FRESENIUS
MEDICAL CARE

La Prevenzione nella Gestione della Malattia Renale Cronica

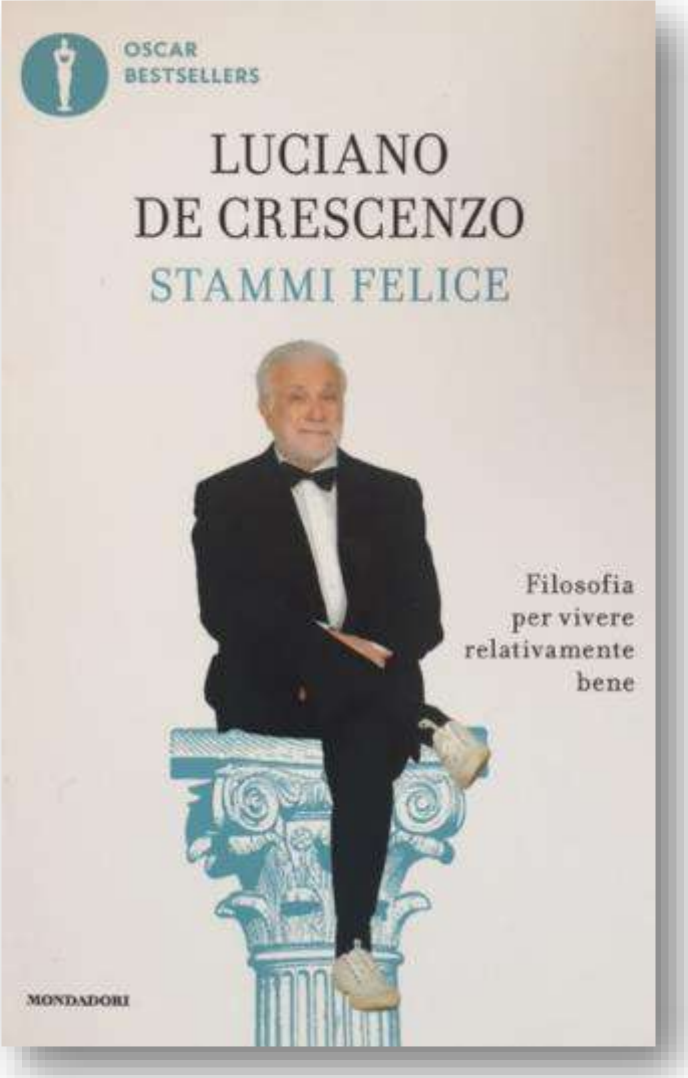
Working Together with Gps

Attilio Di Benedetto MD
NephroCare Italy Medical Director
Chia Laguna, 5 ottobre 2017

DALLA
PRESTAZIONE
ALLA
PERFORMANCE

NephroCare

Filosofia per vivere relativamente bene


OSCAR
BESTSELLERS
LUCIANO
DE CRESCENZO
STAMMI FELICE
Filosofia
per vivere
relativamente
bene
MONDADORI

«Mettiamo il caso che io veda passare mille persone.

Forse molte sono infelici, ma se ricordassero anche una sola cosa per la quale vale la pena di vivere, probabilmente cambierebbero idea»

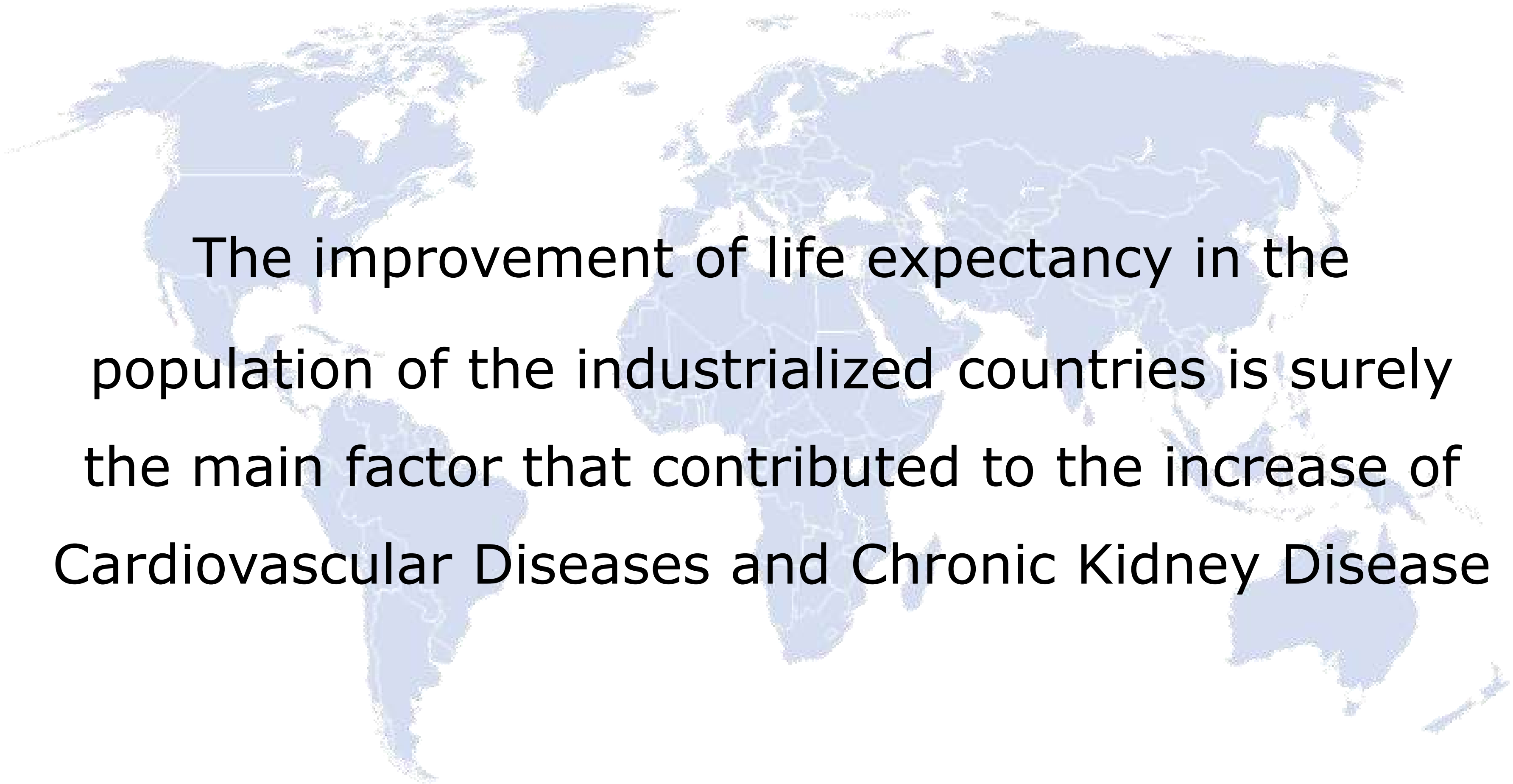
Luciano De Crescenzo

Ingegnere, Sceneggiatore, Attore, Regista

Apparently Healthy Population

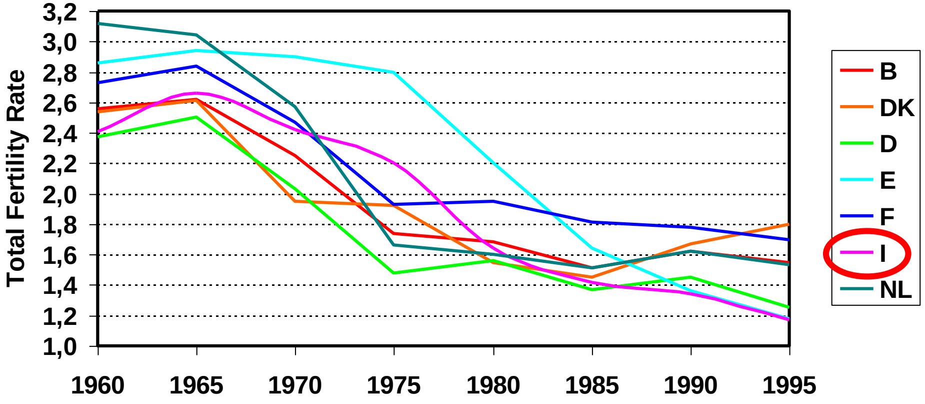
Population Aging

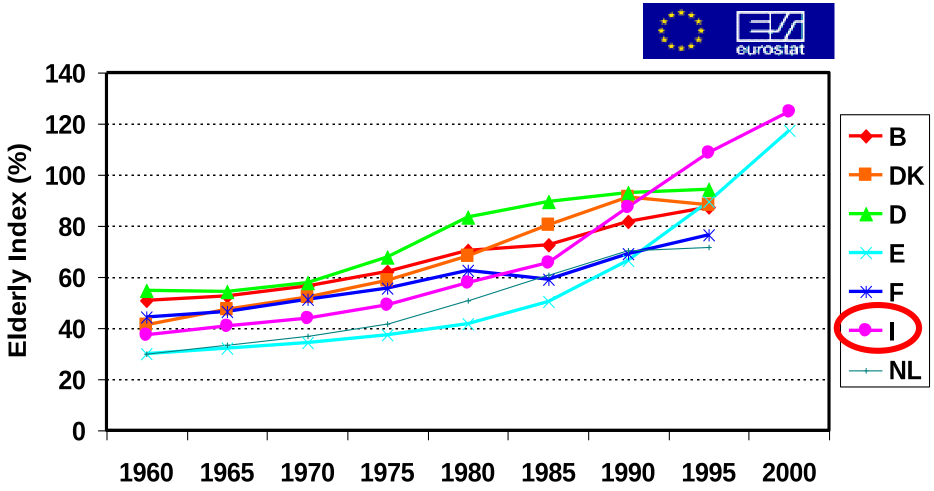
Demographic and Epidemiological Trend

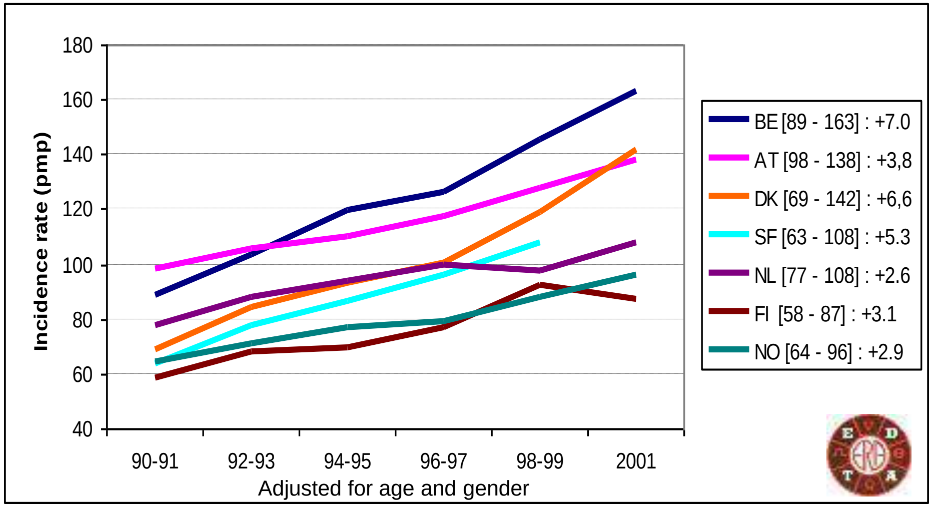


The improvement of life expectancy in the population of the industrialized countries is surely the main factor that contributed to the increase of Cardiovascular Diseases and Chronic Kidney Disease

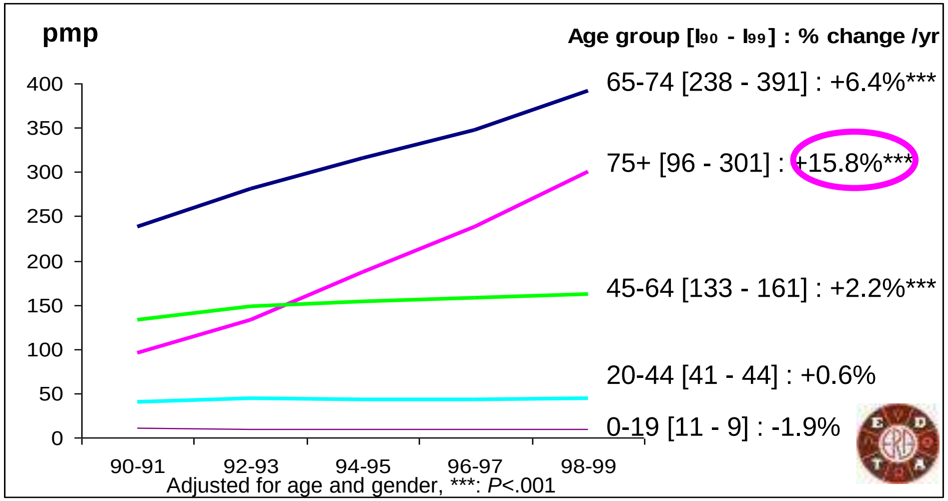
Europe Demographic and Epidemiological Trend







Adjusted for age and gender



Adjusted for age and gender, ***: *P*<.001

Incidence of End Stage Renal Disease (ESRD)

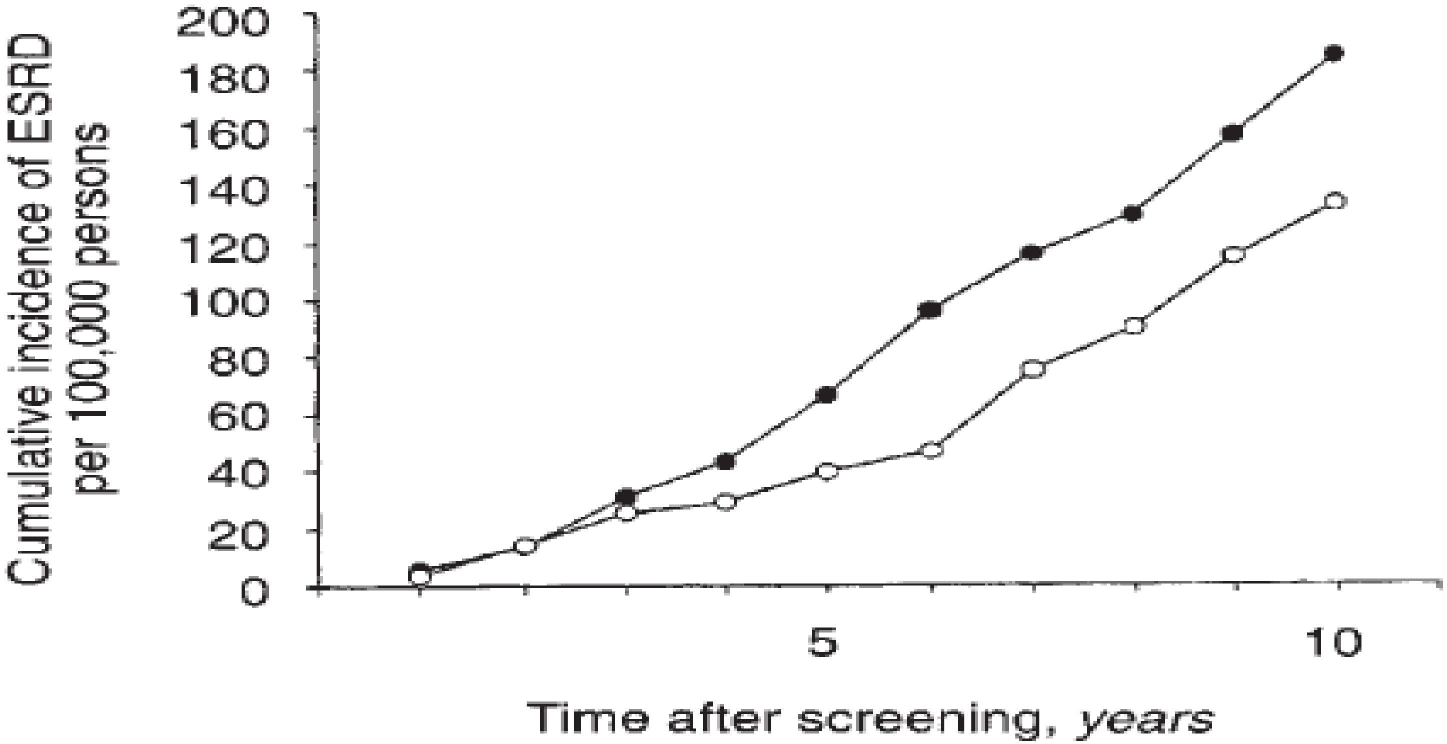
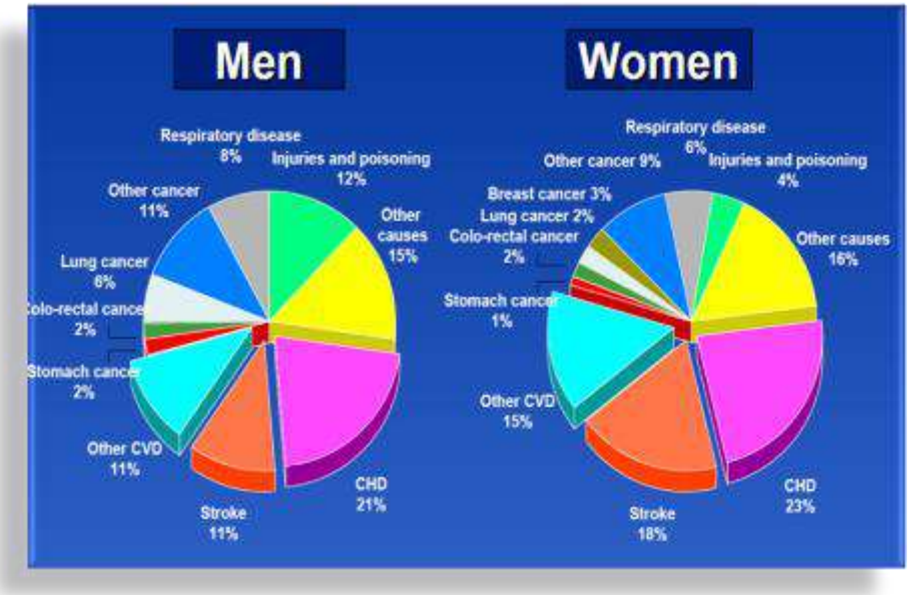


Fig. 3. *Relationship between the cumulative incidence of ESRD and the duration from the mass screening, in years, is shown in each sex.* Symbols are: (—●—) men; (—○—) women.

