

### INTRODUCTION

- Acute kidney Injury (AKI) is a common condition of critical hospitalized patients. Refractory oliguria and longer time to recover diuresis could induce a worst clinical prognosis and the need for CRRT (continuous renal replacement therapy).
- The Nephrocheck<sup>®</sup> is a diagnostic test used to detect early AKI by fluorescent immunoassay of two biomarkers associated with kidney injury (TIMP -2 and IGFBP -7) involved in cell cycle arrest to be measured within 20 minutes. Higher levels of Nephrocheck<sup>®</sup> allow to recognize patients at greater risk for developing AKI in the following 12 hours and could predict short-term renal outcome. Cut off points were defined in cardiac surgery and sepsis studies.

### OBJETIVE

Determination of clinical use and prediction value of a single Nephrocheck<sup>®</sup> assessment in patients hospitalized with AKI.

### METHODS

- Observational and retrospective study was conducted in 99 hospitalized patients with AKI. Mean Age: 62,2 years old (14,8). 73 males
- Data compiled were the followings: Diabetes, types of AKI, AKI stage, diuretic treatment, diuresis recovery time, exitus, ICU origin, requirement of CRRT, serum creatinine monitoring, urine output, days of CRRT, length of ICU and hospital stay.
- According to de Nephrocheck investigation test, results were divided in three stages: Low risk (<0.3); Intermediate risk (0.3-2) and High risk (>2)
- Descriptive analysis was performed using the Pearson chi-square test, and the interaction effects of independent categorical variables over a range of the dependent variable were analyzed using the ANOVA (SPSS Statistic 20).

