Use of antiarrhythmic drug therapy and clinical outcomes in older patients with concomitant atrial fibrillation and coronary artery disease

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Aims
Atrial fibrillation (AF) and coronary artery disease (CAD) are common in older patients. We aimed to describe the use of antiarrhythmic drug (AAD) therapy and clinical outcomes in these patients.

Methods and results
We analysed AAD therapy and outcomes in 1738 older patients (age ≥65) with AF and CAD in the Duke Databank for cardiovascular disease. The primary outcomes were mortality and rehospitalization at 1 and 5 years. Overall, 35% of patients received an AAD at baseline, 43% were female and 85% were white. Prior myocardial infarction (MI, 31%) and heart failure (41%) were common. Amiodarone was the most common AAD (21%), followed by pure Class III agents (sotalol 6.3%, dofetilide 2.2%). Persistence of AAD was low (35% at 1 year). After adjustment, baseline AAD use was not associated with 1-year mortality [adjusted hazard ratio (HR) 1.23, 95% confidence interval (CI) 0.94–1.60] or cardiovascular mortality (adjusted HR 1.27, 95% CI 0.90–1.80). However, AAD use was associated with increased all-cause rehospitalization (adjusted HR 1.20, 95% CI 1.03–1.39) and cardiovascular rehospitalization (adjusted HR 1.20, 95% CI 1.01–1.43) at 1 year. This association did not persist at 5 years; however, these patients were at very high risk of death (55% for those >75 and on AAD) and all-cause rehospitalization (87% for those >75 and on AAD) at 5 years.

Conclusions
In older patients with AF and CAD, antiarrhythmic therapy was associated with increased rehospitalization at 1 year. Overall, these patients are at high risk of longer-term hospitalization and death. Safer, better-tolerated, and more effective therapies for symptom control in this high-risk population are warranted.

Keywords
Atrial fibrillation • Ischaemic heart disease • Antiarrhythmic drug • Elderly • Outcomes research

Atrial fibrillation (AF) is the most common dysrhythmia in adults, and its incidence increases significantly with age. Ultimately, more than one in four persons of age 40 will be diagnosed with AF and ~10% of octogenarians carry a diagnosis of AF. Atrial fibrillation has a negative impact on the quality of life comparable with that observed in patients with ischaemic heart disease, and the effect is largely attributable to significant symptoms including palpitations, fatigue, and exertional limitations. Randomized data have suggested that maintenance of sinus rhythm (‘rhythm control’) is associated with improved symptoms. However, antiarrhythmic drug (AAD) therapy in patients with coronary artery disease (CAD) raises several safety concerns, including toxic side effects and the potential for fatal proarrhythmia. Yet most of the evidence in the literature is derived from selected populations and few data are available in older patients. In an effort to assess the effects of AAD on clinical outcomes in older patients with AF and CAD, we performed an analysis of patients in the Duke Databank for Cardiovascular Disease. The objectives of this study were (i) to describe the use of AADs in older patients with AF and CAD, (ii) to assess clinical outcomes in these...
What’s new?
- Concomitant atrial fibrillation (AF) and coronary artery disease (CAD) portend a poor prognosis yielding significant morbidity and mortality in older patients. At 5 years, rehospitalization exceeded 75% and mortality exceeded 33% in all groups.
- Nearly one-third of patients with AF and CAD are treated with an antiarrhythmic drug (AAD), most commonly amiodarone.
- Use of antiarrhythmic therapy was associated with increased risk of rehospitalization at 1 year.
- Safer and more effective therapies for symptom control in this population are needed.

Methods
Data for the current analysis were obtained from the Duke Databank for Cardiovascular Disease (DDCD), an institution-wide cohort of all patients undergoing catheterization procedures at Duke University Medical Center. All demographics, comorbidities, vital signs, laboratory studies, imaging results, and medications are captured at baseline. Patients with angiographically confirmed CAD are prospectively followed for medication use and outcomes at 6 months, 1 year, and annually thereafter. The design and methods of the DDCD have been described previously.10,11

Outcomes
The primary outcomes for this analysis were all-cause mortality and rehospitalization at 1 year. Secondary outcomes were cardiovascular death and cardiovascular rehospitalization from the time of catheterization to 1 year. To further explore associations with outcomes, a landmark analysis of event-free patients was performed at 1 year for the same end-points at 5 years. Overall, the median follow-up was 3.8 years.

