MORTALITY RATIO OF CHRONIC KIDNEY DISEASE (CKD) PATIENTS NOT ON DIALYSIS VERSUS THE GENERAL POPULATION IN URUGUAY

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INTRODUCTION AND AIMS: Located in South America, Uruguay has 3.241.003 inhabitants: 13.7% are 65 years or older, 93.2% are Caucasian and 5.9% are of African descent. In 2011 the gross domestic product per capita is US$ 11,305. The human development index is 0.765. Poverty population 10.7%. CKD is recognized as a public health problem. Patients (Pts) with CKD have a higher risk of dying than progressing to end stage renal disease (ESRD). Since 2004, Uruguay has been implementing a National Renal Healthcare Program (NRHP). Up to now, more than 6,000 Pts have been included in the NRHP's registry.

The **aim** of this study is to describe the mortality ratio among CKD Pts versus the general population (Gral. Pop) in Uruguay, as well as cause-specific mortality

METHODS: Data from the Gral Pop (obtained from the National Institute of Statistics) and from CKD Pts (from the NRHP registry) have been classified by the following age groups: 20-29, 30-39, 40-49, 50-59, 60-69, 70-79 and 80 years or older for each gender.
Data for deaths were obtained from the Ministry of Health including age, gender and cause of death using ICD-10. Causes of death were classified as cardiovascular, infectious, neoplasia and others. When cause of death was not specified (13.7%), it was imputed by similar percentage distribution.
The mortality rate for the Gral Pop was calculated using 2008 data. Data of CKD Pts were obtained from 2005 to 2009. The general and specific causes of mortality rates were calculated by age and gender groups for both the Gral Pop and CKD Pts. Estimation of the mortality ratio and its 95% confidence interval were calculated by indirect standardization (SMR) as the ratio between the observed and expected deaths after applying the mortality rate of the Gral Pop to the NRHP registry.

RESULTS:

In Uruguay in 2008, 26.780 of 2.296.517 people died aged 20 years or older and the mortality rate for the Gral Pop was 11.17 per 1000 pt-year
The **NRHP Registry** has 5321 Pts (aged 20 years or older) registered: 54.7% male, aged 67±14.3 ys, 91.5 Caucasian, diabetic 37%, high blood pressure 85.3% obesity 37.3%. At the first control, CKD stage was: I in 5.6%, II in 11.6%, III in 60.9 %, IV in 19.2 % and 2.8% in V. The most frequent diagnoses were: diabetic (15.4%) vascular (47.2%), obstructive (6.2%), and glomerulopaties (5.1 %). From 1/1/2005 to 12/31/2009, 483 died. The mortality rate was 54,5 per 1000 pt-year.

TABLE I. MORTALITY RATIO: CKD PTS VS. GRAL POP ACCORDING AGE GROUPS

AGE (years)	MALE	CI	FEMALE	CI
20-39	14,03	1,73 - 26,33	16,06	6,2 - 38,32
40-59	2,43	1,11 - 3,75	8,61	4,93 - 12,29
60-69	1,75	1,19 - 2,31	4,84	4,63 - 6,04
70-79	0,88	0,64 - 1,11	3,22	2,68 - 3,75
≥ 80	0,68	0,5 - 0,86	1,71	1,36 - 2,05

Table II. Specific mortality (1000 pt-year) without standardization

	Cardiovascular	Neoplasia	Infectious	Other	All
Gral Population	3,8	3	1,1	3,8	11,7
CKD	20,7	11,2	6,3	16,4	54,5

