Kidney Failure-
Are you at risk??
(腎功能衰竭-你是在高危險群嗎?)

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www.PassPACES.com/kidney.htm

Outline of Lecture

- Introduction(介紹)
- Definition of Chronic kidney disease(慢性肾脏病的定义)
- Stages of Chronic kidney disease (慢性肾脏病的阶段)
- Epidemiology of chronic kidney disease (流行病学)
- Chronic kidney disease- Myths and Truth (神话与真相)
- Are you at risk?
- What should you do if you have CKD?
- Renal Replacement therapy (肾脏替代疗法)
- Conclusion

Introduction

The prevalence of CKD and end-stage renal disease (ESRD) is increasing worldwide.

The estimated prevalence of CKD in the US

was 16.8% while in Asia the prevalence ranged from 12.1% to 17.5%.

In Malaysia, the incidence and prevalence of patients with ESRD on dialysis had increased from 88 and 325 per million population (pmp) respectively in 2001 to 170 and 762 pmp respectively in 2009.

The growing number of ESRD places an enormous human, economic and social burden on the healthcare system.

Early kidney disease is largely asymptomatic and patients often present late with complications of CKD.

Definition of Chronic kidney disease

Table 11. Definition of Chronic Kidney Disease

Criteria
1. Kidney damage for ≥3 months, as defined by structural or functional abnormalities of the kidney, with or without decreased GFR, manifest by *either*: • Pathological abnormalities; or • Markers of kidney damage, including abnormalities in the composition of the blood or urine, or abnormalities in imaging tests
2. GFR <60 mL/min/1.73 m^2 for ≥3 months, with or without kidney damage

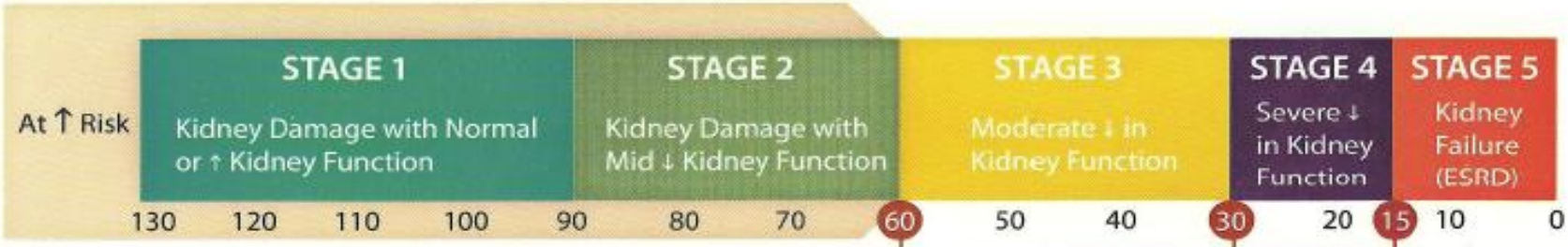
Methods to estimate GFR are discussed in Guideline 4. Markers of kidney damage are discussed in Guidelines 5–6.

Stages of Chronic kidney disease

Appendix 3 : CKD – Stages of CKD

Roche

Kidney Function: Glomerular Filtration Rate (GFR) (Guidelines 1 and 2)



If GFR <60, asess:
- Presence of anemia (Guideline 8): follow K/DOQI Anemia Guidelines
- Nutritional status (Guideline 9): follow K/DOQI Nutritional Guidelines
- Bone Metabolism (Guideline 10): follow K/DOQI Bone Metabolism Guidelines
- Indices of functioning and well-being (Guideline 12)

If GFR <30:
- Refer to nephrologist
- Prepare for Kidney Replacement Therapy (KRT)

If GFR <15, consider initiation of KRT.
Patients who may benefit from KRT at Higher levels of kidney function:
- Living donor transplant recipients
- Older patients
- Those with diabetes (this group is at highest risk for ASCVD)
- Those with ASCVD
- Those with other comorbid conditions

National Kidney Foundation. K/DOQI Clinical Practice Guidelines for Chronic Kidney Disease: Evaluation, Classification and Stratification. Am J Kidney Dis 39, 2002(suppl 1). These Guidelines, as well as all other K/DOQI™ guidelines, can be accessed on the Internet at: www.kdoqi.org NKF Order No. 12-50-0157. Amgen Part No. P35184.

Prevalence of ESRD

(per million population),

2005

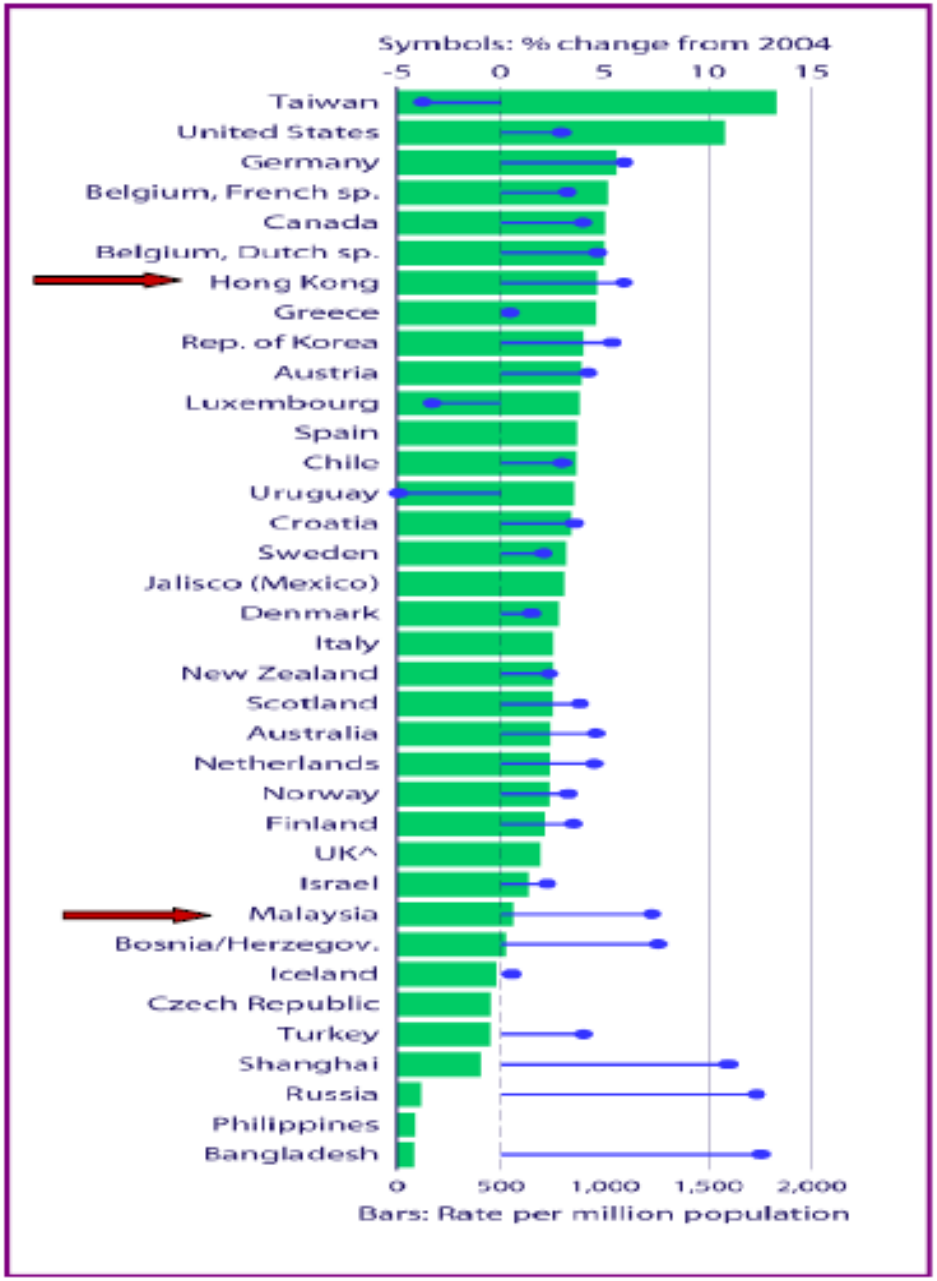
1. **Taiwan 1,830**
2. **USA 1,585**
3. **Germany 1,057**