Iseki K. Kidney International (1996) 49, 800-805

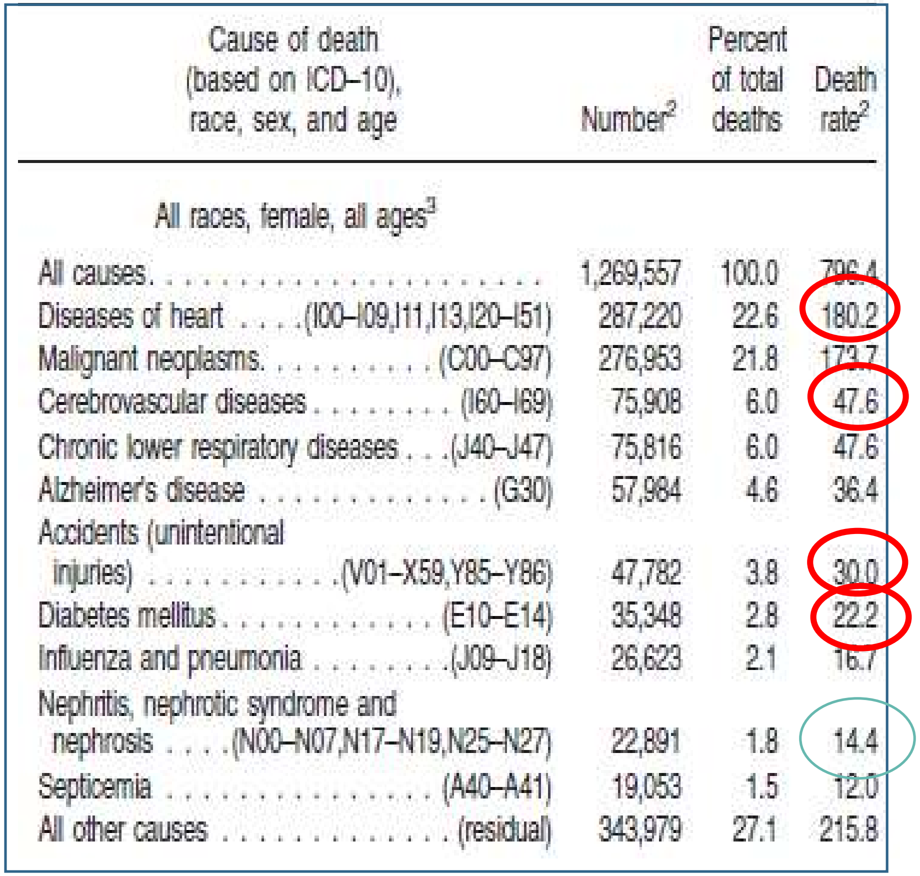
Cardiovascular Diseases in Female and Male

- Cardiovascular Disease (CVD) prevalence is on the rise in industrialised countries (1) presenting a significant societal and economic burden, in both gender.
- Early detection of CVD risk factors may prevent related complications, including Chronic Kidney Disease (CKD) (2-3-4).

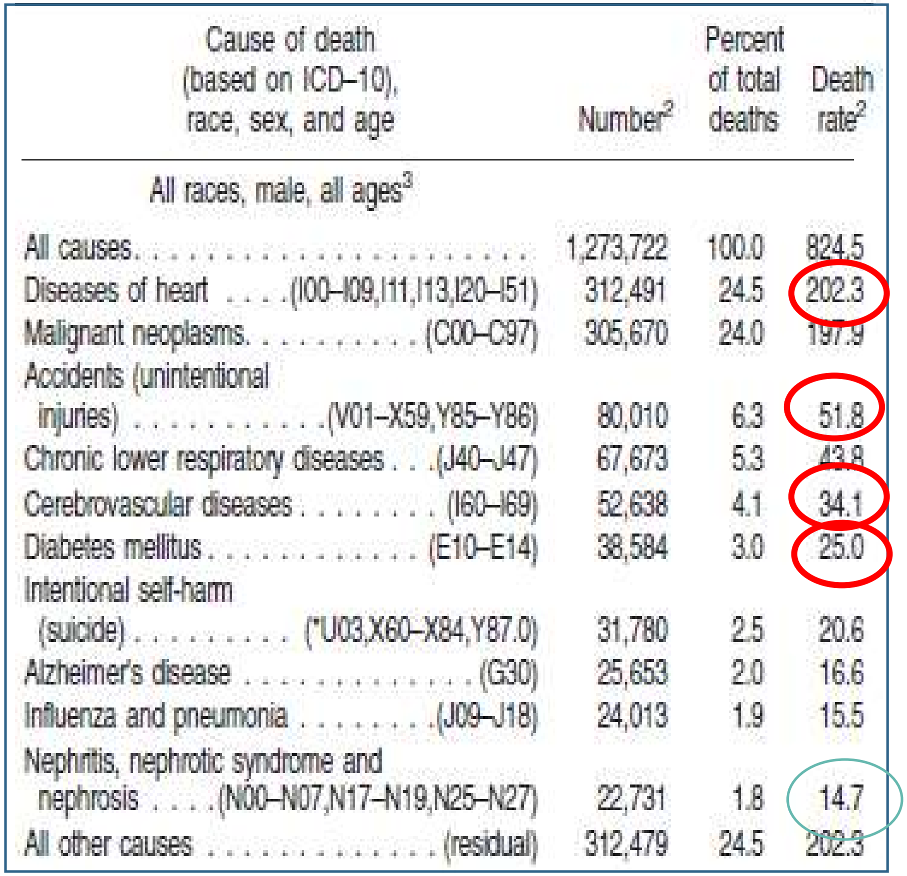


(1) World Health Organization : http://www.who.int/chp/chronic_disease_report/en/
(2) Foley R.N., Parfrey P.S., Sarnak M.J. Clinical epidemiology of cardiovascular disease in chronic renal disease - AJKD (1998) 32, Suppl 3; S112-S119
(3) De Jager D.J., Grootendorst D.C., Jager K.F. et Al. Cardiovascular and non cardiovascular mortality among patients starting dialysis- JAMA (2009) 302 (16); 1782-1789. ERA-EDTA registry, 1994-2000
(4) Di Benedetto A., Marcelli D., D'Andrea et Al. Risk factors and underlying cardiovascular diseases in incident ESRD patients- J Nephrol (2005);18:592-598.

Cause of Death in Female and Male



Cause of death (based on ICD–10), race, sex, and age	Number[2]	Percent of total deaths	Death rate[2]
All races, female, all ages[3]			
All causes.	1,269,557	100.0	796.4
Diseases of heart . . . .(I00–I09,I11,I13,I20–I51)	287,220	22.6	180.2
Malignant neoplasms. . . . . (C00–C97)	276,953	21.8	173.7
Cerebrovascular diseases . . . . (I60–I69)	75,908	6.0	47.6
Chronic lower respiratory diseases . . .(J40–J47)	75,816	6.0	47.6
Alzheimer's disease . . . . (G30)	57,984	4.6	36.4
Accidents (unintentional injuries) . . . .(V01–X59,Y85–Y86)	47,782	3.8	30.0
Diabetes mellitus. . . . . (E10–E14)	35,348	2.8	22.2
Influenza and pneumonia . . . .(J09–J18)	26,623	2.1	16.7
Nephritis, nephrotic syndrome and nephrosis . . . .(N00–N07,N17–N19,N25–N27)	22,891	1.8	14.4
Septicemia . . . . (A40–A41)	19,053	1.5	12.0
All other causes . . . . (residual)	343,979	27.1	215.8



Cause of death (based on ICD–10), race, sex, and age	Number[2]	Percent of total deaths	Death rate[2]
All races, male, all ages[3]			
All causes.	1,273,722	100.0	824.5
Diseases of heart . . . .(I00–I09,I11,I13,I20–I51)	312,491	24.5	202.3
Malignant neoplasms. . . . . (C00–C97)	305,670	24.0	197.9
Accidents (unintentional injuries) . . . .(V01–X59,Y85–Y86)	80,010	6.3	51.8
Chronic lower respiratory diseases . . .(J40–J47)	67,673	5.3	43.8
Cerebrovascular diseases . . . . (I60–I69)	52,638	4.1	34.1
Diabetes mellitus. . . . . (E10–E14)	38,584	3.0	25.0
Intentional self-harm (suicide) . . . . (*U03,X60–X84,Y87.0)	31,780	2.5	20.6
Alzheimer's disease . . . . (G30)	25,653	2.0	16.6
Influenza and pneumonia . . . .(J09–J18)	24,013	1.9	15.5
Nephritis, nephrotic syndrome and nephrosis . . . .(N00–N07,N17–N19,N25–N27)	22,731	1.8	14.7
All other causes . . . . (residual)	312,479	24.5	202.3

National Vital Statistics Report 2012

Women’s Health

- **Women live** longer than men, an average of **5 years longer**, but they tend to be “sicker” than men
  (Apfel, 1982; Waldron, 1994)
- **Longer life expectancy** holds across ethnic groups and nations, but **the gap is decreasing**
  (Verbrugge, 1985; Walsh, et al., 1995)
- **Women** are traditionally more **prone to “taking care”** of themselves and others

Women and Men's Health

- There are some differences between women and men about healthcare and it's clear that **women** are **more attentive** to their **physical appearance** and to **riduce risk factors**

- **Women live longer than men**, probably **not only** because of **biological differences**, **but also** because women pay more **attention in healthcare**, following a better behaviour and avoiding risks

- This is true also in End Stage Renal Disease

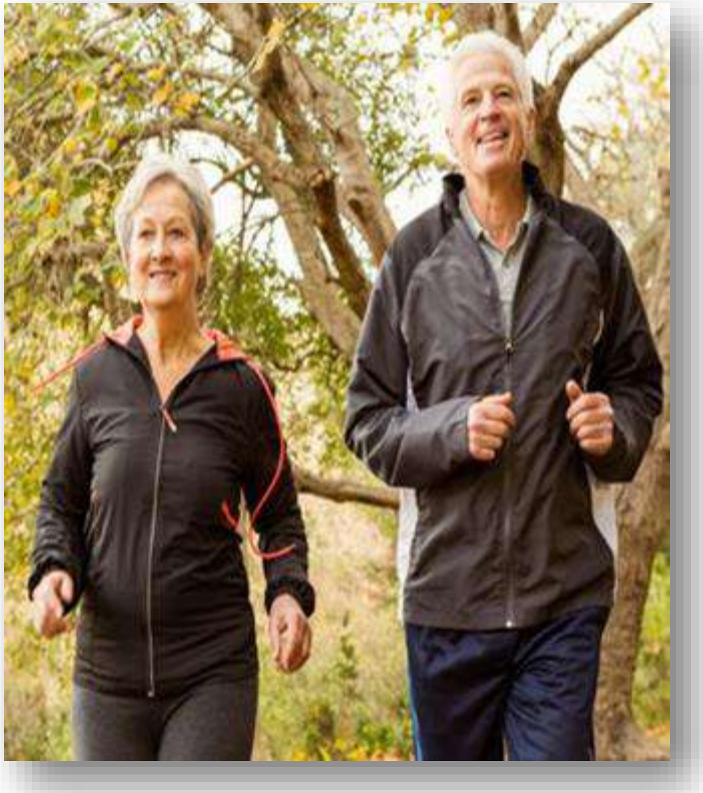
Women’s and Men’s Health…over 65 years #1

- **After 65 years**, **men** are more **attentive** to the **abdominal circumference** and other **cardiovascular risk factors** than women, while in **women** cardiovascular risk and ictus increase and they are **less attentive** to **CVD risk factors** as **smoke** or **overweight** .

- In Ferrara, with the project **‘Ferrara Città della Prevenzione’** , involving more than 16.000 people, we have a new identity card of cardiovascular risk. The results of the reserch presented at European Society of Cardiology (ESC) in Barcellona, show that :

- **Women over 65 years old have an higher risk than men**, because men with aging have better parameters than women, as abdominal circumference in men decreases from 91% to 75%, while in women increases from 73% to 85%.

- **72% relatives of patients with cardiovascular deseases** have **high risk of acute cardiovascular disease.** The percentage in relatives (**55%**) is higher than the percentage in general population .
- Only 28% relatives of patients with cardiovascular deseases have low risk (vs 37% in general population).
- All relatives of patients have a higher rate of overweight and obesity



Women’s and Men’s Health…over 65 years #2

- Thus, the decisive role of **genetic predisposition in the development of cardiovascular diseases** is confirmed, so we should **monitor these citizens with greater attention..**

- Also important are differences with age advancement: **men over 65 are more virtuous than women, beyond the age-related increase in risk factors such as blood pressure, diabetes, and visceral obesity.** " Already in 2008, the expert said, Ferrara had promoted a "census" of the population's cardiovascular risk. "Overall, the **'Absolute Cardiovascular Risk'** over time has improved, but **some factors show a worsening trend, particularly overweight has increased from 35% to 37% and obesity from 12% to 15%."**
- If women over the age of 65 are worried by the health of the heart, they have better results in the younger ones. **In younger age risk is actually reducing**, discovered a research at the University of Zurich, **the difference in mortality for infarction between the two genera**. If in the 1990s women were almost double (18.3% versus 9.8%), it is now considerably reduced for both, and it is 6.9% for women and 5.5% for men.

Sex-Based Differences in Cardiometabolic Biomarkers

- Differences between men and women were largely attributed to **hormonal differences**, but there are gender differences **in many different biological pathways that contribute to heart disease.**

- A transversal analysis of the **Dallas Heart Study** evaluated the associations between gender and 30 biomarkers in 6 pathophysiological categories.
- The study included **3,439 subjects** (mean age 43 years; 56% women; 56% African Americans) **without heart disease**. After adjustment for age, ethnicity, CVD risk factors, kidney function, insulin resistance, body composition, fat distribution, and left ventricular mass, **were found significant gender differences in several categories**, including lipids, adipokines and biomarkers of inflammation, endothelial dysfunction, stress and myocyte function and kidney damage.

Lew J, Sanghavi M, et al. Sex-Based Differences in Cardiometabolic Biomarkers, Circulation, 2017;135 (6):544-55

Sex-Based Differences in Cardiometabolic Biomarkers

Adamo ed Eva,
Hermitage, St Petersburg, Russia

In models adjusted, **women showed** :

- higher levels of concentration of **HDL-C and HDL** and lower levels of **LDL-C** ($p \leq 0.02$ in both cases)
- more levels high levels of **leptin** ($p \leq 0.0001$)
- lower levels of **adiponectin** ($p = 0.04$)
- higher levels of **D-dimer** and lower mass and activity of **LP-PLA2** ($p < 0.0001$ in each case)
- lower levels of **endothelial markers SESAM and SDMA** ($p < 0.0001$ for both)
- lower levels of renal biomarker **cystatin C** ($p < 0.0001$).

Lew J, Sanghavi M, et al. Sex-Based Differences in Cardiometabolic Biomarkers, Circulation, 2017;135 (6):544-55

Cardiovascular Risk Factors

- The most important cardiovascular (CV) risk factors are hypertension, smoke, diabetes, lifestyle related obesity and **Fluid Overload** (5).

- Prevention and management of fluid overload could reduce incidence of secondary hypertension and **left ventricular hypertrophy (LVH)**.

