# EVALUATING THE USE OF WARFARIN USING THE HAS-BLED SCORE AND INR ON ATRIAL FIBRILLATION PATIENTS AT HARAPAN KITA NATIONAL HEART CENTER

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# EVALUATING THE USE OF WARFARIN USING THE HAS-BLED SCORE AND INR ON ATRIAL FIBRILLATION PATIENTS AT HARAPAN KITA NATIONAL HEART CENTER

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## ABSTRACT

Patients with atrial fibrillation are associated with a 4-5-fold risk of having a stroke. The most effective treatment for atrial fibrillation is to prevent blood clot formation by administering anticoagulant drugs. Warfarin is an anticoagulant drug with a narrow therapeutic index, with side effects of bleeding risk. Hence, it needs supervision in its use. In this study, the HAS-BLED score was used to measure major bleeding risk and as a value representing each risk factor for bleeding. The bleeding risk can be prevented by maintaining a warfarin response in the therapeutic range with an INR (International Normalized Ratio) measurement 2-3. This study was an observational study conducted with retrospective data collection through medical records of patients with a primary diagnosis of atrial fibrillation who received oral warfarin anticoagulant therapy at Harapan Kita National Heart Center in the period of January-December 2017. There is 40 patients sample who met the inclusion criteria. According to the data, in atrial fibrillation patients who received oral warfarin therapy, 55% were male patients, while 45% were female patients. Patients with atrial fibrillation who got the most oral warfarin therapy were over 40 years old with 90% of the total sample, with the highest group in patients aged 50-54 years with 22.5%. The HAS-BLED values arranged from 0-9, the percentage of patients who had HAS-BLED values of 0, 1, 2 respectively at 7.5%, 42.5%, 30%. The HAS-BLED score ≥ 3 showed patients classified as at high risk of bleeding by 20%. The most risk factors based on HAS-BLED score from all study samples were 18 patients with abnormal kidney or 45%. The average INR score in patients at high risk of bleeding showed that 37.5% had an average INR score in the target ratio score of INR 2-3.

**Keywords:** Atrial Fibrillation; Warfarin; INR (International Normalized Ratio); HAS-BLED

## INTRODUCTION

Atrial fibrillation is the most common type of arrhythmia. Normally, a person would have 60 to 100 heartbeats per minute. An atrial fibrillation patient, however, could have up to 175 heartbeats per minute. Atrial fibrillation increases the risk of stroke 4 to 5 times. The risk of stroke by atrial fibrillation increases exponentially by age. Patients aged 50-59 have a 1.5% chance of having a stroke by atrial fibrillation, while patients aged 80-89 have a much higher risk of 23.5%.[1] This is reflected in the data acquired from the Harapan Kita Hospital for Heart and Arteries, which shows the constant yearly increase in atrial fibrillation cases: 7.1% in 2010, 9.0% in 2011, 9.3% in 2012, and 9.8% in 2013.[2] One of the most important aspects of atrial fibrillation treatment is the prevention of blood clots, and such is the reason why anticoagulant is commonly prescribed.[3]

Anticoagulants use as prophylaxis of stroke in atrial fibrillation patients can decrease stroke risk by 60%.[4] The most significant side effect of anticoagulants, especially warfarin, is hemorrhage risk.[5] In 2010, the HAS-BLED score (Hypertension, Abnormal renal/liver function, Stroke, Bleeding history, Labile INR, Elderly, Drugs) was first validated in Europe's heart survey. HAS-BLED is a scoring system used to measure hemorrhage risk, which represents each factor that can lead to hemorrhage. This system determines the score for each hypertension risk

(uncontrolled systolic blood pressure > 160 mm Hg), kidney function or liver abnormalities, previous stroke episode(s), hemorrhage history or predispositions, labile INR, older patients (aged 65+), common drugs and/or the alcohol excess. HAS-BLED score is presented on a scale of 0 to 9, with a score of ≥3 implicates a higher hemorrhage risk. High hemorrhage risk can be prevented by maintaining warfarin response within the therapeutic span using INR (International Normalized Ratio) measurement. INR measurement has been deemed an integral part of warfarin treatment.[6] Warfarin has a narrow therapy index as its side effects need to be paid close attention to provide effective and safe therapy to atrial fibrillation patients.