Study population
For the present analysis, the overall DDCD cohort was limited to patients undergoing cardiac catheterization with coronary angiography from 2000 to 2010, who were ≥65 years at the time of catheterization, had obstructive (≥50%) or non-obstructive CAD (<50%, angiographically-confirmed), and had a diagnosis of AF at baseline, within the prior 12 months. The diagnosis of AF was made by electrocardiogram, DDCD data, or hospital administrative data and patients with incident (new AF) during follow-up were not included. The following patients were excluded: patients who died during the index catheterization hospitalization; those with an index hospitalization of >30 days; patients without medication data available within 30 days after index catheterization; patients receiving quinidine or procainamide at baseline; and patients with a history of ventricular tachycardia or ventricular fibrillation.

Patients were stratified by AAD use at baseline. For the purpose of this analysis, AAD therapy was defined as the use of an oral membrane active antiarrhythmic drug (Vaughan–Williams Class I or Class III or a mixed channel blocker) within 30 days of the index catheterization. Only AAD drugs cited in the AHA/ACC/HRS guidelines for rhythm management were considered, including propafenone, flecainide, dofetilide, sotalol, disopyramide, dronedarone, or amiodarone.12 Procarainamide and quinidine were excluded. Use of AAD is presented by age group: 65–75 and >75 years. All analyses of AAD were conducted according to the treatment at baseline.

Statistical methods
Baseline characteristics are described by absolute rates (percentage) for categorical variables, and medians (interquartile range) for continuous variables. Analytical results were stratified by age group (65–75, >75), and then by use of any AAD. Unadjusted 1- and 5-year Kaplan–Meier (KM) event rates were calculated for each sub-group (by age and AAD). Tests for differences across strata were conducted for baseline characteristics. An analysis of variance F-test was used for continuous characteristics. If normality assumptions were violated for any of these tests on continuous variables, a Kruskal–Wallis test was performed for that particular variable where the assumptions were violated. A χ² test for independence was used for categorical baseline characteristics. If the assumptions were violated for a particular χ² test, Fisher’s exact test was performed.

Subsequently, Cox proportional hazards regression models for each endpoint were generated for 1-year outcomes. Patients without an outcome event at 1 year and who had >1 year of follow-up were then included in landmark analyses for assessment of 5-year outcomes. Multi-variable models observing the relationship between outcomes and the variables of AAD use and age group were constructed. Missing data values were imputed using multiple imputation techniques when <15% missingness was observed. The result from these techniques is that there are multiple values imputed for each missing data point. The set of multiple values are used in running all of the models and allows the analyses to account for variation due to the fact that some of the data were imputed.13,14 Linearity assumptions were checked by examining the results of cubic polynomial spline plots of the log hazard ratio (HR) of an endpoint against each of the ordinal or continuous adjustment variables. Transformations were performed for variables that had significant non-linear relationships to satisfy this assumption. All statistical analyses of the data were performed by the Duke Clinical Research Institute using SAS software (version 9.2, SAS Institute).

This analysis was approved by the Duke Institutional Review Board, and no outside funding was used to perform this analysis. All of the authors had access to the aggregate results and take full responsibility for the results presented herein.

Results
From the total DDCD database of 170 629 procedures, 152 395 were excluded for being non-cardiac catheterizations, outside the study age range, in patients with a history of ventricular arrhythmias, or in those without evidence of CAD. Repeat procedures were excluded, as were an additional 10 550 patients without AF (Supplementary material online, Figure S1). The final study cohort included a total of 1738 patients (n = 964 age 65–75 and n = 774 >75 years old), 609 (35%) of whom were treated with an AAD. Characteristics of the study population, stratified by age and AAD use at baseline, are shown in Table 1. Overall, 43% were female, with women less likely than men to be taking an AAD. Risk factors for atherosclerotic cardiovascular disease, such as hyperlipidaemia and diabetes, were common with lower rates in older patients. Twenty-nine percent (n = 510) had non-obstructive (<50%) CAD, and the remaining 71% (n = 1228) had obstructive (>50%) CAD in 1, 2, or 3 epicardial coronary arteries. Warfarin therapy was prescribed to 34% overall (with 65% having CHADS² scores ≥2), and further details of
antithrombotic medications in this population have been described previously.\textsuperscript{11} Roughly one-third of the cohort had a prior myocardial infarction (MI), and about one-third had prior coronary revascularization (percutaneous or surgical, Table 2). Approximately 40% of patients manifested an acute coronary syndrome on index admission, and AAD use in this subgroup was similar to that of the overall cohort (35%). Forty-one percent had congestive heart failure. The median left-ventricular ejection fraction (EF) was 55% in patients not on AAD vs. 52% for patients on an AAD. The estimated glomerular filtration rate was lower in older patients, and lowest in older patients receiving AAD therapy.

