The Pursuit of Prevention of Renal failure in an imperfect world-Is it possible in the 21st century?

By: Baskar , WDHB, Renal Service Auckland New Zealand

Presented at : "4th International Conference on Nephrology and Therapeutics" – Baltimore USA

International Society of Nephrology (ISN) and the International Federation of Kidney Foundations (IFKF) .

World Kidney Day is a joint initiative between ISN & IFKF.

World Kidney Day started in 2006 and has not stopped growing ever since.

They didn’t do this for fun

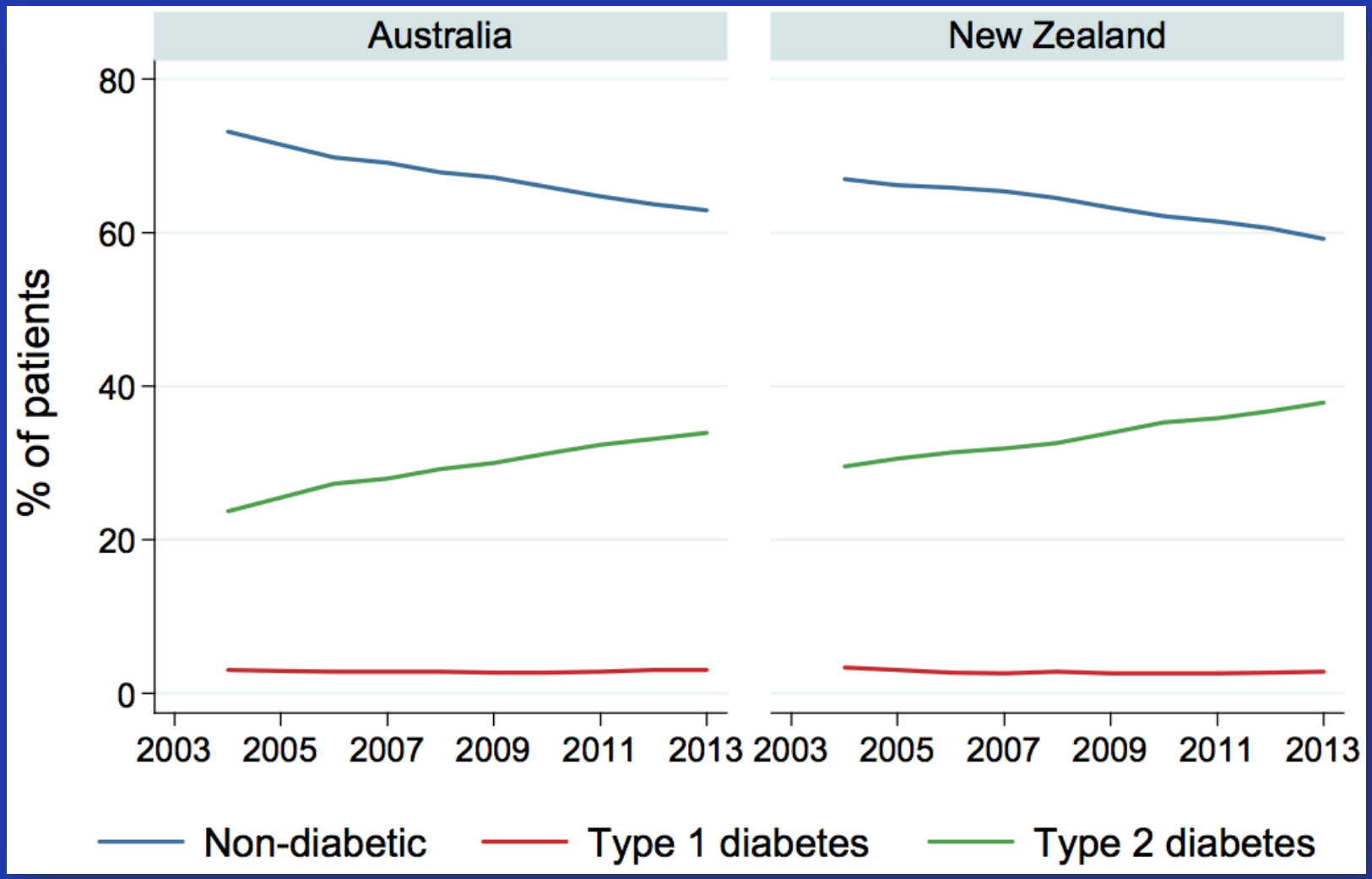
Its not a single day prevention programme

