been variable.\(^3\)\(^4\)
- Several observational studies have shown that the doses of DOACs used in practice are inconsistent with manufacturer labeling.\(^5\)\(^6\)

Methods
- Retrospective chart review
- Single-site study at ARH
- Convenience sample of patients admitted from April 2017 to September 2017

Inclusion Criteria
- Age ≥ 18, ICD-10 diagnosis code of atrial fibrillation (AF), CHADS-65 > 1

Exclusion Criteria
- Mitral stenosis, mechanical heart valve, active intracranial bleed, hypersensitivity or intolerance to oral anticoagulants (OAC), pregnant women, left atrial appendage exclusion device, AF due to reversible causes, dialysis patients

Primary Outcome
- % of patients prescribed DOAC (apixaban, dabigatran, edoxaban, rivaroxaban), warfarin or no OAC at discharge

Secondary Outcomes
- Patient characteristics associated with prescribing of warfarin vs. DOAC.
- % of patients on DOACs receiving the correct dose, too low of a dose, or too high of a dose

Table 1 – Patient Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Warfarin (N=25)</th>
<th>DOAC (N=83)</th>
<th>No OAC (N=12)</th>
<th>P-value**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>78 ± 8.6</td>
<td>79 ± 11.6</td>
<td>78 ± 10.8</td>
<td>0.55</td>
</tr>
<tr>
<td>Male</td>
<td>17 (68%)</td>
<td>43 (52%)</td>
<td>9 (75%)</td>
<td>0.19</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>84.5 ± 29.5</td>
<td>78.5 ± 25.3</td>
<td>89.3 ± 15.6</td>
<td>0.34</td>
</tr>
<tr>
<td>S Cr (mmol/L)</td>
<td>116 ± 69.4</td>
<td>93 ± 26.3</td>
<td>99.6 ± 34.9</td>
<td>0.12</td>
</tr>
<tr>
<td>eGFR (ml/min)</td>
<td>59 ± 22.1</td>
<td>63.2 ± 20.2</td>
<td>61.2 ± 26.8</td>
<td>0.38</td>
</tr>
<tr>
<td>ALT/ASTALP &gt; 3 × ULN</td>
<td>3 (12%)</td>
<td>3 (4%)</td>
<td>2 (17%)</td>
<td>0.8</td>
</tr>
<tr>
<td>Total bilirubin &gt; 2 × ULN</td>
<td>3 (12%)</td>
<td>4 (5%)</td>
<td>0 (0%)</td>
<td>0.2</td>
</tr>
<tr>
<td>NSAID</td>
<td>0 (0%)</td>
<td>1 (1.2%)</td>
<td>0 (0%)</td>
<td>0.9</td>
</tr>
<tr>
<td>ASA</td>
<td>5 (12%)</td>
<td>12 (14.5%)</td>
<td>10 (63.3%)</td>
<td>0.9</td>
</tr>
<tr>
<td>P2Y12 inhibitor</td>
<td>1 (4%)</td>
<td>5 (6%)</td>
<td>4 (33.3%)</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Comorbidities
- Hypertension: 20 (80%) vs DOAC: 62 (74.7%), P = 0.59
- Heart failure: 15 (60%) vs DOAC: 35 (42.2%), P = 0.12
- Ischemic stroke/TIA: 6 (24%) vs DOAC: 21 (25.3%), P = 0.9
- Stable CAD: 7 (28%) vs DOAC: 15 (18.1%), P = 0.28
- ACS in the last year: 0 (0%) vs DOAC: 7 (8.4%), P = 0.3
- Hemorrhagic stroke: 0 (0%) vs DOAC: 0 (0%), P = 1
- GI bleed: 0 (0%) vs DOAC: 2 (2.4%), P = 0.9
- Other major bleeding: 0 (0%) vs DOAC: 1 (1.2%), P = 0.9
- Diabetes mellitus: 6 (24%) vs DOAC: 19 (22.9%), P = 0.36
- Chronic kidney disease: 10 (40%) vs DOAC: 35 (42.2%), P = 0.85
- Current alcohol abuse: 1 (4%) vs DOAC: 4 (4.8%), P = 0.9
- HAS-BLED: 1.6 ± 0.8 vs DOAC: 1.5 ± 0.8, P = 0.47

Results
- 184 patients were prescribed DOAC, compared with 77% of them prescribed warfarin. (See Table 1)
- Of the 12 patients not discharged on an OAC, 3 declined to take an OAC on discharge. A higher bleeding risk may explain why these patients were not prescribed an OAC on discharge.
- A higher proportion of patients not receiving an OAC were on ASA or a P2Y12 inhibitor, which offers some protection against stroke in AF.

Discussion
- Apixaban may be favored as it has been shown to be superior to warfarin in reducing stroke and systemic embolism while causing less major bleeds in the ARISTOTLE trial.
- Rivaroxaban was also commonly prescribed possibly due to its convenient once-daily dosing.
- The CHADS-65 score appears to be similar across all groups of patients. However, the HAS-BLED score appears to be higher in patients not receiving an OAC. A higher bleeding risk may explain why these patients were not prescribed an OAC on discharge.
- A higher proportion of patients not receiving an OAC were on ASA or a P2Y12 inhibitor, which offers some protection against stroke in AF.

Conclusions
- At ARH, the majority of patients with NVAF and a CHADS-65 of ≥ 1 were prescribed a DOAC on discharge.
- Patient characteristics appear to be similar between the warfarin and DOAC groups.
- The majority of patients discharged on a DOAC were correctly dosed.

References available upon request.