



Chronic Kidney Disease in the United States



U.S. Department of Health
and Human Services



National Institutes of Health

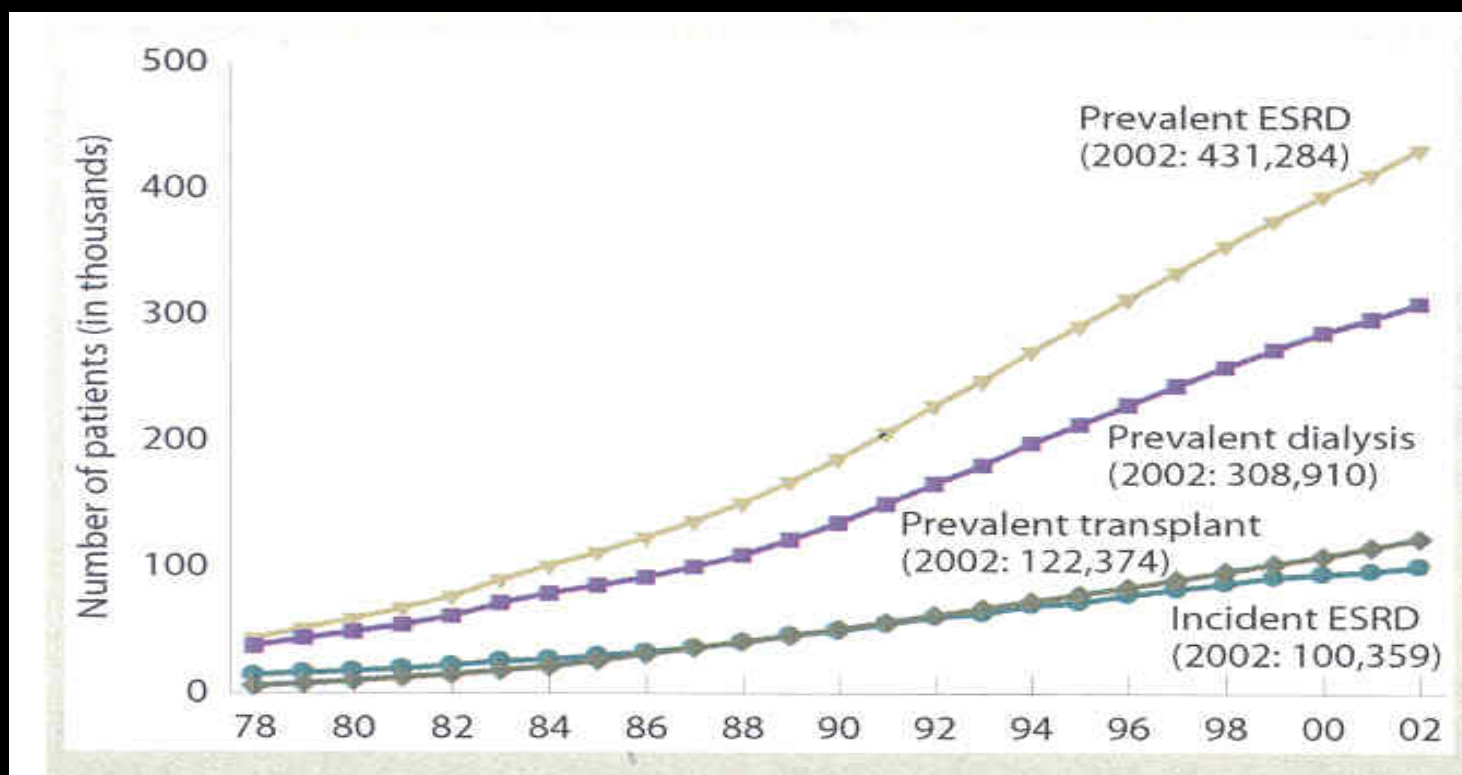


National Institute of Diabetes and
Digestive and Kidney Diseases

Reasons for a National Kidney Disease Education Program