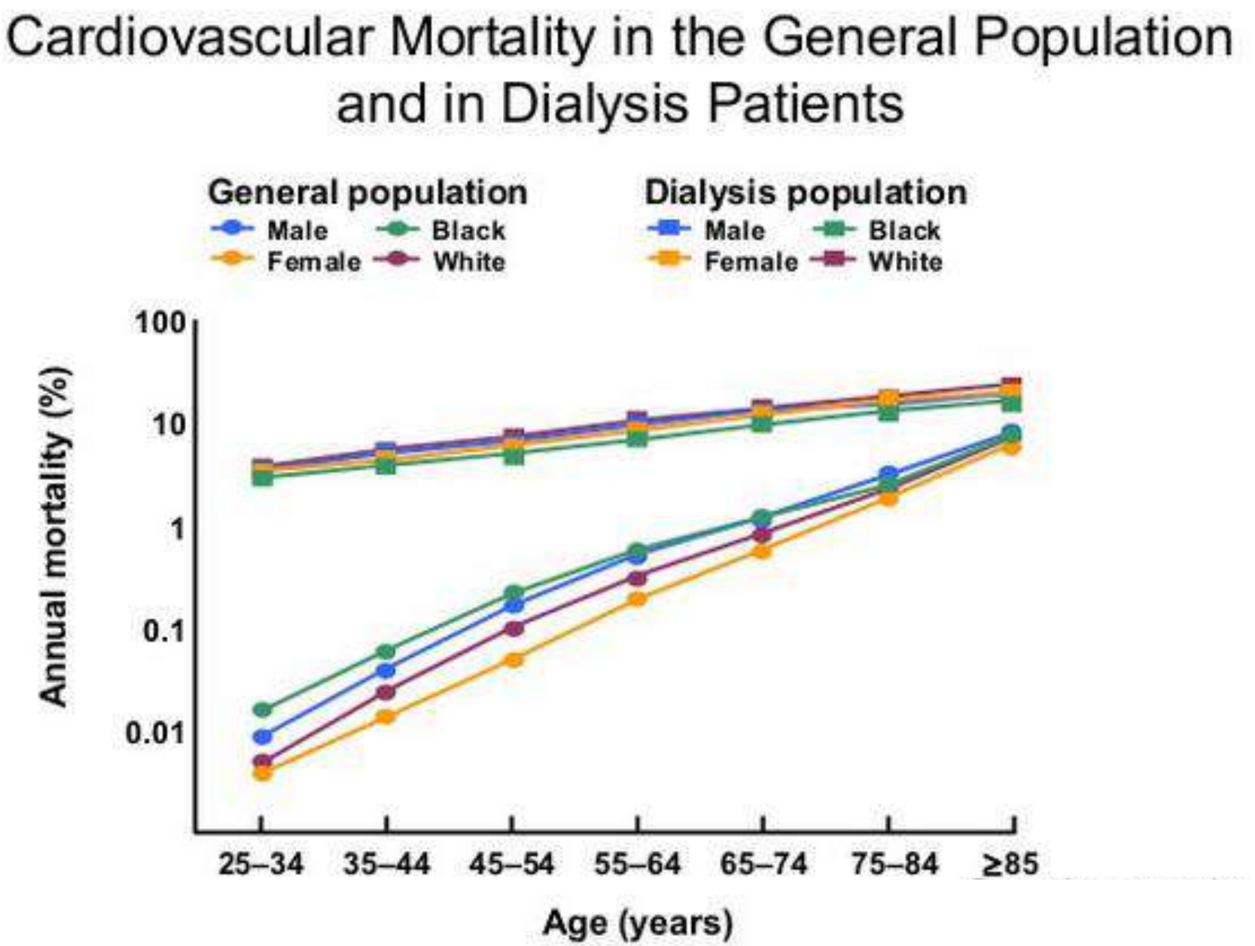
(5) Wizemann V., Wabel P., Chamney P. et al. The mortality risk of overhydration in haemodialysis patients - Nephrol Dial Transplant (2009);

24: 1574–1579

Cardiovascular Disease in Patients with CKD

- Patients with Chronic Kidney Disease (CKD) are exposed to a very high risk to develop a cardiovascular disease (CVD), which is considered the first cause of morbidity and mortality of Patients on dialysis (40-50%).

Cardiovascular Mortality in the General Population and in Dialysis Patients



(1) Foley R.N., Parfrey P.S. , Sarnak M.J. Clinical epidemiology of cardiovascular disease in chronic renal disease - AJKD (1998) 32, Suppl 3; S112-S119

Prevalence of Cardiovascular Disease in General Population and in HD/PD Patients

	Clinical Coronary Artery Disease	Left Ventricular Hypertrophy	Congestive Heart Failure
General Population	**5 %* to 12 %****	**20 %**	**5 %*****
Haemodialysis and Peritoneal Dialysis	40 %	75 %	40 %

* 45 – 64 years
** > 65 years
*** 60 years

(1) Foley R.N., Parfrey P.S. , Sarnak M.J. Clinical epidemiology of cardiovascular disease in chronic renal disease - AJKD (1998) 32, Suppl 3; S112-S119

Prevalence of Cardiovascular Risk Factor at Admission on Dialysis (Incident Patients)

Cardiovascular Risk Factors	Proportion (%)
Age 65-75 years	30.5
Age >75 years	25.8
Males	58.5
Diabetes	21.4
LDL Cholesterol > 100 mg/dL	48.3
Total Cholesterol > 200 mg/dL	15.6
Uncontrolled Hypertension*	41.9
Obesity	20.5
Smoking (current)	12.8
Smoking (previous)	29.6

*(syst. BP> 140 and/or diast. BP > 90 mmHg)

41° EDTA – ERA CONGRESS
LISBON 2004

ELEVENTH ASSISI EUROPEAN MEETING ON CARDIONEPHROLOGY
ASSISI, APRIL 7 – 9, 2005

(2) Di Benedetto A. et al. Risk factors and underlying cardiovascular diseases in incident ESRD patients- J Nephrol (2005);18:592-598.

Prevalence of the main CVD present at time of admission (Incident Patients) and reported after admission as the novo

Disease	ICD10 code	Baseline (%)	De novo (%)
Chronic Rheumatic Heart Disease	I05-I09	1.6	0.8
Hypertensive Disease	I10-I15	13.6	-
Ischaemic Heart Disease	I20-I25	12.6	1.6
Pulmonary Heart Disease, etc	I26-I28	0.2	-
Other Forms of Heart Disease	I30-I52	13.0	4.9
Dis. of Arteries, Arterioles, etc	I70-I79	7.1	5.0
Cerebrovascular Disease	I60-I69	5.9	2.8

41° EDTA – ERA CONGRESS
LISBON 2004

ELEVENTH ASSISI EUROPEAN MEETING ON CARDIONEPHROLOGY
ASSISI, APRIL 7 – 9, 2005

(2) Di Benedetto A. et al. Risk factors and underlying cardiovascular diseases in incident ESRD patients- J Nephrol (2005);18:592-598.

Increased Mortality Risk by Overhydration

Aim

- Assessment of hydration status and body composition by *Body Composition Monitor*

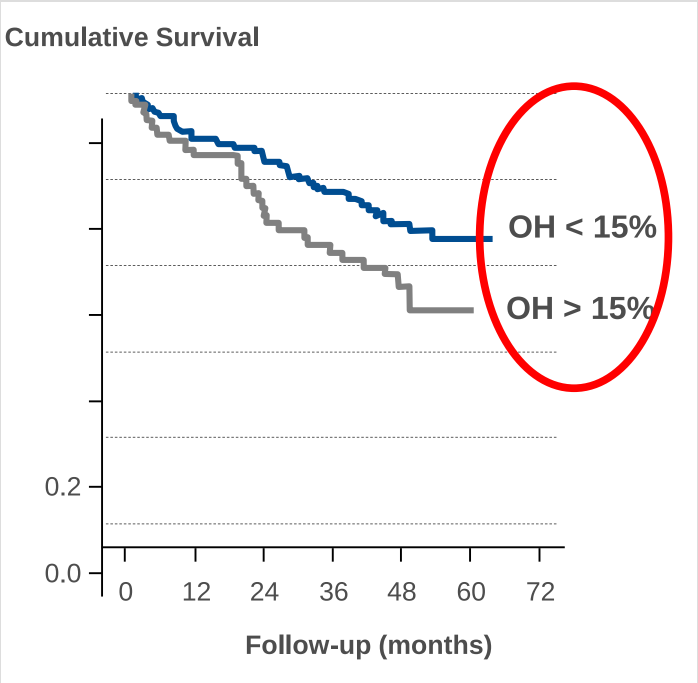
Patients

- 269 prevalent haemodialysis (HD) patients, follow up of 3.5 years

Results

- **Hydration state** is an important and independent **predictor of mortality** in chronic HD patients

Survival Curve (Kaplan-Meier)

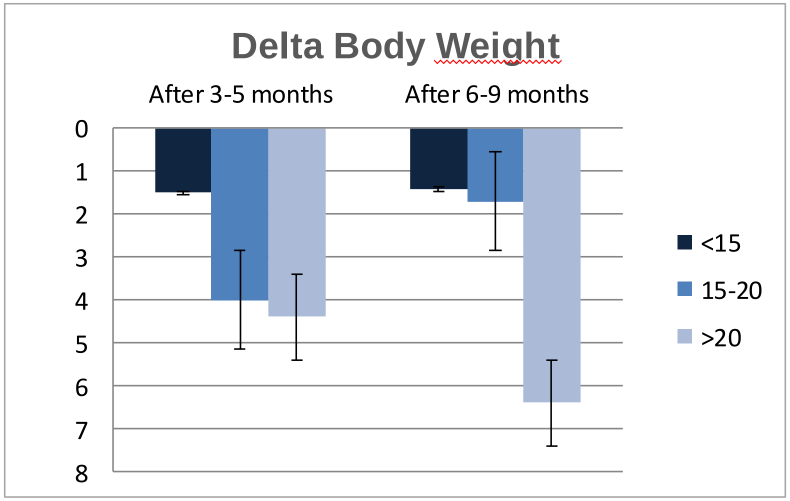


Wizemann et al. Nephrol Dial Transplant (2009) 24: 1574–1579

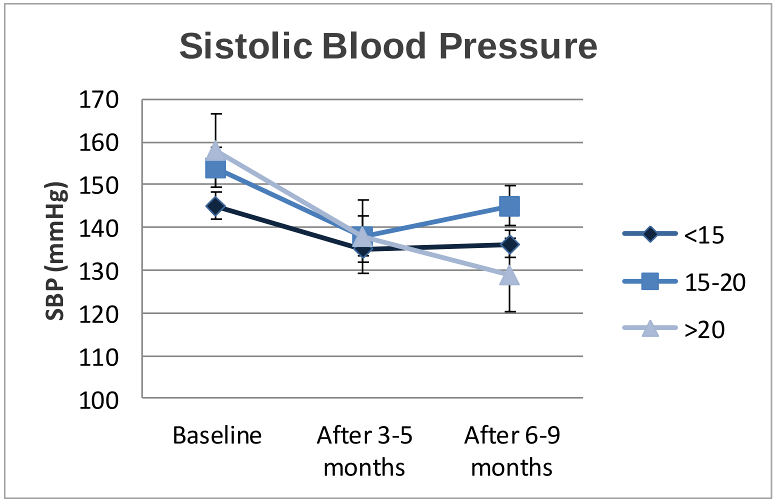
Arterial Ipertension & Fluid Overload

Evaluation in ESRD Incident Patients in Emodialysis

The mean post-dialysis body weight change compared to baseline (delta BW) and predialysis systolic blood pressure (SBP) during follow-up.



Delta Body Weight

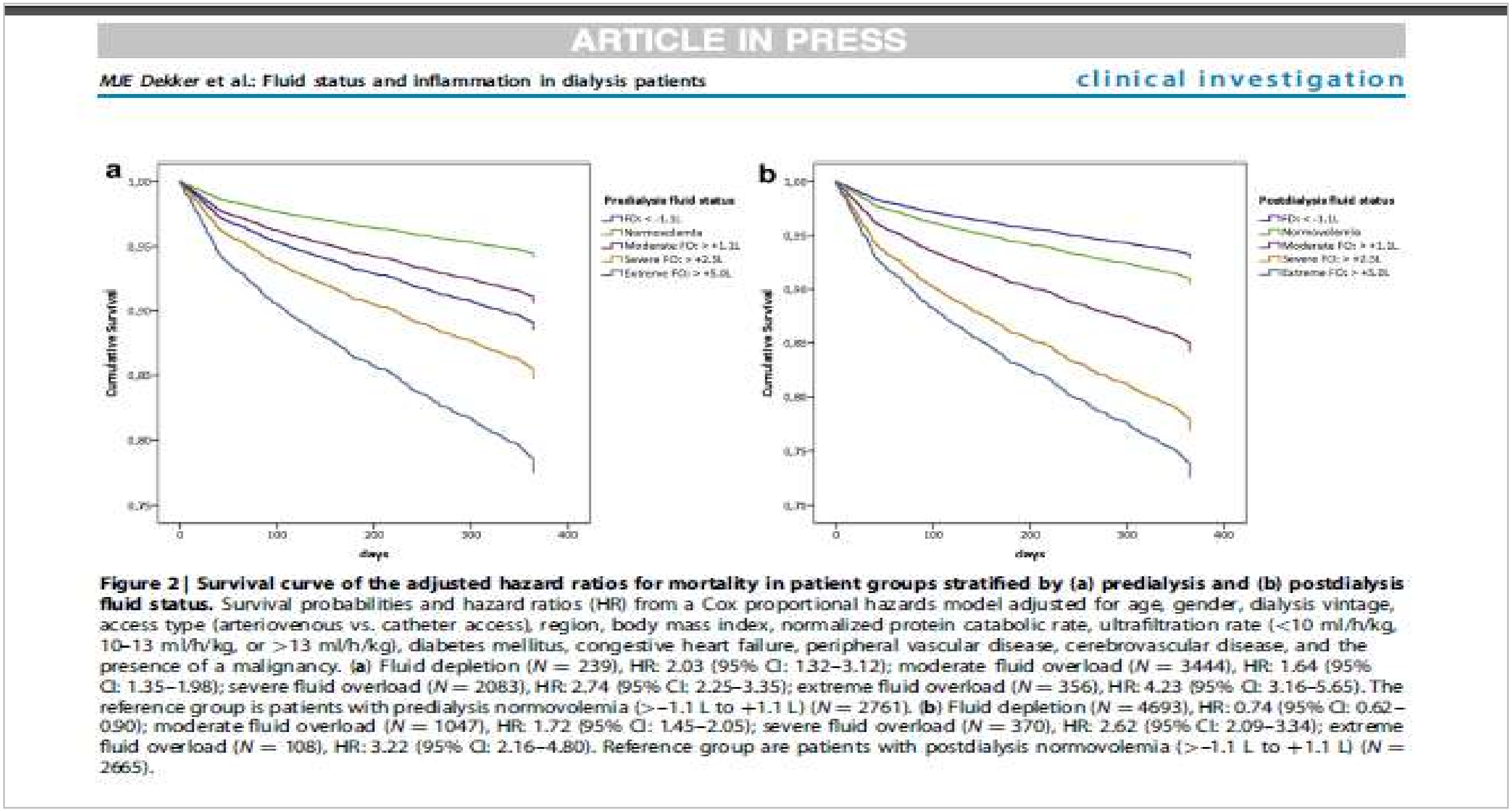


Sistolic Blood Pressure

Over-hydration (%)	Baseline (N=281 pts)		After 3-5 months (N=283 pts)			After 6-9 months (N=231 pts)		
	Pts (%)	SBP (mmHg)	Pts (%)	Delta BW (%)	SBP (mmHg)	Pts (%)	Delta BW (%)	SBP (mmHg)
<15	69.0	145±24	78.4	-1.5±4.3	135±18	80.1	-1.4+5.1	136±21
15-20	17.4	154±21	11.3	-4.0±4.9	138±20	13.0	-1.7+3.3	145±23
>20	13.5	158±22	10.2	-4.4±6.6	138±27	6.9	-6.4+7.9	129±22

52° EDTA – ERA CONGRESS
LONDON 2015
CARDIONEPHROLOGY CONGRESS
ROMA 2015

Chronic Fluid Overload & Mortality in ESRD



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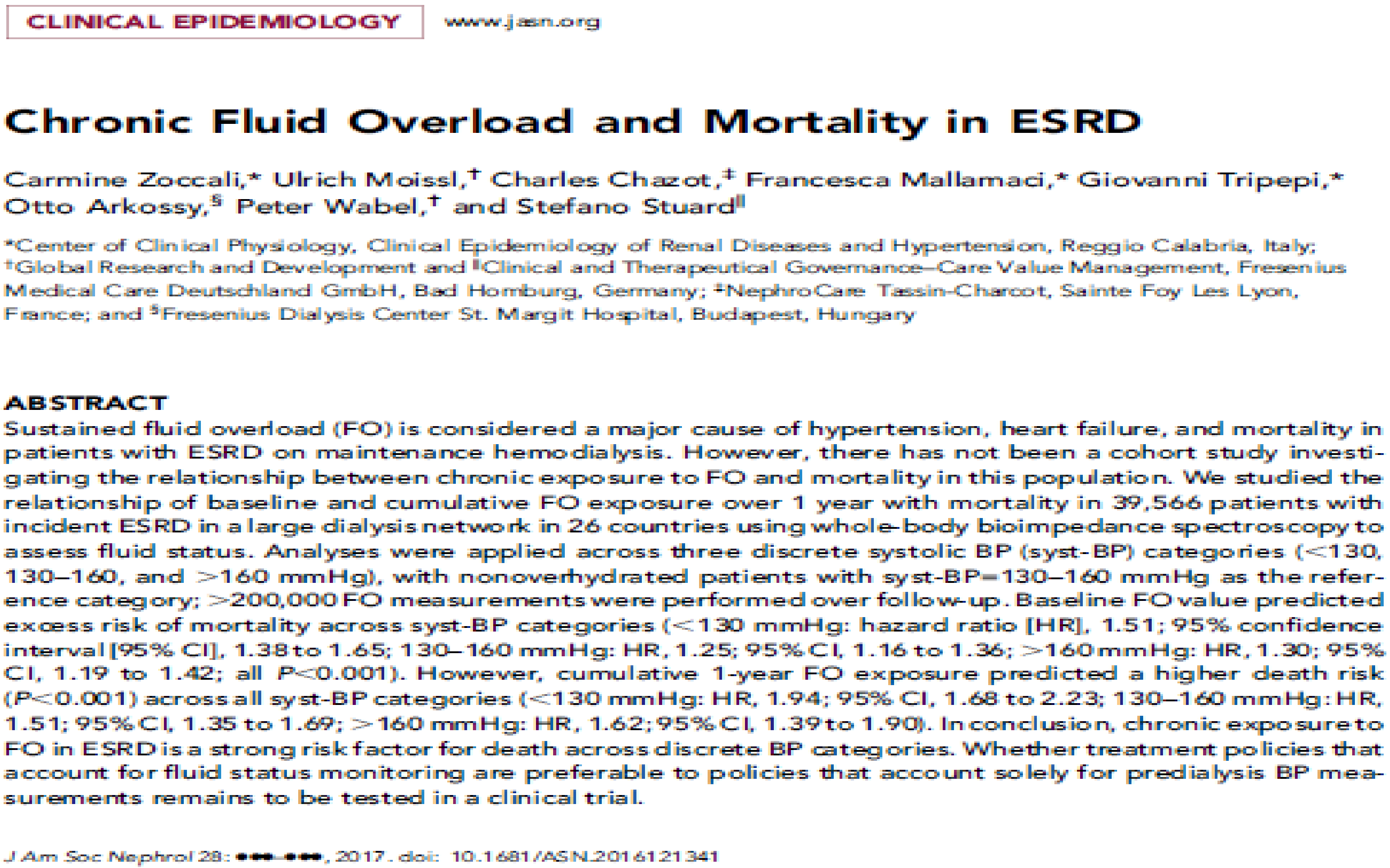
MJE Dekker et al.: Fluid status and inflammation in dialysis patients — clinical investigation