After age standardization the increased mortality was seen in the younger population and both gender, mainly in women.
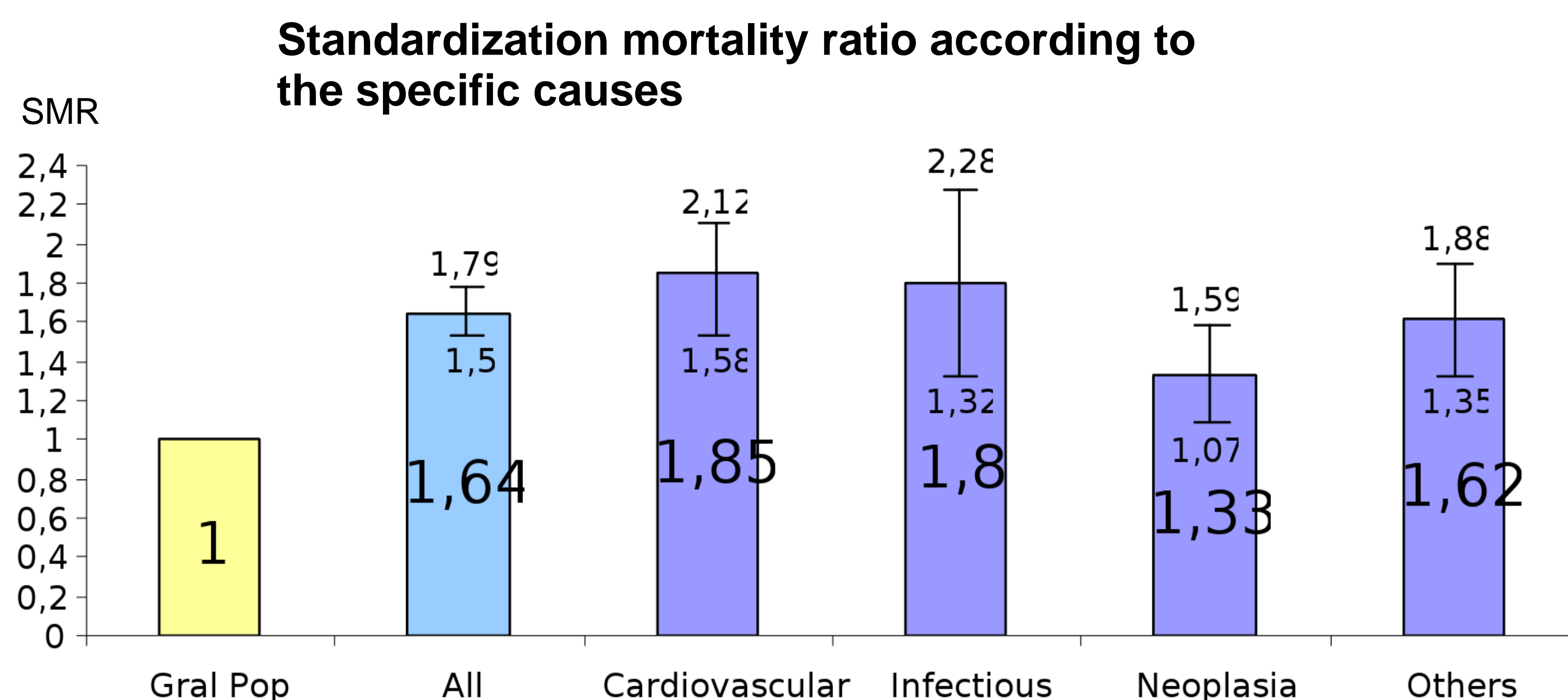