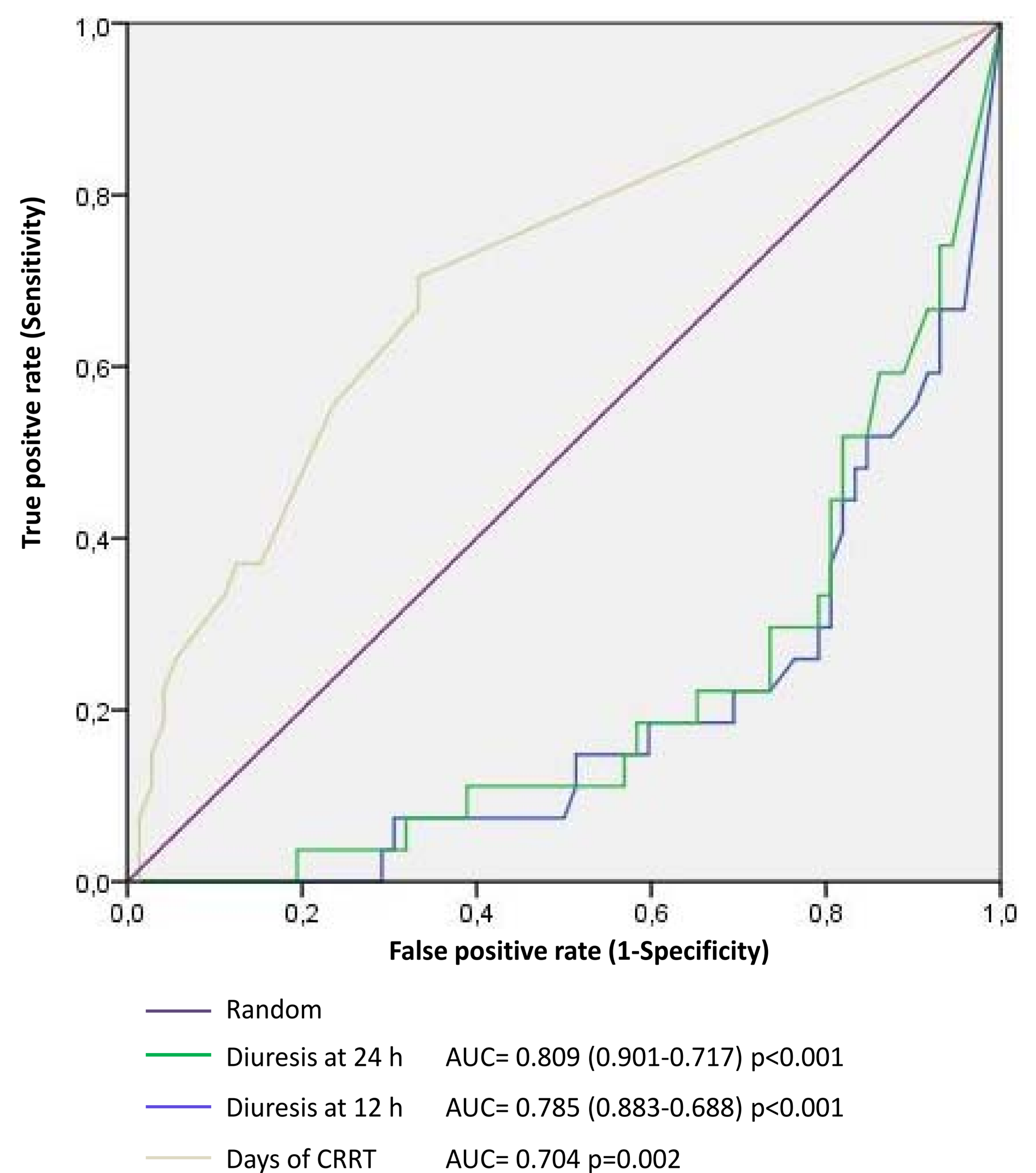
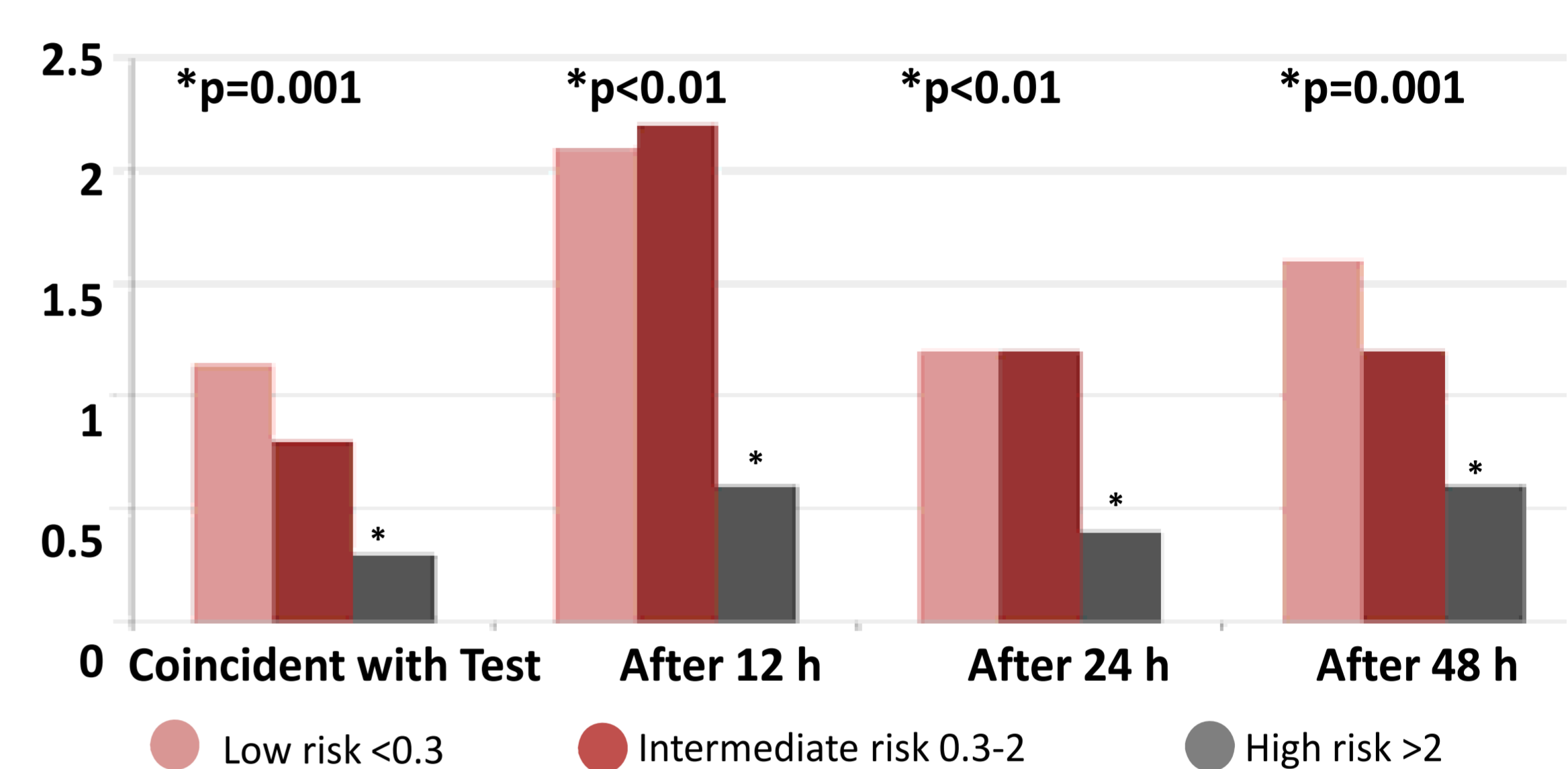
### RESULTS

