ESTIMATION OF GLOMERULAR FILTRATION IN KIDNEY TRANSPLANT PATIENTS WITH NEW CKD-EPI EQUATIONS SHOWS IMPORTANT DIFFERENCES RESPECT COMMONLY USED MDRD EQUATION.

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INTRODUCTION

- It has been recommended to use new CKD-EPI equations with creatinine and/or cystatin C to estimate glomerular filtration rate (GFR) because they give better estimations than MDRD equation, in population with potential better renal function.
- In renal transplant patients, several authors have shown important overestimations of GFR employing creatinine 2009 CKD-EPI equation when is compared with GFR measured with inulin, iothalamate or ^{51}Cr-EDTA.
- **AIM**: Our objective was to analyze the differences that occur in estimation of GFR using CKD-EPI equations with creatinine and/or cystatin C when they are compared with MDRD estimates.

PATIENTS AND METHODS

- Renal transplant patients with stable graft function with >12 months of duration of transplant.
- Creatinine was determined with Roche-Hitachi enzimatic method and was re-expressed to values with IDMS traceability.
- Cistatin C determinations were obtained using Dade Behring nephelometer.
- We calculated GFR with following equations: MDRD4, creatinine 2009 CKD-EPI, cystatin C 2012 CKD-EPI and creatinine and cystatin C 2012 CKD-EPI.
- We compared results using MDRD4 as reference employing paired non-parametric tests, correlation analysis and kappa test for agreement.

RESULTS

POPULATION CHARACTERISTICS

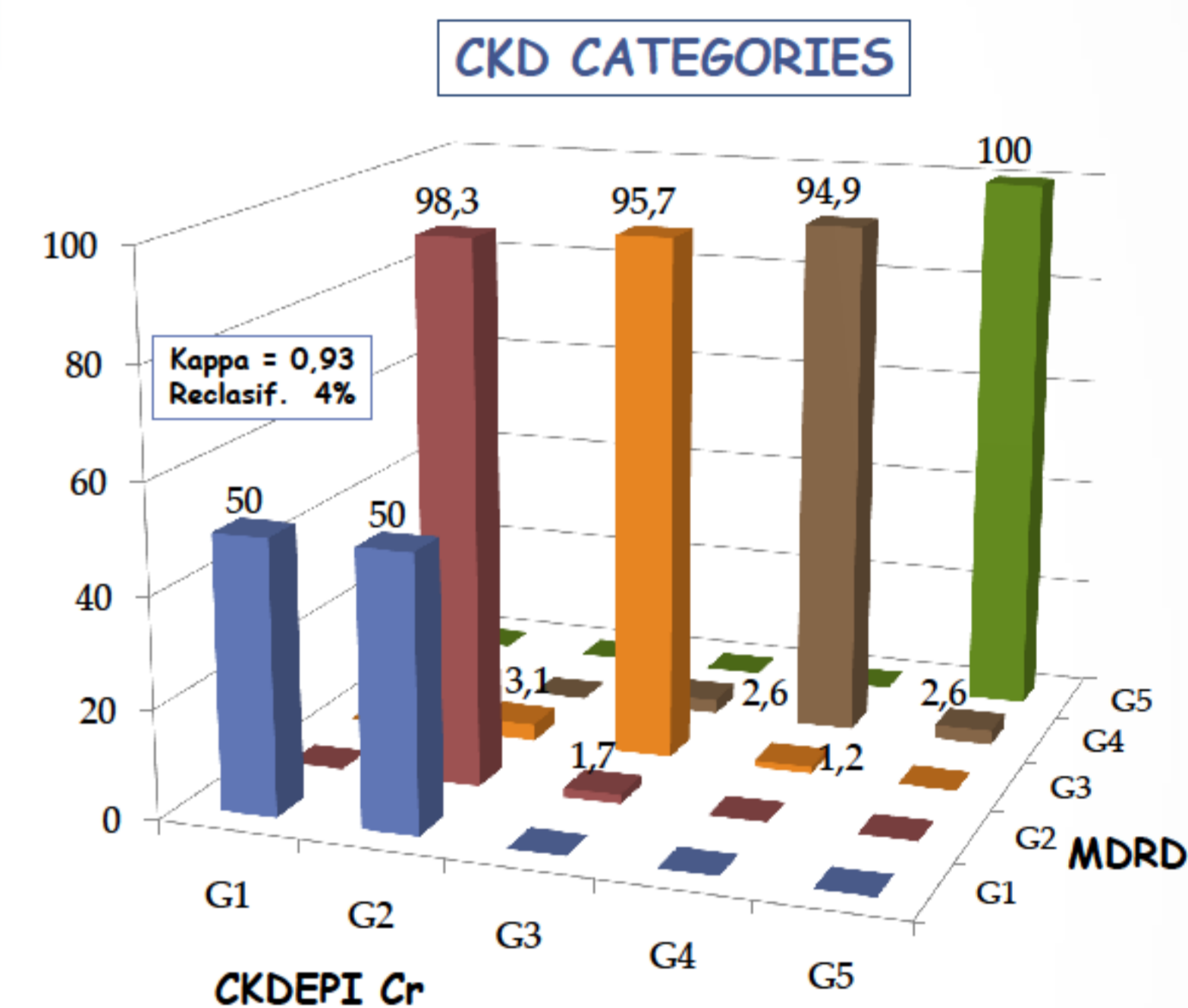|	
N	272
Gender	172 M/100 F
Age	54±13 years
Months postransplantation	126±87 (median 109)