Figure 2 | Survival curve of the adjusted hazard ratios for mortality in patient groups stratified by (a) predialysis and (b) postdialysis fluid status. Survival probabilities and hazard ratios (HR) from a Cox proportional hazards model adjusted for age, gender, dialysis vintage, access type (arteriovenous vs. catheter access), region, body mass index, normalized protein catabolic rate, ultrafiltration rate (<10 ml/h/kg, 10–13 ml/h/kg, or >13 ml/h/kg), diabetes mellitus, congestive heart failure, peripheral vascular disease, cerebrovascular disease, and the presence of a malignancy. (**a**) Fluid depletion (*N* = 239), HR: 2.03 (95% CI: 1.32–3.12); moderate fluid overload (*N* = 3444), HR: 1.64 (95% CI: 1.35–1.98); severe fluid overload (*N* = 2083), HR: 2.74 (95% CI: 2.25–3.35); extreme fluid overload (*N* = 356), HR: 4.23 (95% CI: 3.16–5.65). The reference group is patients with predialysis normovolemia (>−1.1 L to +1.1 L) (*N* = 2761). (**b**) Fluid depletion (*N* = 4693), HR: 0.74 (95% CI: 0.62–0.90); moderate fluid overload (*N* = 1047), HR: 1.72 (95% CI: 1.45–2.05); severe fluid overload (*N* = 370), HR: 2.62 (95% CI: 2.09–3.34); extreme fluid overload (*N* = 108), HR: 3.22 (95% CI: 2.16–4.80). Reference group are patients with postdialysis normovolemia (>−1.1 L to +1.1 L) (*N* = 2665).

M J.E. Dekker , D.Marcelli , B.Canaud et al. Impact of fluid status and inflammation and their interaction on survival: a study in an international hemodialysis patient cohort - Kidney International (2017)

Chronic Fluid Overload and Mortality in ESRD



CLINICAL EPIDEMIOLOGY www.jasn.org

Chronic Fluid Overload and Mortality in ESRD

Carmine Zoccali,* Ulrich Moissl,† Charles Chazot,‡ Francesca Mallamaci,* Giovanni Tripepi,* Otto Arkossy,§ Peter Wabel,† and Stefano Stuard‖

*Center of Clinical Physiology, Clinical Epidemiology of Renal Diseases and Hypertension, Reggio Calabria, Italy; †Global Research and Development and ‖Clinical and Therapeutical Governance–Care Value Management, Fresenius Medical Care Deutschland GmbH, Bad Homburg, Germany; ‡NephroCare Tassin-Charcot, Sainte Foy Les Lyon, France; and §Fresenius Dialysis Center St. Margit Hospital, Budapest, Hungary

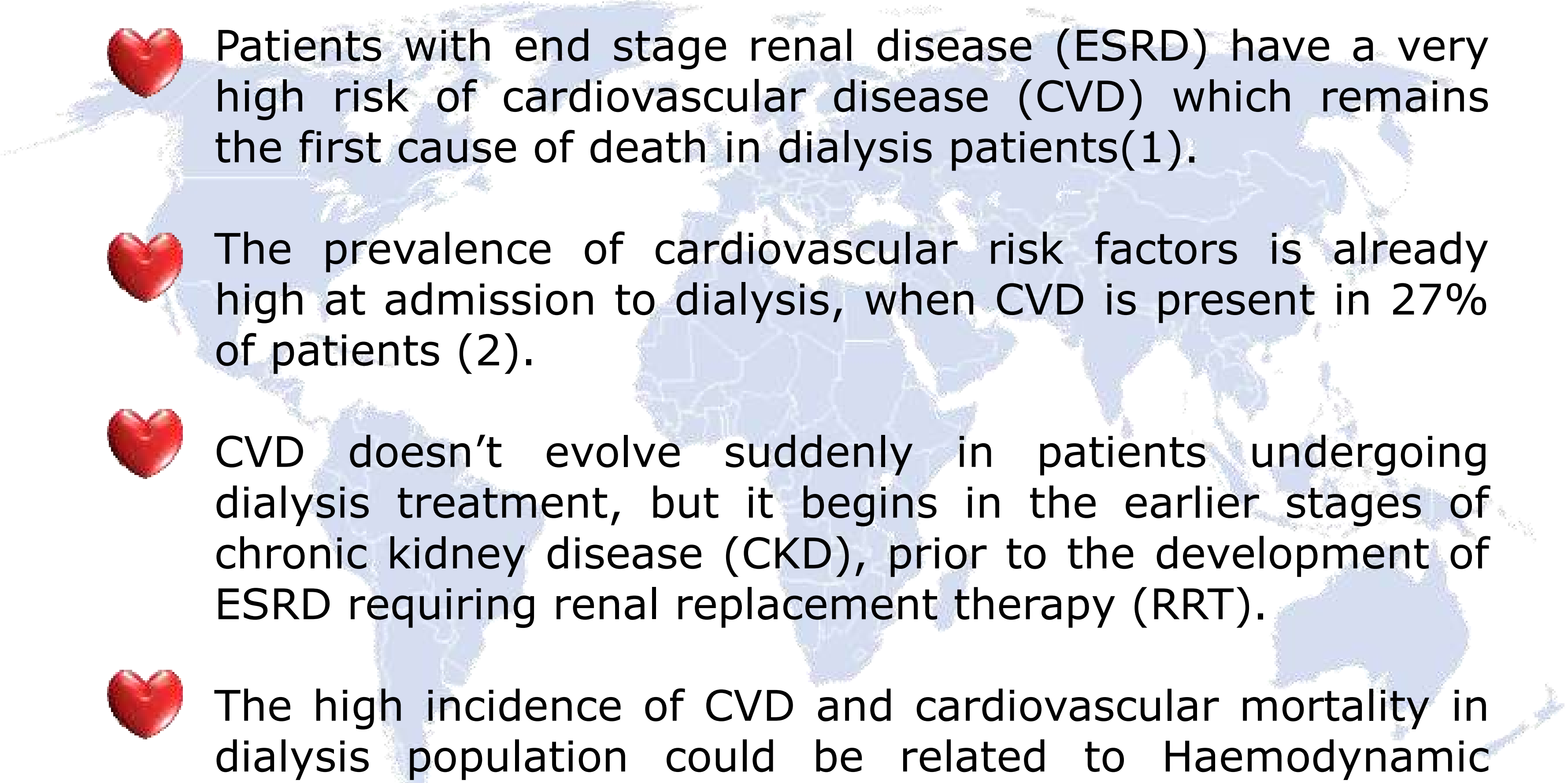
ABSTRACT

Sustained fluid overload (FO) is considered a major cause of hypertension, heart failure, and mortality in patients with ESRD on maintenance hemodialysis. However, there has not been a cohort study investigating the relationship between chronic exposure to FO and mortality in this population. We studied the relationship of baseline and cumulative FO exposure over 1 year with mortality in 39,566 patients with incident ESRD in a large dialysis network in 26 countries using whole-body bioimpedance spectroscopy to assess fluid status. Analyses were applied across three discrete systolic BP (syst-BP) categories (<130, 130–160, and >160 mmHg), with nonoverhydrated patients with syst-BP=130–160 mmHg as the reference category; >200,000 FO measurements were performed over follow-up. Baseline FO value predicted excess risk of mortality across syst-BP categories (<130 mmHg: hazard ratio [HR], 1.51; 95% confidence interval [95% CI], 1.38 to 1.65; 130–160 mmHg: HR, 1.25; 95% CI, 1.16 to 1.36; >160 mmHg: HR, 1.30; 95% CI, 1.19 to 1.42; all P<0.001). However, cumulative 1-year FO exposure predicted a higher death risk (P<0.001) across all syst-BP categories (<130 mmHg: HR, 1.94; 95% CI, 1.68 to 2.23; 130–160 mmHg: HR, 1.51; 95% CI, 1.35 to 1.69; >160 mmHg: HR, 1.62; 95% CI, 1.39 to 1.90). In conclusion, chronic exposure to FO in ESRD is a strong risk factor for death across discrete BP categories. Whether treatment policies that account for fluid status monitoring are preferable to policies that account solely for predialysis BP measurements remains to be tested in a clinical trial.

J Am Soc Nephrol 28: ●●●–●●●, 2017. doi: 10.1681/ASN.2016121341

Summay:

Cardiovascular Disease in Incident and Prevalent Patients in Hemodialysis



- Patients with end stage renal disease (ESRD) have a very high risk of cardiovascular disease (CVD) which remains the first cause of death in dialysis patients(1).

- The prevalence of cardiovascular risk factors is already high at admission to dialysis, when CVD is present in 27% of patients (2).

- CVD doesn’t evolve suddenly in patients undergoing dialysis treatment, but it begins in the earlier stages of chronic kidney disease (CKD), prior to the development of ESRD requiring renal replacement therapy (RRT).

- The high incidence of CVD and cardiovascular mortality in dialysis population could be related to Haemodynamic Management in Dialysis Patients and probably also in CKD 4 and 5 pre-End Stage Renal Disease.

Which are the CKD Management target?

Objectives

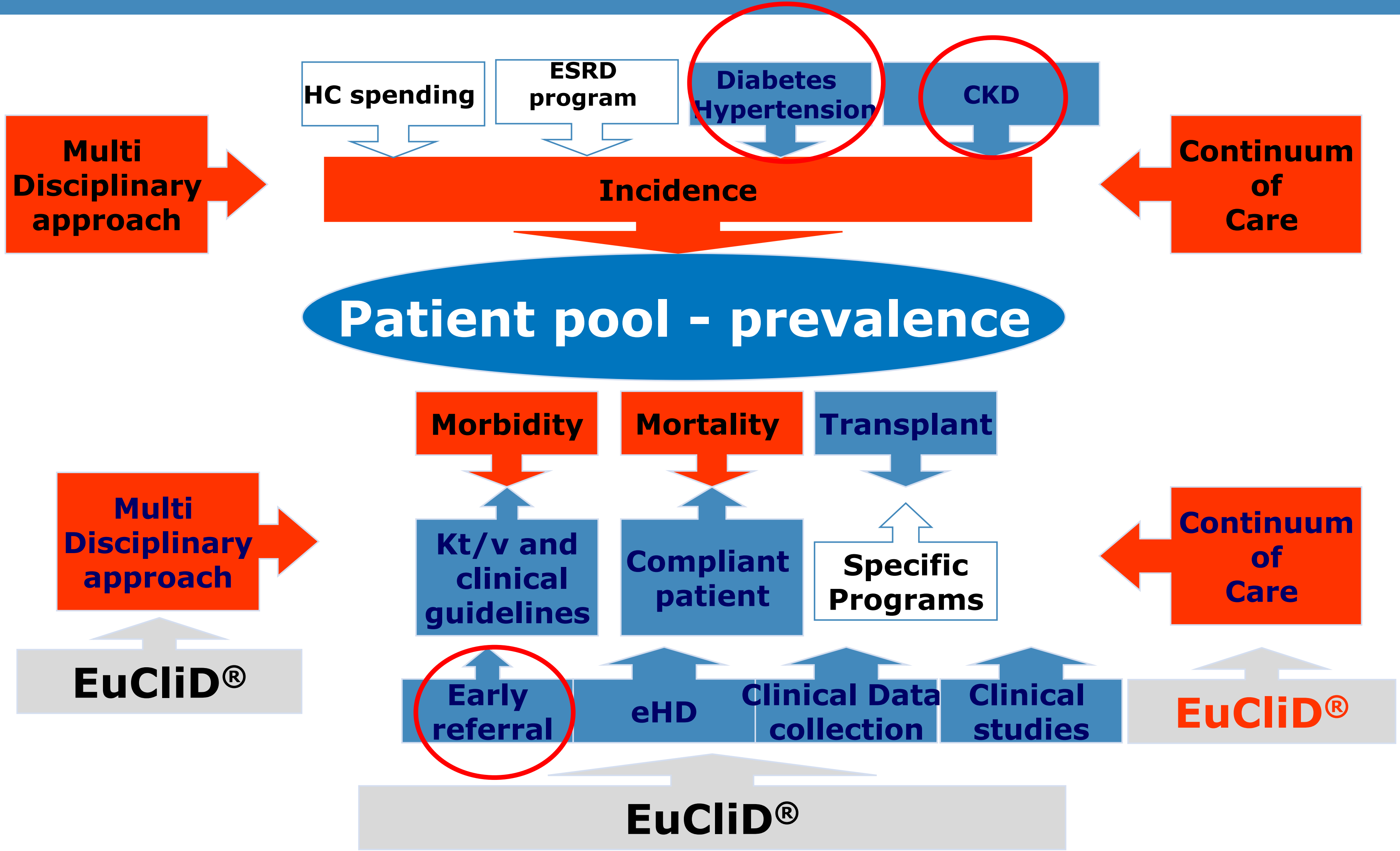
- **Risk Factors Management**
- **Less Mortality (6% > 4 dialysis month)**
- **Less Morbidity (4.8 +/- 3.3 hospitalisation days/patient/year)**

- **Patients loyalty**
- **Improve**
- **Health Care Sustainability**

Care

HEALTHCARE

Disease Management: Early Referral Approach



HC spending

ESRD program

Diabetes Hypertension

CKD

Multi Disciplinary approach

Incidence

Continuum of Care

Patient pool - prevalence

Morbidity

Mortality

Transplant

Multi Disciplinary approach

Kt/v and clinical guidelines

Compliant patient

Specific Programs

Continuum of Care

EuCliD®

Early referral

eHD

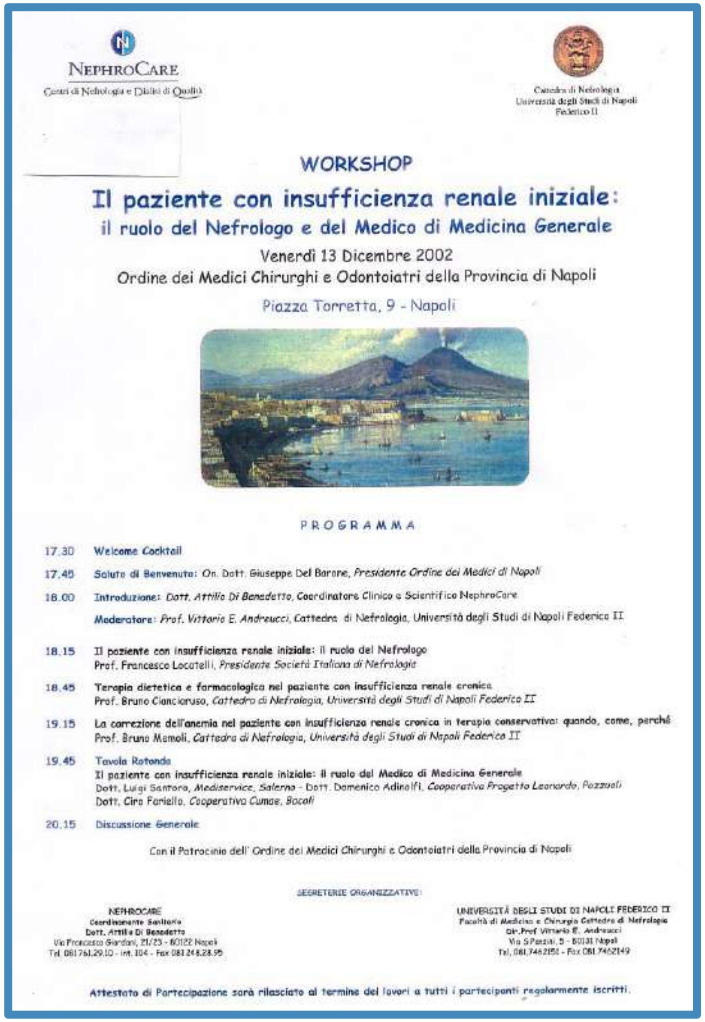
Clinical Data collection

Clinical studies

EuCliD®

EuCliD®

The Value of Relationship with GPs



NephroCare
Centri di Nefrologia e Dialisi di Qualità

Cattedra di Nefrologia
Università degli Studi di Napoli
Federico II

WORKSHOP

Il paziente con insufficienza renale iniziale:
il ruolo del Nefrologo e del Medico di Medicina Generale

Venerdì 13 Dicembre 2002
Ordine dei Medici Chirurghi e Odontoiatri della Provincia di Napoli
Piazza Torretta, 9 - Napoli

PROGRAMMA

17.30 **Welcome Cocktail**

17.45 **Saluto di Benvenuto:** On. Dott. Giuseppe Del Barone, *Presidente Ordine dei Medici di Napoli*

18.00 **Introduzione:** *Dott. Attilio Di Benedetto*, Coordinatore Clinico e Scientifico NephroCare

Moderatore: *Prof. Vittorio E. Andreucci*, Cattedra di Nefrologia, Università degli Studi di Napoli Federico II

18.15 **Il paziente con insufficienza renale iniziale: il ruolo del Nefrologo**
Prof. Francesco Locatelli, *Presidente Società Italiana di Nefrologia*

18.45 **Terapia dietetica e farmacologica nel paziente con insufficienza renale cronica**
Prof. Bruno Cianciaruso, *Cattedra di Nefrologia, Università degli Studi di Napoli Federico II*

19.15 **La correzione dell'anemia nel paziente con insufficienza renale cronica in terapia conservativa: quando, come, perché**
Prof. Bruno Memoli, *Cattedra di Nefrologia, Università degli Studi di Napoli Federico II*

19.45 **Tavola Rotonda**
Il paziente con insufficienza renale iniziale: il ruolo del Medico di Medicina Generale
Dott. Luigi Santoro, *Mediservice, Salerno* - Dott. Domenico Adinolfi, *Cooperativa Progetto Leonardo, Pozzuoli*
Dott. Ciro Fariello, *Cooperativa Cumae, Bacoli*

20.15 **Discussione Generale**

Con il Patrocinio dell' Ordine dei Medici Chirurghi e Odontoiatri della Provincia di Napoli

SEGRETERIE ORGANIZZATIVE:

NEPHROCARE
Coordinamento Sanitario
Dott. Attilio Di Benedetto
Via Francesco Giordani, 21/23 - 80122 Napoli
Tel. 081.761.29.10 - int. 104 - Fax 081.248.28.95

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
Facoltà di Medicina e Chirurgia Cattedra di Nefrologia
Dir. Prof Vittorio E. Andreucci
Via S.Pansini, 5 - 80131 Napoli
Tel. 081.7462150 - Fax 081.7462149

Attestato di Partecipazione sarà rilasciato al termine dei lavori a tutti i partecipanti regolarmente iscritti.

