SELECTION OF AN OSMOLARITY VALIDATION MODEL
FOR NOMINATIVE PARENTERAL NUTRITION

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MARCH 2022
26th CONGRESS
NO 3PC-005

1 BACKGROUND AND IMPORTANCE
- Osmolarity is one of the pharmaceutical controls carried out on the nominative parenteral nutrition (NPN) produced at the Hospital pharmacy.
- According to a previous method validation, we use the Pereira Da Silva equation (PDS) when the theoretical osmolarity (TO) determined by this model is greater than 1000 mosmol/L and we use the manufacturers’ data (MD) equation when the TO according to the PDS equation is below 1000 mosmol/L.
- This method is associated to an osmolarity nonconformity (NC) rate of 5.9%.

2 OBJECTIVE
Determine the best predictive model to calculate TO of the NPN in order to decrease osmolarity NC rate.

3 MATERIAL AND METHODS
- Retrospective analysis of measured osmolarities was carried out from June 2018 to September 2021 to determine the osmolarity classes most affected by NC.
- The MO (measured osmolarity) was compliant if it is between -10% and +10% of the TO.
- Different models (modification of the limit value; choice of the two models within a range of osmolarities) were tested and the one with the lowest NC rate was chosen.
- Selection of the best validation model for nominative parenteral nutrition

4 RESULTS
DISTRIBUTION OF MO (mOsm/L) VALUES

ANALYSIS OF THE COMPLIANCE OF THE MO ACCORDING TO THE CURRENT RULE

ANALYSIS OF THE OSMOLARITY VALUES MEASURED ACCORDING TO THE 2 MODELS (PDS and MD)

SELECTION OF THE BEST VALIDATION MODEL FOR NOMINATIVE PARENTERAL NUTRITION

5 CONCLUSION AND RELEVANCE
- By increasing osmolarity limit value to 1150 mosmol/L (instead of the current 1000 mosmol/L), the NC rate decreases to 5.2%.
- By allowing both equations for a TO according to the PDS equation between [900;1000]; [800–1200] or [700–1300], the NC rate decreases to 4.8%; 4% and 3.5% respectively.
- Thus, we choose to select the model allowing both equations between 700 and 1300. The rate of non-compliance will then fall from 5.9% to 3.5%. The application of this new model will facilitate the interpretation of nominative parenteral nutrition.