GLOMERULAR FILTRATION ESTIMATIONS

FG	Mean±SD	Median	Rank	1st and 3rd Quartil
MDRD4	46,7±18,1	46,3	8,1-101,6	34,0-58,5
CKD-EPI Cr 2009	46,9±19,1	46,6	6,9-98,2	33,1-59,0
CKD-EPI Cystatin C 2012	54,3±28,5	50,2	10-130,8	32,1-71,3
CKD-EPI Cr & Cystatin C 2012	49,7±23,1	47,5	7,8-103,1	32,9-64,8

MULTIPLE LINEAR REGRESSION ANALYSIS CKD-EPI vs MDRD

	Indep. Term	Age	Gender (M/F)	MDRD
CKD-EPI Cr 2009	+7.29	-0,12	+1,48	+0,045
CKD-EPI Cystatin C 2012	+19,86	-0,34	+5,21	+1,33
CKD-EPI Cr & Cystatin C 2012	+9,89	-0,21	+2,88	+1,20

CKD CATEGORIES AND ROOT MEAN SQUARES WITH GFR MDRD

GFR MDRD vs CKD-EPI Cr-2009

CKD CATEGORIES

Kappa = 0,93 Reclasif. 4%

GFR MDRD vs CKD-EPI CistC 2012

CKD CATEGORIES

Kappa = 0,43 Reclasif. = 38,6%
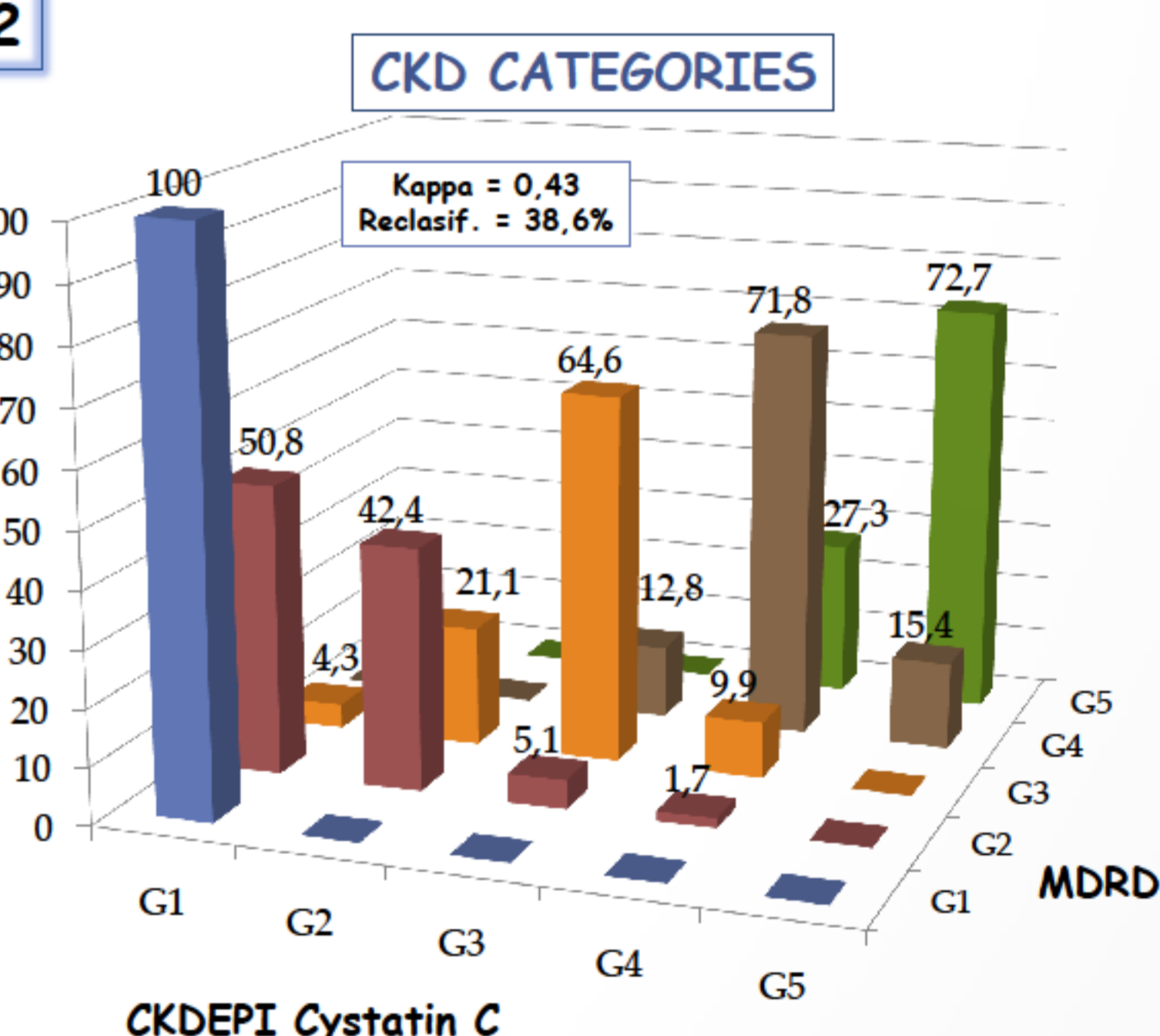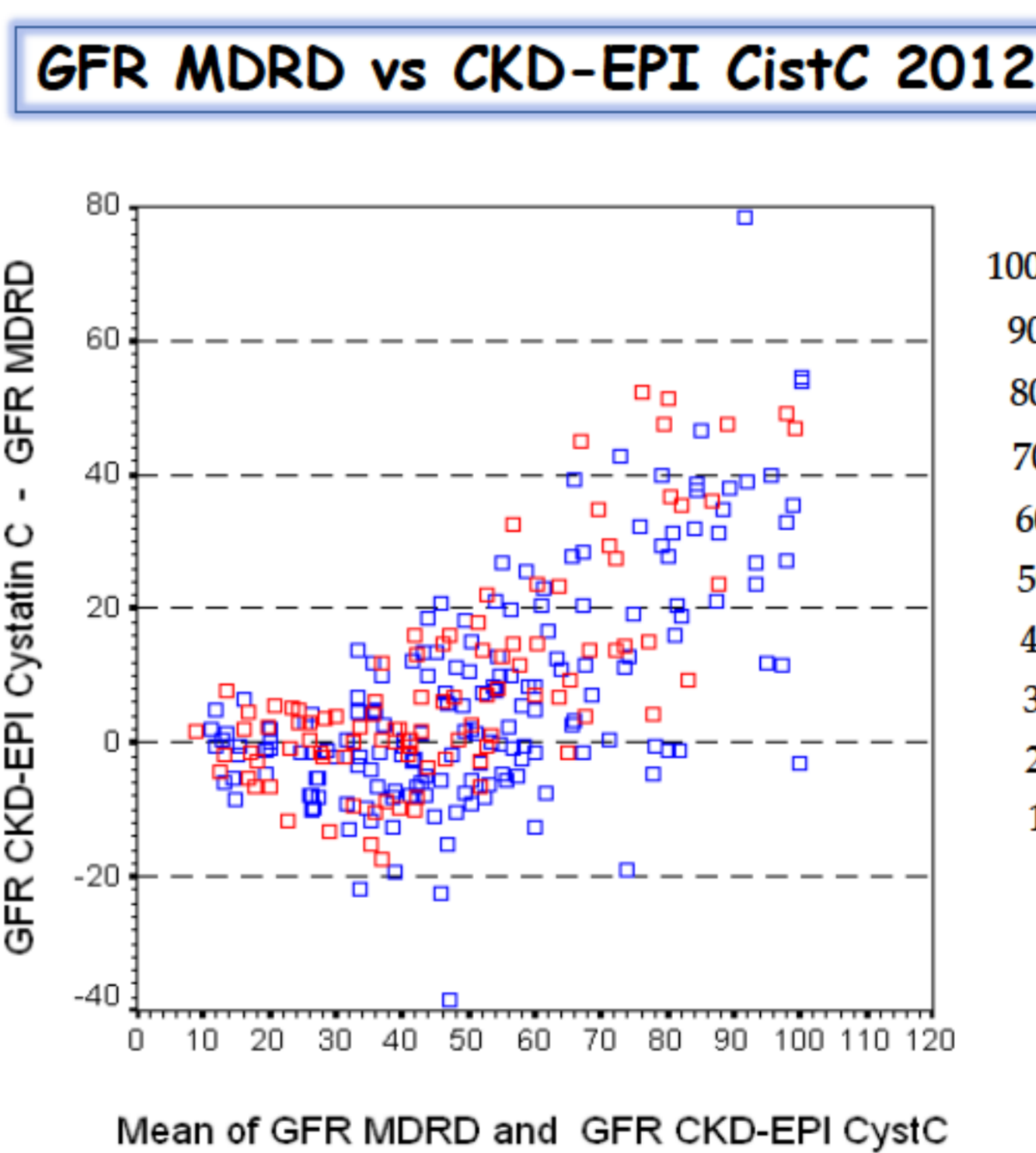