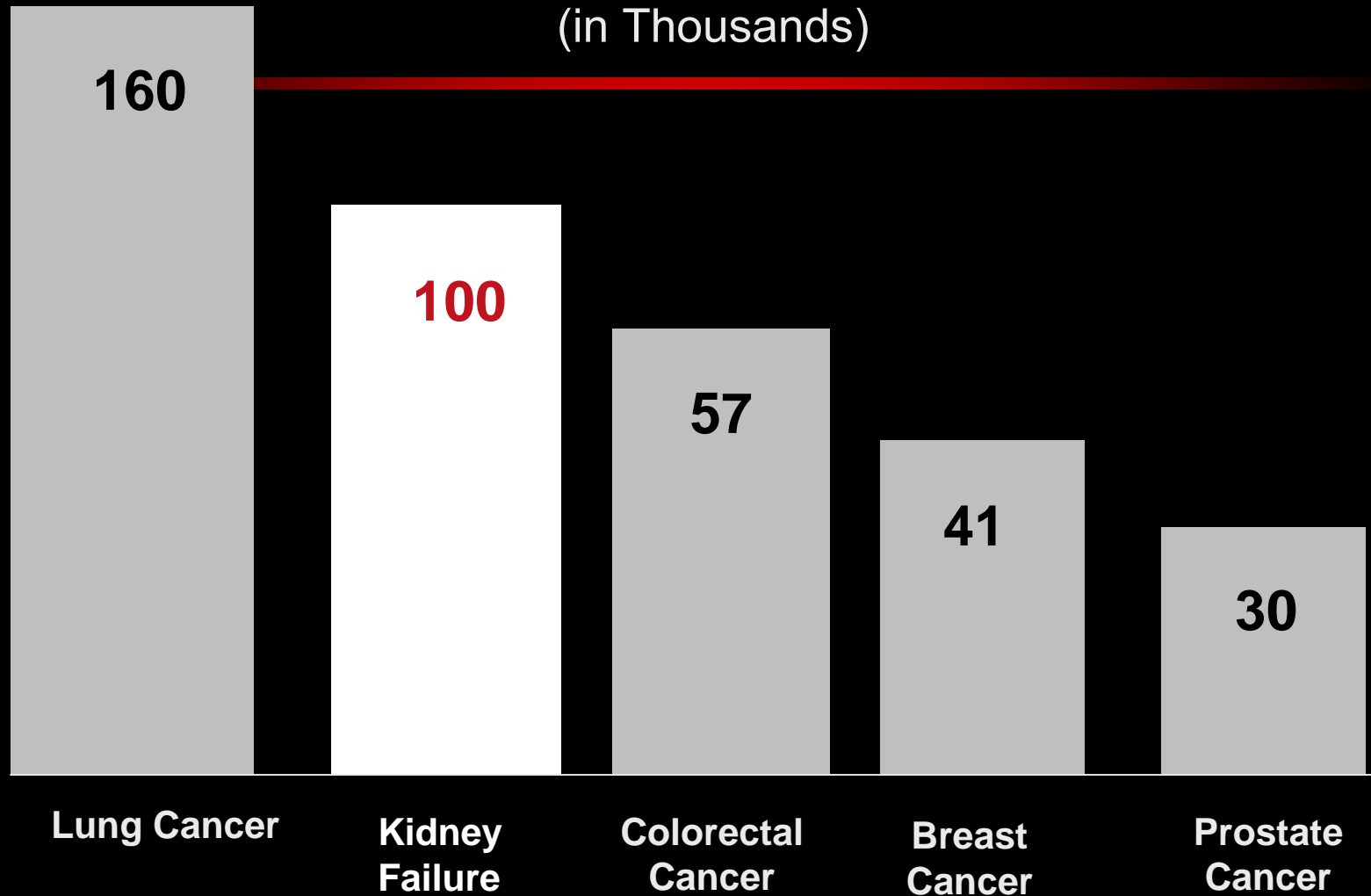
- 1) Kidney failure is a public health problem
- 2) Economical, effective testing and therapy exist
- 3) Testing and therapy are inadequately applied

ESRD Rates Continue to Rise



Kidney Failure Compared to Cancer Deaths in the U.S. in 2000

(in Thousands)

