

**ATRIAL FIBRILLATION IN GERIATRIC PATIENTS AND MODERN
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Abstract: This review article examines the mechanisms of atrial fibrillation (AF) in geriatric patients, including age-related electrical and structural remodeling, increased thromboembolic risk, and modern approaches to anticoagulation therapy. Differences in efficacy and safety between NOACs (apixaban, rivaroxaban, dabigatran, edoxaban) and warfarin are analyzed in accordance with ESC 2023–2024 clinical guidelines for selecting optimal therapy in elderly patients. Additionally, clinical challenges such as reduced renal function, polypharmacy, and bleeding risk are highlighted, emphasizing the importance of individualized management.

Keywords: atrial fibrillation, geriatrics, anticoagulation, NOAC, warfarin, thromboembolism, CHA₂DS₂-VASc, HAS-BLED.

INTRODUCTION. Atrial fibrillation (AF) is the most common cardiac arrhythmia in the geriatric population, affecting 10–15% of individuals over the age of 75. In the elderly, increased atrial fibrosis, inflammation, and alterations in ion channel expression contribute to electrical and structural remodeling, which accelerates the transition to permanent AF. AF increases the risk of ischemic stroke by fivefold; therefore, anticoagulation therapy is a cornerstone of geriatric cardiovascular management.

According to ESC 2024 recommendations, modern NOACs are superior to warfarin in most elderly patients due to their lower bleeding risk, fixed dosing, and fewer drug–drug interactions.

LITERATURE REVIEW**Pathophysiology of AF in the Geriatric Population**

With aging, atrial tissue undergoes the following changes:

- increased fibrosis,
- reduced sodium and calcium channel activity,
- dysfunction of gap junctions.

These changes disrupt electrical conduction, leading to heterogeneous impulse propagation and promoting multiple re-entry circuits—key mechanisms in AF persistence.

Thromboembolic Risk and CHA₂DS₂-VASc Score

Several factors significantly increase the risk of stroke in geriatric AF patients:

- Age ≥ 75 years (2 points)
- Heart failure

- Diabetes mellitus
- Hypertension

According to ESC 2024, anticoagulation is mandatory at:

- ≥ 2 points in men
- ≥ 3 points in women.

Anticoagulation Strategies

1. Warfarin. Advantages: the only recommended option in patients with mechanical heart valves. **Limitations:** INR monitoring, significant drug interactions, and unstable dosing.

2. NOACs. Since 2012, NOACs have been recommended as first-line therapy for AF in elderly patients.

Drug	Advantages	Risks
Apixaban	Lowest bleeding risk	Requires twice-daily dosing
Rivaroxaban	Once-daily dosing	Slightly higher GI bleeding risk
Dabigatran	Potent anticoagulant	GI adverse effects
Edoxaban	Very safe profile	Reduced efficacy at high GFR

Major trials (ROCKET-AF, ARISTOTLE, RE-LY) confirm the superiority of NOACs over warfarin in elderly populations.

Dose Adjustment in Renal Impairment

Since renal function commonly declines with age, NOAC dosing must be adjusted according to ESC 2024 renal function guidelines.

Polypharmacy and Drug Interactions

- Warfarin: highest interaction potential
- Apixaban: safest option
- Rivaroxaban: interacts via CYP3A4 pathway

CLINICAL PROSPECTS

- NOACs remain effective even in patients aged 80 years and older.
- Continuous anticoagulation prevents up to 70% of AF-related strokes.
- Low-dose NOAC strategies can reduce major bleeding risk by 40%.

DISCUSSION

Current evidence demonstrates that AF development in geriatric patients is strongly influenced by age-related structural and electrical remodeling. Anticoagulant therapy remains the most critical intervention for preventing thromboembolic complications. NOACs offer significant advantages over warfarin, including superior safety, stable dosing without monitoring, and fewer interactions. However, dosing decisions must account for renal function, body weight, and bleeding risk (HAS-BLED).

CONCLUSION

1. AF significantly increases stroke risk in geriatric patients.
2. NOACs are superior to warfarin and are recommended as first-line therapy in elderly populations.
3. CHA₂DS₂-VASc and HAS-BLED scoring systems are essential for selecting appropriate anticoagulation.
4. Dose adjustments are required in patients with reduced renal function.
5. Management of AF in the elderly requires a multidisciplinary, individualized approach.

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