

## Editorial



# How to Overcome Social Inequalities of Oral Anticoagulation Usage in Korea?

**Ki Hong Lee** , MD, PhD, FESC

Department of Cardiovascular Medicine, Chonnam National University Hospital, Gwangju, Korea

## OPEN ACCESS

► See the article “Social Inequalities of Oral Anticoagulation after the Introduction of Non-Vitamin K Antagonists in Patients with Atrial Fibrillation” in volume 50 on page 267.

**Received:** Jan 2, 2020

**Accepted:** Jan 15, 2020

### Correspondence to

**Ki Hong Lee, MD, PhD, FESC**

Department of Cardiovascular Medicine,  
Chonnam National University Hospital, 42,  
Jebong-ro, Dong-gu, Gwangju 61469, Korea.  
E-mail: drgood2@naver.com

Copyright © 2020. The Korean Society of  
Cardiology

This is an Open Access article distributed  
under the terms of the Creative Commons  
Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0>)  
which permits unrestricted noncommercial  
use, distribution, and reproduction in any  
medium, provided the original work is properly  
cited.

### ORCID iDs

Ki Hong Lee 

<https://orcid.org/0000-0002-9938-3464>

### Conflict of Interest

The author has no financial conflicts of  
interest.

The contents of the report are the author's  
own views and do not necessarily reflect the  
views of the *Korean Circulation Journal*.

In patients with atrial fibrillation (AF) regardless of valvular or non-valvular subtype, oral anticoagulation is essential to prevent thromboembolism, a lethargic complication of AF. Traditionally, vitamin K-dependent oral antagonists (e.g. warfarin) performed a role of oral anticoagulants (OACs). Because of its easy availability and cost-effectiveness, vitamin K-dependent OACs could be used in all medical care units regardless of tertiary referral hospital, nursing or public health centers.

However, vitamin K-dependent oral antagonists possessed high risk of developing tragic bleeding complication. Therefore, dose titration should be essential between the prevention of thromboembolism and bleeding complication. Most guidelines suggested optimal level of anticoagulation with vitamin K dependent OACs.<sup>1-4)</sup> Dose titration was done via blood sampling and measurement of serum concentration. Also, serum concentration of vitamin K-dependent OACs was easily changed by daily food or certain medications. These disadvantages such as frequent blood sampling, bothersome dose titration let physicians to prefer fixed dose rather than titrated dose according to blood concentration in the real-world practice, resulting in both lessened efficacy and safety of vitamin K-dependent OACs. Therefore, physicians desired new generation OACs with same efficacy and minimized disadvantages.

As a response to physicians' desire, new OACs were introduced since late 2000. New OACs was named as non-vitamin K antagonist OACs (NOACs) with the initial acronym of 'N' as novel or new OACs. With time elapse, new generation of OACs were not new or novel anymore, abbreviation of NOACs was changed into non-vitamin K dependent antagonist OACs. NOACs overcame disadvantages of vitamin K-dependent OACs. There is no need for dose titration, caution for food or medications. Furthermore, NOACs maintained similar or even better efficacy and safety.<sup>5-7)</sup> There was no reason to replace vitamin K-dependent OACs for NOACs. The preferred usage of NOACs is also recommended in AF management guidelines.<sup>1)2)</sup>

However, real world practice level, usage of NOACs was totally different from expectation. In this issue of the *Korean Circulation Journal*, Yu et al.<sup>8)</sup> reported real-world usage of NOACs in Korea. In late 2016, overall usage rate of NOACs was only 14.6%. Furthermore, most of NOACs were prescribed in tertiary referral hospital (37.2%) rather than nursing or public medical centers (5.5%). Although overall OACs usage was increased from 13.2% to 23.4% after full reimbursement of NOACs, OACs usage rates between of tertiary referral hospital and nursing

or public medical centers paradoxically became larger. It meant increased social inequalities of OAC usage after the introduction of NOACs even despite full reimbursement of NOACs.

Which factors influence gradual increment of OAC usage difference among practice level?  
How to minimize social inequalities of OAC utilization?