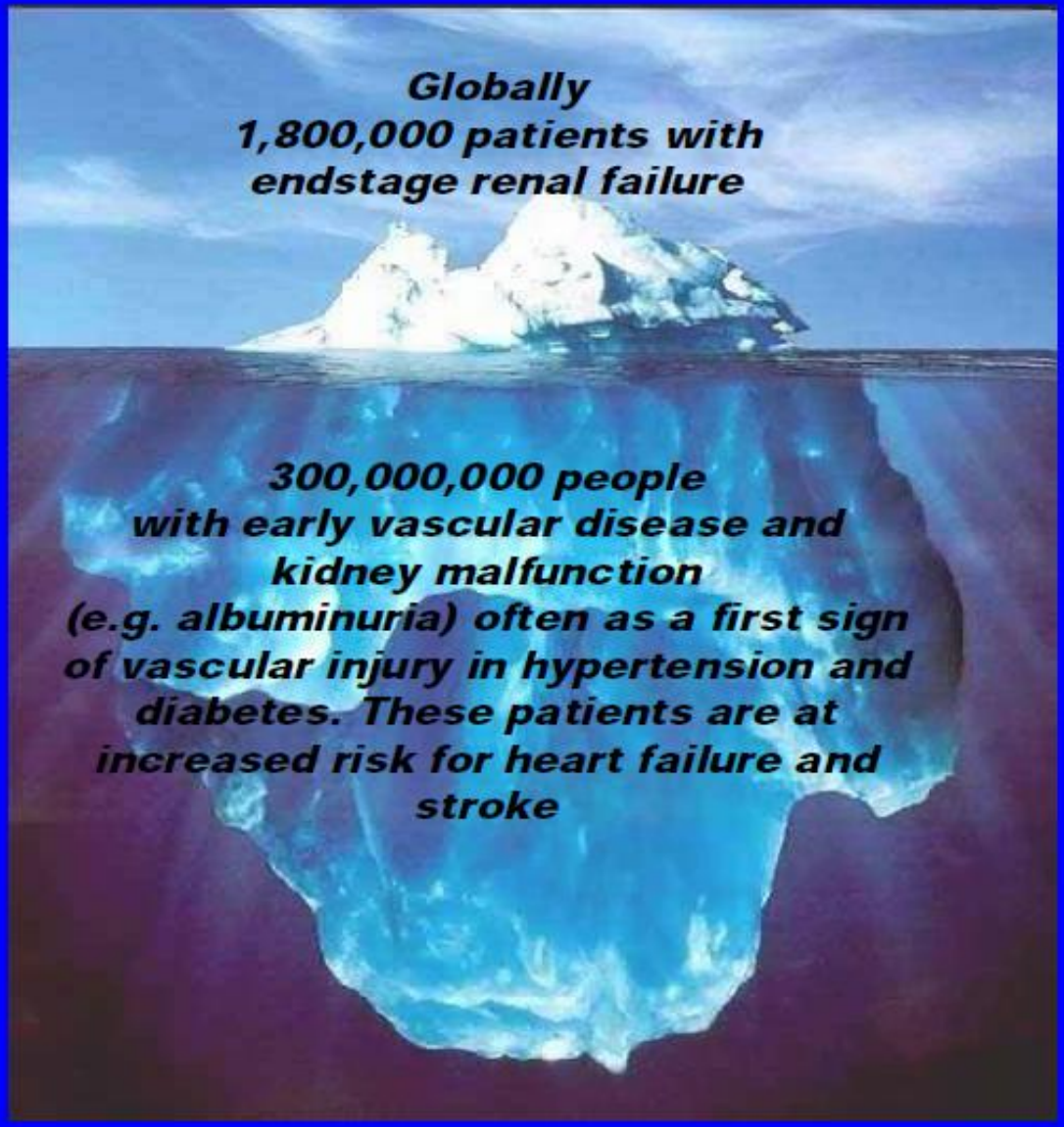
7. HK 965

28. Malaysia 560

(Japan – no data - No. 1 in 2003)

USRDS 2007



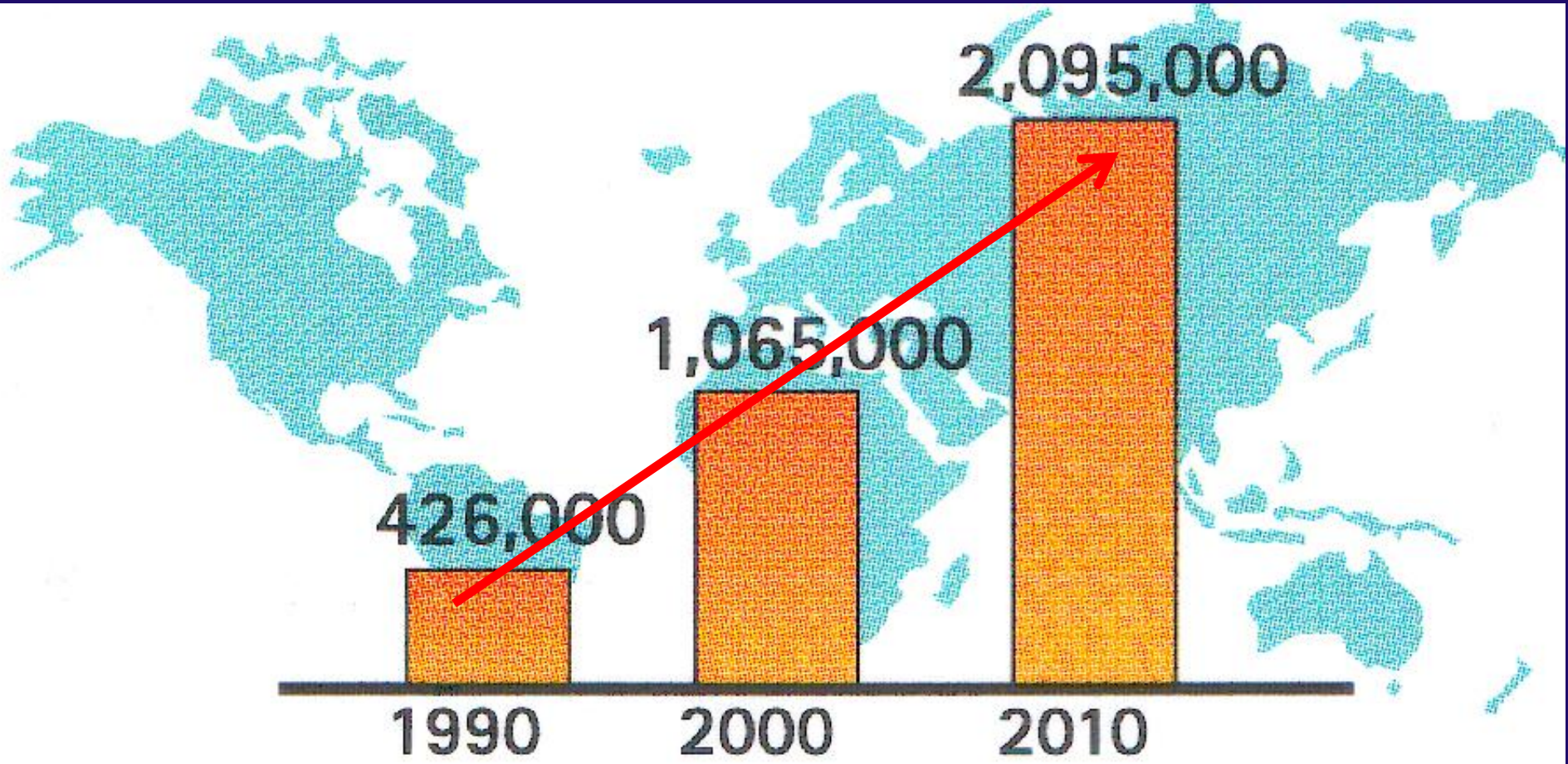

Globally
1,800,000 patients with
endstage renal failure
300,000,000 people
with early vascular disease and
kidney malfunction
(e.g. albuminuria) often as a first sign
of vascular injury in hypertension and
diabetes. These patients are at
increased risk for heart failure and
stroke

Stages of CKD in US – Estimated Prevalence

Stage of CKD	Description	GFR	Detection, Evaluation, and Management*	Prevalence†	
				%	No. of Cases (95% CI)
		ml/min/1.73 m²			*millions*
1	Kidney damage with normal or increased GFR	>90	Diagnosis and treatment Treatment of coexisting conditions Slowing progression Risk reduction for cardiovascular disease	2.8	5.6 (4.0–7.2)
2	Kidney damage with mild decrease in GFR	60–89	Estimation of progression	2.8	5.7 (4.2–7.2)
3	Moderate decrease in GFR	30–59	Evaluation and treatment of complications	3.7	7.4 (6.0–8.9)
4	Severe decrease in GFR	15–29	Referral to nephrologist and consideration for kidney replacement therapy	0.1	0.30 (0.02–0.5)
5	Kidney failure	<15	Replacement (if uremia present)	0.2	0.30‡

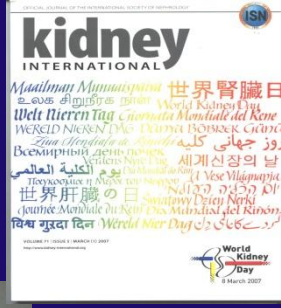
US Estimates from **Stevens: N Engl J Med** *, 2006*