Rate and rhythm therapies
Concomitant cardiac medications are shown in Table 3, stratified by age. Eighty-six percent and 84% (ages 65–75 and >75, respectively) of patients receiving AAD were also taking a beta-blocker, compared with 73 and 78% of patients not on an AAD. Calcium-channel blockers (non-dihydropyridines) and digoxin were not commonly used.

The most common AAD in this cohort was amiodarone (≏60% of those on AAD, 21% overall), followed by sotalol (6.3% overall), and then dofetilide (2.2% overall). More than 75% of the cohort was receiving beta-blocker therapy, including those with mild-moderate and severe heart failure.

After 1 year, 35% of patients on AAD at baseline remained on AAD; of patients not on an AAD initially, 16% were on an AAD at 1 year (excluding patients who died).

Unadjusted clinical outcomes
After 5 years of follow-up, unadjusted KM rates of all-cause rehospitalization ranged from 79% in non-AAD patients aged 65–75 to 87% in AAD patients >75 years. Unadjusted KM rates for all-cause mortality ranged from 33% in AAD patients aged 65–75 to 55% in AAD patients >75 years (Figures 1–4). Rates of mortality over time were highest in older patients, while rehospitalization rates were highest in patients on AAD of either age group (Supplementary material online, Table S1). A minority of follow-up hospitalization events carried a
### Table 2 Baseline cardiovascular disease