Diabetes in New Zealand

- 257,776 New Zealanders have been diagnosed with diabetes
- Every day, around 50 more people are diagnosed-that's 2 every hour
- Diabetes currently costs the health system around $600 million per year
- Those most at risk of diabetes are Maori, Pacific Islanders and South Asians
- Diabetes is a major contributors to heart disease, stroke, and kidney disease

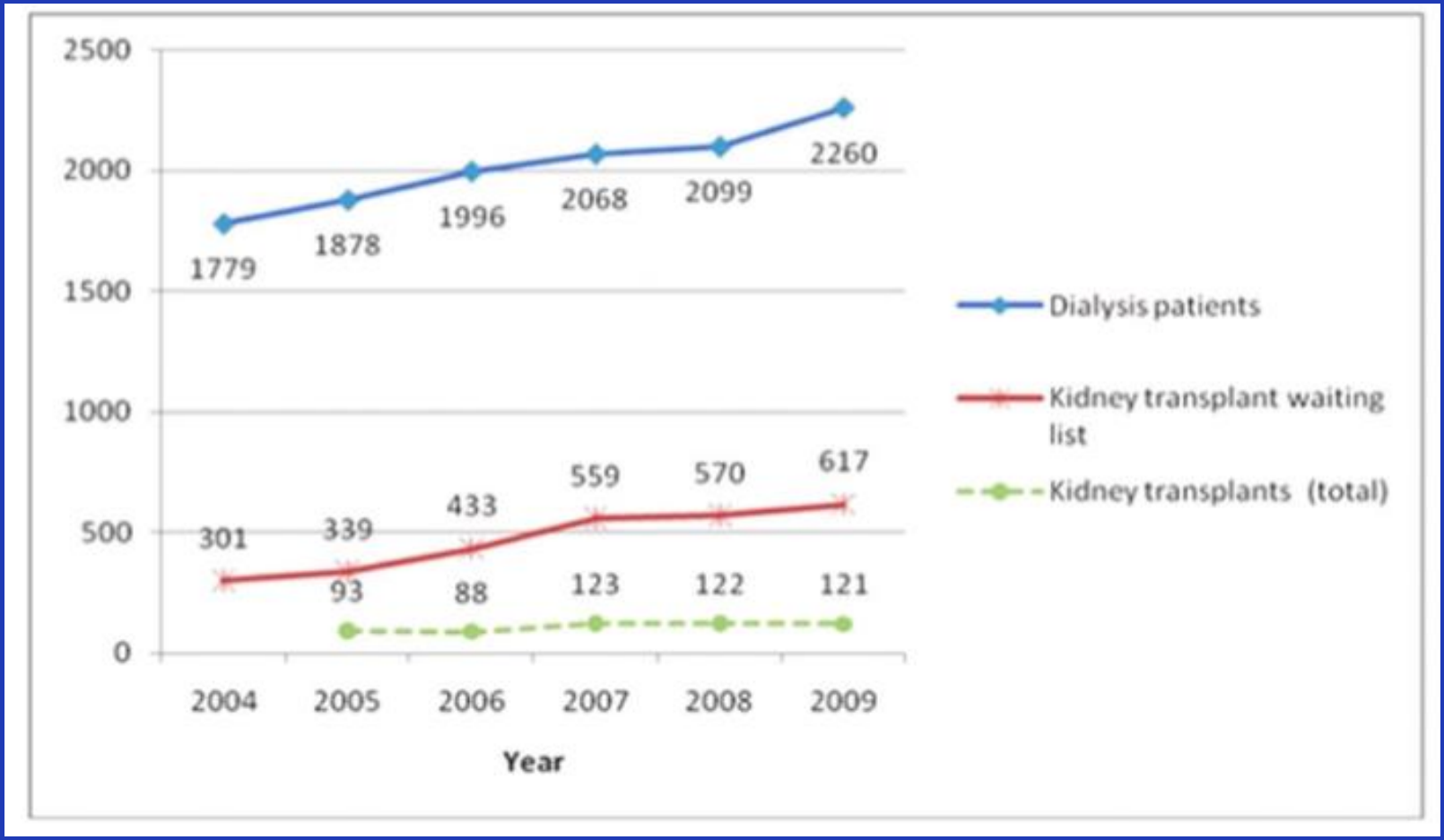
Diabetes NZ 2014

Diabetic status at end of year

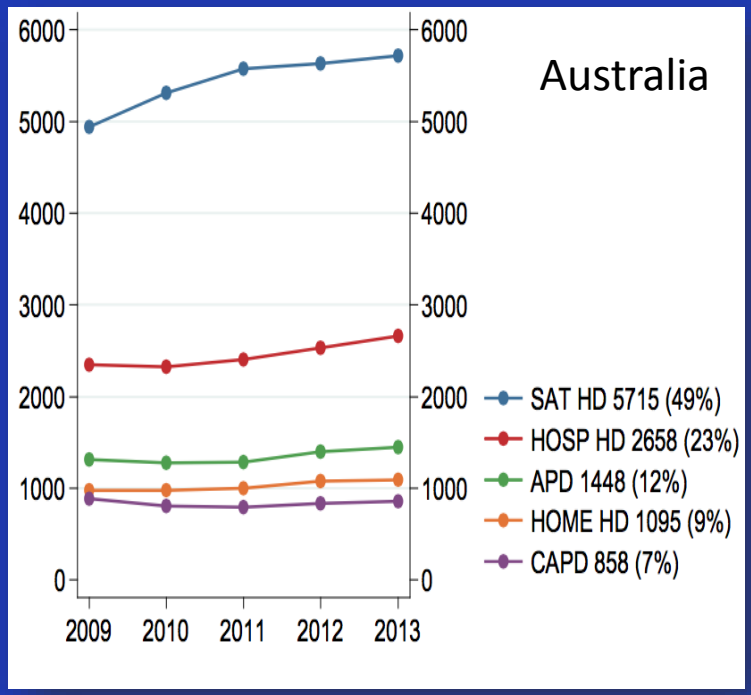


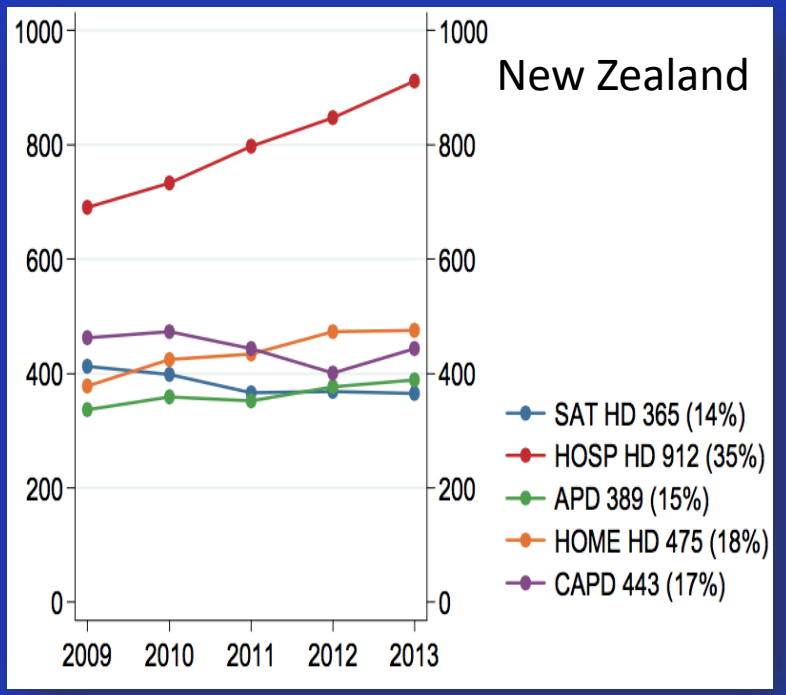
Source : ANZDATA REGISTRY 2014

Dialysis Numbers - ANZDATA