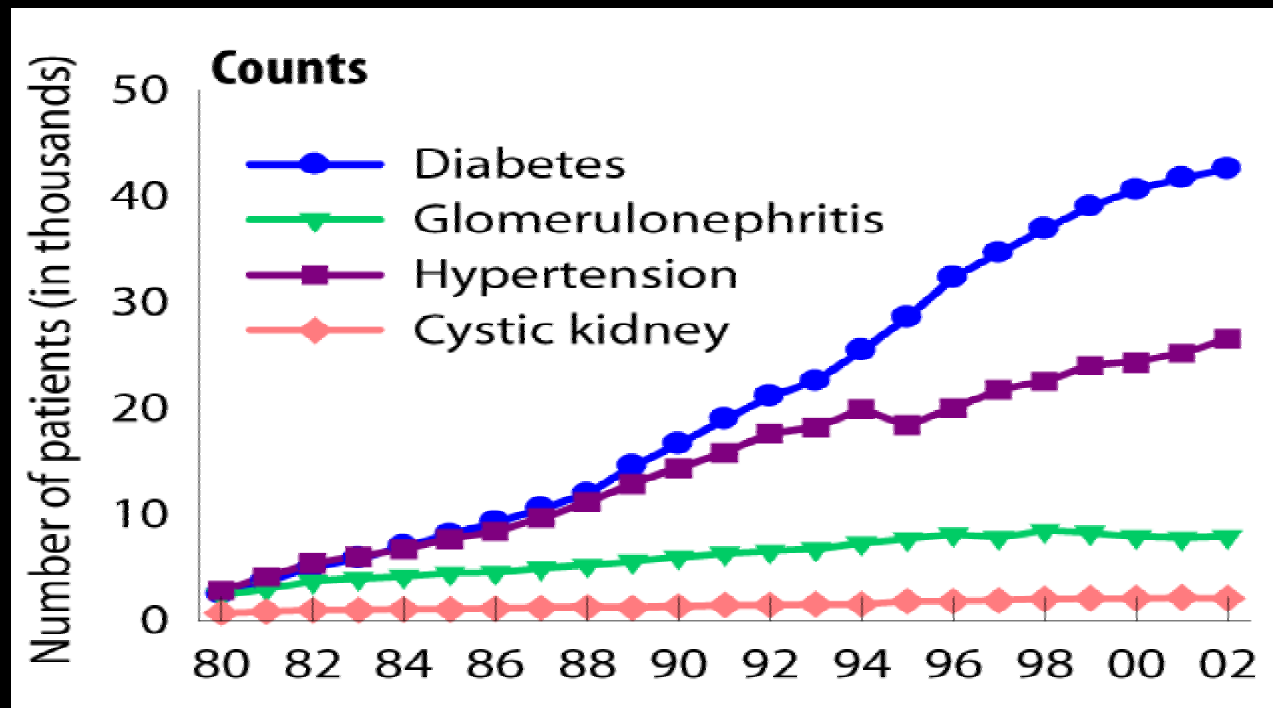


Prevalence of Renal Insufficiency in U.S.

GFR (mL/min/1.73 m ²)	59-30	29-15
Number of People	7.7 Million	360,000

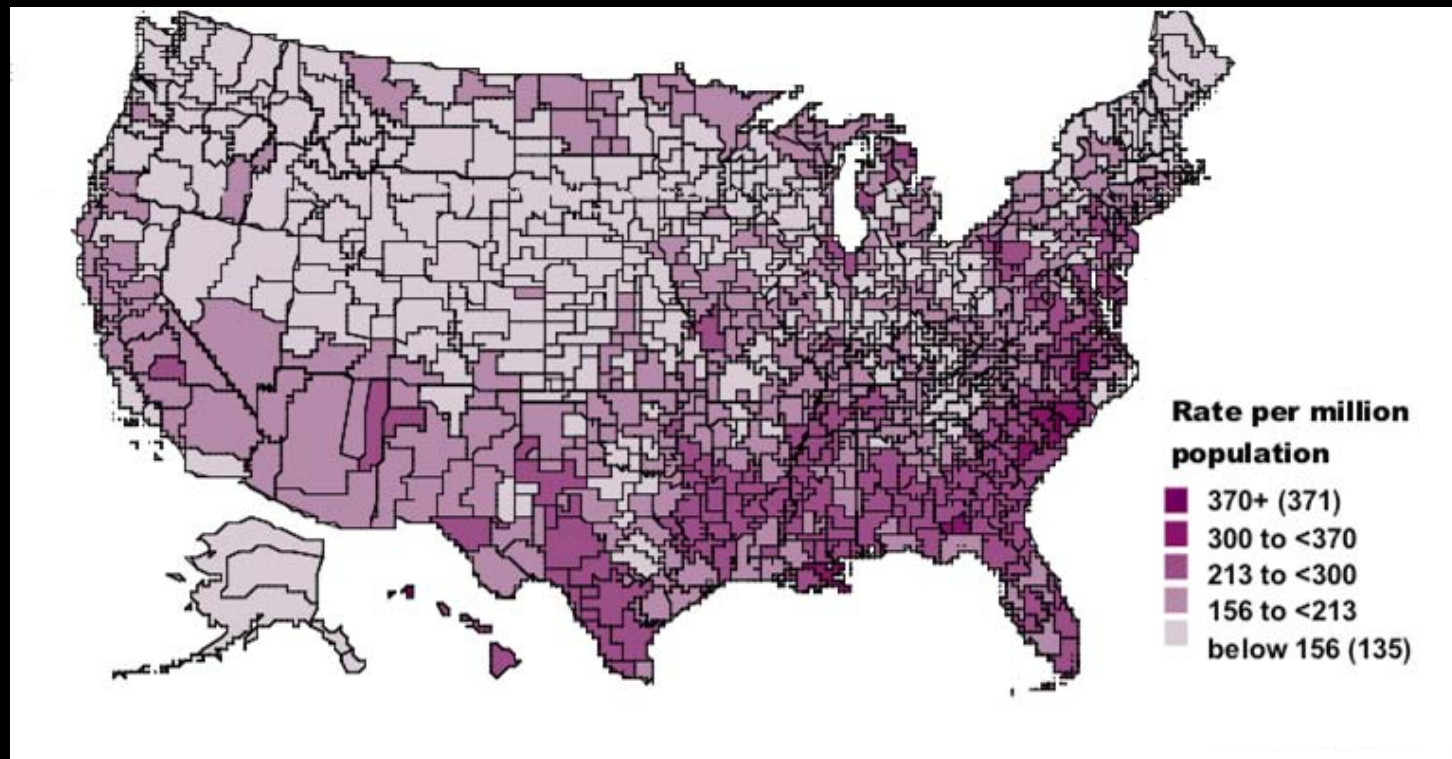
Thus, about 8 million Americans have a GFR less than 60 mL/min/1.73 m². Plus 11 million more have a GFR over 60 but have persistent microalbuminuria.

