

Anticoagulants in ≥80 Year-Old Patients Assessed in an Emergency Department Setting – Too Much Medicine?

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WHAT?

A chart review of 303 patients of ≥80 years of age, seen in a Danish secondary ED over a one month period. Patient record were used to investigate anticoagulant(AC) use, hospital outcome, all-cause mortality, length of stay and cause of ED visit.

WHY?

To assess:

- How many very elderly patients were on ACs, and which kinds of ACs were in use.
- Whether patients on ACs were more likely to present with clinically relevant haemorrhages, such as ICH or GI-bleeding, than patients without ACs.
- Whether patients on ACs were adequately protected against severe thromboembolic events, such as AMI and Cerebral infarctions
- Whether there were differences between patients in the traditional Vitamine-K antagonist (VKA) treatment compared with Novel Oral Anticoagulants (NOACs.)

WHO WERE INCLUDED?

Total Population	308	With anticoagulants	193	Without anticoagulants	110	P
On anticoagulant treatment	193 (62.7%)					
Not on Anticoagulant treatment	110 (35.7%)					
On Anticoagulant treatment not examined in this study	2 (0.6%)					0.22
Medication could not be confirmed	3 (1%)					
Age Range	80-99 Years					0.074
		MALE:FEMALE RATIO:	2:5	1:3		
		MEAN AGE ± SEM (YEARS)	86.55 ± 0.31	85.8 ± 0.43		

WHICH DRUGS WERE USED?

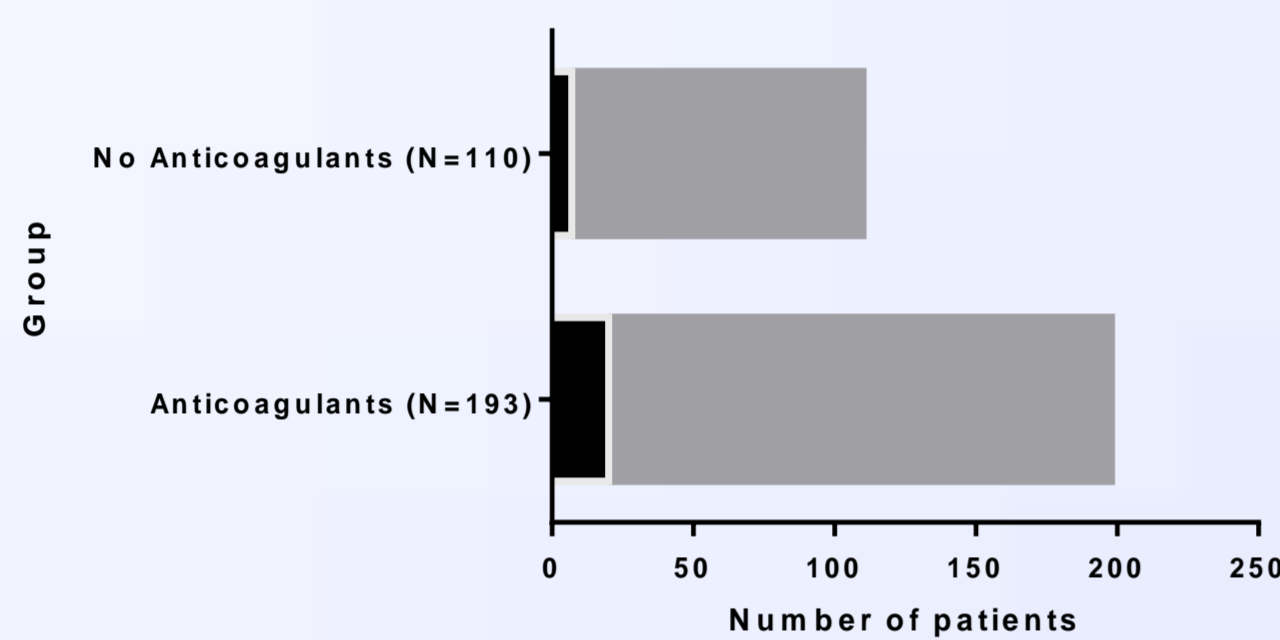
TYPE OF MEDICATION	NUMBER OF PATIENTS	% OF TOTAL STUDY POPULATION	% OF PATIENTS IN ANTICOAGULANT TREATMENT.
VITAMINE K-ANTAGONISTS	45	14.6%	23.3%
NOACs	30	9.8%	15.5%
ADP-RECEPTOR INHIBITORS	36	11.7%	18.7%
ACETYSALICYLIC ACID	65	21.1%	33.7%
IN TREATMENT WITH MULTIPLE DRUGS	17	5.5%	8.8%
Total	193	62.7%	100,0%