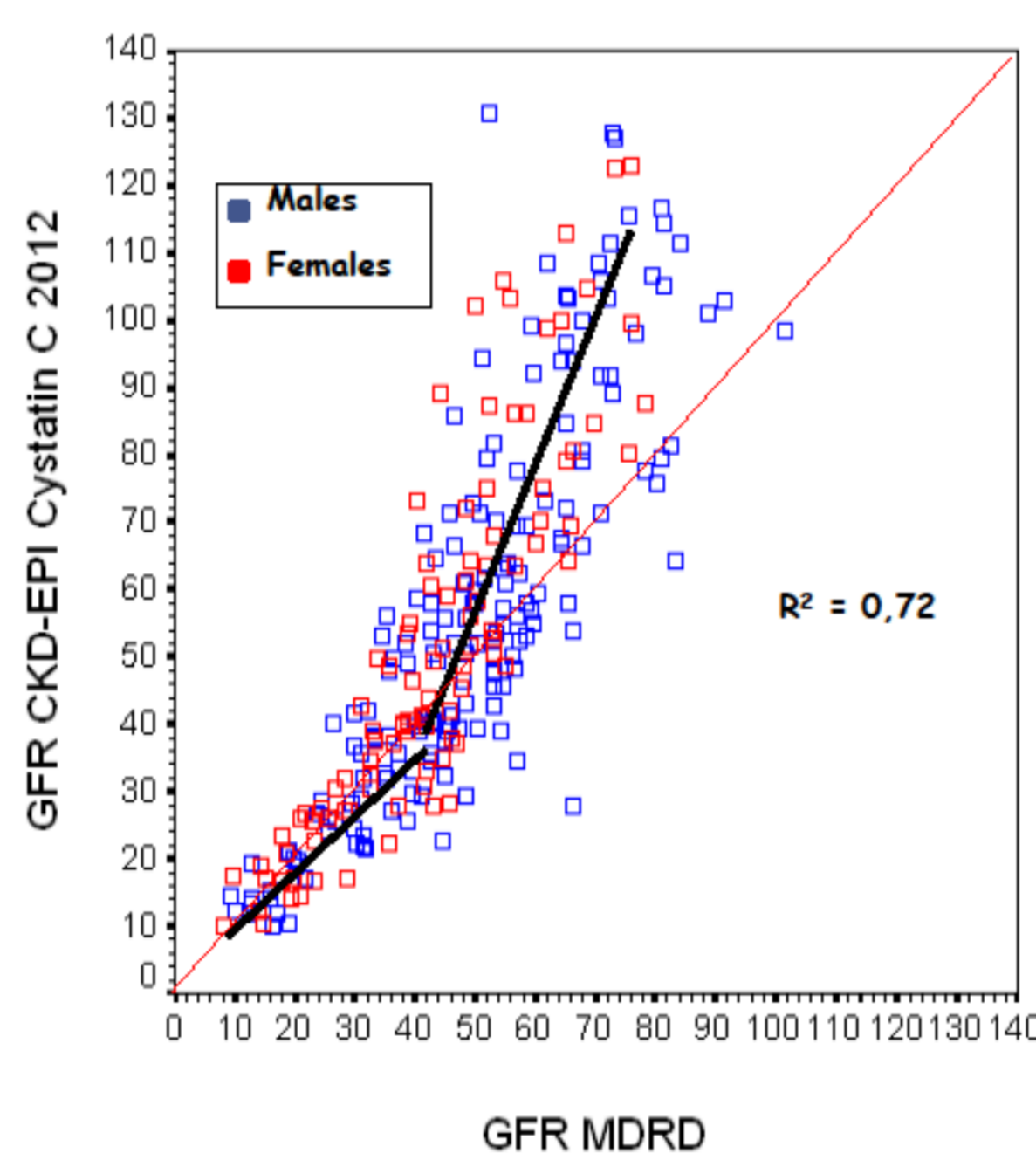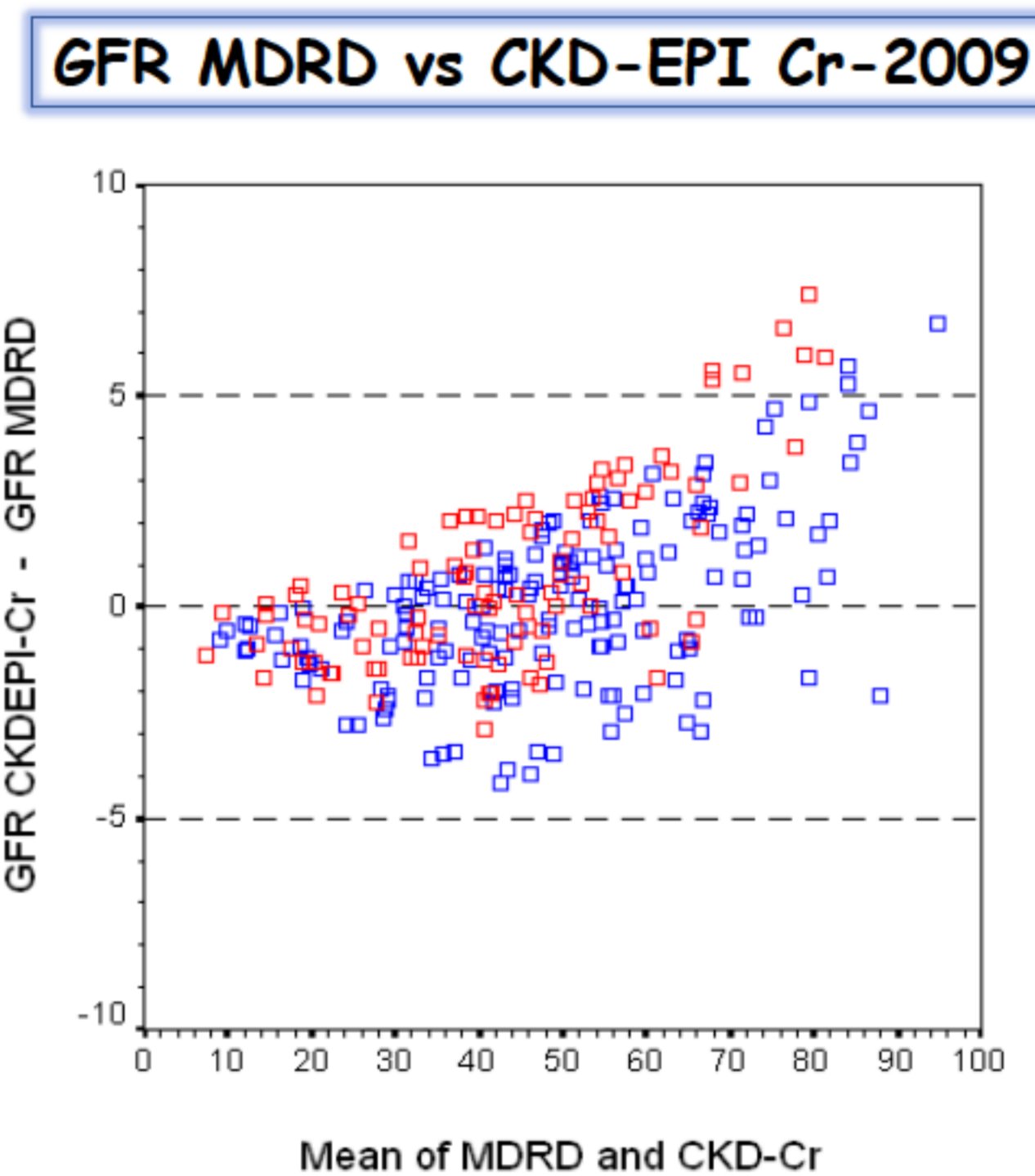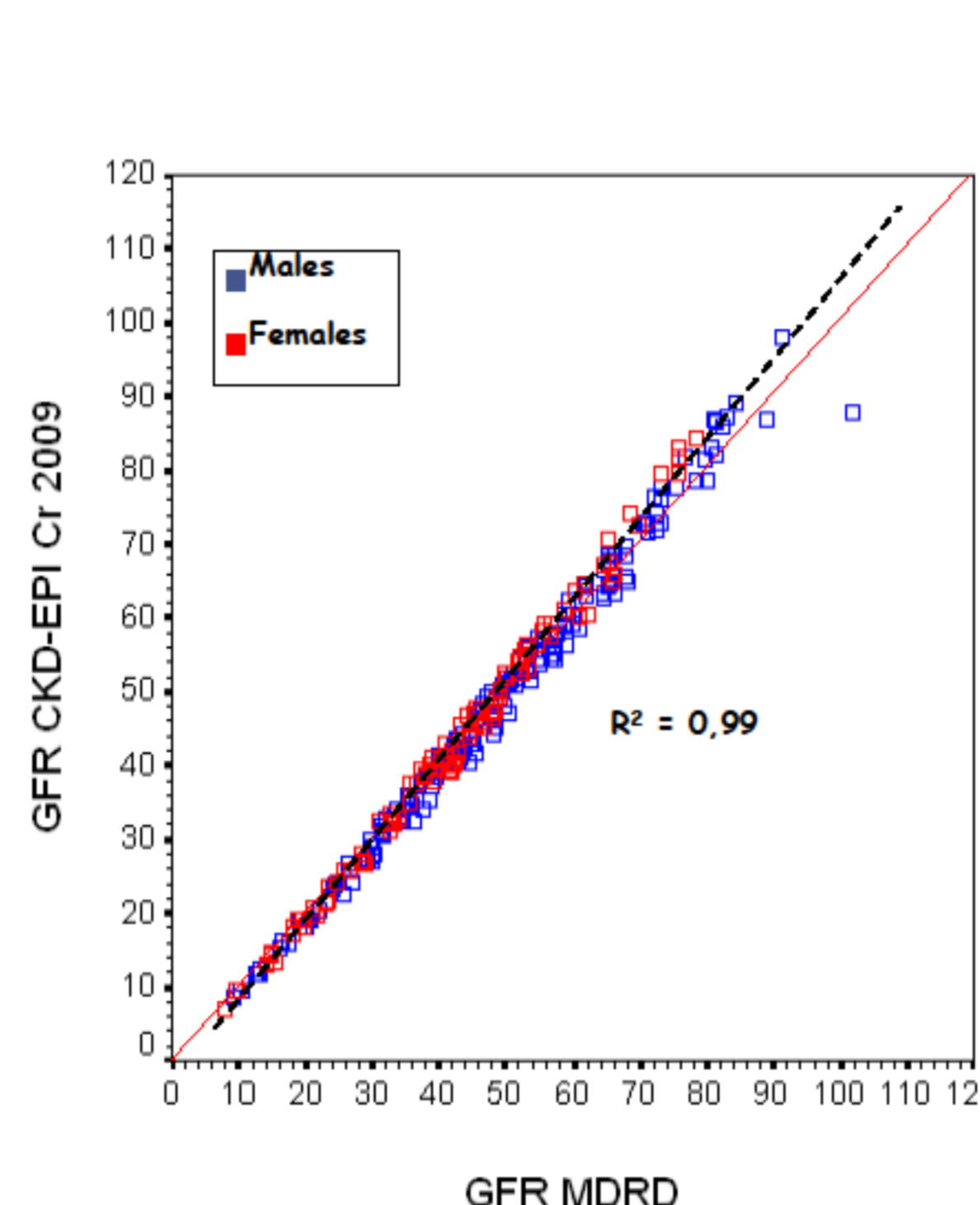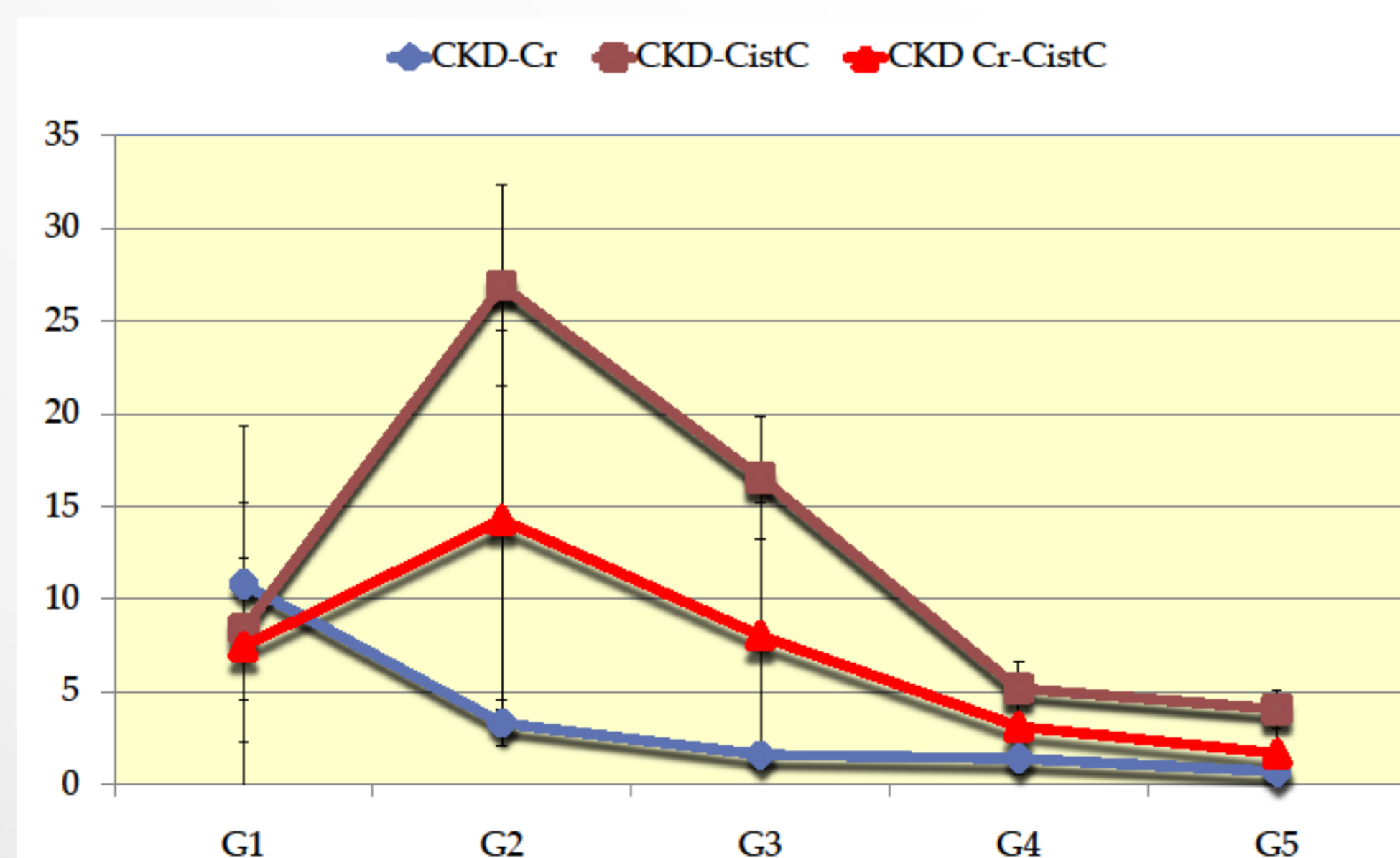
GFR MDRD vs CKD-EPI Cr & Cyst.C 2012

