

## COMPARATIVE ANALYSIS OF ANTICOAGULANT THERAPY IN PATIENTS OVER 90 YEARS OLD: VITAMIN K ANTAGONISTS VERSUS DIRECT ORAL ANTICOAGULANTS.

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**Background and Aims:** Managing anticoagulation in patients over 90 poses unique challenges due to increased risks of thromboembolism and bleeding. Vitamin K antagonists (VKAs) have traditionally been the mainstay but require frequent monitoring and have a narrow therapeutic window. Direct Oral Anticoagulants (DOACs) offer a predictable pharmacokinetic profile with less monitoring. This study compares the safety and efficacy of VKAs and DOACs in patients aged over 90, focusing on thromboembolic and bleeding complications. **Methods:** This retrospective observational study examined two cohorts of patients aged over 90 years receiving anticoagulant therapy. The VKAs group comprised 67 patients (22 m, 45 f; mean age 93 years), all under warfarin treatment, observed over an average of 1074.3 days (range 41-3990). Indications included atrial fibrillation (n=48), arterial thrombosis (n=2), pulmonary embolism (n=4), ischemic heart disease (n=3), stroke (n=4), prosthetic valves (biological n=2, mechanical n=1), and deep vein thrombosis (n=3). The time in the therapeutic range (TTR) over the last 6 months of observation was 65.6%. Adverse events recorded included one major gastrointestinal bleed, three minor hemorrhages, and one peripheral arterial thrombosis. The DOAC group included 23 patients (6 m, 17 f; age 91 - 102, mean age 93.2 years), with a mean observation of 709.8 days (range 170-2329). Anticoagulation indications were atrial fibrillation (n=19) and venous thromboembolism (n=4). The DOACs prescribed were apixaban (n=18), edoxaban (n=3), rivaroxaban (n=1), and dabigatran (n=1). Recorded complications included one intracerebral hemorrhage following trauma, one minor hemorrhage, one retinal thrombosis, and one transient ischemic attack. Statistical comparisons involved descriptive analysis of complication rates, incidence proportions, and evaluation of significance via chi-square or Fisher's exact test, considering the small sample sizes.

**Results:** The VKAs group experienced a total of 5 adverse events over an average follow-up of approximately 1074 days, translating to an incidence rate of approximately 4.67% per patient-year. Specifically, there was one major gastrointestinal hemorrhage (1.5%) and three minor hemorrhages (4.5%), with a thrombosis rate of 1.5%. The mean time within therapeutic INR range was 65.6%, indicating relatively variable anticoagulation control. In contrast, the DOAC group reported 4 adverse events over a mean follow-up of 709.8 days, corresponding to an incidence rate of approximately 7.2% per patient-year. These included one intracerebral hemorrhage (4.3%), one minor rectal bleed (4.3%), one retinal thrombosis (4.3%), and one ischemic attack (4.3%). Notably, despite the higher raw incidence rate, the small sample size limits definitive statistical significance, but Fisher's exact test suggests no statistically significant difference in overall complication rates between the groups (p = 0.50). The major bleeding event in the DOAC group, though serious, was rare relative to the total number of patients and follow-up duration. **Conclusions:** This comparative analysis indicates that anticoagulant therapy in patients over 90 years old carries inherent risks, but both AVKs and DOACs demonstrate comparable safety profiles when considering complication incidence rates. The data suggest that while AVKs anticoagulation control was moderate, the bleeding risk was low, and similar findings are observed with DOACs despite their shorter follow-up. The findings highlight the importance of individualized therapy, accounting for comorbidities and patient preferences. Larger prospective studies are needed to confirm these results and guide safer anticoagulation management in the very elderly.

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Parameter	VKA Group	DOAC Group
Number of patients	67 (22 men / 45 women)	23 (6 men / 17 women)
Mean age	93 years	93.2 years
Average follow-up duration	1074.3 days	709.8 days
Main indications	Atrial fibrillation (48), Arterial thrombosis (2), Pulmonary embolism (4), Cardiac conditions (3), Stroke (4), Valvular (biological 2, mechanical 1), DVT (3)	Atrial fibrillation (19), Venous thromboembolism (4)
TTR (last 6 months, VKA only)	65.6%	—
Anticoagulant medications	Warfarin	Apixaban (18), Edoxaban (3), Rivaroxaban (1), Dabigatran (1)
Total complications	5 (approx. 4.67% per patient-year)	4 (approx. 7.2% per patient-year)
- Major bleeding	1 (1.5%)	1 intracerebral hemorrhage (4.3%)
- Minor bleeding	3 (4.5%)	1 rectal bleed (4.3%)
- Thrombosis/Ischemia	1 (1.5%)	1 retinal thrombosis (4.3%), 1 TIA (4.3%)