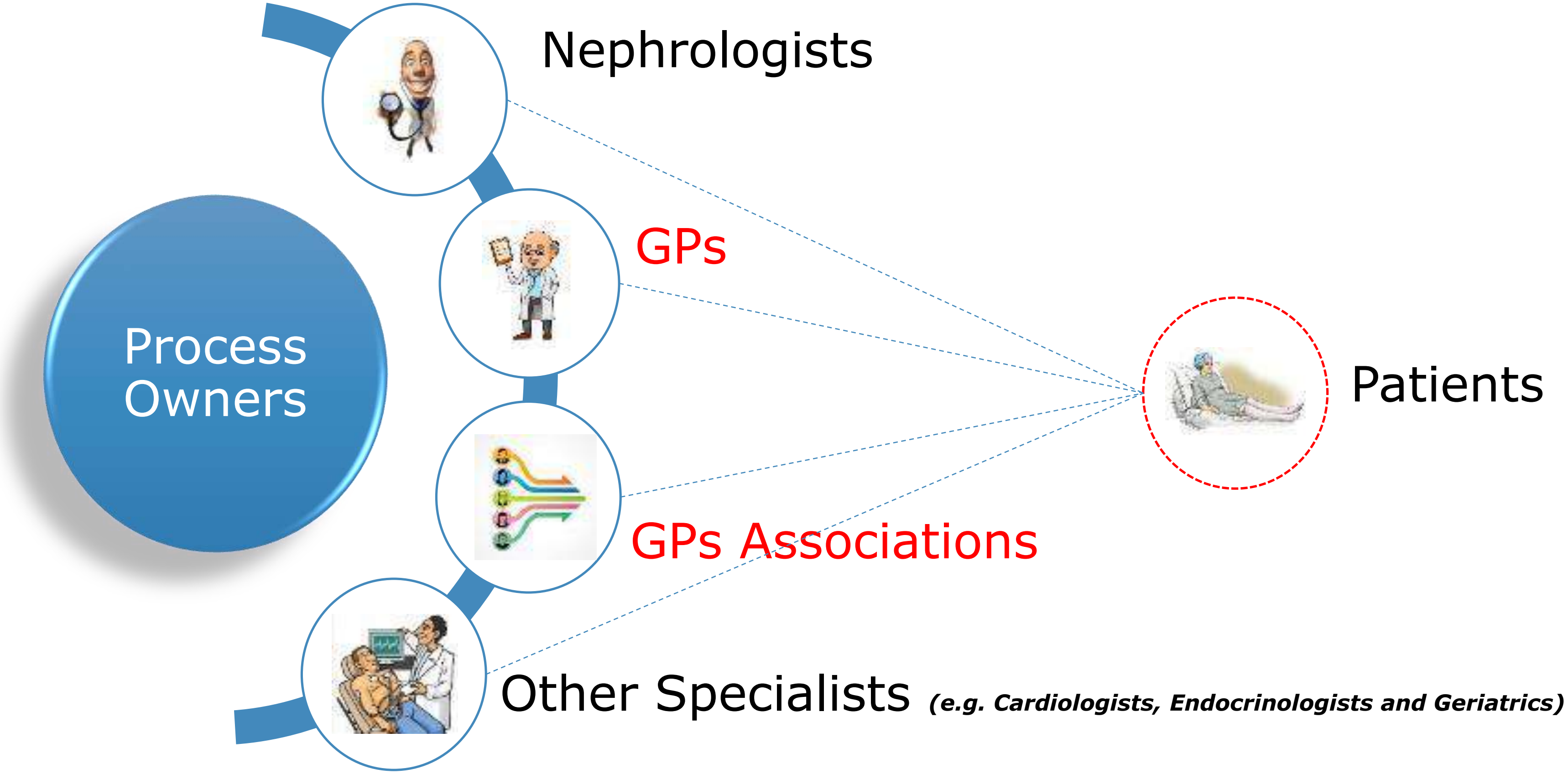
LATE REFERRAL patient characteristics:

- **Uncontrolled Hypertension**
- **Fluid Overload**
- **Higher urea and creatinine values**
- **Higher Mortality (39% < 1dialysis month)**
- **Higher Morbidity (29.7 +/- 15.8 hospitalisation days/patient/year)**
- **Higher Risk of Sudden Death**

EARLY REFERRAL patient characteristic:

- **Less Mortality (6% > 4 dialysis month)**
- **Less Morbidity (4.8 +/- 3.3 hospitalisation days/patient/year)**

Main Process Owners



Process Owners

Nephrologists

GPs

GPs Associations

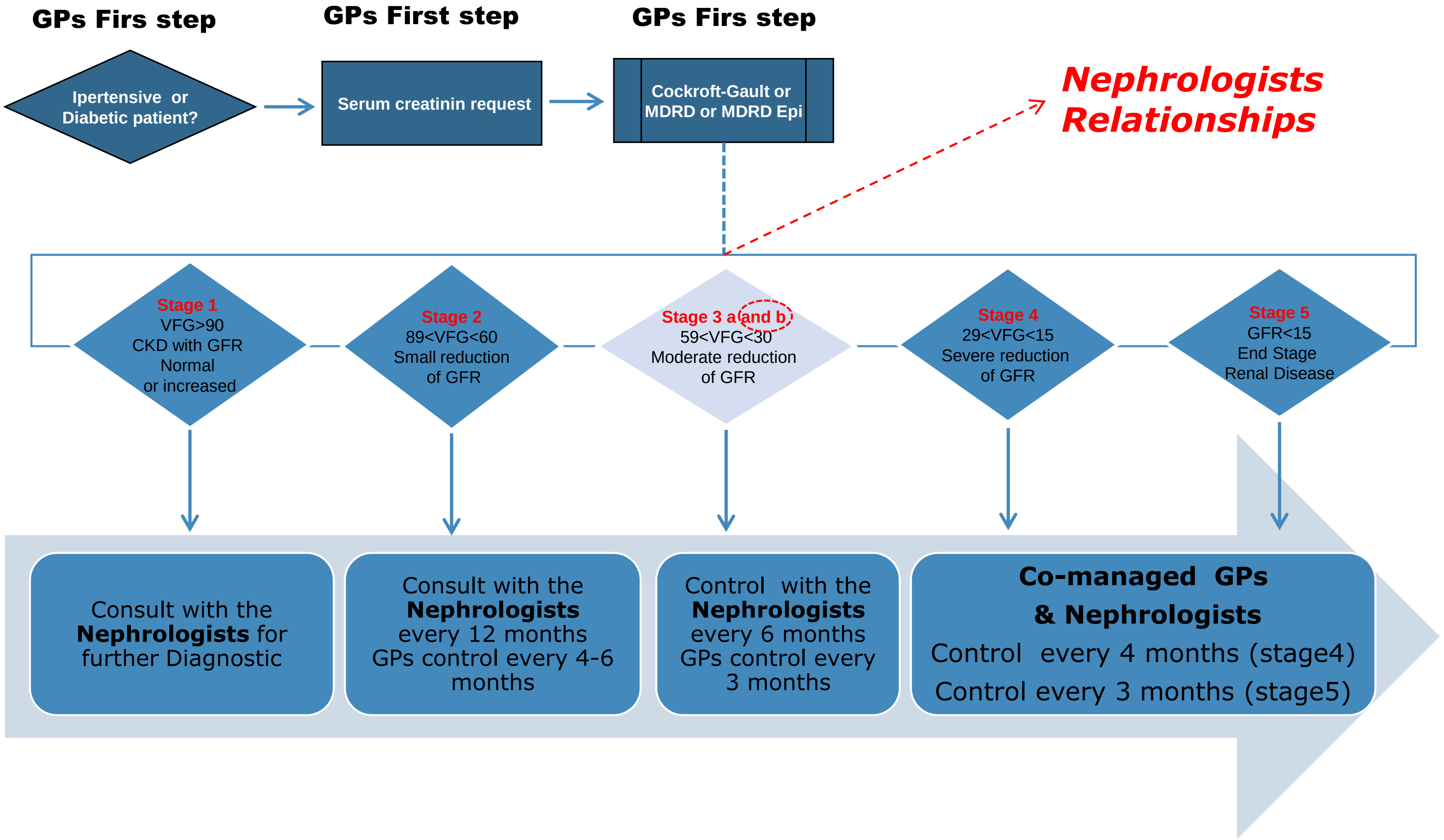
Other Specialists *(e.g. Cardiologists, Endocrinologists and Geriatrics)*

Patients

What kind of relationship can exist between the main actors involved?

☑ Personal ☑ Professional

Process Steps and Nephrologists Relationship



GPs Firs step

Ipertensive or Diabetic patient?

GPs First step

Serum creatinin request

GPs Firs step

Cockroft-Gault or MDRD or MDRD Epi

Nephrologists Relationships

Stage 1
VFG>90
CKD with GFR Normal or increased

Stage 2
89<VFG<60
Small reduction of GFR

Stage 3 a and b
59<VFG<30
Moderate reduction of GFR

Stage 4
29<VFG<15
Severe reduction of GFR

Stage 5
GFR<15
End Stage Renal Disease

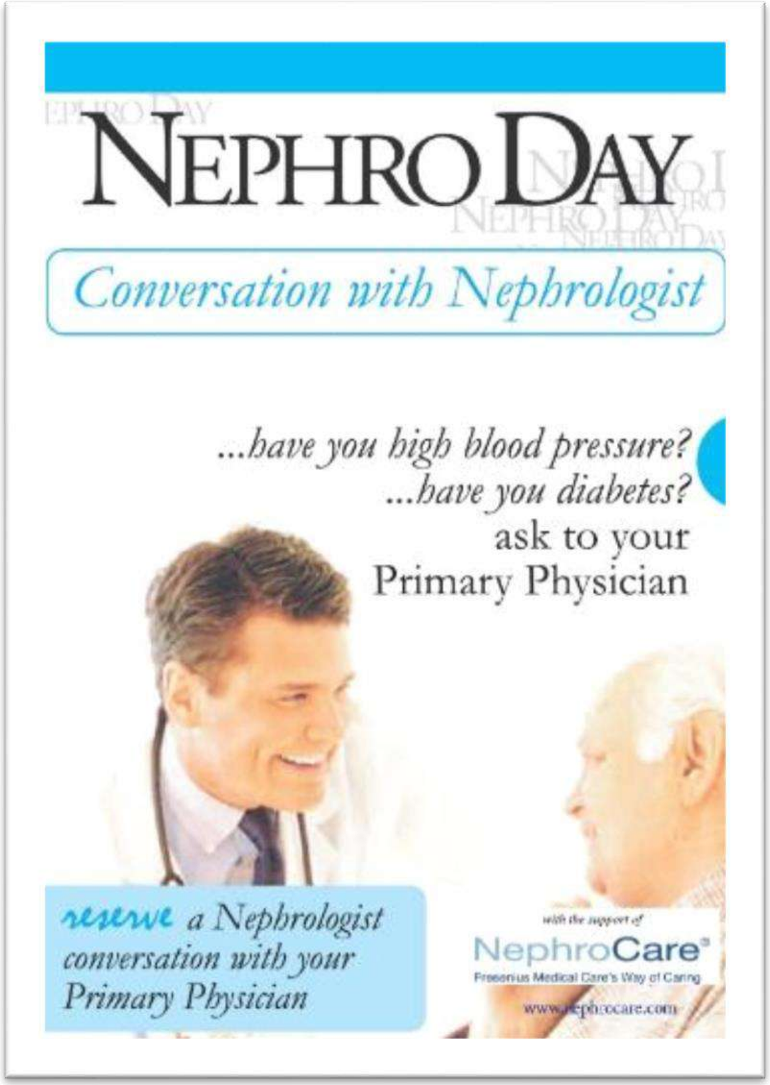
Consult with the **Nephrologists** for further Diagnostic

Consult with the **Nephrologists** every 12 months GPs control every 4-6 months

Control with the **Nephrologists** every 6 months GPs control every 3 months

Co-managed GPs & Nephrologists
Control every 4 months (stage4)
Control every 3 months (stage5)

NephroDay: Chronic Kidney Disease Patients Territory Condivision between GPs and Nephrologists



NEPHRO DAY

Conversation with Nephrologist

...have you high blood pressure?
...have you diabetes?
ask to your
Primary Physician

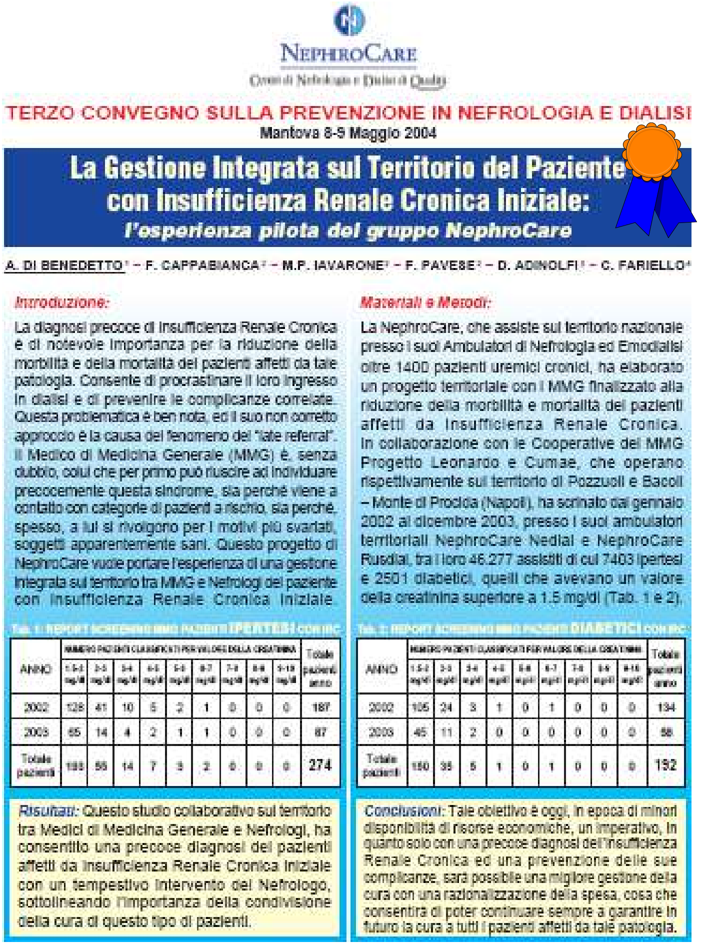
reserve a Nephrologist conversation with your Primary Physician

with the support of
NephroCare®
Fresenius Medical Care's Way of Caring
www.nephrocare.com

- NEPHRO DAY is a NEPHROCARE ITALY PROJECT started in 2000 aiming at Chronic Kidney Disease Patients Screening by GFR and early Nephrologist intervention.
- General Practitioner is the first to early detect such a pathology being in contact with Higher Risks Patients Categories like DIABETICS and HYPERTENSIVES.
- DIABETIC, HYPERTENSIVE and CHRONIC KIDNEY DISEASE PATIENTS SHARING between Primary Physicians and Nephrologists, is FUNDAMENTAL for a BETTER HEALTH CARE MANAGEMENT.
- Patients, more and more frail because of their elderly age, perceive the CARE SHARING as a BETTER CARE.