Incident Counts & Adjusted Rates, By Primary Diagnosis



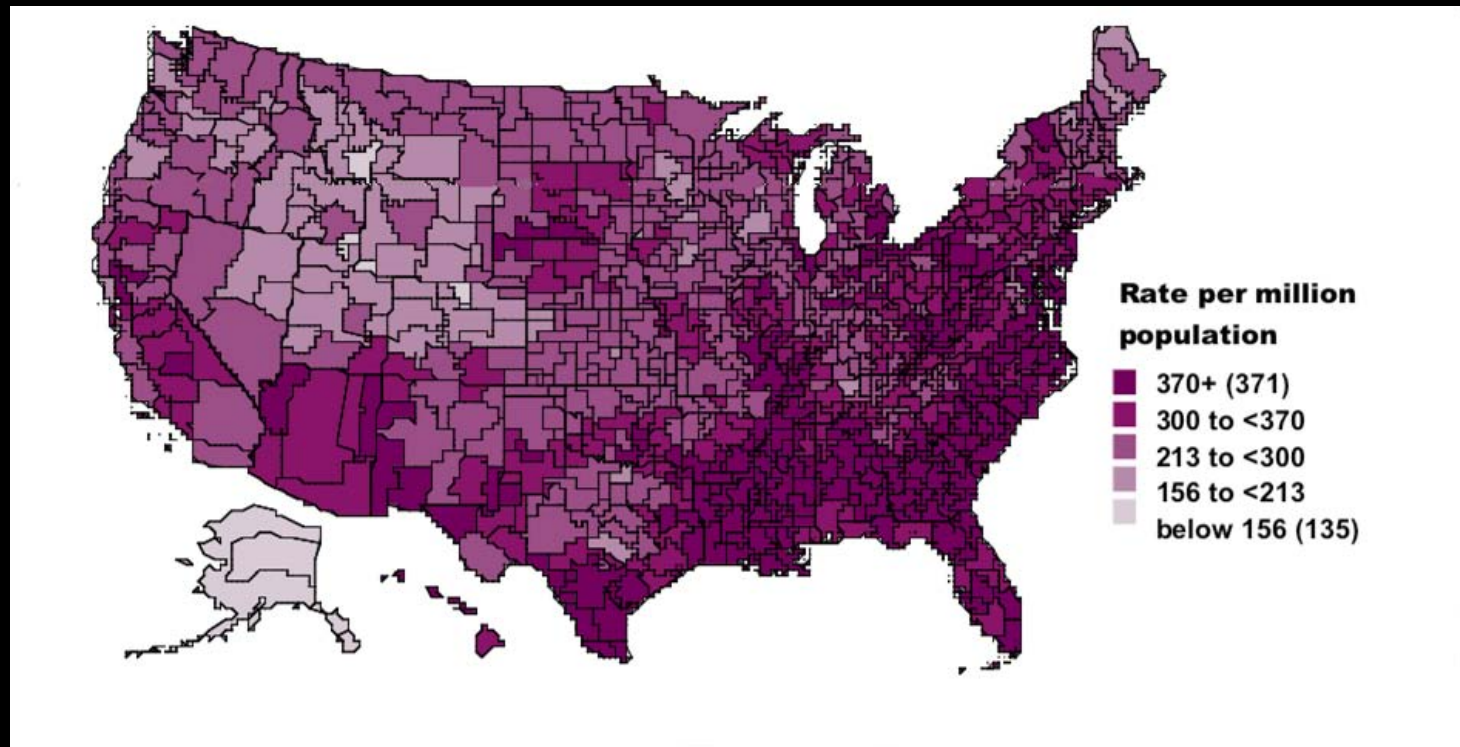
Incidence of Kidney Failure

(per million population, 1990, by HSA, unadjusted)