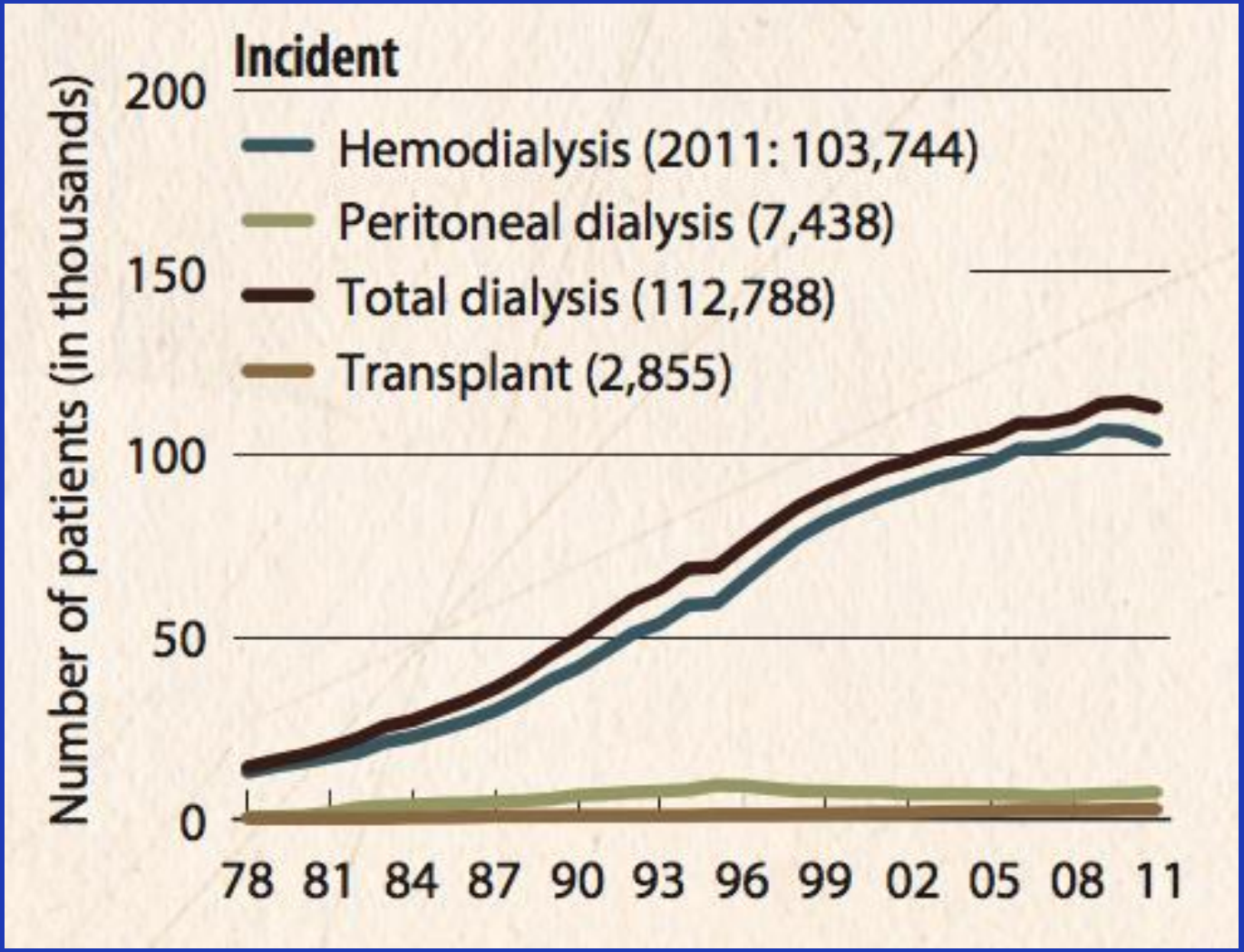
Method and location of dialysis Australia & New Zealand, 2009 - 2013





Source : ANZDATA REGISTRY 2014

Incident counts (USRDS), by modality



Causes of ESRD in Australia & New Zealand

Causes of ESRD 2009 - 2012
Number of Patients (% Patients)