First Scientific Evidence of NephroCare Pilot Initiatives of the Shared Care Management on the Territory with GPs

3° Congress on Prevention in Nephrology and Dialysis, Mantova 2004



NEPHROCARE

Centri di Nefrologia e Dialisi di Qualità

TERZO CONVEGNO SULLA PREVENZIONE IN NEFROLOGIA E DIALISI

Mantova 8-9 Maggio 2004

La Gestione Integrata sul Territorio del Paziente con Insufficienza Renale Cronica Iniziale:

l'esperienza pilota del gruppo NephroCare

A. DI BENEDETTO[1] – F. CAPPABIANCA[2] – M.P. IAVARONE[2] – F. PAVESE[2] – D. ADINOLFI[3] – C. FARIELLO[4]

Introduzione:

La diagnosi precoce di Insufficienza Renale Cronica è di notevole importanza per la riduzione della morbilità e della mortalità dei pazienti affetti da tale patologia. Consente di procrastinare il loro ingresso in dialisi e di prevenire le complicanze correlate. Questa problematica è ben nota, ed il suo non corretto approccio è la causa del fenomeno del "late referral". Il Medico di Medicina Generale (MMG) è, senza dubbio, colui che per primo può riuscire ad individuare precocemente questa sindrome, sia perché viene a contatto con categorie di pazienti a rischio, sia perché, spesso, a lui si rivolgono per i motivi più svariati, soggetti apparentemente sani. Questo progetto di NephroCare vuole portare l'esperienza di una gestione integrata sul territorio tra MMG e Nefrologi del paziente con Insufficienza Renale Cronica Iniziale.

Tab. 1: REPORT SCREENING MMG PAZIENTI IPERTESI CON IRC

ANNO	NUMERO PAZIENTI CLASSIFICATI PER VALORE DELLA CREATININA									Totale pazienti anno
	1.5-2 mg/dl	2-3 mg/dl	3-4 mg/dl	4-5 mg/dl	5-6 mg/dl	6-7 mg/dl	7-8 mg/dl	8-9 mg/dl	9-10 mg/dl	
2002	128	41	10	5	2	1	0	0	0	187
2003	65	14	4	2	1	1	0	0	0	87
Totale pazienti	193	55	14	7	3	2	0	0	0	274

Materiali e Metodi:

La NephroCare, che assiste sul territorio nazionale presso i suoi Ambulatori di Nefrologia ed Emodialisi oltre 1400 pazienti uremici cronici, ha elaborato un progetto territoriale con i MMG finalizzato alla riduzione della morbilità e mortalità dei pazienti affetti da Insufficienza Renale Cronica. In collaborazione con le Cooperative dei MMG Progetto Leonardo e Cumae, che operano rispettivamente sul territorio di Pozzuoli e Bacoli – Monte di Procida (Napoli), ha scrinato dal gennaio 2002 al dicembre 2003, presso i suoi ambulatori territoriali NephroCare Nedial e NephroCare Rusdial, tra i loro 46.277 assistiti di cui 7403 ipertesi e 2501 diabetici, quelli che avevano un valore della creatinina superiore a 1.5 mg/dl (Tab. 1 e 2).

Tab. 2: REPORT SCREENING MMG PAZIENTI DIABETICI CON IRC

ANNO	NUMERO PAZIENTI CLASSIFICATI PER VALORE DELLA CREATININA									Totale pazienti anno
	1.5-2 mg/dl	2-3 mg/dl	3-4 mg/dl	4-5 mg/dl	5-6 mg/dl	6-7 mg/dl	7-8 mg/dl	8-9 mg/dl	9-10 mg/dl	
2002	105	24	3	1	0	1	0	0	0	134
2003	45	11	2	0	0	0	0	0	0	58
Totale pazienti	150	35	5	1	0	1	0	0	0	192

Risultati: Questo studio collaborativo sul territorio tra Medici di Medicina Generale e Nefrologi, ha consentito una precoce diagnosi dei pazienti affetti da Insufficienza Renale Cronica Iniziale con un tempestivo intervento del Nefrologo, sottolineando l'importanza della condivisione della cura di questo tipo di pazienti.

Conclusioni: Tale obiettivo è oggi, in epoca di minori disponibilità di risorse economiche, un imperativo, in quanto solo con una precoce diagnosi dell'Insufficienza Renale Cronica ed una prevenzione delle sue complicanze, sarà possibile una migliore gestione della cura con una razionalizzazione della spesa, cosa che consentirà di poter continuare sempre a garantire in futuro la cura a tutti i pazienti affetti da tale patologia.

Giornale Italiano di Nefrologia / Anno 22 *S-31 2005 / pp. S120-S124*

La Gestione Integrata sul Territorio del Paziente con Insufficienza Renale Cronica Iniziale:

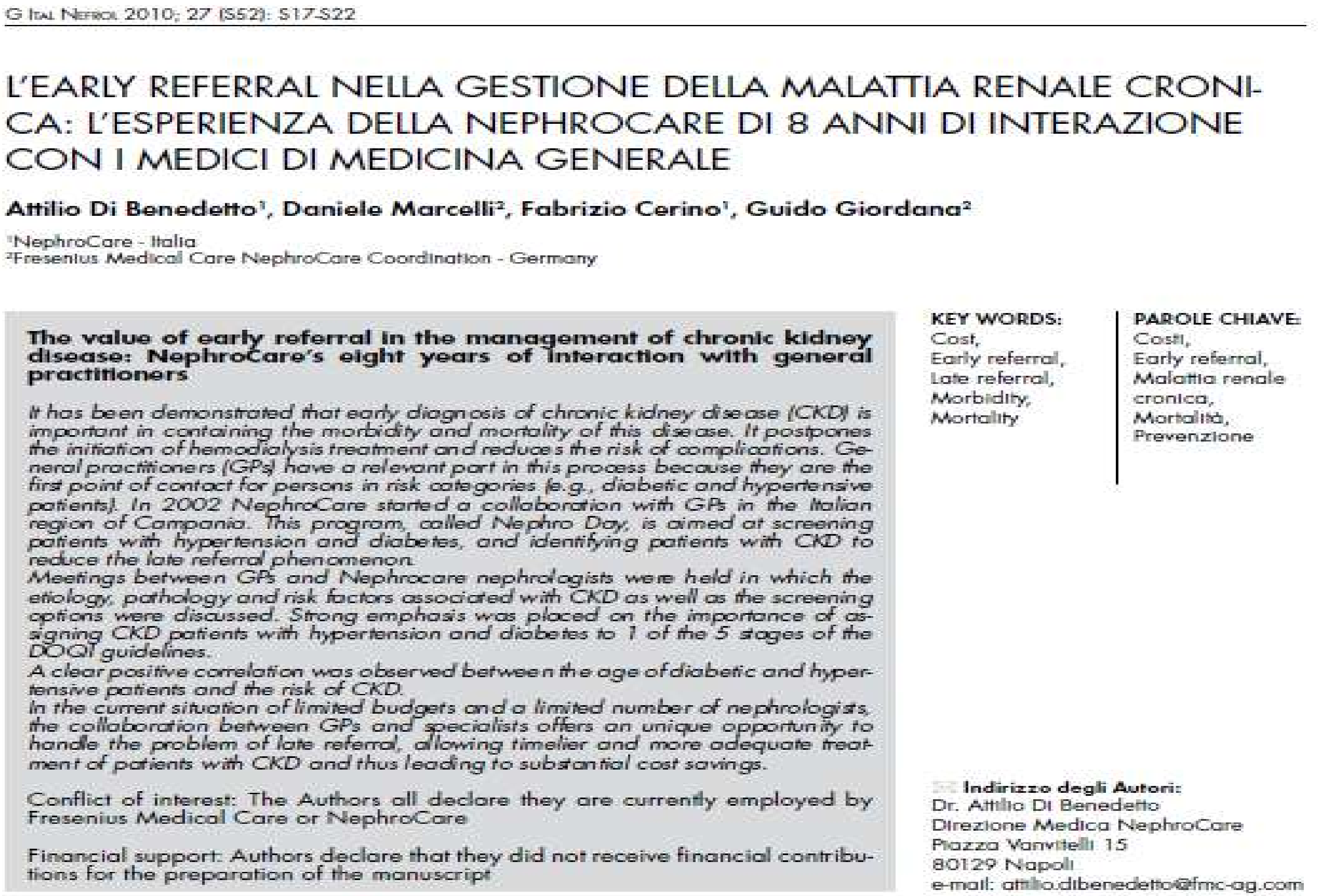
l'esperienza pilota del gruppo NephroCare

A. Di Benedetto[1], D. Adinolfi[2], C. Fariello[3]
[(1)] Coordinatore Clinico e Scientifico NephroCare-FME Italia, [(2)] Presidente Cooperativa Medici di Medicina Generale "Progetto Leonardo", [(3)] Presidente Cooperativa Medici di Medicina Generale "Cumae"

In collaborazione con:

*Gruppo di Lavoro NephroCare Nedial (Pozzuoli) e NephroCare Rusdial (Monteruscello)**
[(*)]F. Cappabianca, M.P. Iavarone, F. Pavese
*Gruppo di Lavoro Cooperativa Medici di Medicina Generale "Progetto Leonardo" (Pozzuoli)***
[(**)] A. Baiano, G. Baiano, F. Costigliola, R. Giugliano, G. Lubrano, F. Minotta, V. Russo, T. Scotto di Minico, A. Smaldone, M. Smaldone, S. Sproviero
*Gruppo di Lavoro Cooperativa Medici di Medicina Generale "Cumae" (Bacoli-Monte di Procida) ****
[(***)] S. Appratto, L. Ariete, A. Barbato, F. Bove, M. Carannante, V. Di Meo, C. Gianpaolo, A. Iorio, G. Martino, L. Merone, T. Parascandola, G. Race, I.M.R. Romano, P.M. Russo, M. Savastano, A.M. Scamardella, A. Scotto d'Antuono, M. Scotto di Vetta, P. Vecchioli

8 Years of NephroCare Italy Territory Interaction with GPs



G Ital Nefrol 2010; 27 (S52): S17-S22

L'EARLY REFERRAL NELLA GESTIONE DELLA MALATTIA RENALE CRONICA: L'ESPERIENZA DELLA NEPHROCARE DI 8 ANNI DI INTERAZIONE CON I MEDICI DI MEDICINA GENERALE

Attilio Di Benedetto[1], Daniele Marcelli[2], Fabrizio Cerino[1], Guido Giordana[2]

[1]NephroCare - Italia
[2]Fresenius Medical Care NephroCare Coordination - Germany

The value of early referral in the management of chronic kidney disease: NephroCare's eight years of interaction with general practitioners

It has been demonstrated that early diagnosis of chronic kidney disease (CKD) is important in containing the morbidity and mortality of this disease. It postpones the initiation of hemodialysis treatment and reduces the risk of complications. General practitioners (GPs) have a relevant part in this process because they are the first point of contact for persons in risk categories (e.g., diabetic and hypertensive patients). In 2002 NephroCare started a collaboration with GPs in the Italian region of Campania. This program, called Nephro Day, is aimed at screening patients with hypertension and diabetes, and identifying patients with CKD to reduce the late referral phenomenon.

Meetings between GPs and Nephrocare nephrologists were held in which the etiology, pathology and risk factors associated with CKD as well as the screening options were discussed. Strong emphasis was placed on the importance of assigning CKD patients with hypertension and diabetes to 1 of the 5 stages of the DOQI guidelines.

A clear positive correlation was observed between the age of diabetic and hypertensive patients and the risk of CKD.

In the current situation of limited budgets and a limited number of nephrologists, the collaboration between GPs and specialists offers an unique opportunity to handle the problem of late referral, allowing timelier and more adequate treatment of patients with CKD and thus leading to substantial cost savings.

Conflict of interest: The Authors all declare they are currently employed by Fresenius Medical Care or NephroCare

Financial support: Authors declare that they did not receive financial contributions for the preparation of the manuscript

KEY WORDS:
Cost,
Early referral,
Late referral,
Morbidity,
Mortality

PAROLE CHIAVE:
Costi,
Early referral,
Malattia renale cronica,
Mortalità,
Prevenzione

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8 Years Project NephroCare/GPs: Ipertensive patients GFR and age group classified through Kidney Risk

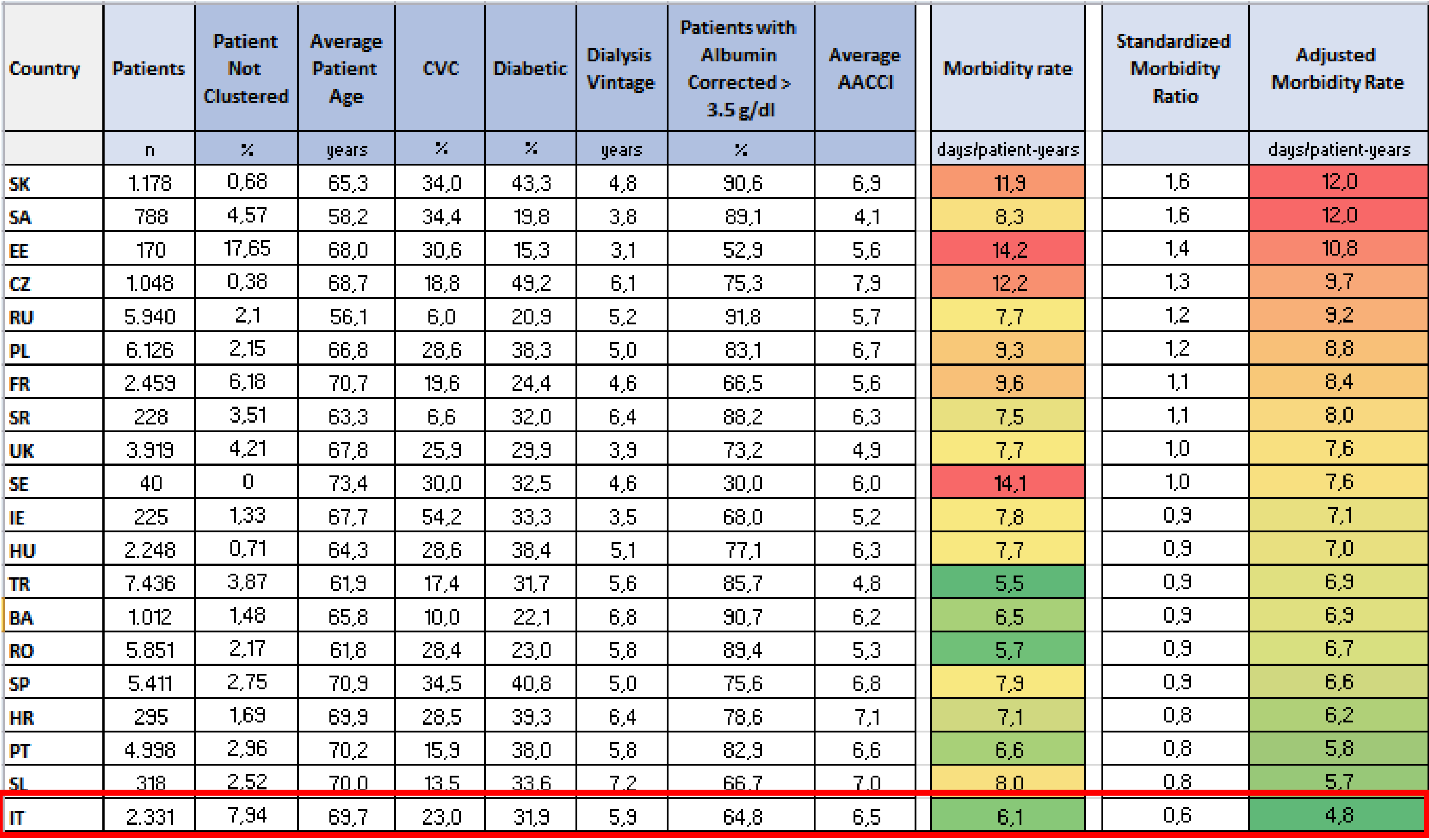
Age Group	Stage 1 GFR >90	Stage 2 GFR 89 - 60	Stage 3 GFR 59 - 30	Stage 4 GFR 29 -15	Stage 5 GFR <15	Total
0-19	19	0	**0**	0	0	**19**
20-44	3115	638	**63**	25	13	**3854**
45-64	12604	13379	**1995**	100	144	**28222**
65-75	2802	13924	**8669**	125	206	**25726**
>75	463	5461	**16251**	1964	281	**24420**
Total	**19003**	**33402**	**26978**	**2214**	**644**	**82241**

8 Years Project NephroCare/GPs: Diabetic patients GFR and age group classified through Kidney Risk

Age Group	Stage 1 GFR >90	Stage 2 GFR 89 - 60	Stage 3 GFR 59 - 30	Stage 4 GFR 29 - 15	Stage 5 GFR <15	**Total**
0-19	26	6	**0**	0	0	**32**
20-44	394	32	**0**	0	0	**426**
45-64	3898	2874	**426**	24	65	**7287**
65-75	1399	4983	**2589**	117	98	**9186**
>75	224	2570	**4559**	692	105	**8150**
Total	**5941**	**10465**	**7574**	**833**	**268**	**25081**