Incidence of Kidney Failure

(per million population, 2000, by HSA, unadjusted)



The Risk of Kidney Failure is Not Uniform

Relative risks compared to Whites:

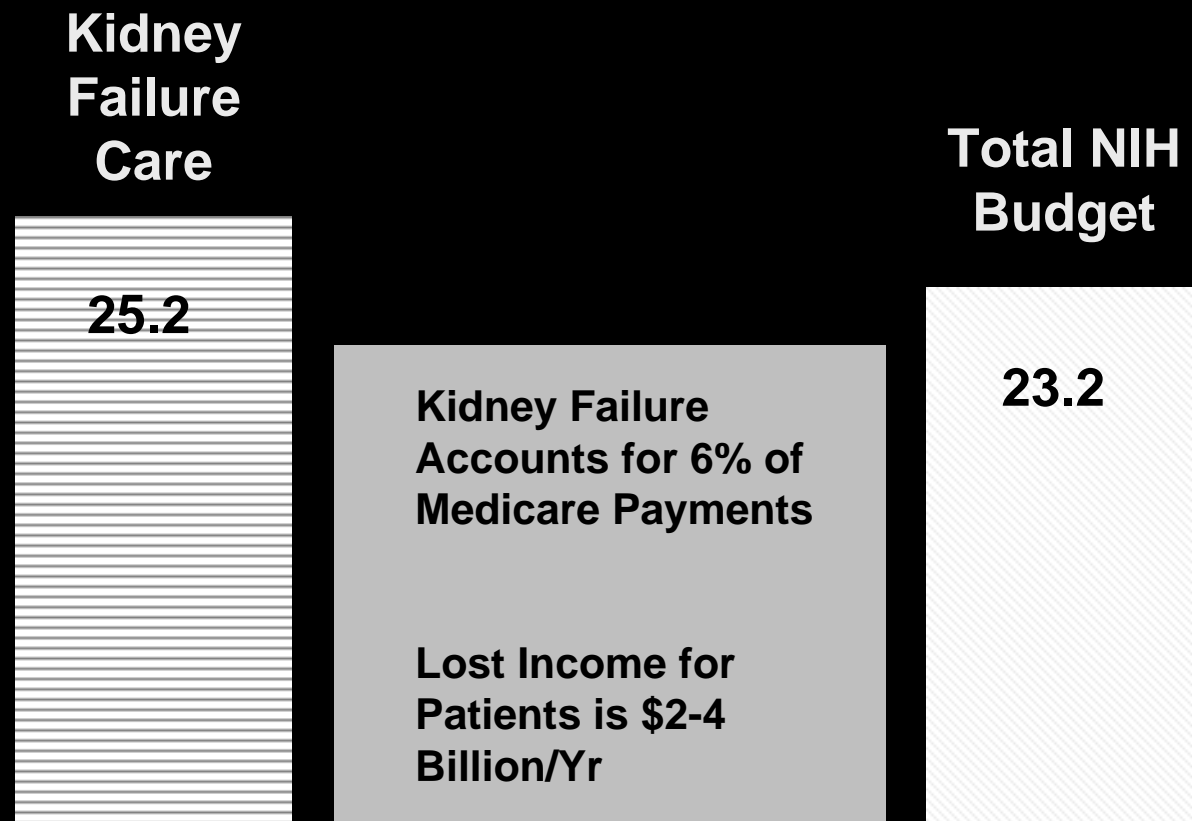
African Americans **3.8 X**

Native Americans **2.0 X**

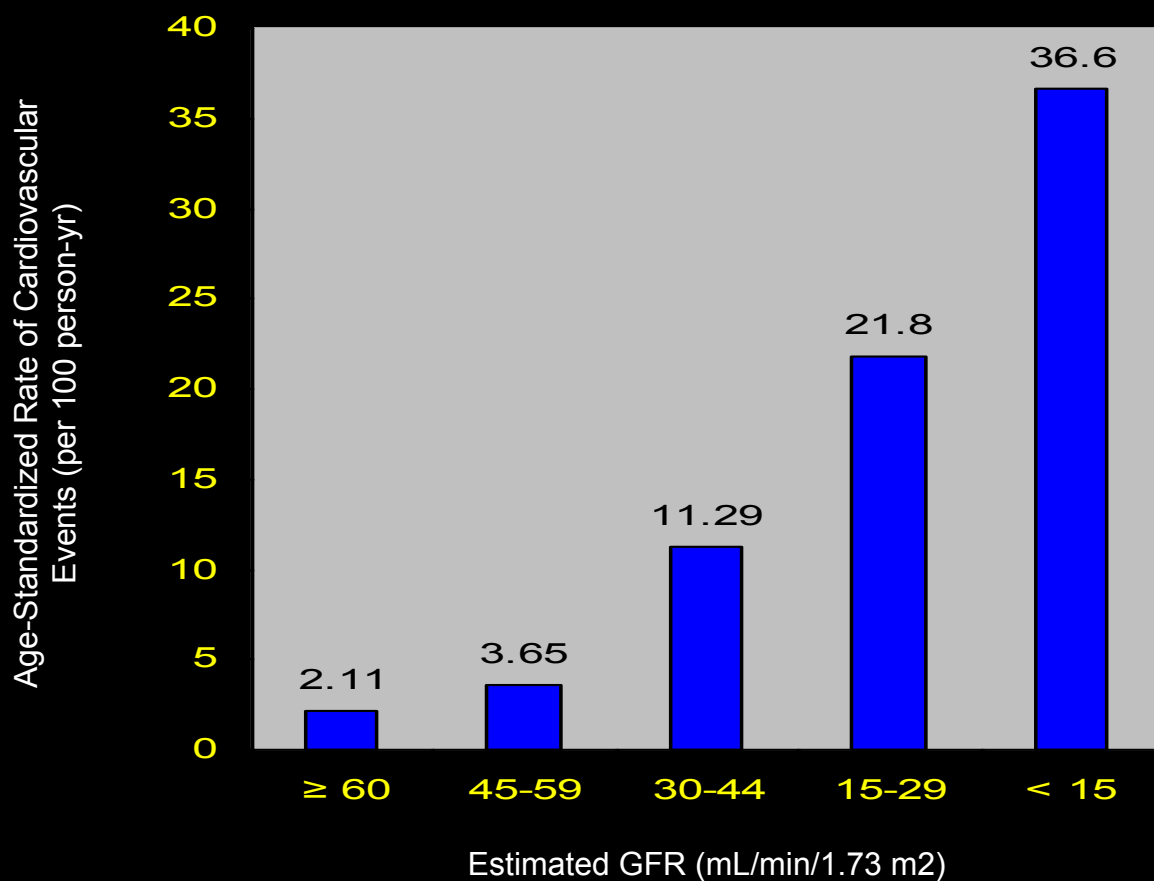
Asians/Pacific Islander **1.3 X**

The relative risk of Hispanics compared to
non-Hispanics is about 1.5 X

Costs of Kidney Failure are High (in \$billions for 2002)



CKD Predicts CVD



Treatment to Prevent Progression of CKD to Kidney Failure

- Intensive glycemic control lessens progression from microalbuminuria in type 1 diabetes
 - DCCT, 1993
- Antihypertensive therapy with ACE Inhibitors lessens proteinuria and progression
 - Giatras, et al., 1997
 - Psait, et al., 2000
 - Jafar, et al., 2001

} **Meta-Analyses**
- Low protein diets lessen progression
 - Fouque, et al., 1992
 - Pedrini, et al., 1996
 - Kasiske, et al., 1998

} **Meta-Analyses**

CKD is Not Being Recognized or Treated

- Most practices screen fewer than 20% of their Medicare patients with diabetes*
- Patients are referred late to a nephrologist, especially African-American men
- Less than 1/3 of people with identified CKD get an ACE Inhibitor

