

DIGOXIN ADJUSTMENT: COMPARATIVE ANALYSIS OF THREE PHARMACOKINETIC SOFTWARE

ANDREA RODRÍGUEZ ESQUIROZ¹, CLAUDIA LERALTA GONZÁLEZ², MARÍA JIMÉNEZ MESEGUER³, ÁNGEL LUIS SALCEDO MINGORRANZ³, BENITO GARCÍA DÍAZ³, MAITE SAROBE CARRICAS¹, MARI FE HURTADO GÓMEZ².
¹NAVARRRE UNIVERSITARY HOSPITAL, PHARMACY, PAMPLONA, SPAIN. ²SAN PEDRO HOSPITAL, PHARMACY, LOGROÑO, SPAIN. ³SEVERO OCHOA UNIVERSITARY HOSPITAL, PHARMACY, MADRID, SPAIN.



BACKGROUND AND IMPORTANCE

Digoxin is a drug with a narrow therapeutic index (0.8-1.2 ng/mL). Therapeutic drug monitoring is an important tool to improve therapeutic safety and efficacy, especially in elderly patients.

AIM AND OBJECTIVES

To estimate the accuracy and precision of three pharmacokinetic software to analyze serum digoxin concentrations (SDC).

MATERIAL AND METHODS

Retrospective, observational study



Elderly patients (65-80 years), admitted to a tertiary hospital, treated with digoxin in 2020

Accuracy and precision were assessed using **Sheiner and Beal's prediction error theory**

Sex, age, body mass index (BMI), SDC, creatinine clearance evaluated by the Cockcroft-Gault equation (CrCl), and concomitant treatment: proton pump inhibitors (PPIs) and non-steroidal anti-inflammatory drugs (NSAIDs).



Estimated with:
 1. Medware
 2. PKS
 3. NONMEM

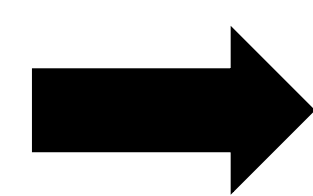
Subgroups:
 1. renal impairment patients (CrCl <60 mL/min)
 2. ≥ 2 SDC

ACCURACY: mean prediction error (MPE)

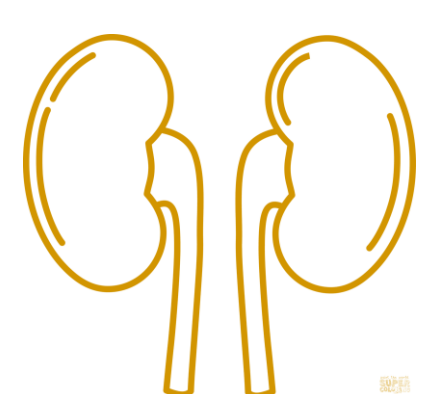
PRECISION: mean absolute prediction error (MPAE) and square root of the root mean square prediction error (RMSE)

RESULTS

53 patients with 130 SDC, 31 women (58.5%), median age 75.5 years-old (66.5-80.7). 64% on concomitant treatment with PPIs and 41.5% with NSAIDs.

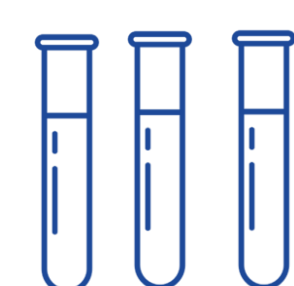


Software	MPE	MPAE	RMSE
Medware	0.002	0.193	0.331
PKS	-0.011	0.201	0.345
NONMEM	-0.081	0.243	0.328



Renal impairment
 32 patients, 64 levels

Software	MPE	MPAE	RMSE
Medware	-0.052	0.192	0.330
PKS	-0.028	0.246	0.416
NONMEM	-0.106	0.275	0.363



≥ 2 SDC
 36 patients

Software	MPE	MPAE	RMSE
Medware	0.003	0.205	0.347
PKS	-0.010	0.211	0.360
NONMEM	-0.080	0.235	0.312

CONCLUSION AND RELEVANCE

The three software showed similar accuracy and precision for analyzing SDC. Medware is the best tool for daily clinical practice in terms of ease of use.