CKD CATEGORIES

Kappa = 0,66 Reclasif.= 20,2%
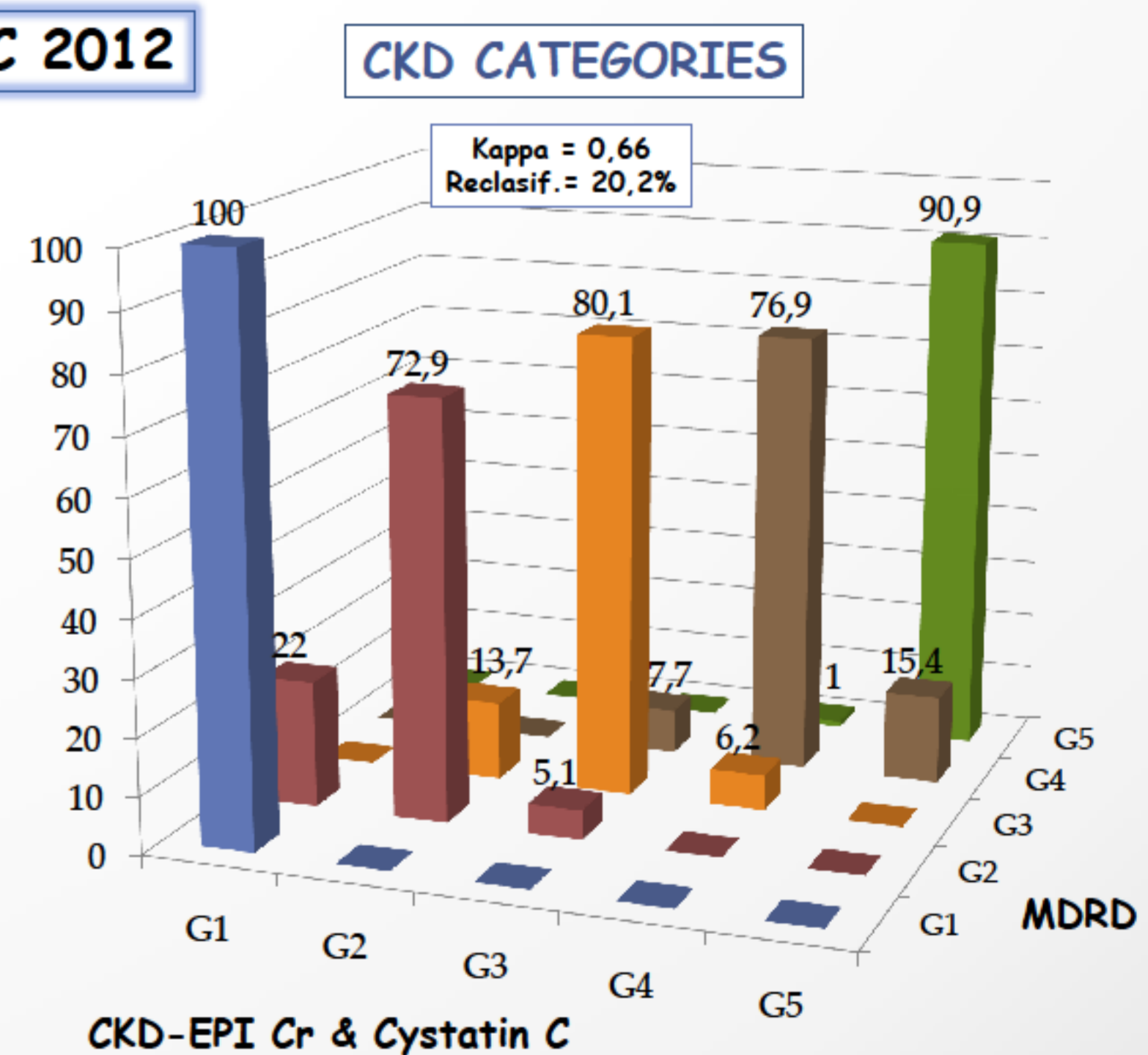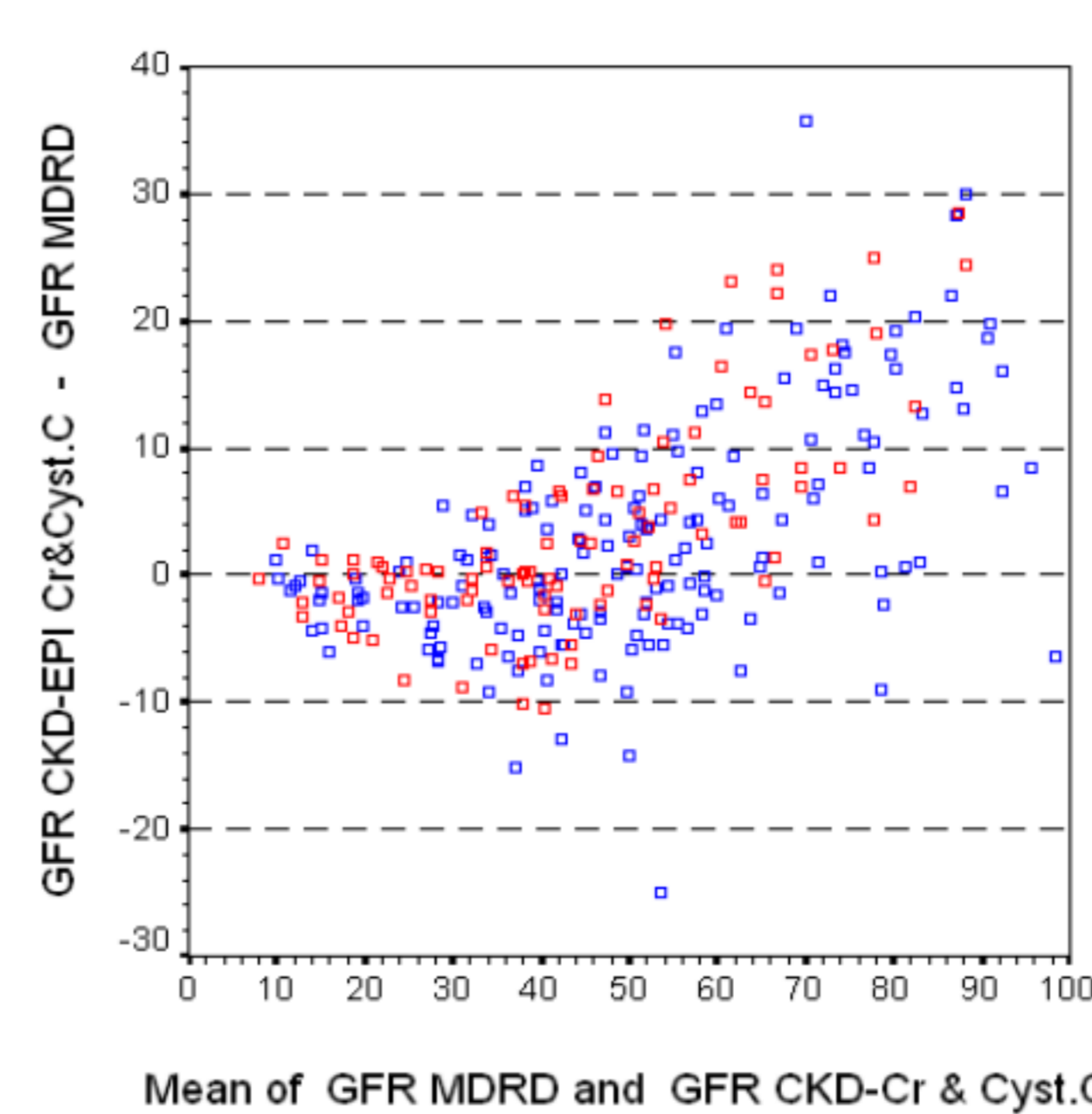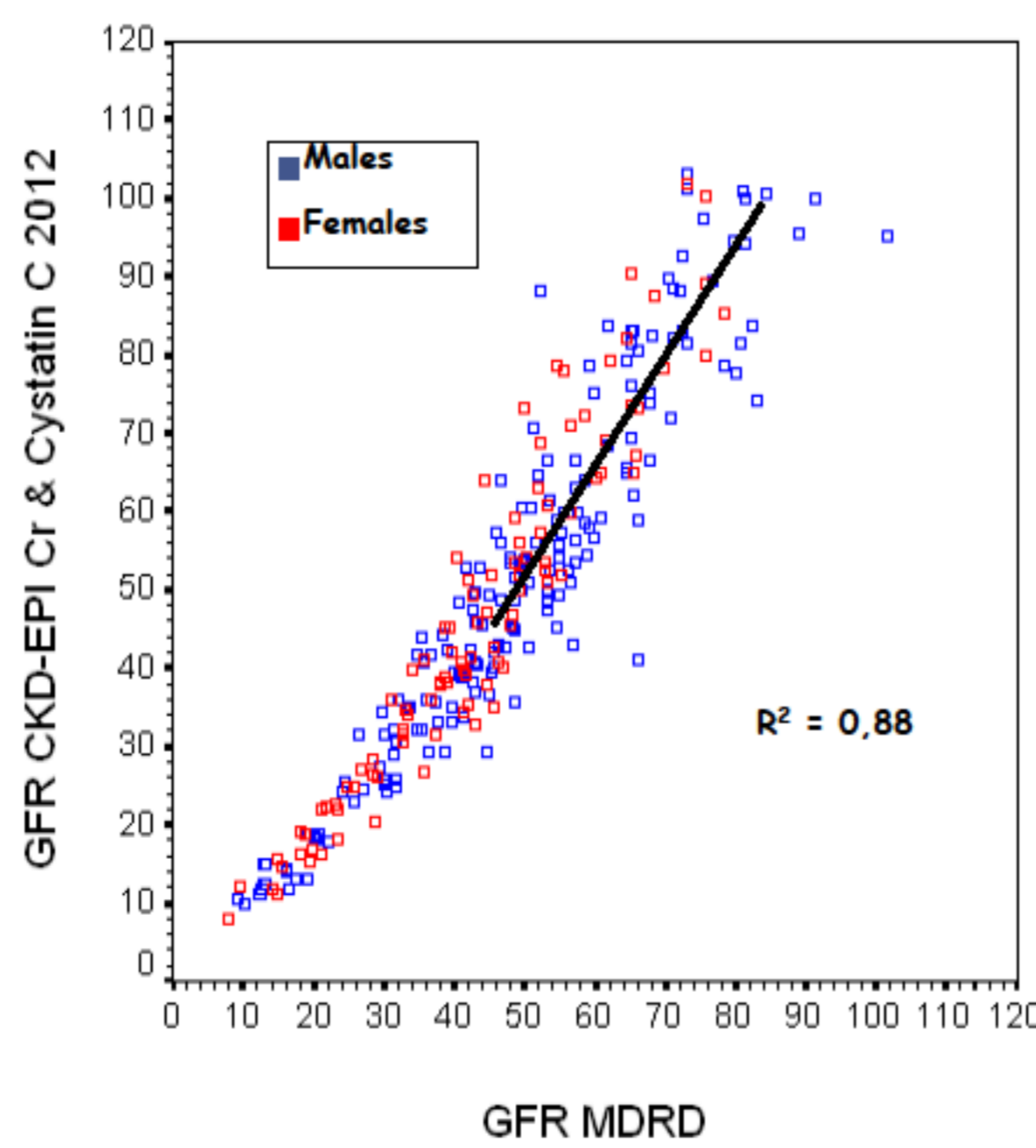
CONCLUSIONS

- GFR estimation in renal transplant patients using new CKD-EPI equations introduces important changes with respect to estimation obtained with MDRD equation.
- Variations are very important when we use equations with cystatin C, specially with 2012 CKD-EPI, showing a low agreement with MDRD and significant percentages of reclassification in CKD categories, specially in G1, G2 and G3 stages.
- It is necessary to validate new CKD-EPI equations in renal transplant patients to know which one really wins in accuracy and precision.