Disease	2009	2010	2011	2012
Australia				
Glomerulonephritis	591 (24%)	499 (21%)	566 (23%)	490 (19%)
Analgesic Nephropathy	42 (2%)	37 (2%)	32 (1%)	35 (1%)
Polycystic Kidney Disease	177 (7%)	167 (7%)	143 (6%)	132 (5%)
Reflux	80 (3%)	60 (3%)	56 (2%)	66 (3%)
Hypertension	346 (14%)	320 (14%)	360 (14%)	303 (12%)
Diabetic Nephropathy	782 (32%)	827 (35%)	886 (35%)	913 (36%)
Miscellaneous	268 (11%)	290 (12%)	316 (13%)	440 (17%)
Uncertain diagnosis	145 (6%)	130 (6%)	137 (5%)	155 (6%)
Australia Total	**2431**	**2330**	**2496**	**2534**
New Zealand				
Glomerulonephritis	125 (21%)	111 (22%)	114 (24%)	105 (20%)
Analgesic Nephropathy	2 (0%)	2 (0%)	5 (1%)	4 (1%)
Polycystic Kidney Disease	34 (6%)	18 (3%)	28 (6%)	27 (5%)
Reflux	9 (2%)	8 (2%)	9 (2%)	8 (2%)
Hypertension	62 (11%)	58 (11%)	51 (11%)	48 (9%)
Diabetic Nephropathy	279 (48%)	260 (50%)	204 (42%)	249 (49%)
Miscellaneous	54 (9%)	41 (8%)	53 (11%)	57 (11%)
Uncertain diagnosis	19 (3%)	17 (3%)	21 (4%)	15 (3%)
NZ Total	**584**	**515**	**485**	**513**

Source : http://www.anzdata.org.au/anzdata/AnzdataReport/36thReport/ANZDATA_36th_Annual%20_Report.pdf

Causes of ESRD in NZ. These are the diseases which can be prevented

Disease	2009	2010	2011	2012
New Zealand				
Glomerulonephritis	125 (21%)	111 (22%)	114 (24%)	105 (20%)
Analgesic Nephropathy	2 (0%)	2 (0%)	5 (1%)	4 (1%)
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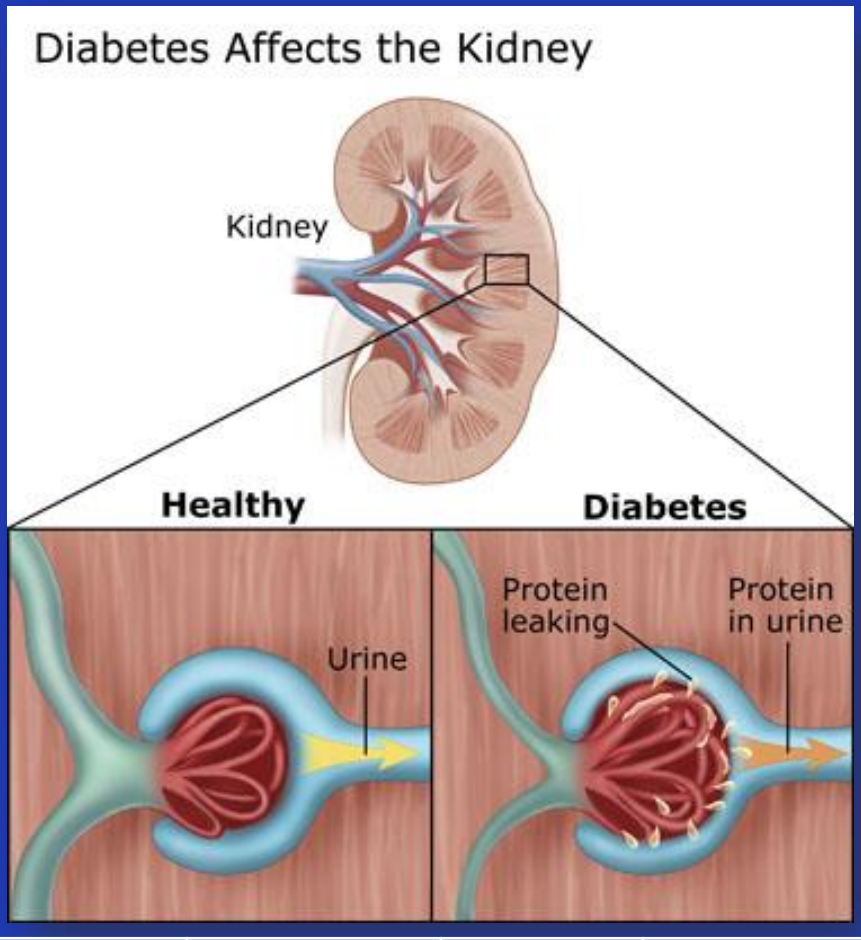
Diabetic Nephropathy