<table>
<thead>
<tr>
<th></th>
<th>Overall (n = 1738)</th>
<th>Age 65–75 No AAD (n = 622)</th>
<th>AAD (n = 342)</th>
<th>Age &gt;75 No AAD (n = 507)</th>
<th>AAD (n = 267)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prior CAD history</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of MI</td>
<td>545 (31)</td>
<td>174 (28)</td>
<td>104 (30)</td>
<td>173 (34)</td>
<td>94 (35)</td>
<td>0.07</td>
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<tr>
<td>History of revascularization</td>
<td>535 (31)</td>
<td>213 (34)</td>
<td>99 (29)</td>
<td>150 (30)</td>
<td>73 (27)</td>
<td>0.1</td>
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<td><strong>ACS during index hospitalization</strong></td>
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<td></td>
</tr>
<tr>
<td>STEMI</td>
<td>108 (6.2)</td>
<td>34 (5.5)</td>
<td>24 (7.0)</td>
<td>32 (6.3)</td>
<td>18 (6.7)</td>
<td>0.07</td>
</tr>
<tr>
<td>Non-STEMI</td>
<td>253 (14.6)</td>
<td>72 (11.6)</td>
<td>44 (12.9)</td>
<td>90 (17.8)</td>
<td>47 (17.6)</td>
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<td>Unspecified MI</td>
<td>5 (0.3)</td>
<td>2 (0.3)</td>
<td>2 (0.6)</td>
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<td>1 (0.4)</td>
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<tr>
<td>Unstable angina</td>
<td>378 (21.7)</td>
<td>138 (22.2)</td>
<td>64 (18.7)</td>
<td>118 (23.3)</td>
<td>58 (21.7)</td>
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<tr>
<td>No ACS</td>
<td>994 (57.2)</td>
<td>376 (60.5)</td>
<td>208 (60.8)</td>
<td>267 (52.7)</td>
<td>143 (53.6)</td>
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<td><strong>CAD severity</strong></td>
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<td>0.07</td>
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<tr>
<td>Non-obstructive</td>
<td>510 (29)</td>
<td>208 (33)</td>
<td>101 (30)</td>
<td>129 (25)</td>
<td>72 (27)</td>
<td></td>
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<tr>
<td>1-vessel</td>
<td>415 (24)</td>
<td>146 (24)</td>
<td>83 (24)</td>
<td>123 (24)</td>
<td>63 (24)</td>
<td></td>
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<tr>
<td>2-vessel</td>
<td>313 (18)</td>
<td>111 (18)</td>
<td>51 (15)</td>
<td>106 (21)</td>
<td>45 (17)</td>
<td></td>
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<tr>
<td>3-vessel</td>
<td>500 (29)</td>
<td>157 (25)</td>
<td>107 (31)</td>
<td>149 (29)</td>
<td>87 (33)</td>
<td></td>
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<tr>
<td><strong>History of cerebrovascular disease</strong></td>
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<td></td>
<td>0.009</td>
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<tr>
<td>History of stroke</td>
<td>65 (3.7)</td>
<td>30 (4.8)</td>
<td>13 (3.8)</td>
<td>18 (3.6)</td>
<td>4 (1.5)</td>
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<tr>
<td>EF</td>
<td>55 (40.62)</td>
<td>55 (41.63)</td>
<td>52 (39.60)</td>
<td>55 (43.63)</td>
<td>52 (39.60)</td>
<td>0.004</td>
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<td><strong>NYHA heart failure class</strong></td>
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<tr>
<td>None</td>
<td>1005 (59)</td>
<td>362 (60)</td>
<td>192 (57)</td>
<td>312 (63)</td>
<td>139 (53)</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>32 (1.9)</td>
<td>11 (1.8)</td>
<td>4 (1.2)</td>
<td>11 (2.2)</td>
<td>6 (2.3)</td>
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</tr>
<tr>
<td>II</td>
<td>161 (9.5)</td>
<td>56 (9.2)</td>
<td>41 (12)</td>
<td>35 (7.1)</td>
<td>29 (11)</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>336 (20)</td>
<td>121 (20)</td>
<td>67 (20)</td>
<td>93 (19)</td>
<td>55 (21)</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>165 (9.7)</td>
<td>57 (9.4)</td>
<td>33 (9.8)</td>
<td>42 (8.5)</td>
<td>33 (12.6)</td>
<td></td>
</tr>
</tbody>
</table>

Values are presented as number (%) or median (interquartile range).
CAD, coronary artery disease; ACS, acute coronary syndrome; MI, myocardial infarction; NYHA, New York Heart Association.

### Table 3 Rate and rhythm medications by age and antiarrhythmic drug use

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Age 65–75 No AAD (n = 622)</th>
<th>AAD (n = 342)</th>
<th>Age &gt;75 No AAD (n = 507)</th>
<th>AAD (n = 267)</th>
</tr>
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<tbody>
<tr>
<td>ACE inhibitor</td>
<td>919 (53)</td>
<td>184 (54)</td>
<td>264 (52)</td>
<td>158 (59)</td>
<td></td>
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<tr>
<td>Beta blocker</td>
<td>1369 (79)</td>
<td>295 (86)</td>
<td>394 (78)</td>
<td>225 (84)</td>
<td></td>
</tr>
<tr>
<td>CCB (verapamil, diltiazem)</td>
<td>330 (19)</td>
<td>68 (20)</td>
<td>93 (18)</td>
<td>62 (23)</td>
<td></td>
</tr>
<tr>
<td>Digoxin</td>
<td>282 (16)</td>
<td>48 (14)</td>
<td>88 (17)</td>
<td>37 (14)</td>
<td></td>
</tr>
<tr>
<td>Antiarrhythmic Drugs</td>
<td>342 (100)</td>
<td>267 (100)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Disopyramide</td>
<td>22 (1.3)</td>
<td>13 (3.8)</td>
<td>9 (3.4)</td>
<td>3 (3.0)</td>
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<tr>
<td>Propafenone</td>
<td>22 (1.3)</td>
<td>14 (4.1)</td>
<td>8 (3.0)</td>
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<td></td>
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<tr>
<td>Flecaïnide</td>
<td>20 (1.2)</td>
<td>15 (4.4)</td>
<td>5 (1.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class III</td>
<td>145 (8.3)</td>
<td>86 (25)</td>
<td>59 (22)</td>
<td></td>
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<tr>
<td>Dofetilide</td>
<td>38 (2.2)</td>
<td>25 (7.3)</td>
<td>13 (4.9)</td>
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<tr>
<td>Sotalol</td>
<td>109 (6.3)</td>
<td>63 (18)</td>
<td>46 (17)</td>
<td></td>
<td></td>
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<tr>
<td>Amiodarone</td>
<td>368 (21)</td>
<td>202 (59)</td>
<td>166 (62)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dronedarone</td>
<td>3 (0.2)</td>
<td>2 (0.6)</td>
<td>1 (0.4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AAD, antiarrhythmic drug; ACE, angiotensin-converting enzyme; CCB, calcium-channel blocker.
primary diagnosis of AF (52 events in patients not on AAD, 45 in patients on an AAD).