Global maintenance dialysis population from 1990 to 2010

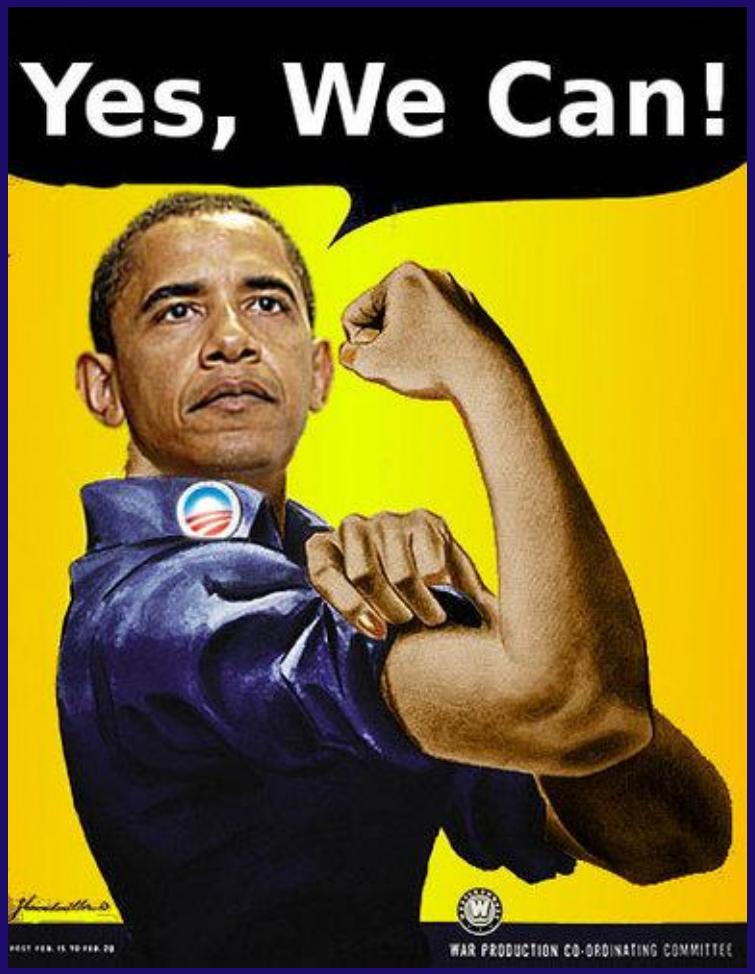


Lysaght, *J Am Soc Nephrol*, 2002

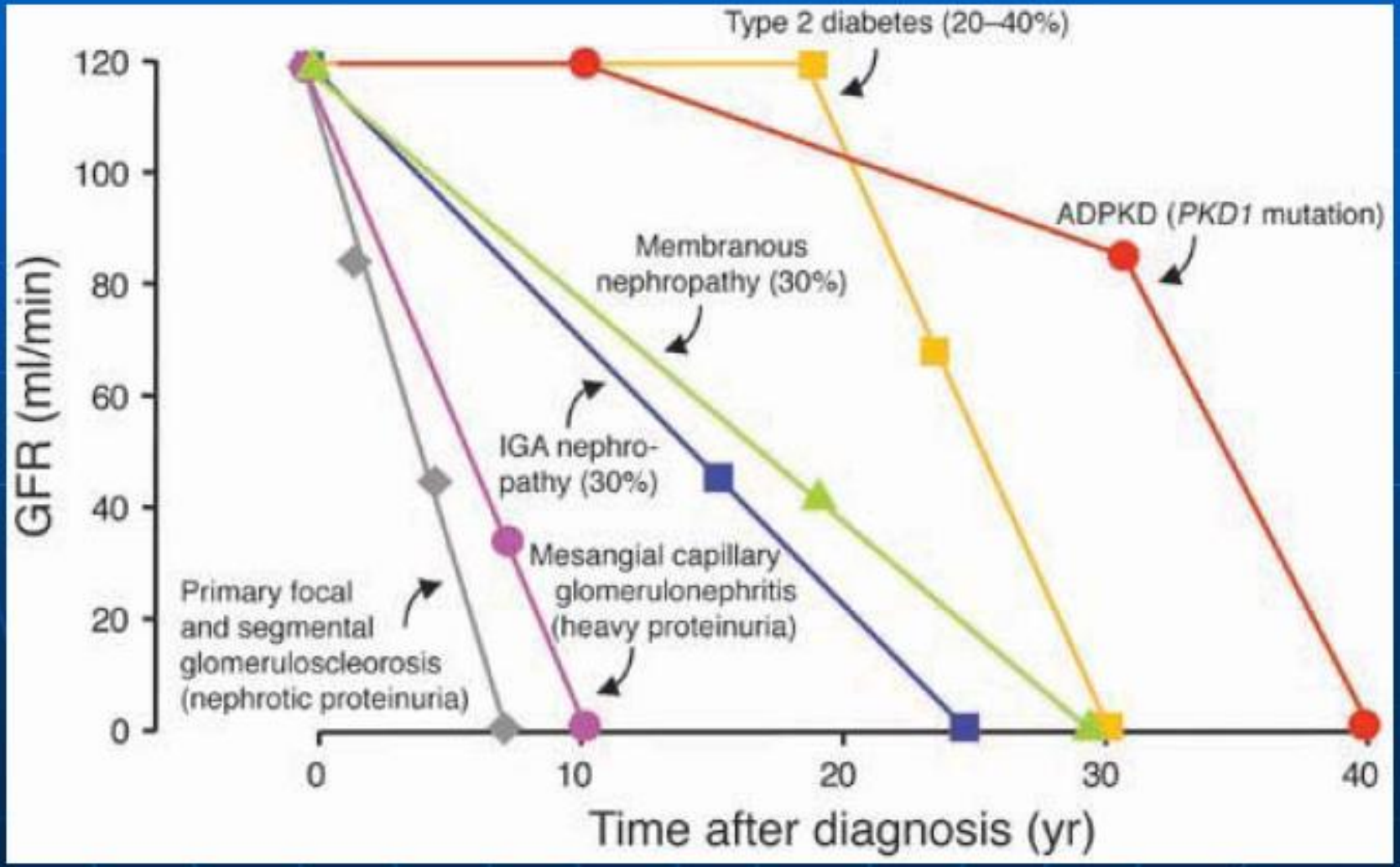
You Have THE Power To Prevent CKD!!



YES, WE CAN!!



Natural History of CKD



CKD-Myths and Truth

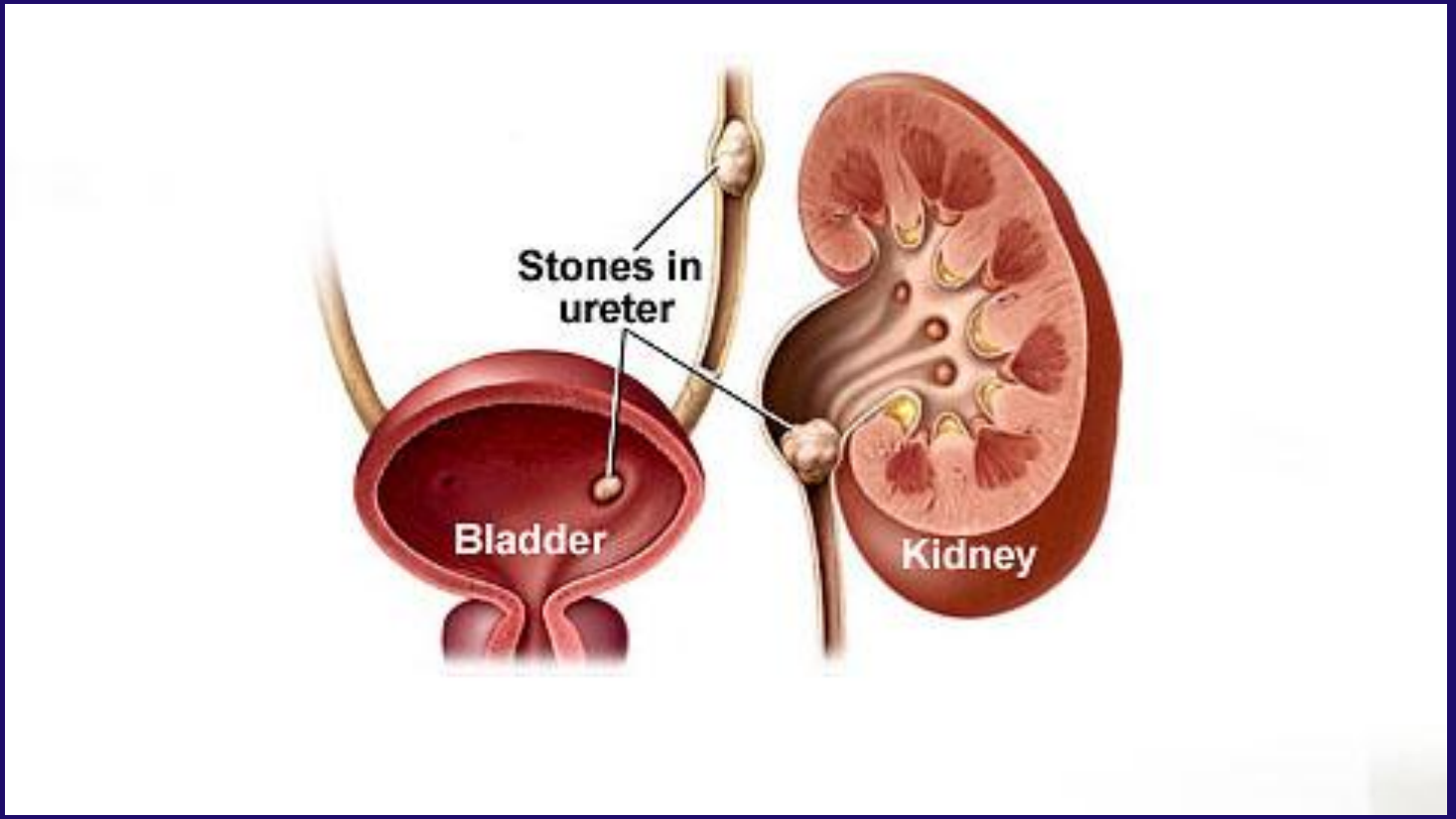
Myth 1: Backpain is kidney failure

Fact:

Patients with early stage of CKD are generally asymptomatic.