**Table.1** Comparison of analyzed variables by the three ranges of Nephrocheck<sup>®</sup> in patients with AKI

	Low-risk: <0.3 n=9	Intermediate-risk: 0.3-2 n=63	High-risk: >2 n=27	p
Age (years)	60.3 (15)	63.2 (15)	60.5 (14.6)	0.974
Sex (Male/Female)	6/3	50/13	17/10	0.237
Diabetes, n (%)	3 (33.3%)	32 (50.7%)	11 (40.7%)	0.483
ICU origin, n (%)	6 (8.7%)	43 (62.3%)	20 (29%)	0.841
Type of AKI				0.231
Prerenal	7	45	18	
Intrinsic renal	2	18	7	
Obstructive	0	0	2	
AKI stage (I/II/III)	3/4/2	19/32/12	4/13/10	0.343
Diuretic treatment at baseline, n	9 (100%)	57 (90.4%)	25 (92.5%)	0.611
Diuretic treatment at 48 h, n (%)	7 (77.7%)	55 (87.3%)	22 (81.4%)	0.643
Diuresis recovery time				<b>0.02</b>
<12 h	6	27	4	
12-24 h	2	16	2	
>24 h	1	16	16	
CRRT n(%)	1 (2.9%)	25 (39.6%)	19 (70.3%)	<b>0.008</b>
Creatinine (mg/dL)				
Baseline (previous AKI)	2.5 (1.1)	2.3 (3.8)	1.3 (0.8)	0.419
Coincident with test Nephrocheck	3.5 (1.2)	2.9 (1.5)	3 (1.7)	0.53
Creatinine at discharged (mg/dl)	2.8 (1.3)	2.3 (1.4)	2.3 (2)	0.730
Outcomes				
Nº days CRRT	1.3 (4)	1.7 (3.2)	4.5 (5)	<b>0.006</b>
Length of ICU stay (days)	5.7 (6.6)	26.8 (20.3)	26.8 (22.8)	<b>0.022</b>
Length of hospital stay (days)	47.5 (44.4)	26.8 (20.3)	26.8 (22.8)	0.051
Exitus, n (%)	3 (33.3%)	9 (14.2%)	10 (37%)	<b>0.041</b>

\*Data expressed as average (Standard deviation); ns: non significant; AKI: acute kidney injury/malfunction; CRRT: continuous renal replacement therapy; ICU: Intensive care unit

**Urine output (ml/kg/h)**



### CONCLUSIONS

- The Nephrocheck<sup>®</sup> assesment not only predicts the level of risk of oliguria and of the diuresis recovery time, in fact it also confirms higher length of ICU stay and the numer of days of CRRT.
- By confirming this results in more patients which could facilitate taking clinical decisions in the critical patients such as the early requirement of continuous renal replacement therapy which prevents fluid overload as an important prognostic factor of AKI in the critical patients.
- The immediate result of Nephrocheck<sup>®</sup> promotes the interest of validating these results in different populations of AKI as a potential tool in making decision respect to the renal replacement therapy

### REFERENCES

- LoS One. 2014 Mar 27;9(3):e93460.
- LoS One. 2015 Mar 23;10(3):e0120863.
- Crit Care. 2013 Feb 6;17:R25.
- Nephrol Dial Transplant 2014;29:2054-61;
- Nephrol Dial Transplant.2015Jun4.pii:gfv130.