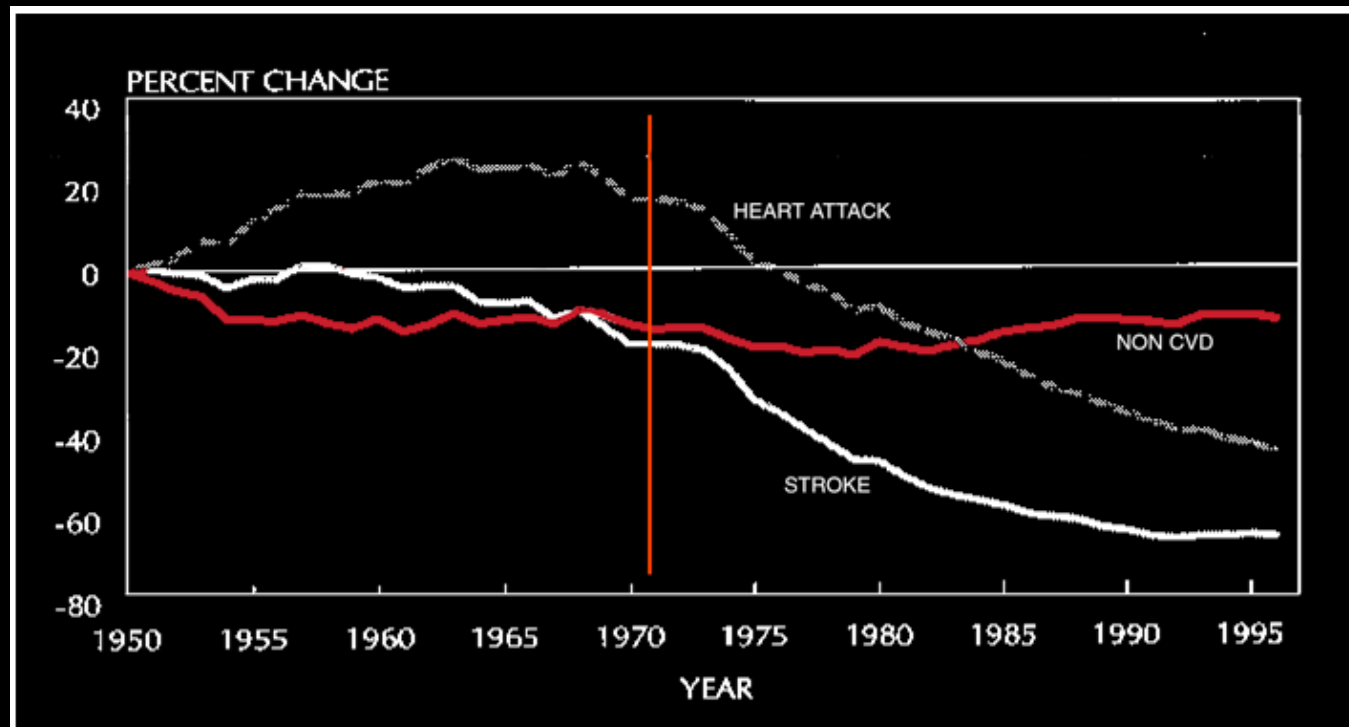
Kinchen, et al., 2002;
McClellan et al., 1997

*Data provided by the USRDS based on 5 percent Medicare enrollment and claims data

Is “System Level” Action Necessary?

- Universal medical coverage?
- Disease management teams?
- Improved reimbursement for prevention?
- Other?

Age-Adjusted Cardiovascular Death is Declining



Parallels Between Hypertension in 1972 and Kidney Disease in 2005

- Recent documentation of effective therapy
- Treatment of a silent disease to reduce risk for a disastrous outcome
- Simple screening
- Advantages for patients, physicians, industry

Who to Test for Chronic Kidney Disease

Regular testing of people at risk

- Diabetes
- Hypertension
- Relative with kidney failure
- Cardiovascular disease

How to Test for Chronic Kidney Disease*

In individuals with diabetes:

- “Spot” urine albumin to creatinine ratio

In others at risk:

- “Spot” urine albumin to creatinine ratio **OR** standard dipstick (Bouleware, et al., 2003)
- Estimate GFR from serum creatinine using the MDRD prediction equation

**24 hour urine collections are NOT needed. Diabetics should be tested once a year. Others at risk testing less frequently as long as normal.*

At What Level of Creatinine Does a 65-Year-Old Diabetic, Hypertensive White Woman Weighing 50 Kilograms Have CKD?

- 77% said:
Creatinine > 1.5 mg / dl

$$\text{GFR} = 37 \text{ mL/min/ } 1.73 \text{ m}^2$$

$$\text{Ccreat} = 30 \text{ mL/min}$$

- Creatinine = 1.0 for GFR = 59 mL/min/1.73 m²

Who Should be Treated for Chronic Kidney Disease

With diabetes:

- With urine albumin/creatinine ratios more than 30mg albumin/1 gram creatinine

Without diabetes:

- With urine albumin/creatinine ratios more than 300mg albumin/1 gram creatinine corresponding to about 1+ on standard dipstick

Or

Any patient:

- With estimated GFR less than 60 mL/min/1.73 m²

How to Treat for Chronic Kidney Disease

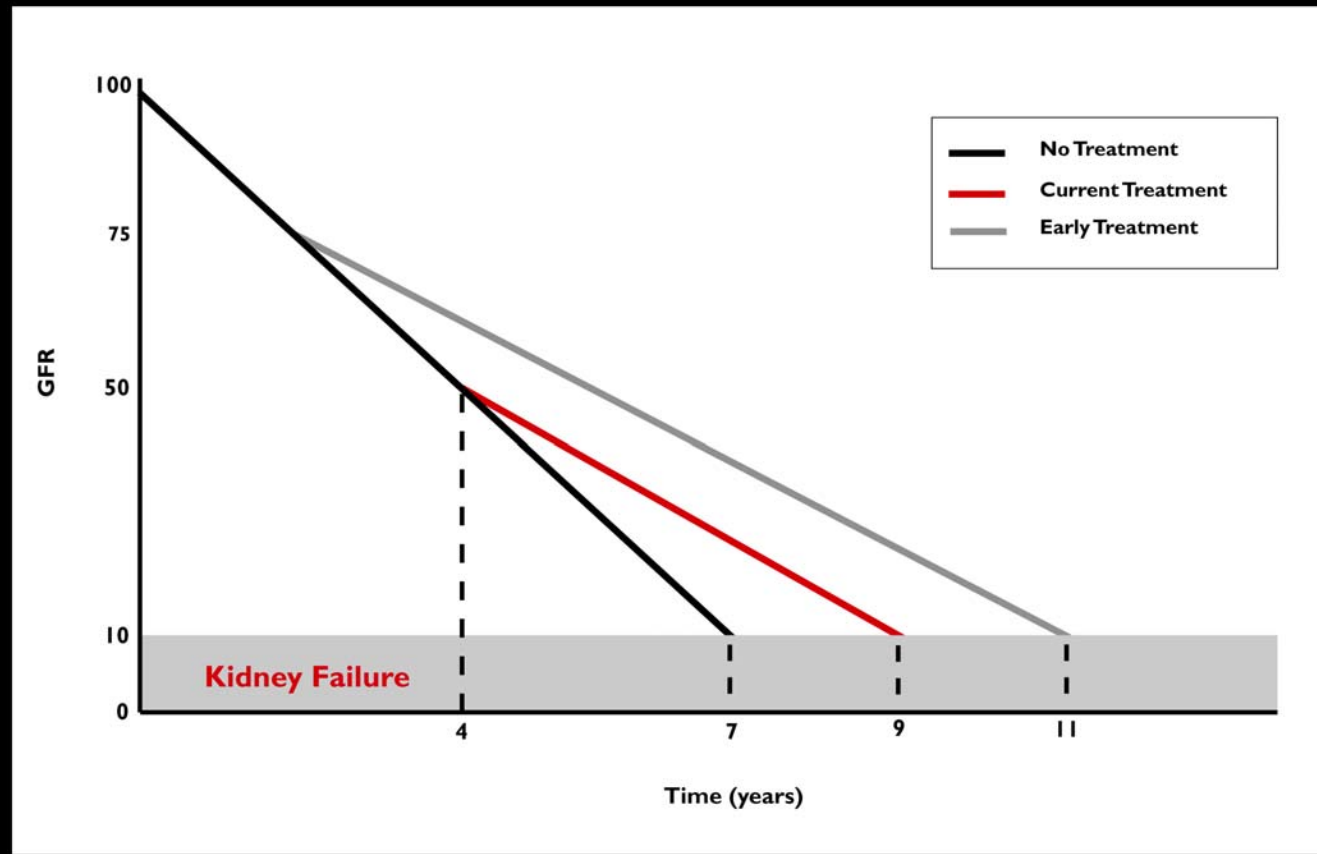
- Maintain blood pressure less than 130/80 mmHg
- Use an ACE Inhibitor or ARB
- More than one drug is usually required and a diuretic should be part of the regimen
- Continue best possible glycemic control in individuals with diabetes

How to Treat for Chronic Kidney Disease

(continued)

- Refer to dietician for a reduced protein diet
- Consult a nephrologist early
- Team with the nephrologist for care if GFR is less than 30 mL/min/1.73 m²
- Monitor hemoglobin and phosphorous with treatment as needed
- Treat cardiovascular risk, especially smoking and hypercholesterolemia

Early Treatment Makes a Difference



Target Audiences

- African Americans with
 - *Diabetes*
 - *Hypertension*
 - *Family history of kidney failure*
- Primary Care Providers



NKDEP Activities

- “*You Have The Power To Prevent Kidney Disease*” awareness campaign
- Improved laboratory measurements and routine reporting of kidney function
- CKD quality indicators among Medicare beneficiaries hospitalized for cardiovascular disease
- Consult letter template for nephrologists
- Working with other non-profit, industry, and government groups

PCP Must be Engaged

- 1) 7.7 million people with GFR 30-60 mL/min/1.73 m²
- 2) About 5,000 full-time nephrologists
- 3) Nearly 1,500 new patients per nephrologist

Therefore, 7 new patients per day per nephrologist.

Obviously not possible.

What can Primary Care Providers do?

- Recognize who is at risk
- Provide testing and treatment
- Encourage labs to provide and report estimated GFR and spot urine albumin/creatinine ratios



You Have The Power To Prevent Kidney Disease

www.nkdep.nih.gov



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