Many of such cases remain undiagnosed and later progress to ESRD.

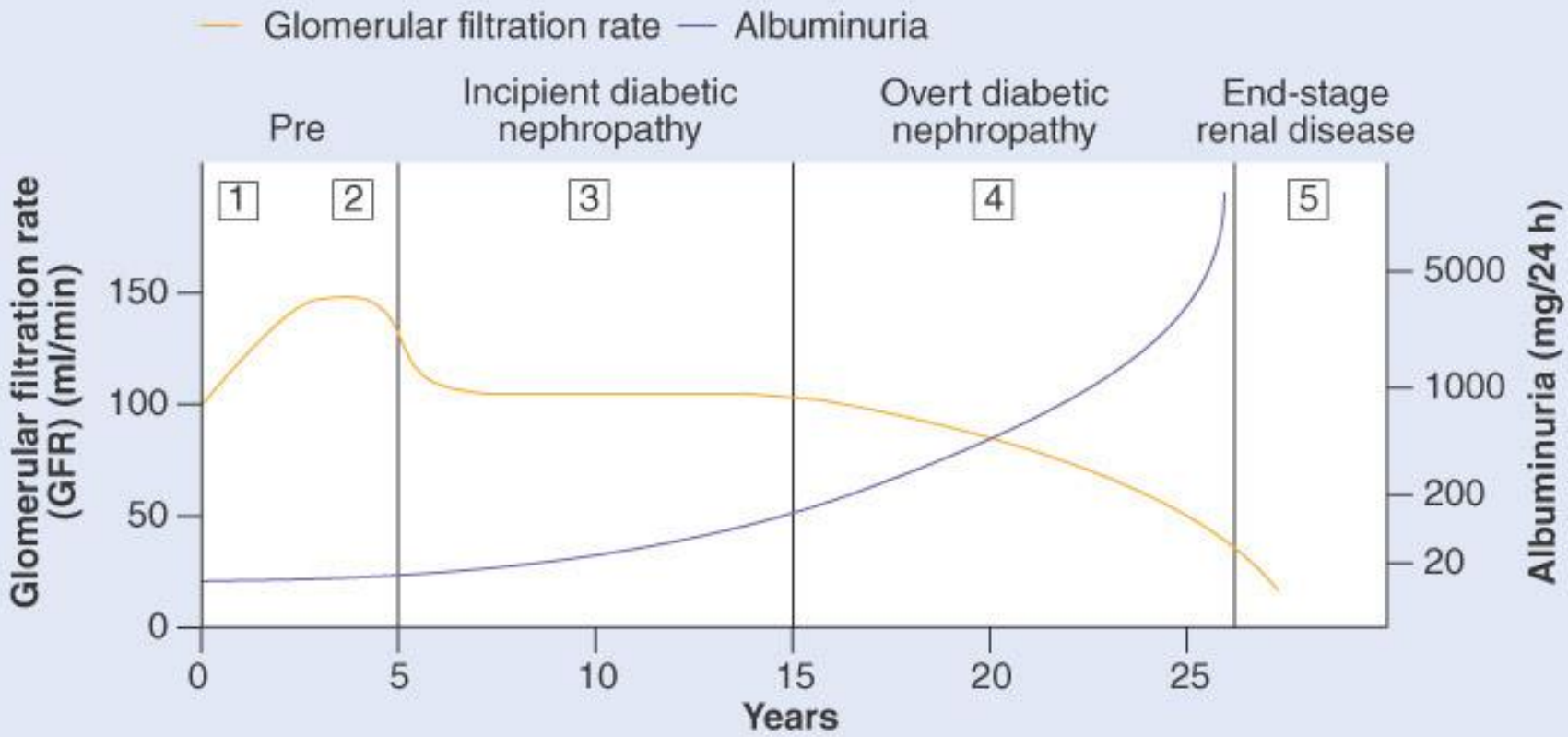
Unless YOU HAVE KIDNEY STONE



Myth 2: Medications cause me to have kidney failure

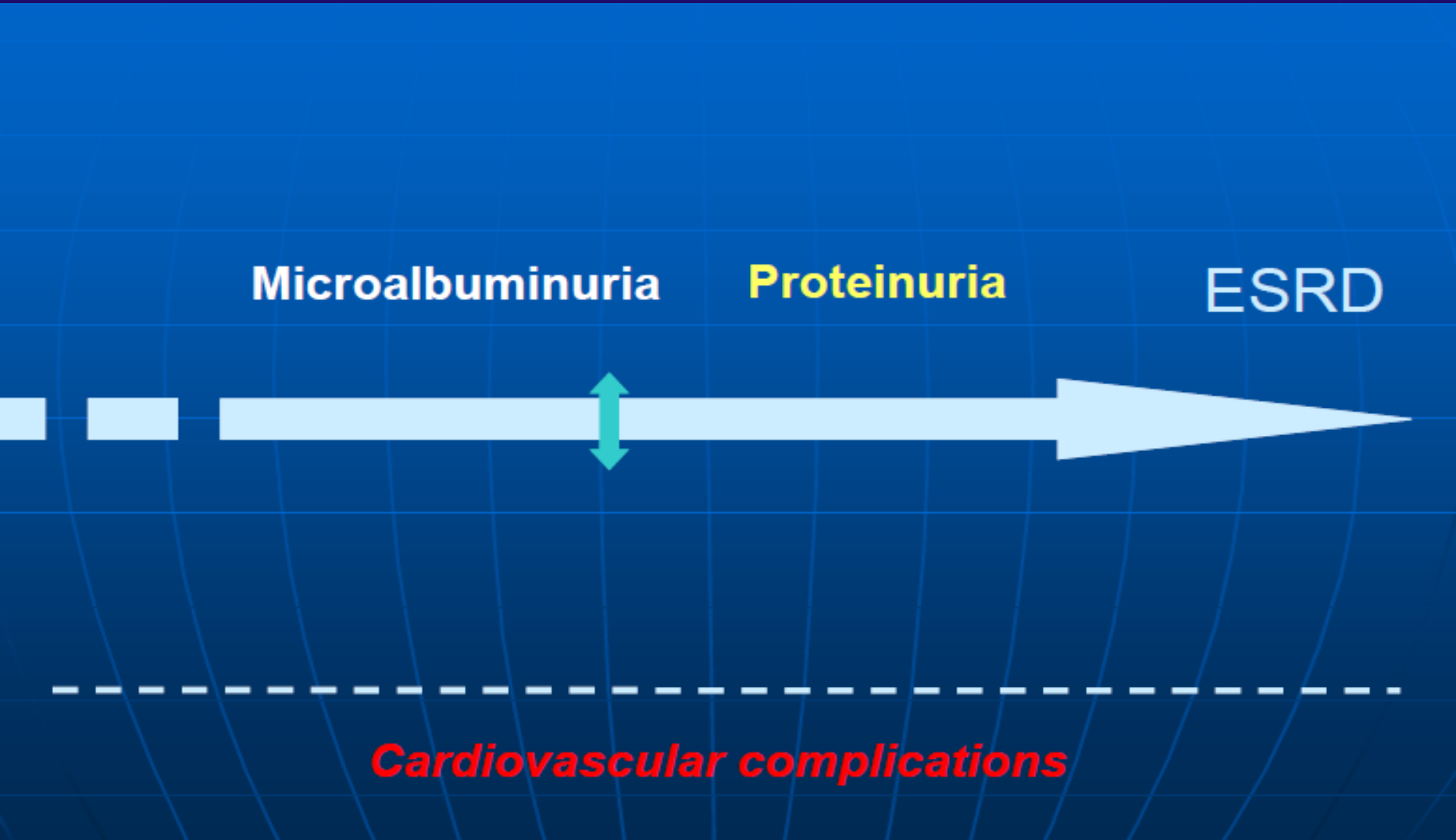
Fact: No, although some medications might not be suitable for chronic kidney disease patients or dosing should be reduced, medications especially those used to control your blood pressure or diabetes are good for you in long run