**Adjusted clinical outcomes**

Results of the multivariable Cox regression analyses at 1 year are shown in Figure 5. After adjustment, the use of AAD at baseline was not significantly associated with increased mortality (adjusted HR 1.23, 95% CI 0.94 – 1.60) or cardiovascular mortality (adjusted HR 1.27, 95% CI 0.90 – 1.80) in the year following cardiac catheterization. In contrast, AAD use was associated with significantly increased rates of any rehospitalization (adjusted HR 1.20, 95% CI 1.03 – 1.39) and cardiovascular rehospitalization (adjusted HR 1.20, 95% CI 1.01 – 1.43). In patients who were event-free at 1 year and had additional follow-up, AAD use at baseline did not appear to affect adverse outcomes over the subsequent 4 years (Supplementary material online, B.A. Steinberg et al.).

**Figure 1** Unadjusted KM event rates for all-cause mortality. AAD, antiarrhythmic drug.

**Figure 2** Unadjusted KM event rates for cardiovascular mortality. AAD, antiarrhythmic drug.

**Figure 3** Unadjusted KM event rates for all-cause rehospitalization. AAD, antiarrhythmic drug.

**Figure 4** Unadjusted KM event rates for cardiovascular rehospitalization. AAD, antiarrhythmic drug.

**Figure 5** Forest plot of adjusted KM event rates at 1 year. AAD, antiarrhythmic drug.
Table S2: all-cause mortality (adjusted HR 0.89, 95% CI 0.72–1.12), cardiovascular death (adjusted HR 0.94, 95% CI 0.69–1.27), any rehospitalization (adjusted HR 1.11, 95% CI 0.89–1.38), and cardiovascular rehospitalization (adjusted HR 1.08, 95% CI 0.84–1.39).

Discussion

We analysed AAD use and outcomes in over 1700 older patients with AF and concomitant CAD. Nearly one-third of patients were treated with an AAD, most commonly amiodarone. There was a high risk of adverse clinical outcomes in this population, including death and rehospitalization, regardless of AAD use. At 5 years, rehospitalization exceeded 75% and mortality exceeded 33% in all groups. Persistence of AAD therapy at 1 year was low. After multivariable adjustment, mortality was not associated with AAD use; however, patients taking an AAD had a higher risk of rehospitalization and cardiovascular rehospitalization at 1 year when compared with patients not on an AAD. This effect did not appear to persist at 5 years for those patients who were event-free and followed beyond 1 year.

Our first observation is the significant mortality and morbidity associated with a concomitant diagnosis of AF and CAD in persons ≥65 years of age. At 5 years, the vast majority had been rehospitalized, and nearly half had died. These findings exaggerate previous descriptions from the REACH registry, where 1-year rates of all-cause and cardiovascular mortality in patients with AF and CAD were 4.4 and 3.4%, respectively. Our study provides extended, long-term data well beyond 12 months. However, there are several differences between these cohorts; most notably, the REACH study enrolled stable outpatients around the world. In comparison, analyses of randomized trials in ACS have demonstrated the marked poor prognostic effect of AF in acutely-ill patients, and our results are consistent with these rates allowing for age differences. This may be attributable to the large proportion with acute coronary syndrome in our cohort (40%), which have been shown to have significantly worse outcomes when complicated by AF.