## METHODS

This research is an observational one: research was done using retrospective data collection through medical records analysis. The researcher went through an evaluative study, which was conducted to assess an ongoing or a completed program. A retrospective approach was made by observing past events aimed at determining factors pertaining to cause and effect. Research and data collection took place between February and May of 2018. The research population was patients whose primary diagnoses were atrial fibrillation; these patients were those who were given oral warfarin anticoagulant therapy at Harapan Kita Nasional Heart Center. Samples were chosen based on atrial fibrillation patients' medical records at Harapan Kita within the January-December 2017 period. Patients whose main diagnoses were atrial fibrillation, patients who had acquired oral warfarin anticoagulant therapy for at least three months, male and female patients were 19 years old and above at the time of data collection.

## RESULTS AND DISCUSSION
### Patient demograph

Out of 40 patients, 22 male patients (55%) and 18 female patients (45%). Results show that coagulation occurs more in male patients than in female patients. Some of the factors which affect blood coagulation in male patients are lifestyle-related: types of food consumed, smoking, lack of exercise, and an irregular pattern of rest. Results are in line with the data that shows that male patients acquire more warfarin therapy to prevent and decrease the risk of coagulation, resulting in a decrease in the risk of stroke in atrial fibrillation patients.[7] These patients were put into six different age groups.
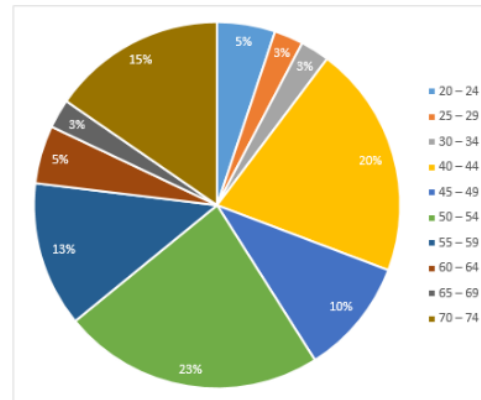


**Figure 1.** Patients based on age groups

Based on the data acquired, atrial fibrillation patients who acquired the most oral warfarin therapy were patients aged 50-54 (22.5%). In total, 90% of patients who acquired the most oral warfarin therapy were those above 40 years of age. The older the patients, the more poorly their organs work, resulting in organs not functioning properly. Older patients also have a higher risk of blood clotting due to their organs not functioning correctly, resulting in coagulation. Patients within this age group need to be closely supervised during warfarin prescription due to them having a high risk of getting heart disease.[8]

## Patients Based on HAS-BLED Scores

HAS-BLED is a scoring system that measures the risk of hemorrhage. HAS-BLED has been proven in various research to identify patients with hemorrhage risk.[8] HAS-BLED represents each hemorrhage risk and determines the score for each hypertension risk (uncontrolled systolic blood pressure >160 mm Hg), kidney function or liver abnormalities, previous stroke episode(s), hemorrhage history or predispositions, labile INR, older patients (aged 65+), common drugs and/or the alcohol excess. HAS-BLED score is presented on a scale of 0 to 9, with a score of ≥3 implicates a higher hemorrhage risk, hence the need to conduct a routine assessment on patients with such score carefully. Based on the HAS-BLED scores of the samples obtained through the measurement of each risk factor, there were eight patients with ≥3 HAS-BLED scores (20%). Results showed that kidney abnormalities risk factor or kidney malfunction and old age (65+) contribute to the HAS-BLED scores of these eight patients (who have an 87.5% risk of experiencing hemorrhage) the most. The results can be seen in table 1.

**Table 1.** Risk factor score percentage based on HAS-BLED ≥3

| Risk factor | Score | Percentage (%) |
|---|---|---|
| Hypertension | 4 | 16 |
| Kidney abnormality | 7 | 28 |
| Bleeding History | 2 | 8 |
| Old age | 5 | 20 |
| Unstable INR | 7 | 28 |

## Evaluation of Warfarin Dosage Based on INR

INR score is the parameter for measuring warfarin dosage accuracy, ensuring that the warfarin dosage given is effective and does not cause hemorrhage. However, it is to be noted that there had been reports that patients with a 2-3 INR ratio still have the potential to experience hemorrhage. INR

test frequency was divided into four groups. The number and percentage of patients based on INR test frequency can be seen in figure 2.
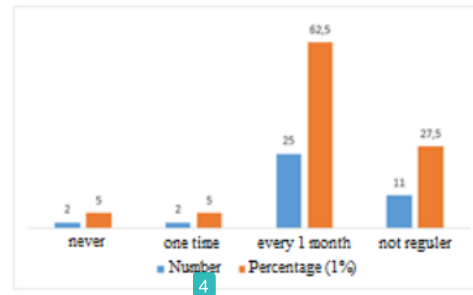


