# Hydration status and vascular access interventions

**Joana Carvalho[1], Margarida Duarte[1], Carina Gonçalves[1], Fernanda Gomes[1], Bruno Pinto[2], Ricardo Peralta[2], João Fazendeiro Matos[2]**

[1]Fresenius Medical Care, NephroCare Vila Franca de Xira, Vila Franca de Xira, Portugal
[2]Fresenius Medical Care, NephroCare Portugal, Porto, Portugal

## Introduction

The hydration status in patients undergoing maintenance haemodialysis may have an influence on blood pressure values (BP), which in turn can influence the haemodynamic state and the dynamics and morbidity of Vascular Access (VA). According to Jeong, J.H., up to 80% in this population suffer from cardiac abnormalities such as left ventricular (LV) hypertrophy and systolic and diastolic dysfunction.

## Objectives

- To evaluate how the hydration status influences mean BP values;
- To assess whether the hydration status influences ischemic and thrombotic events of the vascular access.

## Methods

We conducted a retrospective, quantitative, descriptive observational study, from 11/2012 until 10/2016 considering patients according to specified inclusion criteria. During this period, hydration status was assessed on a monthly basis by a bioimpedance spectroscopy device (BIA), measuring body composition, from which the level of overhydration can be derived. Hydration status was divided into 3 groups:

- Overhydrated (**OH**): relative OH (RelOH) >15% in men, >13% in women;
- Normohydrated (**NH**): RelOH 0-15% in men and 0-13% in women;
- Underhydrated (**UH**): RelOH <0% in men and women.

In addition, VA interventions (angiographic and surgical review interventions) were recorded for the following causes: Vascular access flow values (Qa) (measured according to country protocol), signs/symptoms of peripheral ischemia and thrombosis.
Moreover, mean values for systolic and diastolic BP was measured in the 3 groups.

## Results

191 patients were enrolled. Mean age was 70.81 (SD=15.67) years and 52% were male.
As for VA interventions, 2.7% of interventions in the **OH** and **NH** group and 2.9% in the **UH** group were caused by a decreased Qa and/or signs/symptoms of peripheral ischemia (Figure 1). 0.8% of interventions in the OH group, 1.1% in the **NH** group and 1.9% in the **UH** group were related to thrombosis (Figure 2). Differences between BP means were statistically significant for the diastolic ($p$<0.05), but not for the systolic values ($p$>0.05) (Figure 3).

## Conclusion

Nursing staff plays a key role in assessing both the vascular access patency from the implemented surveillance programmes, as well as the overall condition for our patients, not only from the initial interview but also from regular BIAs. The mean diastolic blood pressure ($p$<0.05) and the percentage of VA thrombosis events, progressively increased from the OH to the UH group, probably due to an increased haemodynamic instability and haemoconcentration at end of each HighFluxHDF® session. Moreover, UH patients showed a slight increase in the percentage of interventions caused by a decrease of Qa and ischemia.