First of all, education for AF management should be encouraged in the primary care, nursery and public centers. Adherence to AF management guidelines are better in physicians in the tertiary referral hospitals than the others.<sup>9)</sup> A large number of patients with AF without contraindication to OACs were still not receiving OACs. Physicians in the primary, nursery and public centers are still reluctant to prescribe OACs. These might be originated from ignorance of the importance of OACs in patients with AF. Also, fear for the complication of OACs limited the use of OACs. Bothersome serum concentration titration of vitamin K-dependent OACs is another contributing factor for low OACs prescription rates. Education about the importance of OACs and advantages of NOACs over traditional vitamin K-dependent OACs is the key factor to encourage NOACs prescription rates in the primary, nursery and public centers.

Second, patients referral system should be encouraged in Korea. Patients with AF should be allocated to the appropriate level centers according to combined disease severity. AF patients with minimal concomitant comorbidities have no need for communicating in tertiary centers. Also, AF patients with completed invasive procedures without complication should be referred to the primary care centers.

Third, equipment for OACs prescription should be encouraged in the primary, nursery and public centers. Physicians in those centers hesitate prescribing NOACs, because they cannot convince patients with AF have mitral stenosis or not. NOACs prescription in AF patients with mitral stenosis more than moderate severity is contraindicated by guidelines and medical insurance reimbursement. Basic echocardiographic advice helps them to identify suitable OACs indications. In situation of treating patients with poor economic condition, locations with short of NOACs supply, vitamin K-dependent OACs are inevitable option. For them, easy and simple measurement of OACs serum concentration might help to prescribe OACs. Recently, serum concentration of warfarin can be easily identified by point-of-care testing (POCT) rather than traditional prothrombin time. POCT can be identified in seconds with minimal amount of blood sample.

In conclusion, the present article revealed temporal change of OACs prescription rates according to time elapse and practice level.<sup>8)</sup> Introduction of NOACs in Korea increased overall OACs utilization, and rapidly replace traditional vitamin K dependent OACs. Meanwhile, social inequalities in the prescription of NOACs are paradoxically increased according to practice level. Minimization of social inequalities for OACs prescription boost every individual and nationwide healthy life and welfare via providing opportunities to prevent complication in patients with AF.

## REFERENCES

1. Kirchhof P, Benussi S, Kotecha D, et al. 2016 ESC guidelines for the management of atrial fibrillation developed in collaboration with EACTS. *Eur Heart J* 2016;37:2893-962.

[PUBMED](#) | [CROSSREF](#)

2. January CT, Wann LS, Alpert JS, et al. 2014 AHA/ACC/HRS guideline for the management of patients with atrial fibrillation: a report of the American College of Cardiology/American Heart Association task force on practice guidelines and the Heart Rhythm Society. *Circulation* 2014;130:e199-267.  
[PUBMED](#) | [CROSSREF](#)
3. JCS Joint Working Group. Guidelines for pharmacotherapy of atrial fibrillation (JCS 2013). *Circ J* 2014;78:1997-2021.  
[PUBMED](#) | [CROSSREF](#)
4. Lee KH, Cho JG, Lee N, et al. Impact of anticoagulation intensity in Korean patients with atrial fibrillation: is it different from Western population? *Korean Circ J* 2020;50:e7.  
[CROSSREF](#)
5. Lip GY, Wang KL, Chiang CE. Non-vitamin K antagonist oral anticoagulants (NOACs) for stroke prevention in Asian patients with atrial fibrillation: time for a reappraisal. *Int J Cardiol* 2015;180:246-54.  
[PUBMED](#) | [CROSSREF](#)
6. Ruff CT, Giugliano RP, Braunwald E, et al. Comparison of the efficacy and safety of new oral anticoagulants with warfarin in patients with atrial fibrillation: a meta-analysis of randomised trials. *Lancet* 2014;383:955-62.  
[PUBMED](#) | [CROSSREF](#)
7. Lee KH, Park HW, Cho JG, et al. Comparison of non-vitamin K antagonist oral anticoagulants and warfarin on clinical outcomes in atrial fibrillation patients with renal dysfunction. *Europace* 2015;17 Suppl 2:ii69-75.  
[PUBMED](#) | [CROSSREF](#)
8. Yu HT, Yang PS, Hwang J, et al. Social inequalities of oral anticoagulation after the introduction of non-vitamin K antagonists in patients with atrial fibrillation. *Korean Circ J* 2020;50:267-77.  
[CROSSREF](#)
9. Fosbol EL, Holmes DN, Piccini JP, et al. Provider specialty and atrial fibrillation treatment strategies in United States community practice: findings from the ORBIT-AF registry. *J Am Heart Assoc* 2013;2:e000110.  
[PUBMED](#) | [CROSSREF](#)