Natural history of type 1 diabetic nephropathy

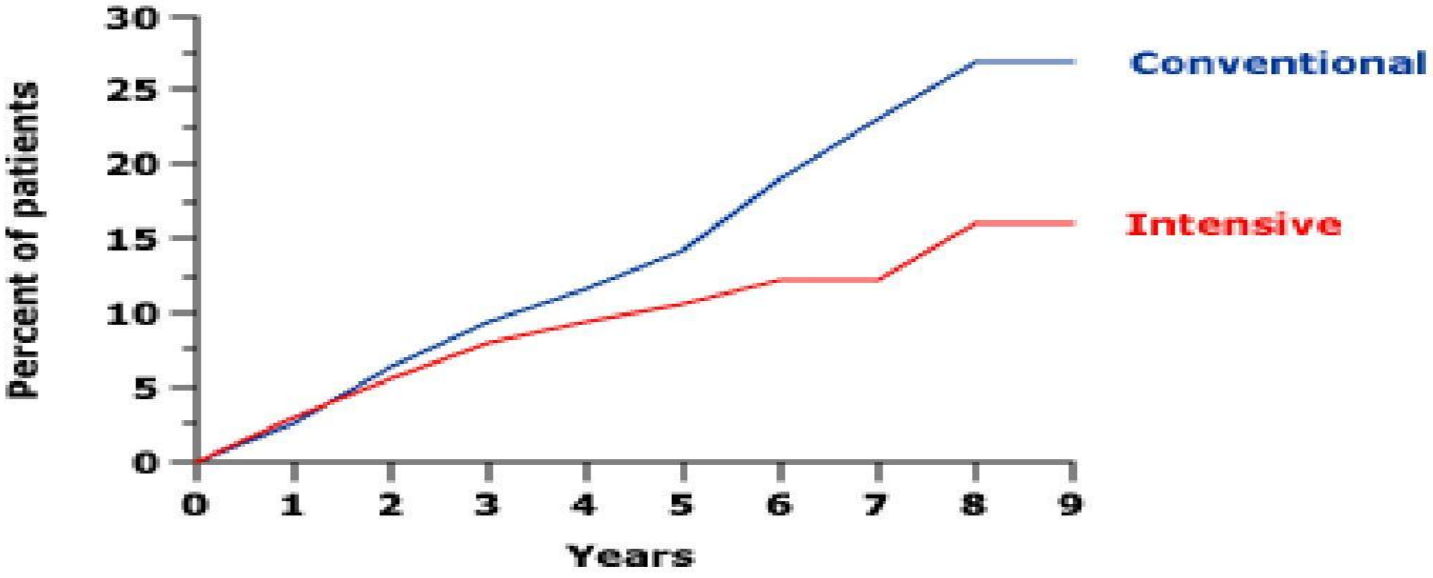


Stage	Pre	Incipient	Overt
Functional	GFR ↑ (25%–50%)	Microalbuminuria, hypertension	Proteinuria, nephrotic syndrome, GFR ↓
Structural	Renal hypertrophy	Mesangial expansion, glomerular basement membrane thickening, arteriolar hyalinosis	Mesangial nodules (Kimmelstiel-Wilson lesions) Tubulointerstitial fibrosis

Time course of diabetic nephropathy



Strict glycemic control prevents microalbuminuria in patients with type 1 diabetes mellitus



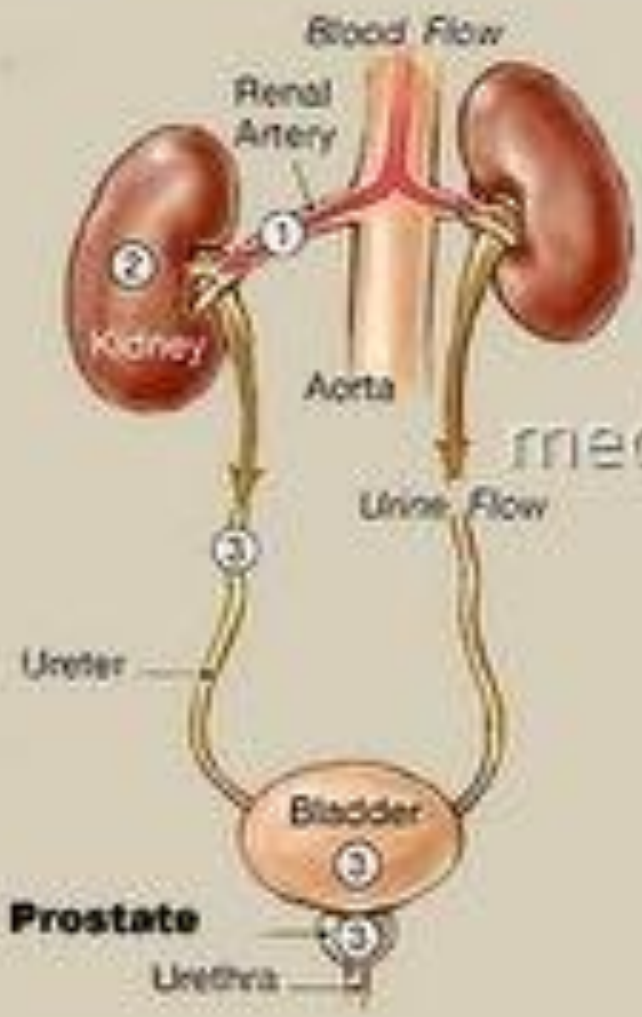
Cumulative incidence of microalbuminuria in patients with type 1 diabetes treated with either conventional or intensive insulin therapy for up to nine years. There was an increasing benefit of intensive therapy over time ($p < 0.04$).
Data from The Diabetes Control and Complications Trial Research Group, N Engl J Med 1993; 329:977.

Myth 3: Can kidney failure recover??

Fact: There are 2 types of kidney failure- Acute or chronic kidney failure. Acute renal failure can recover but not chronic renal failure.

Acute renal failure (or Acute Kidney Injury) can be defined as abrupt loss of kidney function after a acute insult.

Causes of Acute Renal Failure



1 Prerenal
Sudden and severe drop in blood pressure (shock) or interruption of blood flow to the kidneys from severe injury or illness

2 Intrarenal
Direct damage to the kidneys by inflammation, toxins, drugs, infection, or reduced blood supply

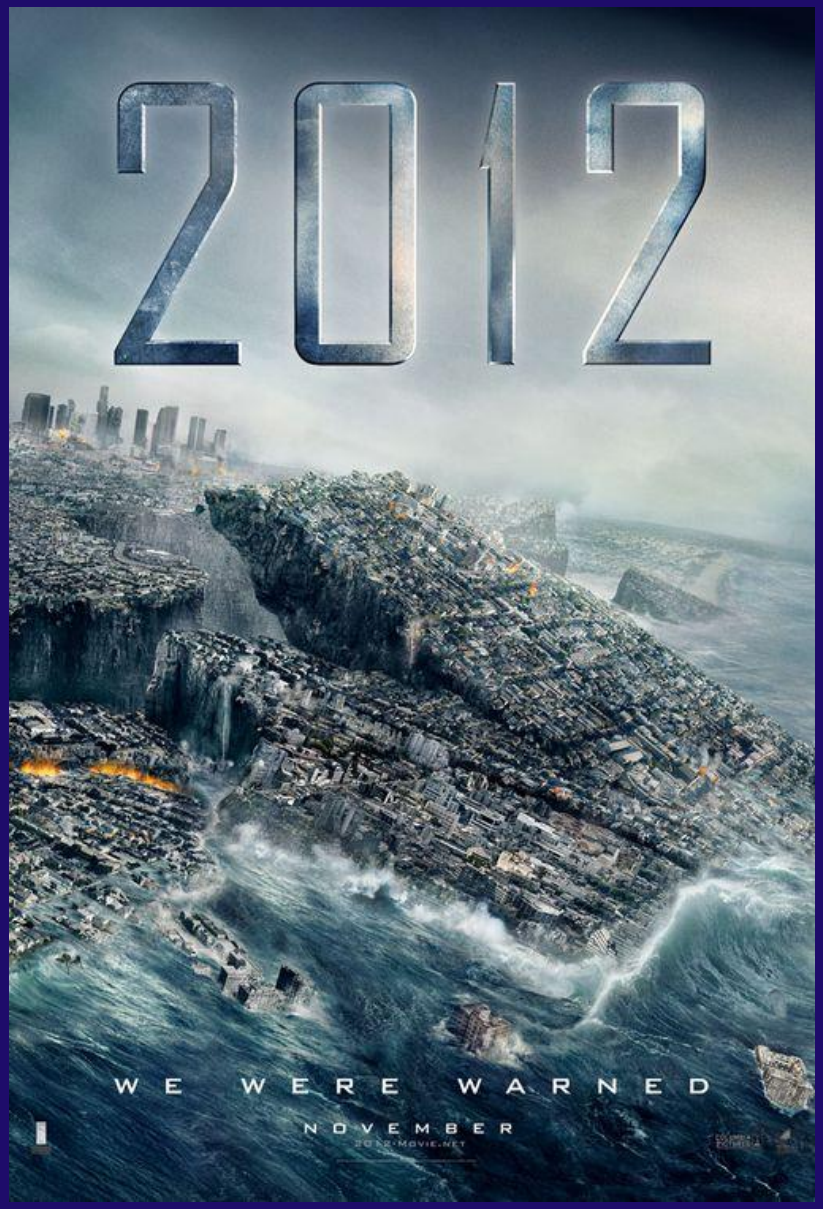
3 Postrenal
Sudden obstruction of urine flow due to enlarged prostate, kidney stones, bladder tumor, or injury

Scenario

1) Acute Kidney Failure (急性肾功能衰竭)
2) Acute on chronic Kidney failure (急性慢性肾功能衰竭
3) Chronic kidney failure (慢性肾功能衰竭)
4) End stage Kidney Failure (终末期肾功能衰竭)

Myth 4: I do not want to start dialysis because it is lifelong and there is no turning back

Fact: Depending on your remaining kidney function, once it reaches critical stage, you have no choice but to start Renal Replacement Therapy (RRT) either peritoneal dialysis, haemodialysis or kidney transplantation.