Nearly two thirds of all patients were on anticoagulant drugs, about 40% were in treatment with NOACs or VKAs.

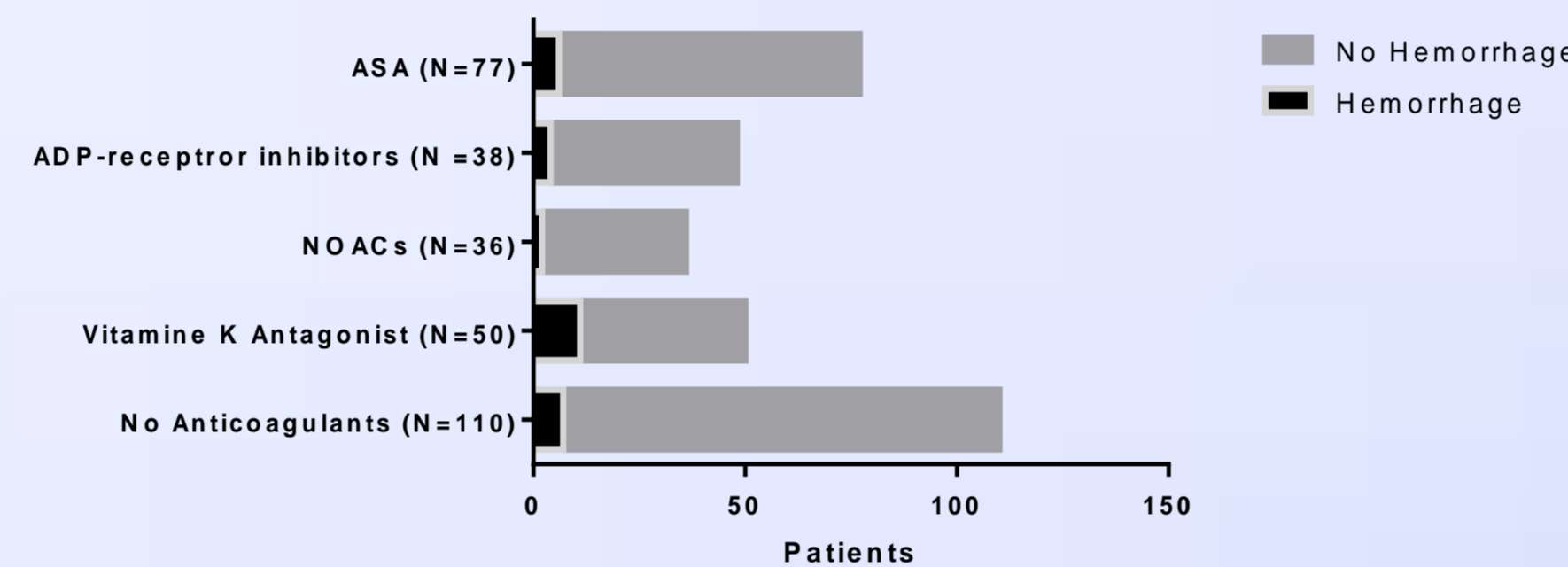
Patients in treatment with multiple drugs:

- 7 (41.2%) were in treatment with an ADP-receptor inhibitor and ASA,
- 3 (17.6%) patients in therapy with a NOAC and an ADP-receptor inhibitor
- 3 (17.6%) patients in therapy with a VKA and an ASA
- 1 (5.9%) patient in therapy with a VKA and an ADP-receptor inhibitor
- 1 (5.9%) patient in therapy with a VKA and a NOAC
- 1 (5.9%) patient in therapy with a VKA and an ADP-receptor inhibitor.
- 1 (5.9%) patient in simultaneous treatment with a NOAC, an ADP-receptor inhibitor and ASA.

