

# Anticoagulation therapy in hemodialysis – the experience of a clinical pharmacist

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**Introduction:** Atrial fibrillation (AF), thromboembolism and maintaining patency of vascular access site may indicate the use of anticoagulation (AC) for patients who need hemodialysis (HD), however the uremic condition itself can increase the risk of bleeding complications.

- In HD patients the risk to benefit trade-off between stroke prevention and bleeding risk is conflicting and clinical guidelines vary in their recommendations.
- Polypharmacy may result in adverse patient outcome.

**Objective:** The goals of our research were:

- to assess the outcomes of AC therapy
- to study potential adverse interaction of the prescribed medications in HD patients

## Method:

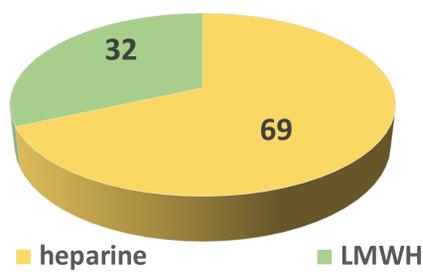
- retrospective, cohort study at Dialysis Unit in Szent Margit Hospital, Budapest, Hungary.
- patient's chart review and personal interview
- drug interaction checker by Medscape drug reference database

## Demography:

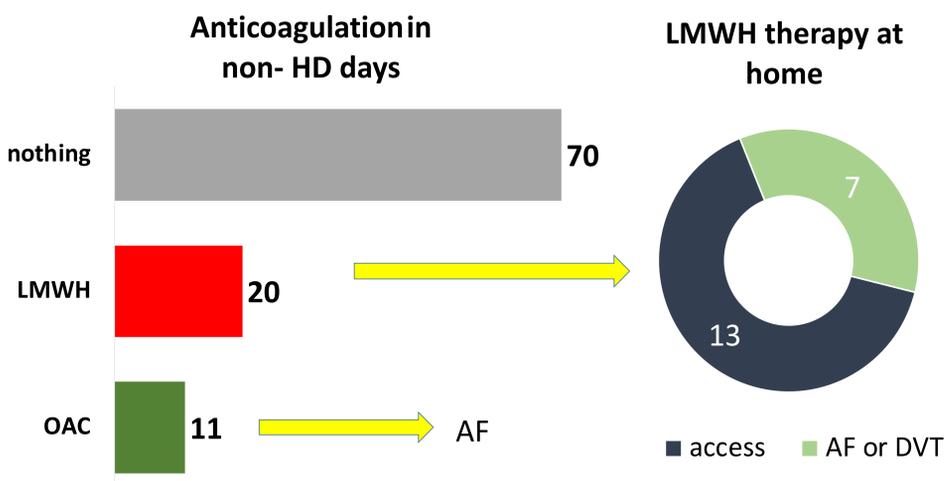
- Number of patients (n): 101 (55 male, 46 female)
- Mean age (± SD): 69 (± 12) years
- Mean duration of hemodialysis: 31 months /IQR :45 months/

### Result I.

#### Anticoagulation during hemodialysis to prevent extracorporeal circuit clotting (n:101)



#### Use of anticoagulation for other reasons (n:31)



#### Use of oral anticoagulation (n:11)

- Patients on HD (n=11) received oral anticoagulation for the management of AF.
- The safety and efficacy of OAC is critically dependent on maintaining INR within the target range.
- We could maintain INR within a target range of 2-3 only in one patient.

In addition to AC therapy, a total of 41 patients were taking other medications with high bleeding risk, such as:

- Clopidogrel n=13
- Aspirin n=28
- NSAID n=29

#### Overall complications of the anticoagulation therapy (n:101):

- 34% suffered moderate and severe **bleeding**,
- 30% suffered **thrombotic complication**.

## Results

### Result II.

#### Drug interactions

##### Contraindications in AC therapy

dalteparin - heparin
dalteparin - enoxaparin
enoxaparin - heparin
dalteparin - *VKA
dalteparin - clopidogrel
heparin - *VKA
dalteparin - tiklopidin
heparin - tiklopidin
sulodexide - heparin
sulodexide - dalteparin
sulodexide - clopidogrel

##### AC with other drug

heparin - levothyroxine
ASA - NSAID
escitalomprame - *VKA
allopurinol - *VKA

- **44/101 patients had 83 AC drug contraindications**
- \*VKA – vitamin K antagonists

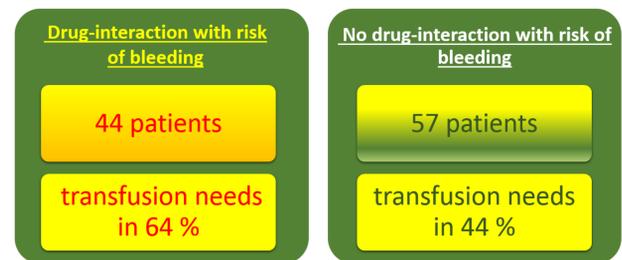
#### Consequences of drug interactions:

##### 1. Bleeding:

44 of 101 patients with AC drug interaction → bleeding **68 %**  
57 of 101 did not have AC drug interaction → bleeding 18% (**p<0.001**)

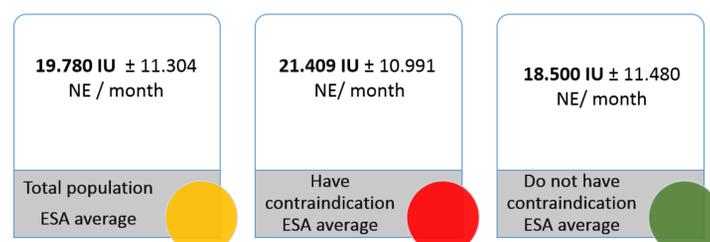
##### 2. Need for transfusion:

- 44/101 (**64%**) patients who had drug interaction with risk of bleeding needed transfusion while 57/101 **44 %** of the patients who did not have drug-interaction required transfusion (**p=0,048**).



##### 3. Erythropoietin stimulating agents (ESA) needs:

- All patients substituted with ESA but patients with drug contraindication needed non-significantly higher dose than patients without drug-interaction (**21409 ±10991 vs. 18500 ± 11480 IU /month, p=0,197**).



## Conclusions

Unavoidable heparinization, special dietary prescriptions, large number of medications necessary for comorbidities and the huge number of drug interactions make the therapy of dialysis patients very difficult.

**The task of the clinical pharmacist is to regularly check medication therapy, unreveal contraindications to decrease their occurrence, which may lead to optimize medication, reduce polypharmacy and medication related problems in hemodialysis patients.**