2012
WE WERE WARNED
NOVEMBER
2012MOVIE.NET

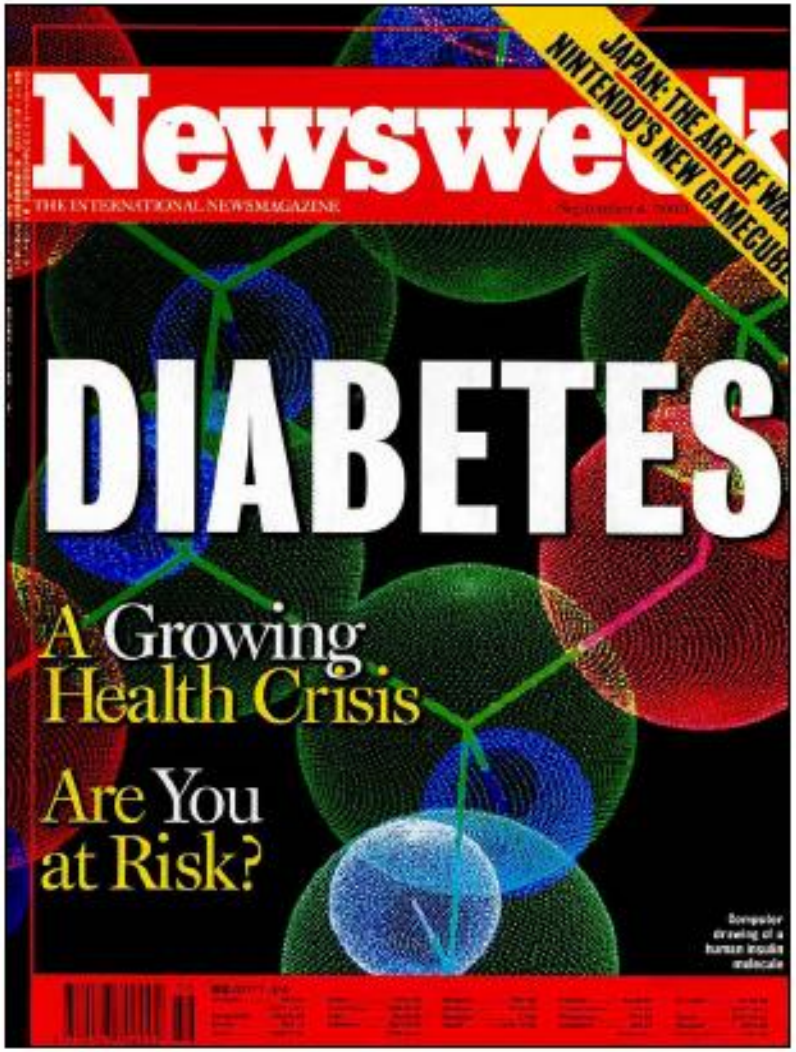
Early detection and intervention of high risk groups may prevent the development and progression of CKD

ARE YOU AT RISK??

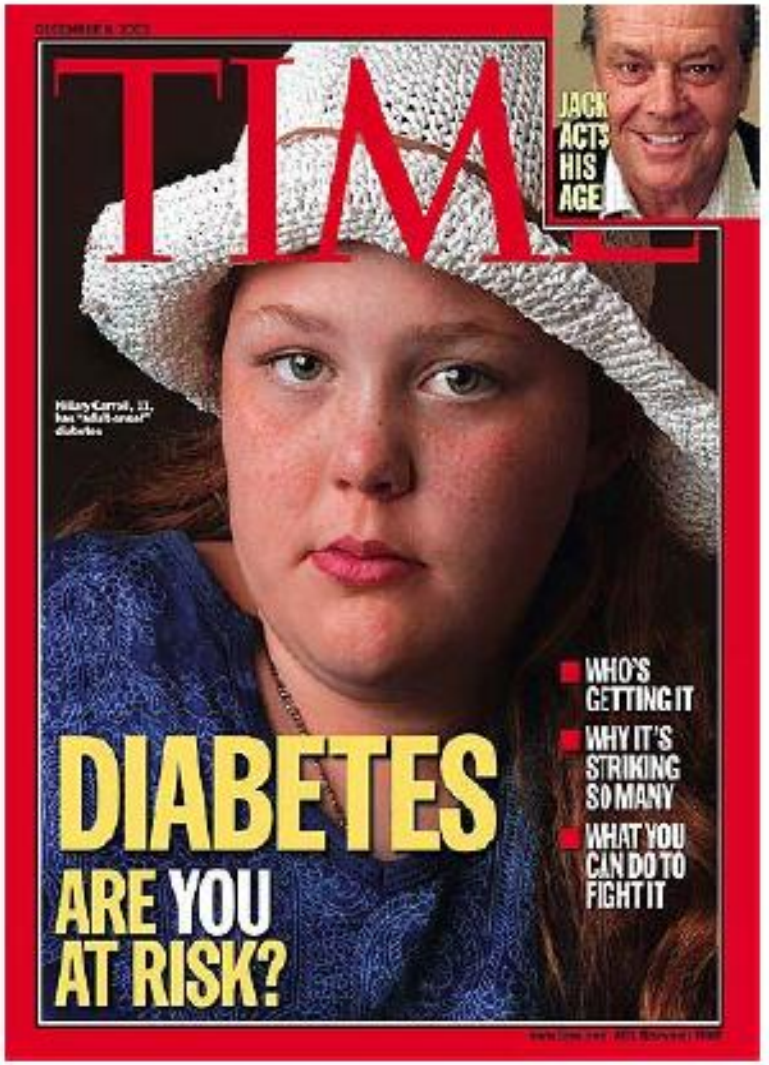
1) Diabetes Mellitus

DM is significantly associated with increased risk for CKD.

In Malaysia, DKD is a major cause of CKD, contributing to 58% of new patients requiring dialysis in 2009.