Haemorrhages



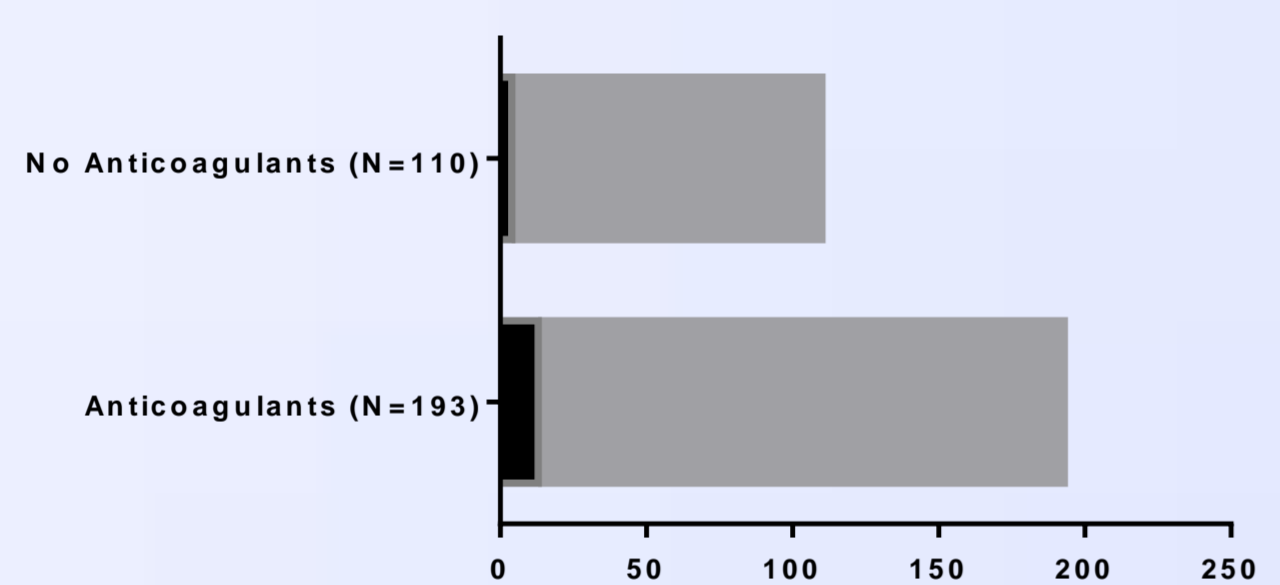
Haemorrhage by drug type



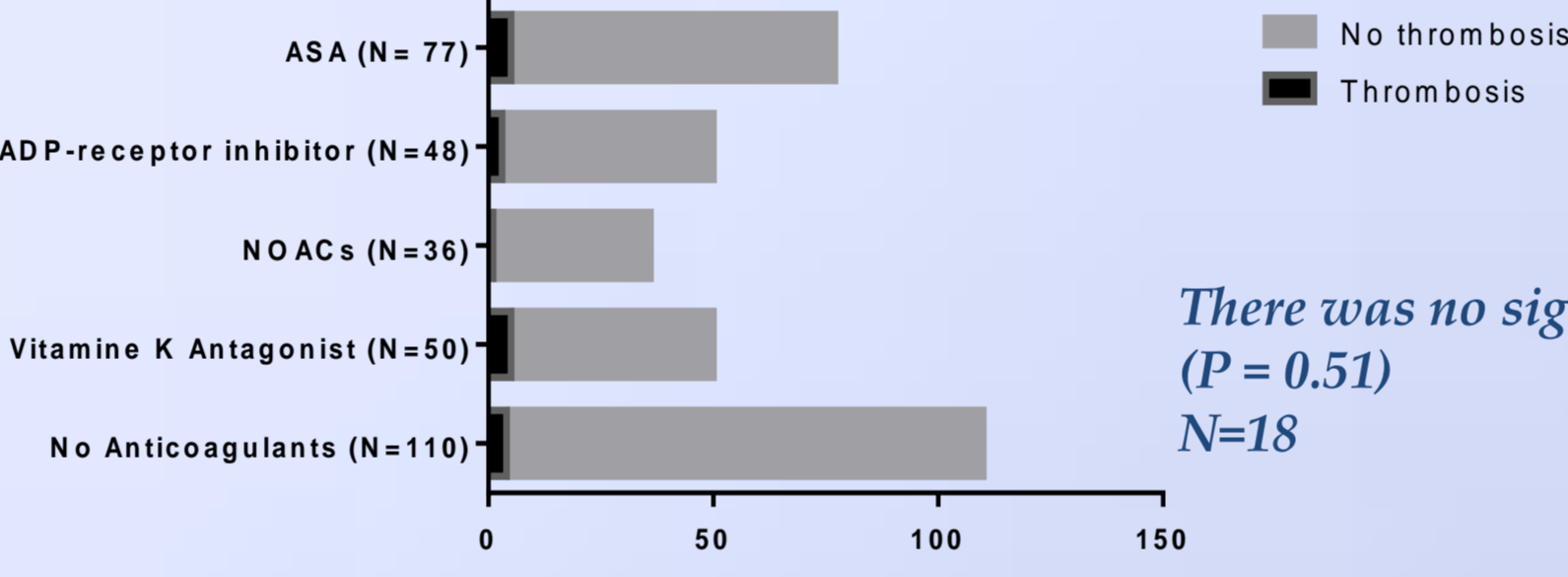
Patients on VKA-therapy were more likely to experience haemorrhages than patients who were not on any anticoagulant therapy, OR: 4.5. (p= 0.006), N=27.

