Practice Gap in Atrial Fibrillation Oral Anticoagulation Prescribing at Emergency Department Home Discharge

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Atrial Fibrillation (AF)

- Quivering of the atrium due to aberrant electrical impulses coming from ectopic areas
- Five-fold increase in an individual’s lifetime risk of stroke
- Expected prevalence of 12 million Americans by 2030

“My heart flip-flops, skips beats, and feels like it’s banging against my chest wall, especially if I’m carrying stuff up my stairs or bending down.”
“I was nauseated, light-headed, and weak. I had a really fast heartbeat and felt like I was gasping for air.”
“I had no symptoms at all. I discovered my AF at a regular check-up. I’m glad we found it early.”
Treatment

- Oral anticoagulation therapy can reduce stroke risk by 64%
- Risk of bleeding vs risk of stroke

| Letter | Risk factor                                      | Score |
|--------|--------------------------------------------------|-------|
| C      | Congestive heart failure/LV dysfunction          | 1     |
| H      | Hypertension                                     | 1     |
| A₂     | Age ≥75                                          | 2     |
| D      | Diabetes mellitus                                | 1     |
| S₂     | Stroke/TIA/thrombo-embolism                      | 2     |
| V      | Vascular disease*                                | 1     |
| A      | Age 65–74                                        | 1     |
| S      | Sex category (i.e., female sex)                  | 1     |
|       | Maximum score                                    | 9     |

Congestive heart failure/LV dysfunction means LV ejection fraction ≤40%. Hypertension includes the patients with current antihypertensive medication. *Prior myocardial infarction, peripheral artery disease, aortic plaque. LV: left ventricular, TIA: transient ischemic attack

| Letter | Clinical Characteristic        | Points |
|--------|--------------------------------|--------|
| H      | Hypertension                   | 1      |
| A      | Abnormal Liver or Renal Function| 1 or 2 |
| S      | Stroke                         | 1      |
| B      | Bleeding                       | 1      |
| L      | Labile INR                     | 1      |
| E      | Elderly (age > 65)             | 1      |
| D      | Drugs or Alcohol               | 1 or 2 |

Maximum Score: 9
AF in the Emergency Department (ED)

• Most common arrhythmia presenting to ED
  • Accounts for 500,000 annual ED visits and ¼ of all diagnoses are made in the ED
• Up to 89% of patients with new-onset AF may be discharged from ED
• More than half of patients with AF discharged from the ED fail to achieve outpatient follow-up within 90 days of hospital discharge
Study Objectives

• Describe baseline ED OAC prescribing rates for eligible OAC-naïve AF patients
• Characterize predictors of OAC prescribing
• Identify variation from established guidelines and risk stratification tools
Methods

• Population: Patients >18 years old evaluated in the ED for primary diagnosis of AF and discharged home between 2012 – 2014

• Charts reviewed by five abstractors blinded to study hypotheses

• Abstracted demographics and data from problem lists and medical history to calculate CHA₂DS₂-VASc and HAS-BLED scores.

• Descriptive statistics used to summary demographics and stroke/bleed risk profiles

• Multivariable logistic regression used to identify factors associated with provision of OAC at ED discharge and factors associated with cardiology consultation.
# Results

| Characteristic (n, %)          | Overall (n=138, 100%) | OAC (n=118, 85.5%) | No OAC | p-value* |
|-------------------------------|-----------------------|--------------------|--------|----------|
| Age (years), mean (SD)        | 58.7 (17.1)           | 61.4 (13.77)       | 58.2 (17.61) | 0.69     |
| Female sex                    | 54 (39.1%)            | 13 (65.0%)         | 41 (34.7%)      | 0.91     |
| Race                          |                       |                    |        |          |
| White                         | 128 (92.8%)           | 20 (100.0%)        | 108 (91.5%)   | 1.00     |
| Black or African American     | 3 (2.2%)              | 0 (0.0%)           | 3 (2.5%)       |          |
| Asian or Pacific Islander     | 2 (1.4%)              | 0 (0.0%)           | 2 (1.7%)       |          |
| Other                         | 2 (1.4%)              | 0 (0.0%)           | 2 (1.7%)       |          |
| Not reported                  | 3 (2.2%)              | 0 (0.0%)           | 3 (2.5%)       |          |

### CHA2DS2-VASc group

- **Low stroke risk**: 62 (39.9%) 6 (30.0%) 49 (41.5%) 0.30
- **Intermediate stroke risk**: 22 (15.9%) 2 (10.0%) 20 (16.9%) 0.23
- **High stroke risk**: 61 (44.2%) 12 (60.0%) 41 (41.5%) 0.30

### HAS-BLED group

- **Low bleeding risk**: 81 (58.7%) 10 (50.0%) 71 (50.0%) 0.42
- **Intermediate bleeding risk**: 31 (22.5%) 7 (35.0%) 24 (20.0%) 0.23
- **High bleeding risk**: 26 (18.8%) 3 (15.0%) 23 (19.5%) 0.01