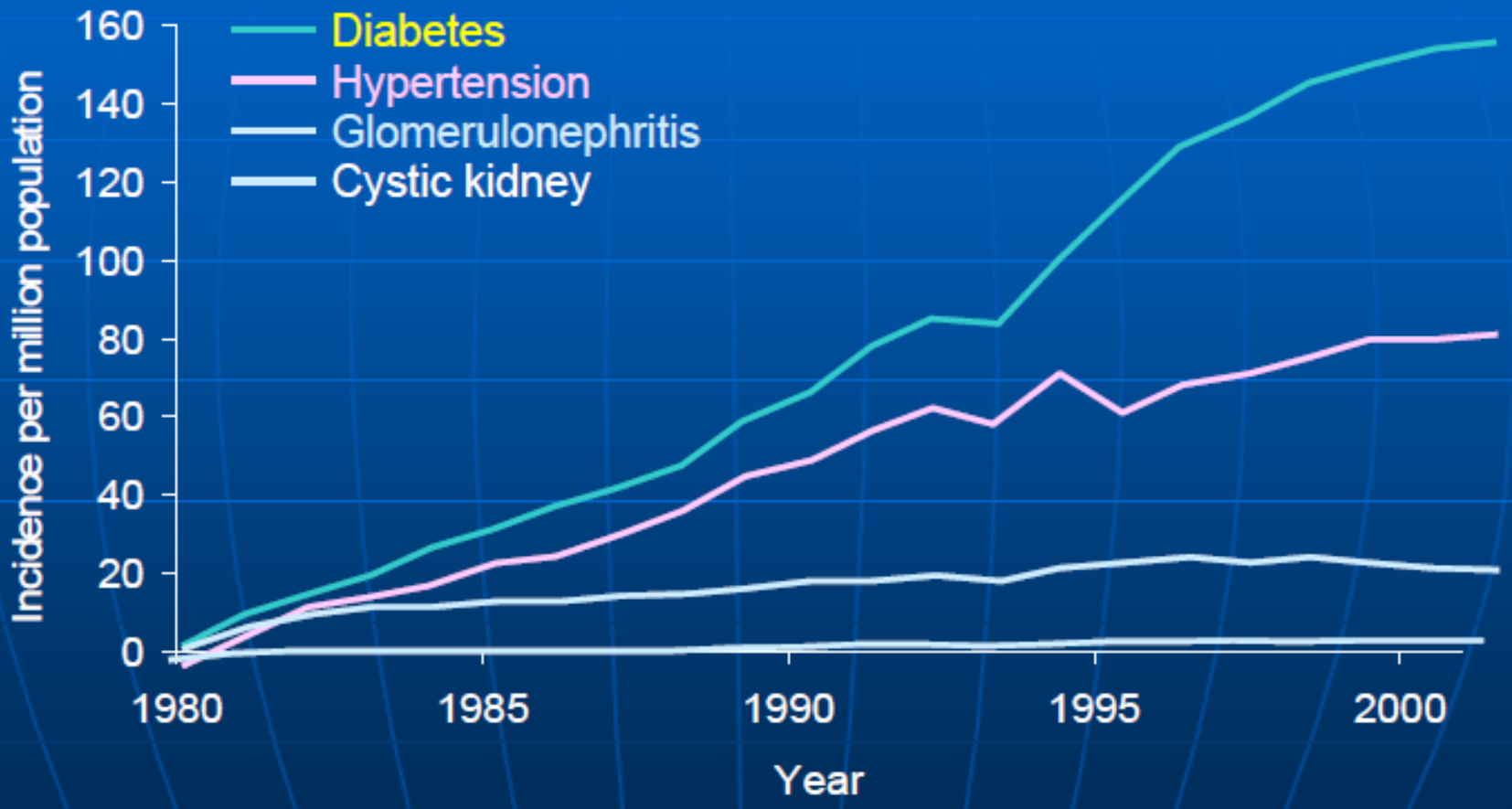


Newsweek Sept 4, 2000



TIME December 8, 2003

The incidence of ESRD is increasing due to increased incidence of diabetes and HT



USRDS 2003 Annual data report

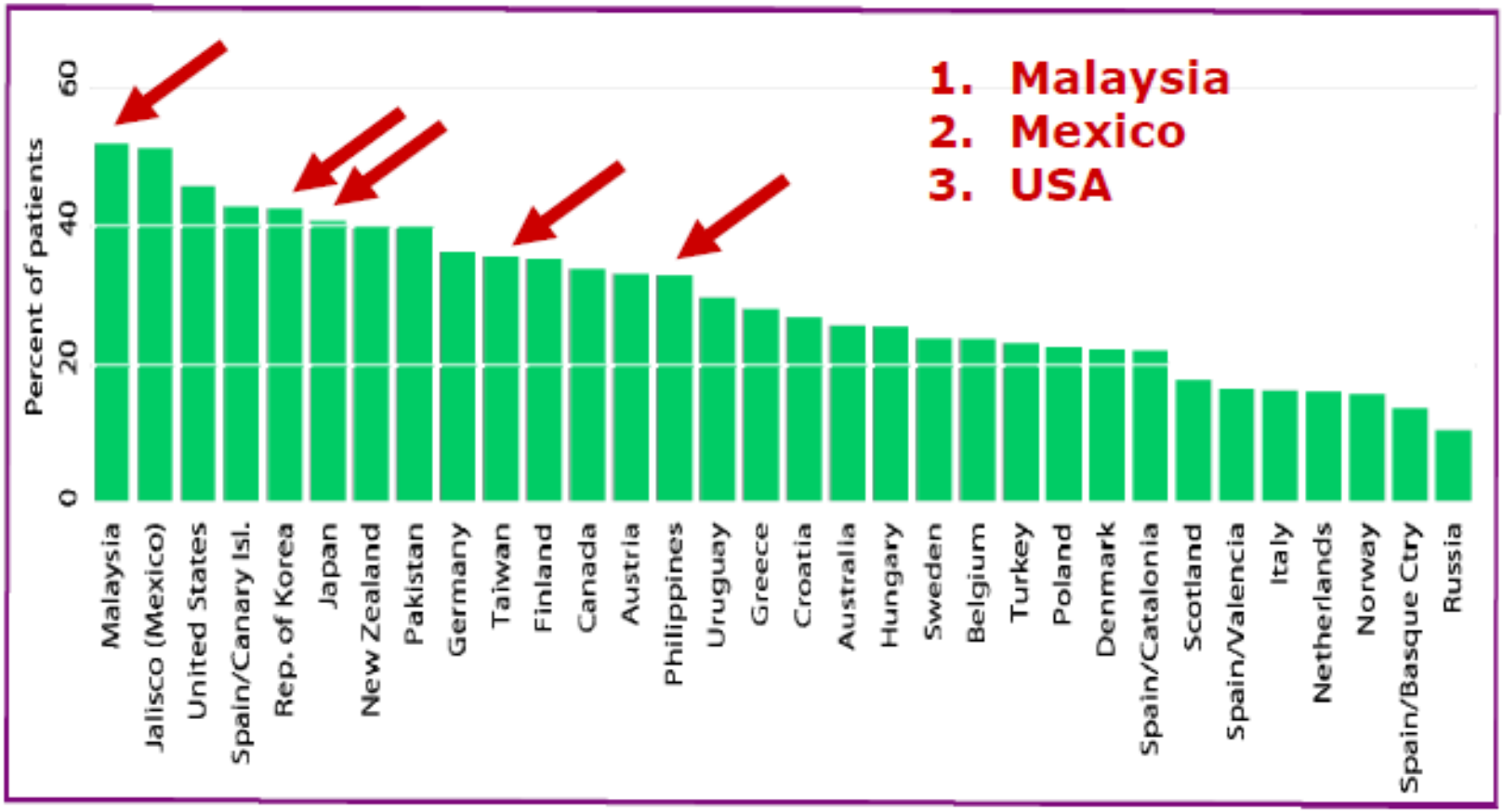
The Statistics - Worldwide

At a glance

All diabetes and IGT	2003	2025
Total world population (billions)	6.3	8.0
Adult population (billions) (20-79 years)	3.8	5.3
Number of people with diabetes (millions) (20-79 years)	194	333
World diabetes prevalence (%) (20-79 years)	5.1	6.3
Number of people with IGT (millions) (20-79 years)	314	472
IGT prevalence (%) (20-79 years)	8.2	9.0

Source: Diabetes Atlas 2nd Edition © International Diabetes Federation 2003

Percent of incident patients with diabetes, 2003



Data presented only for those countries from which relevant information was available. All rates are unadjusted. Incident data from Israel, Jalisco, Japan, Luxembourg, Pakistan, the Philippines, & Taiwan are dialysis only.

USRDS 2005

2) Hypertension

Large studies showed that patients with hypertension had a significantly higher risk of developing CKD compared with normotensive patients.

Coresh J, Astor BC, Greene T et al. Prevalence of chronic kidney disease and decreased kidney function in the adult US population: Third National Health and Nutrition Examination Survey. Am J Kidney Dis. 2003 Jan;41(1):1-12.

3) Metabolic syndrome

Metabolic syndrome has been shown to be an independent risk factor for CKD. Large studies suggested that metabolic syndrome was significantly associated with CKD

4) Age

People aged >65 years old have an increased risk of renal impairment and decline in renal function

5) Family history

A longitudinal study with 25 years follow-up showed that a family history of kidney disease in a first degree relative had a 40% increased risk of CKD

6) Cardiovascular Disease

Patients with atherosclerotic vascular disease had 1.4 times greater risk of developing CKD compared with those without the disease in a 2 year follow-up study.

7) **Chronic Use of NSAIDs**

There was conflicting evidence in the association between chronic NSAIDs, aspirin and paracetamol usage and the development of CKD

What should you do?

If you think you are a high risk patient!!

GO FOR SCREENING

Rome was not built in one day

Type of doctor

“The inferior doctor treats actual sickness.
The mediocre doctor attends

Possible screening Tests

1) Proteinuria

Presence of protein in the urine

Urine dipsticks should be used to screen for proteinuria.

In patients with diabetes, albumin: creatinine ratio (ACR) on an early morning spot urine sample should be performed at least annually to screen for microalbuminuria if urine dipstick is negative.

2) Hematuria

A positive dipstick test (1+ or more) for blood requires repeat testing for confirmation.