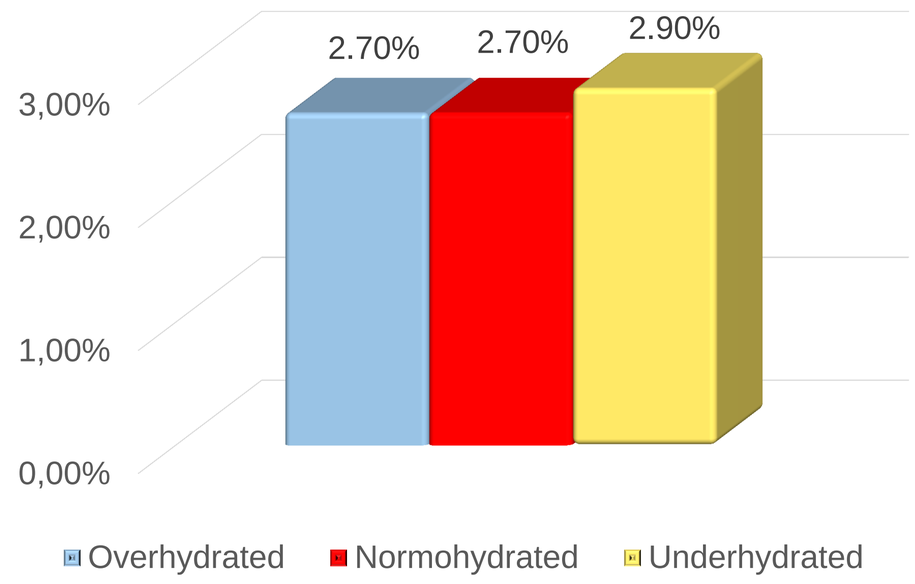


**Figure 1: Interventions caused by decreased Qa and signs/symptoms of peripheral ischemia**

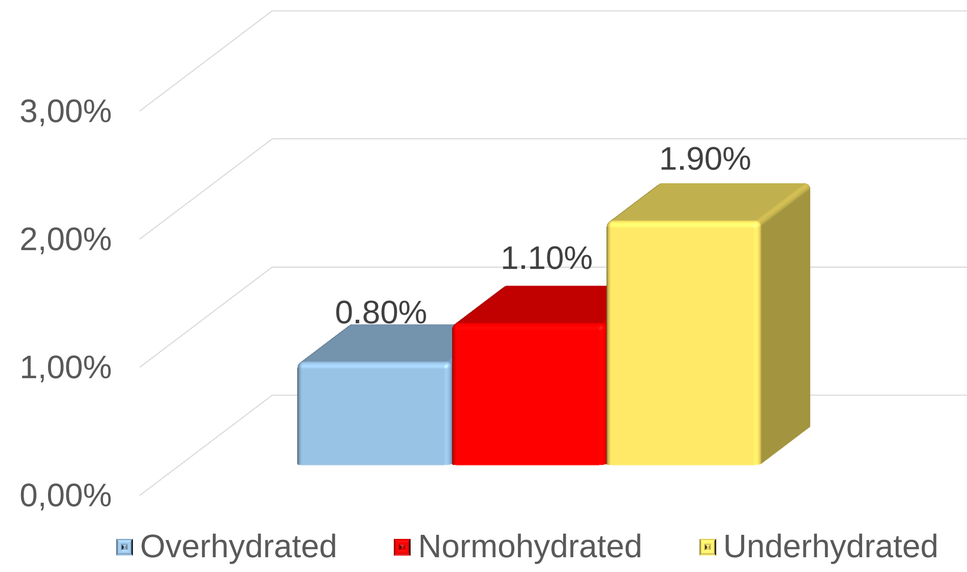


**Figure 2: Interventions related to thrombosis**

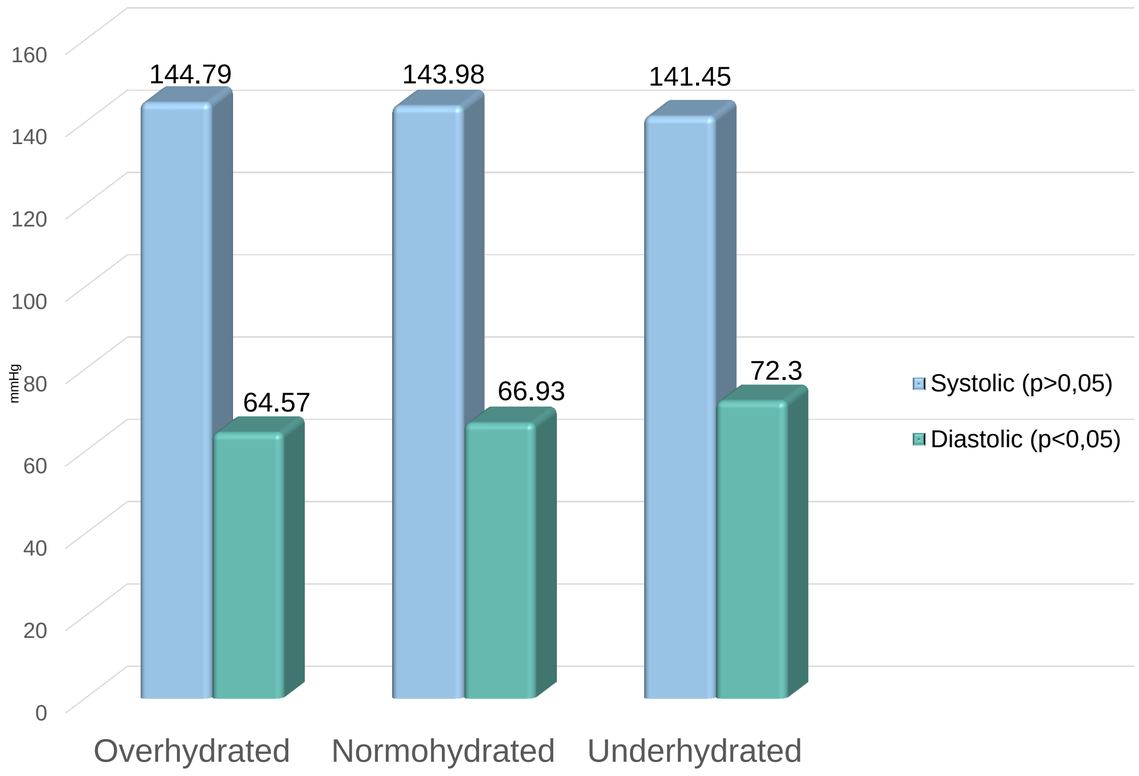


**Figure 3: Mean systolic and diastolic BP values (mmHg)**

**References**

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