HAEMORRHAGE	ANTICOAGULANTS	NO ANTICOAGULANTS	P
TOTAL	20	7	
MALE:FEMALE RATIO	45%	14%	0.16
MEAN AGE	86.2	85.14	0.57
±SEM	±0.86	±1.28	
NUMBER HOSPITALIZED	16	7	05
MEAN LOS	14.3	19.3	0.34
±SEM	±3.7	±5.5	
ALL CAUSE MORTALITY	2	0	1.0
PERSISTENT BLEEDING FROM MINOR WOUND	3	0	
GI HAEMORRHAGE	10	2	
INTRACRANIAL HAEMORRHAGE	1	3	
SPONTANEOUS OR PERSISTING HEMATOMA	2	1	
EPISTAXIS	2	0	
HEMATURIA	2	0	
HAEMOTHORAX	0	1	

Thrombotic Events

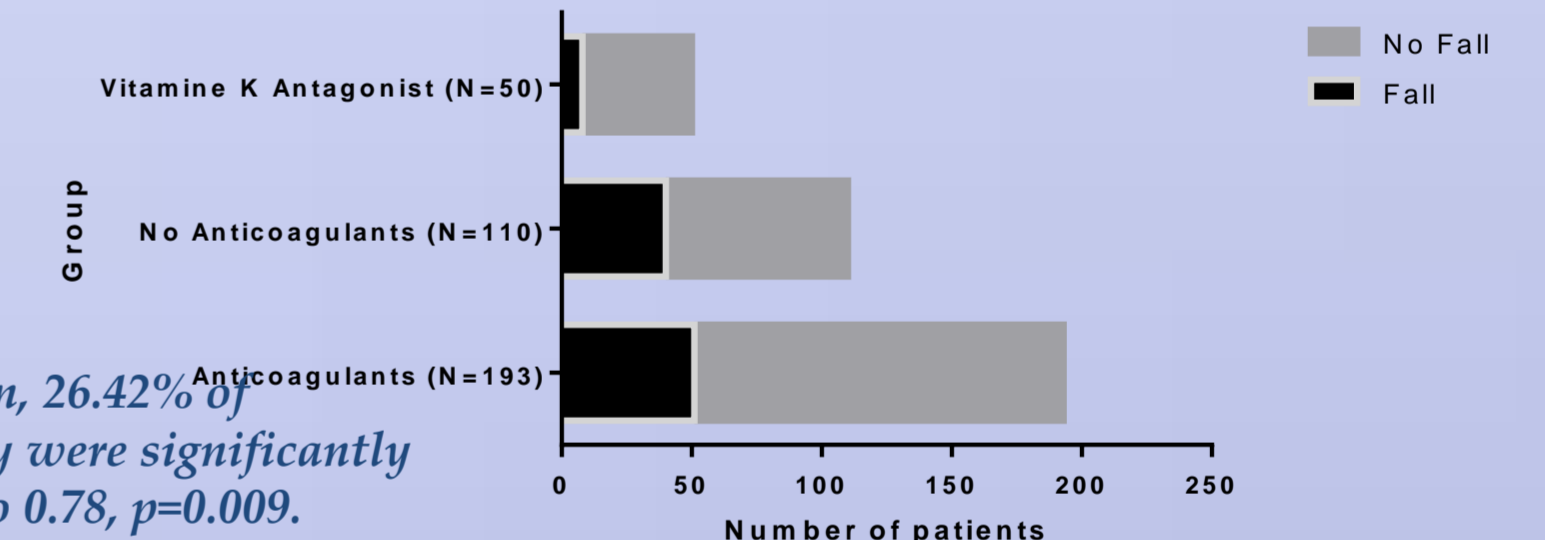


Thrombotic Events by drug type



There was no significant difference in thrombosis (P = 0.51) N=18

Falls



Patients with thrombosis	On Anticoagulants	No Anticoagulants	P