NephroCare Italy Hospitalization Days/Patient/Year

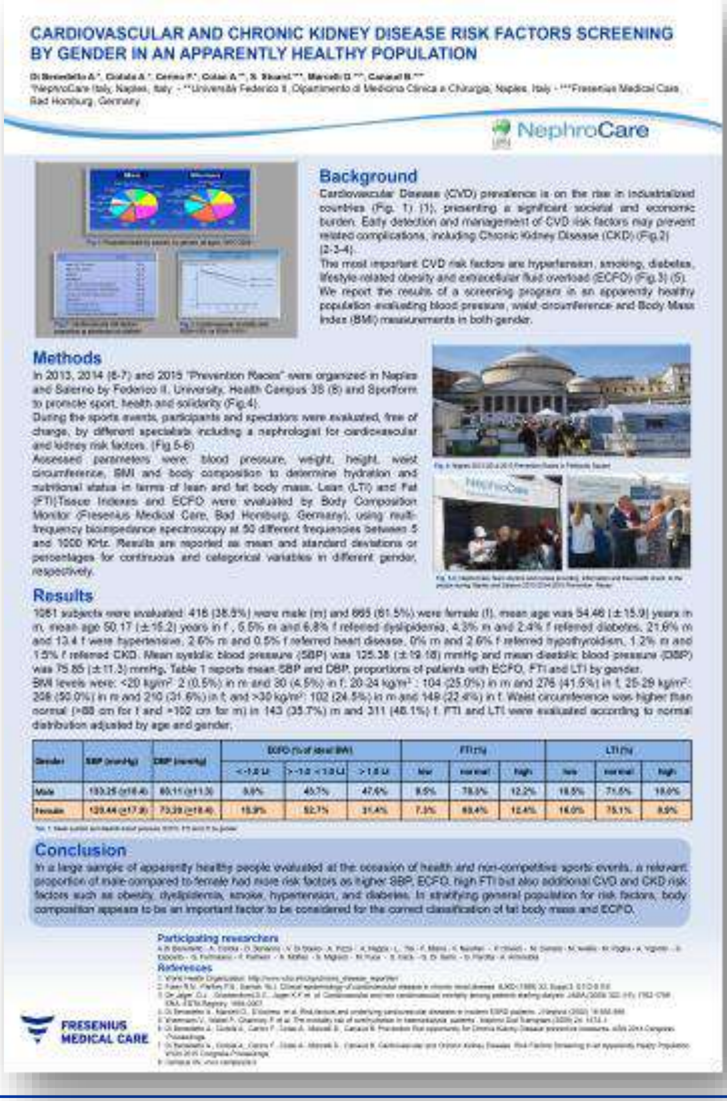
July 2017



Country	Patients	Patient Not Clustered	Average Patient Age	CVC	Diabetic	Dialysis Vintage	Patients with Albumin Corrected > 3.5 g/dl	Average AACCI	Morbidity rate	Standardized Morbidity Ratio	Adjusted Morbidity Rate
	n	%	years	%	%	years	%		days/patient-years		days/patient-years
SK	1.178	0,68	65,3	34,0	43,3	4,8	90,6	6,9	11,9	1,6	12,0
SA	788	4,57	58,2	34,4	19,8	3,8	89,1	4,1	8,3	1,6	12,0
EE	170	17,65	68,0	30,6	15,3	3,1	52,9	5,6	14,2	1,4	10,8
CZ	1.048	0,38	68,7	18,8	49,2	6,1	75,3	7,9	12,2	1,3	9,7
RU	5.940	2,1	56,1	6,0	20,9	5,2	91,8	5,7	7,7	1,2	9,2
PL	6.126	2,15	66,8	28,6	38,3	5,0	83,1	6,7	9,3	1,2	8,8
FR	2.459	6,18	70,7	19,6	24,4	4,6	66,5	5,6	9,6	1,1	8,4
SR	228	3,51	63,3	6,6	32,0	6,4	88,2	6,3	7,5	1,1	8,0
UK	3.919	4,21	67,8	25,9	29,9	3,9	73,2	4,9	7,7	1,0	7,6
SE	40	0	73,4	30,0	32,5	4,6	30,0	6,0	14,1	1,0	7,6
IE	225	1,33	67,7	54,2	33,3	3,5	68,0	5,2	7,8	0,9	7,1
HU	2.248	0,71	64,3	28,6	38,4	5,1	77,1	6,3	7,7	0,9	7,0
TR	7.436	3,87	61,9	17,4	31,7	5,6	85,7	4,8	5,5	0,9	6,9
BA	1.012	1,48	65,8	10,0	22,1	6,8	90,7	6,2	6,5	0,9	6,9
RO	5.851	2,17	61,8	28,4	23,0	5,8	89,4	5,3	5,7	0,9	6,7
SP	5.411	2,75	70,9	34,5	40,8	5,0	75,6	6,8	7,9	0,9	6,6
HR	295	1,69	69,9	28,5	39,3	6,4	78,6	7,1	7,1	0,8	6,2
PT	4.998	2,96	70,2	15,9	38,0	5,8	82,9	6,6	6,6	0,8	5,8
SL	318	2,52	70,0	13,5	33,6	7,2	66,7	7,0	8,0	0,8	5,7
IT	2.331	7,94	69,7	23,0	31,9	5,9	64,8	6,5	6,1	0,6	4,8

Other Opportunities of Prevention in General Population

Health Campus 3S Prevention Race 2013-2014-2015



CARDIOVASCULAR AND CHRONIC KIDNEY DISEASE RISK FACTORS SCREENING BY GENDER IN AN APPARENTLY HEALTHY POPULATION

Di Benedetto A.*, Ciotola A.*, Cerino F.*, Colao A.**, S. Sbarra***, Marcelli D.***, Canaud B.***
*NephroCare Italy, Naples, Italy - **Università Federico II, Dipartimento di Medicina Clinica e Chirurgia, Naples, Italy - ***Fresenius Medical Care, Bad Homburg, Germany

NephroCare

Background

Cardiovascular Disease (CVD) prevalence is on the rise in industrialized countries (Fig. 1) (1), presenting a significant societal and economic burden. Early detection and management of CVD risk factors may prevent related complications, including Chronic Kidney Disease (CKD) (Fig.2) (2-3-4).
The most important CVD risk factors are hypertension, smoking, diabetes, lifestyle-related obesity and extracellular fluid overload (ECFO) (Fig.3) (5).
We report the results of a screening program in an apparently healthy population evaluating blood pressure, waist circumference and Body Mass Index (BMI) measurements in both gender.

Methods

In 2013, 2014 (6-7) and 2015 "Prevention Races" were organized in Naples and Salerno by Federico II. University, Health Campus 3S (8) and Sportform to promote sport, health and solidarity (Fig.4).
During the sports events, participants and spectators were evaluated, free of charge, by different specialists including a nephrologist for cardiovascular and kidney risk factors. (Fig 5-6)
Assessed parameters were: blood pressure, weight, height, waist circumference, BMI and body composition to determine hydration and nutritional status in terms of lean and fat body mass. Lean (LTI) and Fat (FTI) Tissue Indexes and ECFO were evaluated by Body Composition Monitor (Fresenius Medical Care, Bad Homburg, Germany), using multi-frequency bioimpedance spectroscopy at 50 different frequencies between 5 and 1000 KHz. Results are reported as mean and standard deviations or percentages for continuous and categorical variables in different gender, respectively.

Results

1081 subjects were evaluated: 416 (38.5%) were male (m) and 665 (61.5%) were female (f), mean age was 54.46 (±15.9) years in m, mean age 50.17 (±15.2) years in f , 6.5% m and 6.8% f referred dyslipidemia, 4.3% m and 2.4% f referred diabetes, 21.6% m and 13.4 f were hypertensive, 2.6% m and 0.5% f referred heart disease, 0% m and 2.6% f referred hypothyroidism, 1.2% m and 1.5% f referred CKD. Mean systolic blood pressure (SBP) was 125.38 (±19.18) mmHg and mean diastolic blood pressure (DBP) was 75.85 (±11.3) mmHg. Table 1 reports mean SBP and DBP, proportions of patients with ECFO, FTI and LTI by gender.
BMI levels were: <20 kg/m²: 2 (0.5%) in m and 30 (4.5%) in f, 20-24 kg/m²: 104 (25.0%) in m and 276 (41.5%) in f, 25-29 kg/m²: 208 (50.0%) in m and 210 (31.6%) in f, and >30 kg/m²: 102 (24.5%) in m and 149 (22.4%) in f. Waist circumference was higher than normal (>88 cm for f and >102 cm for m) in 143 (35.7%) m and 311 (48.1%) f. FTI and LTI were evaluated according to normal distribution adjusted by age and gender.

Gender	SBP (mmHg)	DBP (mmHg)	ECFO (% of ideal BW)			FTI (%)			LTI (%)		
			<-1.0 Lt	>-1.0 <1.0 Lt	>1.0 Lt	low	normal	high	low	normal	high
Male	133.25 (±18.4)	80.11 (±11.3)	8.8%	43.7%	47.6%	9.5%	78.3%	12.2%	18.5%	71.5%	10.0%
Female	120.44 (±17.9)	73.20 (±10.4)	15.9%	52.7%	31.4%	7.3%	80.4%	12.4%	16.0%	75.1%	8.9%

Conclusion

In a large sample of apparently healthy people evaluated at the occasion of health and non-competitive sports events, a relevant proportion of male compared to female had more risk factors as higher SBP, ECFO, high FTI but also additional CVD and CKD risk factors such as obesity, dyslipidemia, smoke, hypertension, and diabetes. In stratifying general population for risk factors, body composition appears to be an important factor to be considered for the correct classification of fat body mass and ECFO.

Participating researchers

References

FRESENIUS MEDICAL CARE

APRIL
21-23rd
2016
4th Global
CARDIOVASCULAR EDUCATIONAL FORUM
ST PETERSBURG Russia
RUSSIAN SOCIETY OF CARDIOLOGY
RUSSIAN CARDIOVASCULAR DAYS

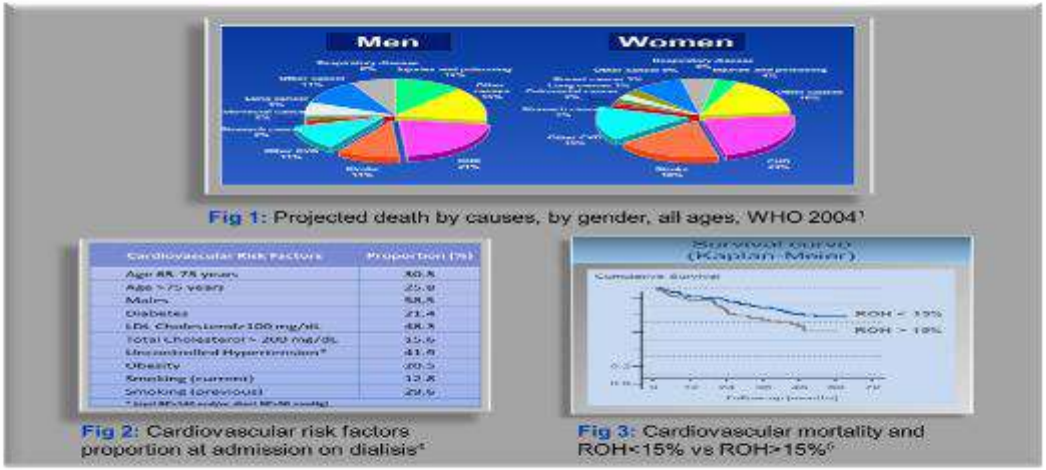
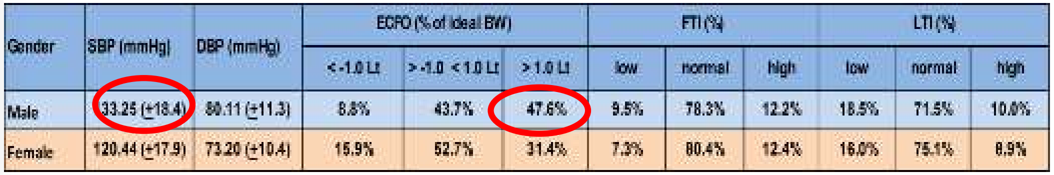


Fig 1: Projected death by causes, by gender, all ages, WHO 2004¹

Fig 2: Cardiovascular risk factors proportion at admission on dialisis⁴

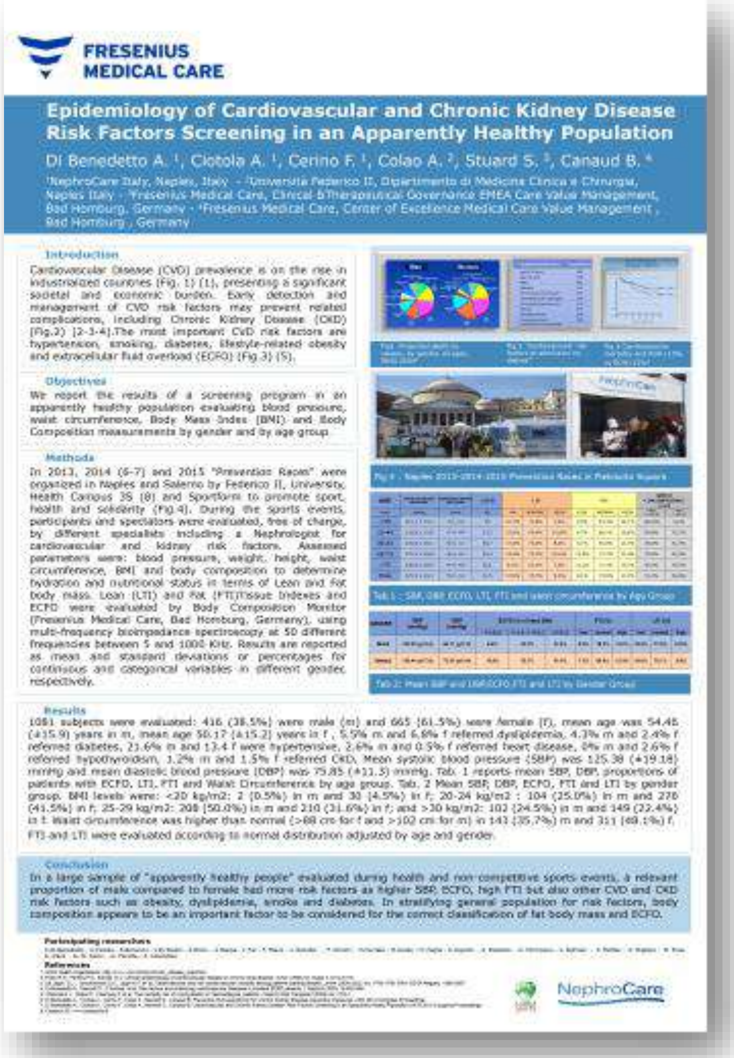
Fig 3: Cardiovascular mortality and ROH<15% vs ROH>15%⁵



Gender	SBP (mmHg)	DBP (mmHg)	ECFO (% of ideal BW)			FTI (%)			LTI (%)		
			<-1.0 Lt	>-1.0 <1.0 Lt	>1.0 Lt	low	normal	high	low	normal	high
Male	133.25 (±18.4)	80.11 (±11.3)	8.8%	43.7%	47.6%	9.5%	78.3%	12.2%	18.5%	71.5%	10.0%
Female	120.44 (±17.9)	73.20 (±10.4)	15.9%	52.7%	31.4%	7.3%	80.4%	12.4%	16.0%	75.1%	8.9%

Other Opportunities of Prevention in General Population

Health Campus 3S Prevention Race 2013-2014-2015



FRESENIUS MEDICAL CARE

Epidemiology of Cardiovascular and Chronic Kidney Disease Risk Factors Screening in an Apparently Healthy Population

Di Benedetto A. [1], Ciotola A. [1], Cerino F. [1], Colao A. [2], Stuard S. [3], Canaud B. [4]

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Introduction

Cardiovascular Disease (CVD) prevalence is on the rise in industrialized countries (Fig. 1) (1), presenting a significant societal and economic burden. Early detection and management of CVD risk factors may prevent related complications, including Chronic Kidney Disease (CKD) [Fig.2) [2-3-4].The most important CVD risk factors are hypertension, smoking, diabetes, lifestyle-related obesity and extracellular fluid overload (ECFO) (Fig.3) (5).

Objectives

We report the results of a screening program in an apparently healthy population evaluating blood pressure, waist circumference, Body Mass Index (BMI) and Body Composition measurements by gender and by age group.

Methods

In 2013, 2014 (6-7) and 2015 "Prevention Races" were organized in Naples and Salerno by Federico II, University, Health Campus 3S (8) and Sportform to promote sport, health and solidarity (Fig.4). During the sports events, participants and spectators were evaluated, free of charge, by different specialists including a Nephrologist for cardiovascular and kidney risk factors. Assessed parameters were: blood pressure, weight, height, waist circumference, BMI and body composition to determine hydration and nutritional status in terms of Lean and Fat body mass. Lean (LTI) and Fat (FTI)Tissue Indexes and ECFO were evaluated by Body Composition Monitor (Fresenius Medical Care, Bad Homburg, Germany), using multi-frequency bioimpedance spectroscopy at 50 different frequencies between 5 and 1000 KHz. Results are reported as mean and standard deviations or percentages for continuous and categorical variables in different gender, respectively.