Fig 1. After age and gender standardization, patients with CKD had significantly higher mortality for all causes of death
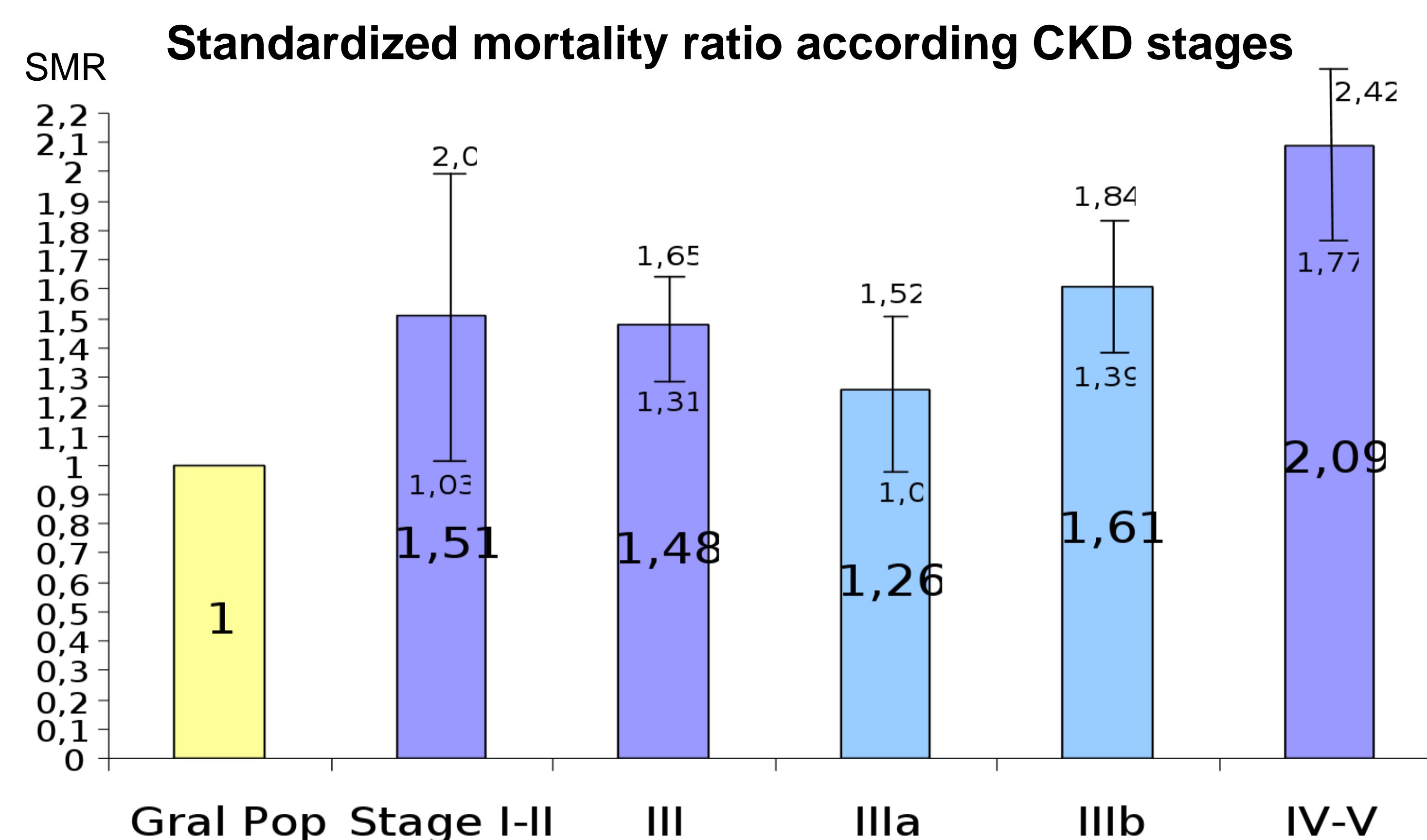

Fig 2. After age and gender standardization mortality increases in the late stages of CKD

CONCLUSIONS:
In CKD pts cardiovascular disease is the first cause of death, the second is Neoplasia and the third is infections as seen for the Gral Pop but differs from ESRD Pts. High mortality risk is seen in CKD Pts prior to dialysis, and in early CKD stages. The mortality ratio of CKD pts compared with the Gral Pop is 64% higher. This higher mortality ratio is seen mainly in younger and in female patients. This increased mortality ratio has been seen both for cardiovascular causes of death and other causes.