Total Number	14	4	
Male:Female ratio	38%	50%	0.74
±SEM	±14%	±29%	
Mean Age	86.46	88.75	0.53
±SEM	±1.26	±3.20	
LOS	7.8	4.5	0.45
±SEM	±2.05	±4.5	
All Cause Mortality	7	0	0.12
DVT	1	4	
Cerebral infarction	3	0	
AMI	3	0	
PE	4	0	
Thromboembolism in other major vessel	3	0	

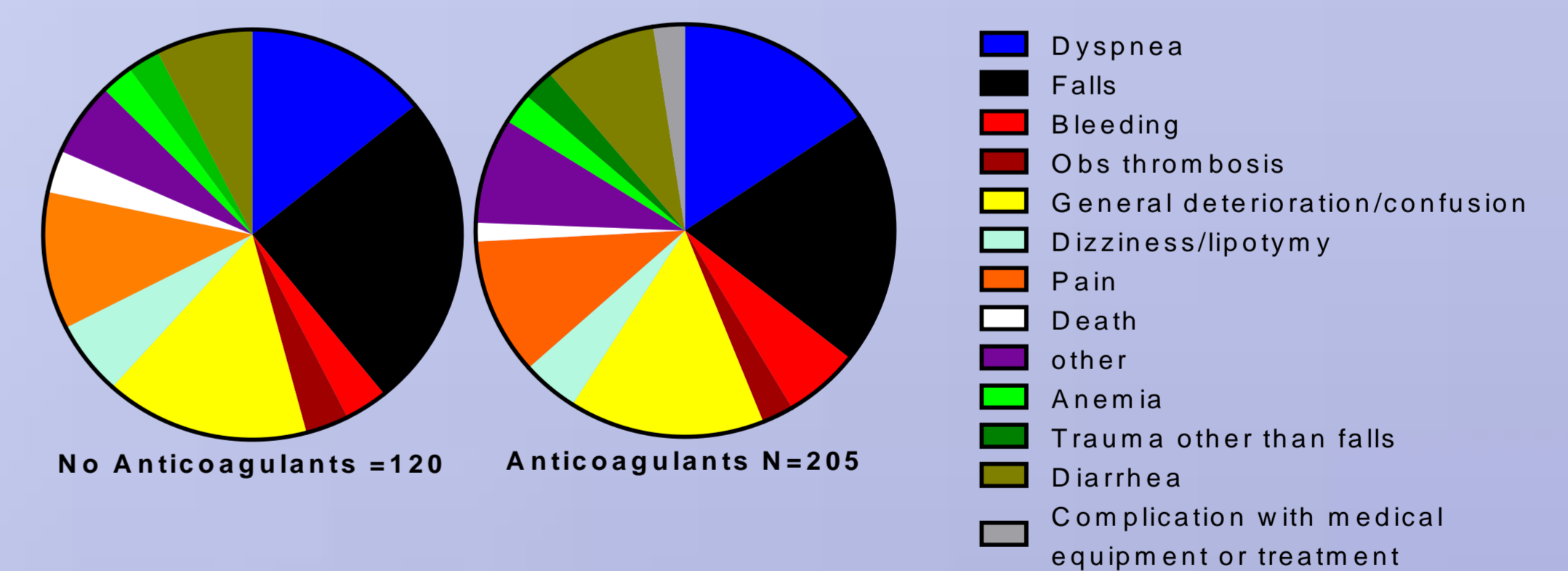
Falling was a component of the presenting complaint for a total of 31.02% of the population, 26.42% of patients with anticoagulant therapy and 37% of patients without. Patients in VKA-therapy were significantly less likely to experience falls than patients without anticoagulant therapy, OR: 0.33±0.14 to 0.78, p=0.009.