There are several important distinctions between our results and those from the AFFIRM trial. The most important are (i) these are contemporary results of AAD treatment, (ii) in a significantly sicker patient cohort (by CAD and heart failure diagnoses), and (iii) they are data from clinical practice—not a well-controlled randomized clinical trial. We demonstrate comparable rates of cardiovascular hospitalization at 5 years—unfortunately, this represents little improvement 10 years later. Similarly, hospitalization risk was increased by AADs in both cohorts, and most common of which remains amiodarone. Amiodarone remains the most frequently used AAD in older patients with AF, and there is reliable evidence to support its use in high-risk patients with AF. Yet the significant side effects and toxicities of amiodarone are well-known; these findings underscore not only the urgent need for safer, more effective pharmacotherapies for rhythm control in AF, but the ongoing risk of using suboptimal treatments in high-risk patients.

However, the AFFIRM investigators cite a lack of warfarin therapy as a potential contributor to the mortality risk of the rhythm strategy observed in that trial. We cannot confirm this and, in fact, our data suggest that it may be more attributable to AAD, as more patients on AADs in our cohort were treated with warfarin. Furthermore, this trend is magnified in our patients >75 years of age (46% on an AAD received warfarin vs. 25% not on warfarin), a group not well studied in AFFIRM (mean age 70).

The isolated early hazard associated with AAD use is likely due to several factors. We cannot exclude adverse patient selection for AAD that is incompletely measured in our multivariable adjustment, leading to higher short-term rehospitalization in this group. Given the age in our population, the competing hazard of unrelated causes of morbidity may overtake any adverse impact associated with AAD at 5 years, by which time all of these patients would be >70 years old. Additionally, there may be an acute hazard associated with AAD use in patients with ACS (roughly 40% of our cohort) that wanes over time. However, there was also marked attrition of AAD use in this cohort. Antiarrhythmic agents are often poorly tolerated and, combined with marginal effectiveness, this yields high discontinuation rates. Treatment persistence has been a long-standing problem with AADs, including amiodarone. In one meta-analysis, AADs were discontinued due to side effects in 10.4%, due to treatment failure in 13.5%, and due to non-compliance in 4.2%. Treatment-related death occurred in ~0.5%. In our data, adverse event rates converged following AAD discontinuation in the majority of patients, suggesting a possible exposure–response relationship.

Regardless of the reasons for discontinuation, the need for safe and effective AF treatments remains, particularly for high-risk patients. Dronedarone, which was used infrequently in our cohort, has demonstrated reduced hospitalization in certain high-risk populations; however, there have been safety concerns with this drug in other AF groups. While older patients may be candidates for drugs with more long-term toxicities (i.e. amiodarone), use of AADs in his population is fraught with other pitfalls, including dynamic renal function, poly-pharmacy, extensive comorbidity (including CAD), and challenges in surveillance of arrhythmia. As the major objective is frequently symptomatic relief, alternative therapies should be entertained. While novel AADs with improved safety and efficacy profiles may become available, the use of invasive, catheter-based strategies for the management of symptomatic AF is a potential option. Preliminary data support the use of catheter ablation of AF in older, symptomatic patients, and further study is warranted regarding the optimal management of such patients.

Limitations

These data are derived from a single-centre observational cohort, and are thus subject to the limitations of such methods including selection bias. Patients with non-obstructive CAD are queried only for hospitalizations within the Duke Health System, whereas patients with obstructive CAD are queried by mail as to whether any rehospitalization occurred within or outside of Duke. Diagnosis codes for cause of rehospitalization are available only for those events occurring within Duke. Additionally, residual and unmeasured confounding likely persist, and a temporal relationship between AAD and outcome is difficult to establish. Both of these factors limit conclusions of a causal relationship between AAD and outcome. Use of AAD was assessed at a single time point, and thus we cannot discern a potential time-dependent effect of such agents on the outcome. Finally, the breadth of confidence intervals (CIs) around the adjusted HRs for mortality demonstrates that we may lack power to more precisely define the effect of AAD.
Conclusions

Older patients with AF and CAD in contemporary practice are at high risk of long-term death and rehospitalization, irrespective of AAD therapy. Treatment with AAD therapy was associated with increased risk of rehospitalization at 1 year. These data highlight the need for improved therapies for symptom control in this population.

Supplementary material

Supplementary material is available at Europace online.

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References