### Number of methods of control attempted

| Method of control | Overall (n=138) | OAC (n=118) | No OAC | p-value* |
|-------------------|-----------------|-------------|--------|----------|
| 0                 | 57 (41.3%)      | 13 (109.0%) | 44 (39.5%)     | 1.00     |
| 1                 | 52 (37.7%)      | 3 (109.3%)  | 49 (39.5%)     |          |
| 2                 | 21 (15.2%)      | 2 (109.3%)  | 19 (39.5%)     |          |
| 3                 | 6 (4.3%)        | 0 (109.3%)  | 6 (39.5%)      |          |
| 4                 | 2 (1.4%)        | 0 (109.3%)  | 2 (39.5%)      |          |
| **Cardioversion attempted** | 18 (13.3%)  | 4 (20.0%)  | 14 (11.9%)  | 0.30    |

### First method of control

- **Rhythm**: 16 (11.6%) 1 (5.0%) 15 (12.7%) 0.52
- **Rate**: 65 (47.1%) 9 (45.0%) 56 (47.5%) 0.47
- **None**: 57 (41.3%) 10 (50.0%) 47 (39.8%) 0.30
OAC-naive patients, n=138

Low Stroke Risk, n=55

Intermediate Stroke Risk, n=22

High Stroke Risk, n=61

Low Bleed Risk, n=81

Intermediate Bleed Risk, n=31

High Bleed Risk, n=26

No OAC Prescribed, n=118

OAC Prescribed, n=20
Results

| Characteristic                      | OR (95% CI) | P Value |
|-------------------------------------|-------------|---------|
| Sex, Female                         | 2.9 (1.0-8.5) | 0.05    |
| CHA²DS²-VASc stratification         |             |         |
| High risk                           | 1.9 (0.7-5.7) | 0.21    |
| Low/intermediate risk               | referent     |         |
| Cardiology consultation             | 12.5 (1.5-100.5) | < 0.01 |

OAC = oral anticoagulant; AF = atrial fibrillation; SD = standard deviation; ED = emergency department * = years; PTA = prior to arrival. Significant values are bolded.

|                      | HAS-BLED score § | OAC Prescription |
|----------------------|------------------|------------------|
|                      | Yes n=20         | No n=118         | Total n=138       |
| Low Stroke Risk      |                  |                  |                  |
| Low Bleeding Risk    | 6 (11.1%)        | 48 (88.9%)       | 54 (100%)        |
| Intermediate Bleeding Risk | 0 (0%)    | 1 (100%)        | 1 (100%)        |
| High Bleeding Risk   | 0(0%)           | 0 (0%)          | 0 (0%)          |
| Total                | 6               | 49              | 55              |
| Intermediate         |                  |                  |                  |
| Low Bleeding Risk    | 2 (14.3%)        | 12 (85.7%)       | 14 (100%)        |
| Intermediate Bleeding Risk | 0 (0%)    | 5(100%)         | 5 (100%)        |
| High Bleeding Risk   | 0 (0%)          | 3 (100%)        | 3 (100%)        |
| Total                | 2               | 20              | 22              |
| High Stroke Risk     |                  |                  |                  |
| Low Bleeding Risk    | 2 (15.4%)        | 11 (84.6%)       | 13 (100%)        |
| Intermediate Bleeding Risk | 7 (28.0%) | 18 (72.0%)      | 25 (100%)        |
| High Bleeding Risk   | 3 (13.0%)       | 20 (87.0%)      | 23 (100%)        |
| Total                | 12              | 49              | 61              |
## Results

| Patient | OAC Rx recommended by cardiology | OAC Rx provided by ED provider | CHA$_2$DS$_2$-VASc | HASBLED | Rx given       | Reason for discrepancy? |
|---------|---------------------------------|-------------------------------|---------------------|----------|----------------|-------------------------|
| 1       | Yes                             | No                            | High Risk           | High Risk|                | N/A                     |
| 2       | Yes                             | No                            | Low Risk            | Low Risk |                | “Low stroke risk”       |
| 3       | Yes                             | No                            | High Risk           | Low Risk |                | N/A                     |
| 4       | Yes                             | No                            | High Risk           | High Risk|                | N/A                     |
| 5       | Yes                             | No                            | Low Risk            | Low Risk |                | N/A                     |
| 6       | Yes                             | No                            | High Risk           | Intermediate |                | N/A                     |
| 7       | Yes                             | No                            | Low Risk            | Low Risk |                | N/A                     |
| 8       | No                               | Yes                            | Intermediate        | Low Risk | Warfarin       | CHADS2 score            |
| 9       | No                               | Yes                            | Low Risk            | Low Risk | Warfarin       | N/A                     |
| 10      | No                               | Yes                            | High Risk           | Intermediate | Dabigatran     | N/A                     |
| 11      | No                               | Yes                            | High Risk           | Intermediate | Other         | N/A                     |
| 12      | No                               | Yes                            | Low Risk            | Low Risk | Dabigatran     | N/A                     |

OAC = Oral anticoagulation; Rx = Prescription; ED = Emergency Department Rx = Prescription
Discussion

• The majority of OAC-eligible patients were discharged home without an OAC prescription
  • Previous work has shown that patients started on an OAC in the ED continue to take that prescription for longer than those referred to another provider
  • Other work has shown that when this population is started on an OAC the risk of bleeding is unchanged at 1 year and risk of stroke is decreased

• Cardiology consult and female sex were predictive of OAC prescription
  • Academic medical centers are more likely to consult cardiology (roughly 2/3) while community less so (roughly 1/3)

• Access to expert opinion may improve provider comfort with OAC prescribing

• Other work highlights that ED providers would feel more comfortable with ED specific guidelines
Questions?
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