The other two most prevalent complaints were dyspnea, and confusion with general deterioration

WERE PATIENTS WELL MANAGED?

- Of the 50 total patients in VKA therapy, only 15 (30%) were within therapeutic INR range on arrival to the hospital and 12 (24%) were missing data on INR.
- 9 patients had an INR above therapeutic index (18%)
- 11 patients had an INR below therapeutic index, (22%)
- Mean INR ±SEM: 3,0 ± 0.3, N=38
- Of the 9 patients in VKA therapy with INR above therapeutic range, all required hospitalization, and 6 experienced haemorrhages.

Most prevalent causes of visit



TAKE AWAY:

2/3 of patients ≥ 80 years of age seen were in antithrombotic treatment, and a third of patients were in treatment with either a NOAC or a VKA.

RESULTS

- Patients in VKA therapy experienced significantly more haemorrhages
- Patients in VKA therapy were significantly less likely to experience falls
- Patients in VKA therapy trended towards longer LOS than other groups
- Patients in NOACs did not have significant haemorrhage in this study compared to patients without VKAs
- There was no difference in LoS or All Cause Mortality
- Thrombotic events occurred even in patients with anticoagulant therapy who were within therapeutic range.

DISCUSSION:

-Many patients were poorly managed in INR, this may explain why we saw more severe thromboembolic events in patients on AC treatment than patients without.

-While patients in VKA therapy were significantly more likely to experience haemorrhages, they were also less likely to experience falls. We suspect that this is because prescribing physicians are aware of the increased risk of haemorrhage with AVK and judiciously assess fall tendency in patients before prescribing VKAs.

-Due to the small number of patients with NOACs and the small number of patients with haemorrhage or Thrombotic events, it is hard to draw firm conclusions, but we saw an increased tendency in haemorrhage in patients with VKAs that were not present in patients with NOACs, possibly due to the more easily managed medication.

In this study, NOACs appeared to be safer than VKAs for avoiding both haemorrhage and thrombotic events. Given the easier manage and the existence of an antidote for Dabigatran, it is perhaps time to forego traditional VKAs in favour of modern NOACs.

It is hard to look at the high tendency to falls and AC mismanagement in this study and not consider overmedication. Like many patients in this age group, many of the patients seen in this study had a long list of both medication and comorbidities, and both could produce interactions that ultimately send patients to the ED with an INR far outside therapeutic range or in a drug-aided stupor that causes them to fall or present in the ED confused or hard to reach. As the very elderly are very a heterogenous and complex group, it falls upon the treating physician to consider individual needs and take care to avoid overmedication.

Limitations and Future studies:

- As this was a chart review, we did not have variables like INR, cognitive function for every patient. With a systematic questionnaire and bloodworks packet, we would have been able to ascertain with greater certainty how well or poorly managed patients with anticoagulant medicine were.
- In this study poor management of drug therapy was an apparent issue in many of the very elderly patients. Considering the history of falls, deterioration and confusion in patients, it is difficult not to suspect that similar problems may be present in the patients' other medication. As such, it would be interesting to conduct a systematic optimization of patient medicines and document their effects on fall tendencies and adverse hospital outcomes.

LENGTH OF STAY AND ALL CAUSE MORTALITY

-While patients with VKAs trended towards longer LoS, this difference did not reach the conventional level of statistical significance (P = 0.068)

- There was no significant difference in All-Cause Mortality (p = 0.45)