Visible or persistent non-visible haematuria requires urological investigation after excluding urinary tract infection

3) Renal Function and Ultrasound

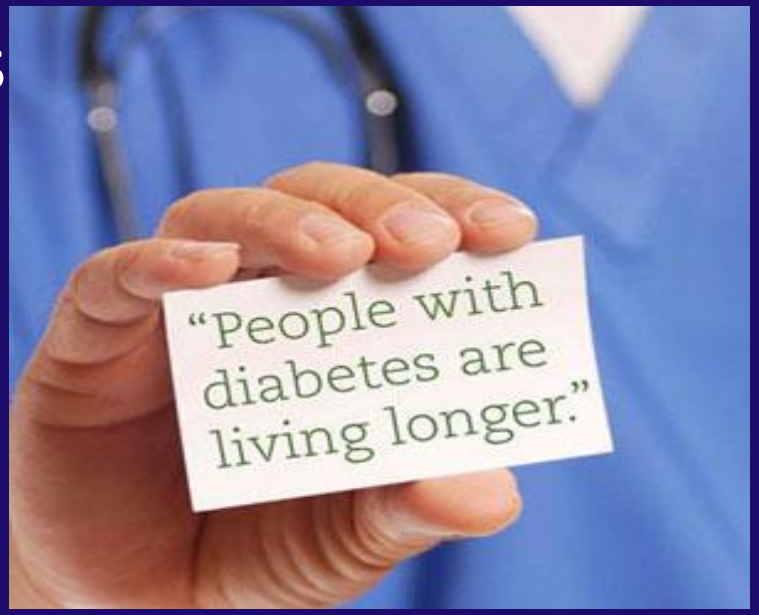
Depending on your condition, a blood test or ultrasound kidney may be recommended by your doctor

What now?

If you have Diabetes Mellitus

Recommendation 1:

The target HbA1c should be ≤7% in patients with diabetes but this should be individualised according to co-morbidities



Recommendation 2:

Certain drugs should be used if you have micro or macroalbuminuria.

(Renal profile should be carefully monitored following introduction of ACEi/ARB)

If you have hypertension

Recommendation 1

Target blood pressure (BP) should be <140/90 (SBP range 120 - 139) mmHg.

Target BP should be <130/80 (SBP range 120 - 129) mmHg

- o in patients with proteinuria ≥1 gram/day.
- o in patients with diabetic kidney disease.

If you are obese and think that you have metabolic syndrome

Get you blood test done and see your GP to know whether you are hypertensive

If you fall into other high risk group

Consult your nephrologist/Family doctor so that further screening tests can be done.

If you have chronic pain and need frequent medications

Consult your doctor so that alternative medications can be given or start you on preventive medications

I have chronic kidney disease- now what?

Protein restriction

Low protein diet (0.6 - 0.8 g/kg/day) with adequate energy intake (30 – 35 kcal/kg/day) may be given to patients with chronic kidney disease Stage

Dietary protein restriction should be supervised by a dietitian

Sodium Restriction

Sodium restriction (total intake <2,400 mg/day) should be initiated in patients with chronic kidney disease)

Lifestyle Modification

Patients with chronic kidney disease should be encouraged to exercise, reduce excess weight and avoid smoking.

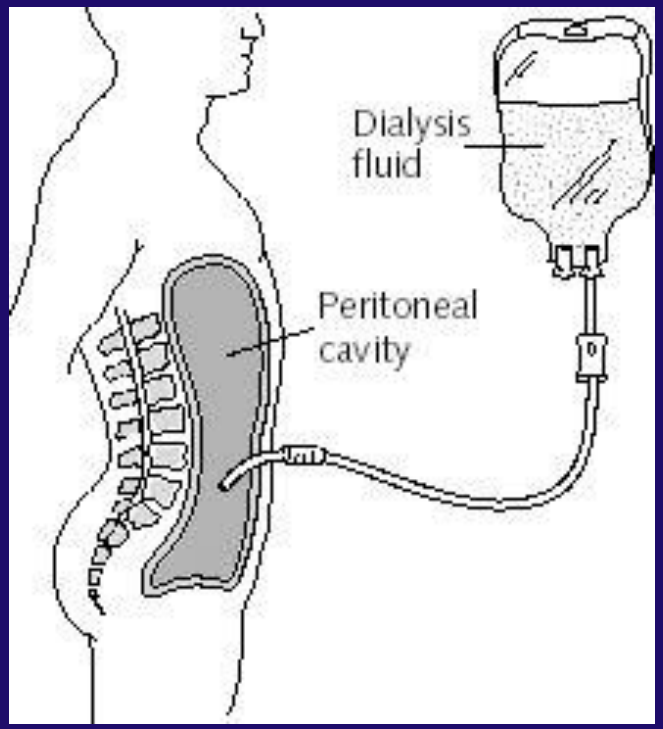
Managing your hyperlipidemia

Statin should be offered to patients with chronic kidney disease for primary and secondary prevention of cardiovascular events.

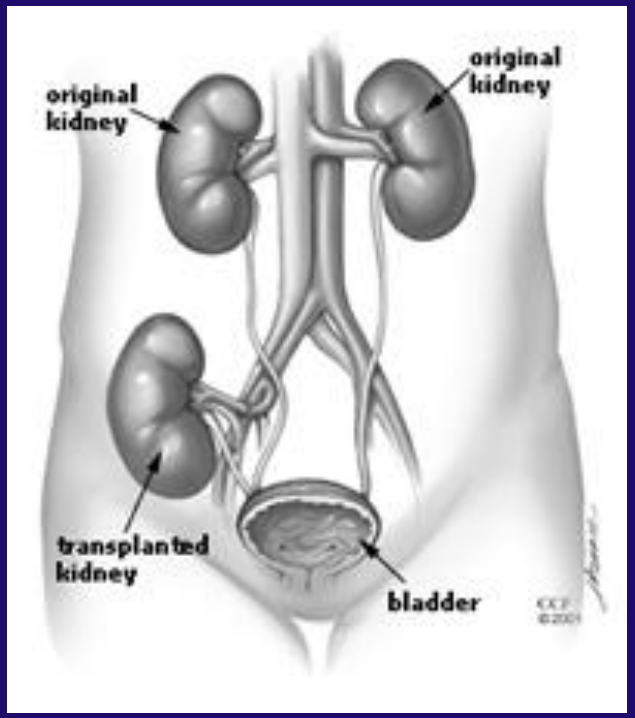
Inform your Primary Doctor that you have CKD

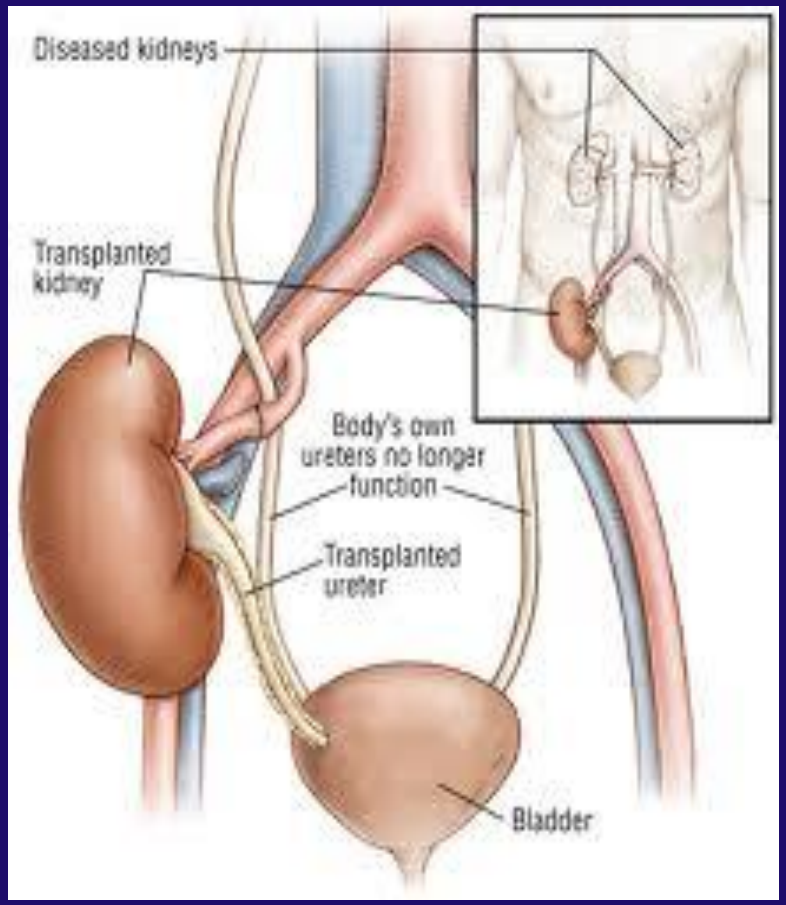
It is important that you inform your doctor that you have CKD because certain drugs may be best avoided or the dosing adjusted.

Renal Replacement Therapy


Dialysis
fluid
Peritoneal
cavity

Kidney Transplantation

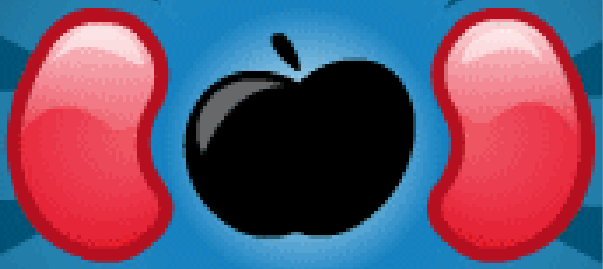




World Kidney Day

8 March 2012

I pledge to eat healthy in 2012



www.worldkidneyday.org