Fig.4 - Naples 2013-2014-2015 Prevention Races in Plebiscito Square

Tab.1 - SBP, DBP, ECFO, LTI, FTI and waist circumference by Age Group

Tab.2: Mean SBP and DBP,ECFO,FTI and LTI by Gender Group

Results

1081 subjects were evaluated: 416 (38.5%) were male (m) and 665 (61.5%) were female (f), mean age was 54.46 (±15.9) years in m, mean age 50.17 (±15.2) years in f , 5.5% m and 6.8% f referred dyslipidemia, 4.3% m and 2.4% f referred diabetes, 21.6% m and 13.4 f were hypertensive, 2.6% m and 0.5% f referred heart disease, 0% m and 2.6% f referred hypothyroidism, 1.2% m and 1.5% f referred CKD. Mean systolic blood pressure (SBP) was 125.38 (±19.18) mmHg and mean diastolic blood pressure (DBP) was 75.85 (±11.3) mmHg. Tab. 1 reports mean SBP, DBP, proportions of patients with ECFO, LTI, FTI and Waist Circumference by age group. Tab. 2 Mean SBP, DBP, ECFO, FTI and LTI by gender group. BMI levels were: <20 kg/m2: 2 (0.5%) in m and 30 (4.5%) in f; 20-24 kg/m2 : 104 (25.0%) in m and 276 (41.5%) in f; 25-29 kg/m2: 208 (50.0%) in m and 210 (31.6%) in f; and >30 kg/m2: 102 (24.5%) in m and 149 (22.4%) in f. Waist circumference was higher than normal (>88 cm for f and >102 cm for m) in 143 (35.7%) m and 311 (49.1%) f. FTI and LTI were evaluated according to normal distribution adjusted by age and gender.

Conclusion

In a large sample of "apparently healthy people" evaluated during health and non-competitive sports events, a relevant proportion of male compared to female had more risk factors as higher SBP, ECFO, high FTI but also other CVD and CKD risk factors such as obesity, dyslipidemia, smoke and diabetes. In stratifying general population for risk factors, body composition appears to be an important factor to be considered for the correct classification of fat body mass and ECFO.

Participating researchers

References

NephroCare

ISN WORLD CONGRESS OF NEPHROLOGY 2017
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AGE	SYSTOLIC BLOOD PRESSURE	DIASTOLIC BLOOD PRESSURE	ECFO	LTI			FTI			WAIST CIRCUMFERENCE (cm)	
years	mmHg	mmHg	%	LOW	NORMAL	HIGH	LOW	NORMAL	HIGH	<88 F <102 M	>88 F >102 M
<20	115,7 ± 15,3	70,2 ± 9,4	50	16,7%	77,8%	5,6%	0,0%	83,3%	16,7%	100,0%	0,0%
20-44	116,8 ± 15,8	72,0 ± 10,5	33,5	19,6%	69,6%	10,8%	9,2%	80,1%	10,8%	69,8%	30,2%
45-64	125,8 ± 18,1	76,3 ± 11,4	34,7	17,0%	74,6%	8,4%	6,1%	81,6%	12,3%	49,0%	51,0%
65-74	135,2 ± 18,8	78,0 ± 10,3	45,4	14,9%	74,5%	10,6%	11,8%	75,2%	13,0%	35,0%	65,0%
>75	140,9 ± 20,9	79,4 ± 10,9	56,1	9,1%	83,3%	7,6%	12,1%	71,2%	16,7%	40,5%	59,5%
Total	125,3 ± 19,1	75,8 ± 11,3	37,6	17,0%	73,7%	9,3%	8,1%	79,6%	12,3%	53,2%	46,8%

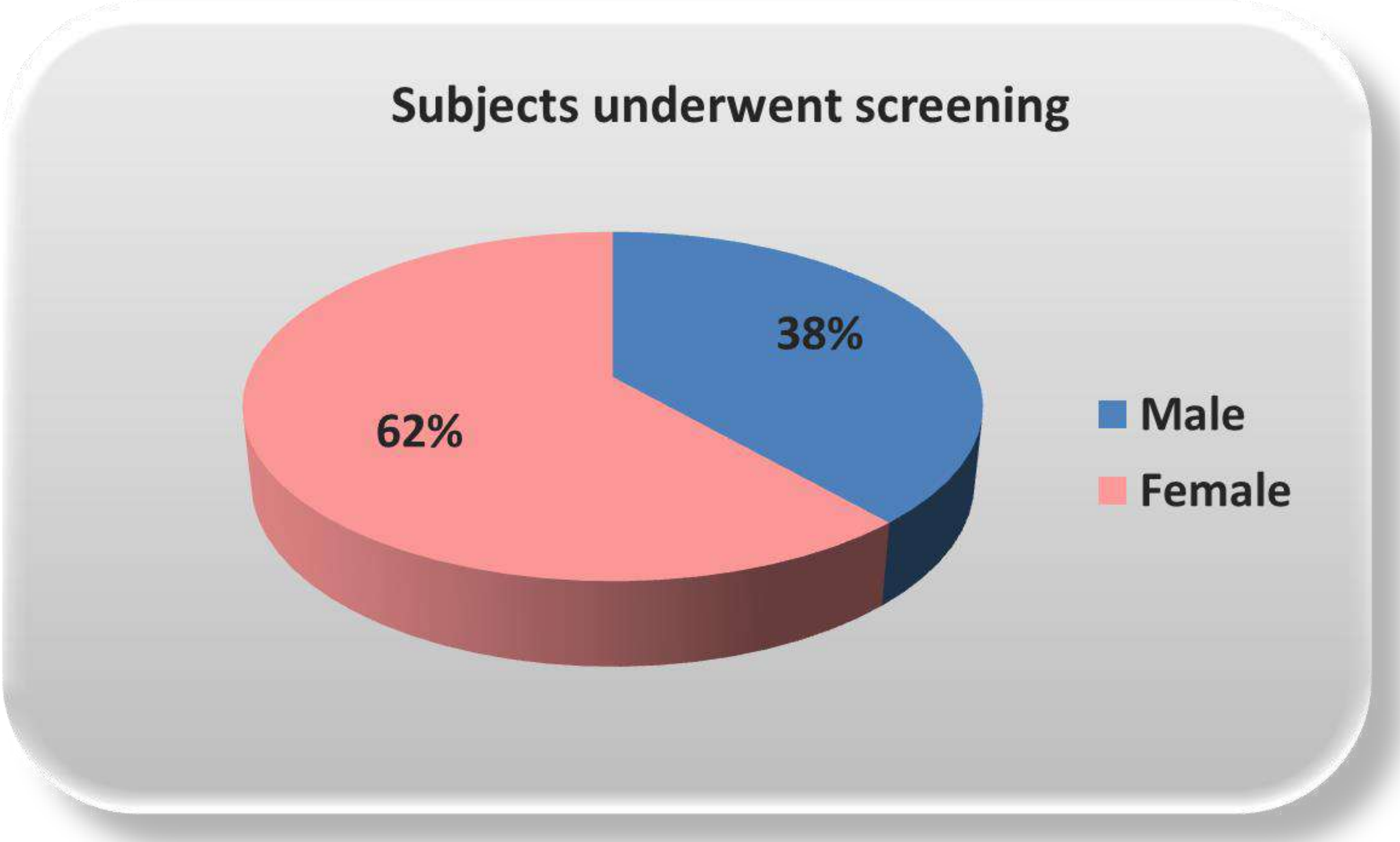
Tab.1 : SBP, DBP, ECFO, LTI, FTI and waist circumference by Age Group

GENDER	SBP (mmHg)	DBP (mmHg)	ECFO (% of ideal BW)			FTI (%)			LTI (%)		
			<-1.0 Lt	> -1.0 < 1.0 Lt	>1.0 Lt	low	normal	high	low	normal	high
MALE	33.25 (±18.4	80.11 (±11.3)	8.8%	43.7%	47.6%	9.5%	78.3%	12.2%	18.5%	71.5%	10.0%
FEMALE	120.44 (±17.9)	73.20 (±10.4)	15.9%	52.7%	31.4%	7.3%	80.4%	12.4%	16.0%	75.1%	8.9%

Tab.2: Mean SBP and DBP,ECFO,FTI and LTI by Gender Group

Health Campus Prevention Race 2013-2014-2015

Percentage of Female vs Male



Percentage of women underwent screening was higher than men

Health Campus Prevention Race 2013-2014-2015

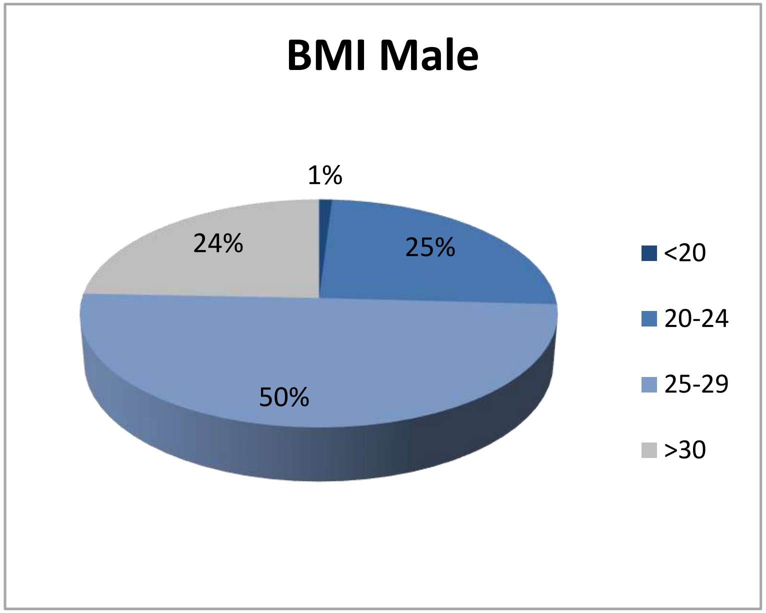
Population Screened

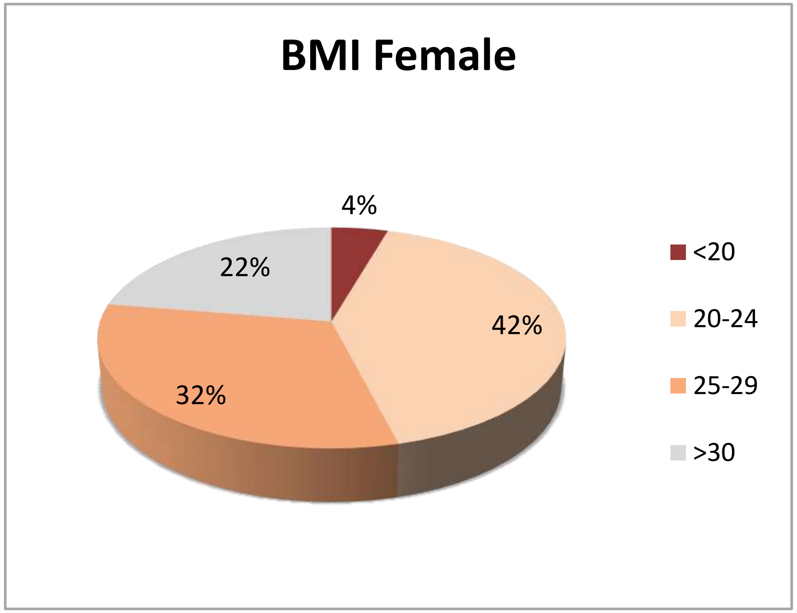
	Female	**Male**	**Total**
Number	665 (61.5%)	416 (38.5%)	1081
Mean Age	50.1 (±15.2)	54.5 (±15.9)	51.8 (±15.6)
Hypertension	89 (13.4%)	90 (21.6%)	179 (16.6%)
Dyslipidemia	45 (6.8%)	23 (5.5%)	68 (6.3%)
Diabetes	16 (2.4%)	18 (4.3%)	34 (3.1%)
Heart disease	3 (0.5%)	11 (2.6%)	14 (1.3%)
Hypothyroidism	17 (2.5%)	0 (0%)	17 (1.6%)
CKD (referred)	10 (1.5%)	5 (1.2%)	15 (1.4%)

Prevention Race 2013-2014-2015

Body Mass Index by Gender

Percentage of Male and Female by Body Mass Index





BMI levels: <20 kg/m2: 2 (0.5%) in m and 30 (4.5%) in f; 20-24 kg/m2 : 104 (25.0%) in m and 276 (41.5%) in f; 25-29 kg/m2: 208 (50.0%) in m and 210 (31.6%) in f; and >30 kg/m2: 102 (24.5%) in m and 149 (22.4%) in f.

Prevention Race 2013-2014-2015

Mean SBP, DBP and ECFO by age group

Mean systolic and diastolic blood pressures and proportions of subjects with Fluid Overload by age group.

AGE	SYSTOLIC BLOOD PRESSURE	DIASTOLIC BLOOD PRESSURE	ECFO (%of ideal BW)	Total Subjects
years	mmHg	mmHg	%	N°
<20	115,7 ± 15,3	70,2 ± 9,6	50	18
20-44	116,8 ± 15,8	72,0 ± 10,5	33,5	316
45-64	125,8 ± 18,1	76,9 ± 11,4	34,7	507
65-74	135,2 ± 18,8	78,9 ± 10,3	45,4	163
>75	140,9 ± 20,9	79,6 ± 10,9	56,1	66
total	125,3 ± 19,1	75,8 ± 11,3	37,6	1070

- Mean systolic blood pressure was 125.3 (±19.1) mmHg
- Mean diastolic blood pressure was 75.8 (±11.3) mmHg.
- **402 (37.6%) Subjects had ECFO (OH>1Lt)**

Prevention Race 2013-2014-2015

LTI, FTI and Waist Circumference by Age Group

LTI, FTI and waist circumference by age group

AGE	LTI			FTI			WAIST CIRCUMFERENCE (cm)	
years	LOW	NORMAL	HIGH	LOW	NORMAL	HIGH	<88 F < 102 M	>88 F > 102 M
<20	16,7%	77,8%	5,6%	0,0%	83,3%	16,7%	100,0%	0,0%
20-44	19,6%	69,6%	10,8%	9,2%	80,1%	10,8%	69,8%	30,2%
45-64	17,0%	74,6%	8,4%	6,1%	81,6%	12,3%	49,0%	51,0%
65-74	14,9%	74,5%	10,6%	11,8%	75,2%	13,0%	35,0%	65,0%
>75	9,1%	83,3%	7,6%	12,1%	71,2%	16,7%	40,5%	59,5%
Total	17,0%	73,7%	9,3%	8,1%	79,6%	12,3%	53,2%	46,8%

According to normal distribution adjusted by age and gender, 790 (73,7%) had a Lean Tissue Index (LTI) in a normal range (N), 100 (9,3%) had an LTI greater than N, 182 (17%) had an LTI below N. 853 (79,6%) had a Fat Tissue Index (FTI) in a normal range, 132 (12.3%) had an FTI greater than N, 87 (8,1%) had an FTI below N.

Mean waist circumference was 91.9 (±15.1) cm.

Prevention Race 2013-2014-2015

Mean SBP, DBP and ECFO by gender

Mean systolic and diastolic blood pressures and proportions of “apparently halthy population” with different level of ECFO, LTI and FTI by gender.

Gender	SBP (mmHg)	DBP (mmHg)	ECFO (% of ideal BW)			FTI (%)			LTI (%)		
			< -1.0 Lt	> -1.0 < 1.0 Lt	> 1.0 Lt	low	normal	high	low	normal	high
Male	133.25 (±18.4)	80.11 (±11.3)	8.8%	43.7%	47.6%	9.5%	78.3%	12.2%	18.5%	71.5%	10.0%
Female	120.44 (±17.9)	73.20 (±10.4)	15.9%	52.7%	31.4%	7.3%	80.4%	12.4%	16.0%	75.1%	8.9%

- Mean systolic blood pressure (SBP) was 125.38 (±19.18) mmHg
- Mean diastolic blood pressure (DBP) was 75.85 (±11.3) mmHg.
- 47.6% M and 31.4% F had ECFO
- Waist circumference was higher than normal (>88 cm in F and >102 cm in M) in 143 (35.7%) male and 311 (48.1%) female

Conclusions

- **Early Referral** of **Chronic Kidney Disease Patients** is a highly important aspect of **Patients Life Cicle Management** in order to decrease **Morbidity** and **Mortality** because prevents complications.

- This is a widely known problem, and its wrong approach causes the so called **"Late Referral"** phenomenon

- Undoubtedly the **Primary Physicians** can identify, at an early stage, patients suffering from this syndrome as they are the first point of contact for patients from risk categories (e.g. diabetic and hypertensive patients). Furthermore they are very often addressed, for various reasons, by patients who are **"apparently in good conditions of Health".**

- In order to **reduce the severe cardiovascular morbidity and mortality in patients on haemodialysis, the quality of the pre-dialysis CVD follow-up has to be improved.**

- Thus the modifiable **cardiovascular risk factors are reduced** as early as possible and the **prevalence of CVD** at time of admission and during the follow-up **will be decreased.**

Conclusions #3

- The Aim of this **Clinical Multidisciplinary approach** implemented by **NephroCare Italy** is the **Evidence** of the importance of **Integrated Cooperation and Continuum Care** between **Nephrologists**, **Primary Physicians, Cardiologists, and Geriatrics.**

- In such a period of **decreasing economic resources**, this is a possible **right approach** to face the **Late Referral** problem and to consequently allow an easier and **better management of Patients' care** and **Cost Rationalisation** can be solved by the intervention of **Nephrologists** working in local clinics.

It confirms the Importance of

Early Referal and

Multidisciplinary Approach with GPs in

CKD pre ESRD Patients Management

"When the game in play is high,
The challenge requires ambition "