**Figure 2**. The number and percentage of patients based on INR test frequency

Based on the data above, it can be seen that the highest frequency of INR test is on the once-a-month frequency with 62.5%. In this category, patients were given INR tests in 3 consecutive months during their treatment. Based on medical records, patients not doing INR tests based on the doctor's recommendation result from them not complying with the therapy procedure. Patients' educational, economic, social, and psychological backgrounds significantly influenced their compliance with the INR test. INR observation was done every day starting from the first time a patient consumed warfarin until INR was within the range of 2-3 (INR should be done every two days at the very least). INR was then checked for 2-3 times a week in 1-2 weeks. If the patients were deemed stable, observations could then be done once in 4-6 weeks. If dosage adjustments were considered to be needed, INR observation would be done more frequently until stability could be achieved. The target INR score was 2-3 within an effective ratio, which would not entail coagulation; dosage would also be a safe one that would not give a side effect in the form of hemorrhage. For the patients who have a high risk of experiencing hemorrhage as assessed by HAS-BLED, there should be an evaluation on INR test scores during their warfarin

therapy. The average of patients' INR scores can be seen in table 2.

**Table 2.** High-risk patients' average INR scores

| Patient | INR Scores |
|---------|------------|
| 1 | 1,67 |
| 2 | 1,73 |
| 3 | 2,23 |
| 4 | 1,69 |
| 5 | 2,96 |
| 6 | 1,63 |
| 7 | 2,18 |
| 8 | 1,82 |
| Rata-rata | 1,99 |

The table above shows that the average INR scores of patients did not meet the 2-3 ratio target. Most INR scores were still below 2, and this indicates the possibility of coagulation still likely to happen. From the average warfarin score of 8 patients who had a high risk of experiencing hemorrhage, the INR score was at 1.99. On the other hand, a high risk of hemorrhage is shown in the INR score of above 3. From 8 patients, three patients had an average INR score within the target ratio of 2-3. It can be said that 37.5% of atrial fibrillation patients who acquired warfarin therapy, who were deemed to have a high risk of experiencing hemorrhage (based on HAS-BLED), had been given an effective and safe warfarin therapy. The other 62.5% of atrial fibrillation patients who were given warfarin therapy, who were put in the high-risk hemorrhage group based on their HAS-BLED, had not reached the INR 2-3 ratio to be acquiring the effectiveness of warfarin. When starting an anticoagulation therapy, it is crucial to assess its risks and benefits first for the patients.[9] Each abnormal INR score cannot become the standard for all patients: an individual approach is needed to adjust the dosage and discontinuous INR observation. The amount of warfarin dosage given is based on the INR score, which is adjusted to individual dosage. In this research, 40 samples were given warfarin in the daily dosage range of 1-6 mg. The dosage percentage can be seen in table 3.

**Table 3.** Warfarin dosage percentage

| Dose (mg) | Percentage (%) |
|-----------|----------------|
| 1 | 12,2 |
| 2 | 59,2 |
| 3 | 24,5 |
| 4 | 3,7 |
| 5 | - |
| 6 | 0,4 |

Based on the results, the most commonly used warfarin dosage was 2 mg, with a percentage of 59.2%. Patients simultaneously started taking amiodarone, statin, antibiotics, or any other drugs known to improve warfarin effectiveness. There should be an initial consideration on the initial dosage of warfarin would be smaller. Patients who had used warfarin before the therapy and started this treatment (which also used warfarin) should also be paid more attention to the dosage they would be given.

## CONCLUSION

Based on the results and discussion, it can be concluded that there were eight patients with HAS-BLED scores of ≥3, which were 20% of the samples. They had a relatively high risk of experiencing hemorrhage. There were 25 patients (62.50%) who acquired oral warfarin therapy and routine INR test (once a month). 37.5% of atrial fibrillation patients who acquired warfarin therapy were considered to have a high risk of experiencing hemorrhage based on their HAS-BLED scores within the INR 2-3 score target ratio. Patients who were given oral warfarin therapy showed improvements in their INR scores based on their routine INR test results.

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