Disease	2009	2010	2011	2012
New Zealand				
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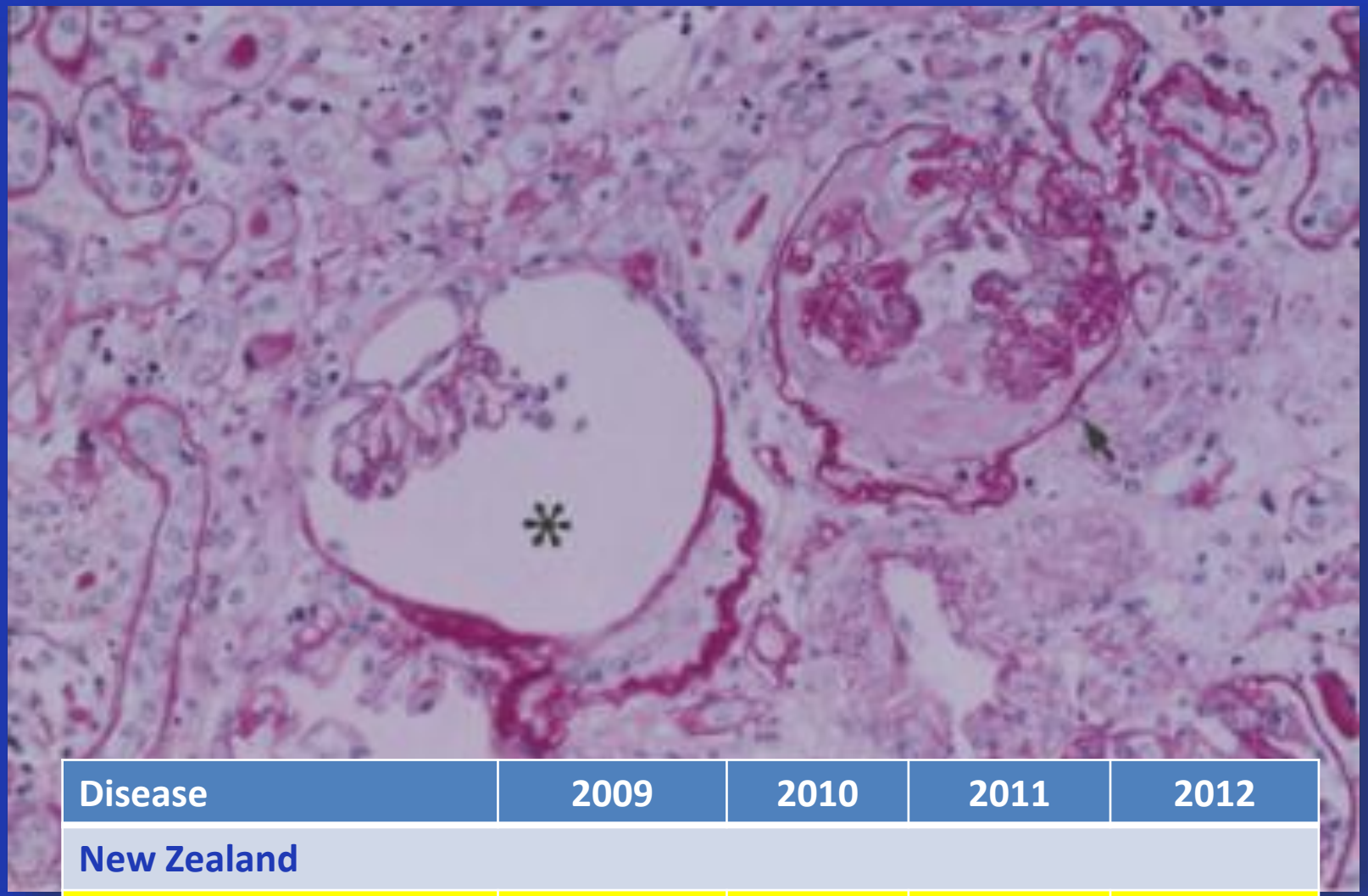
Source : Google images

Nephrosclerosis - (Hypertension)



Disease	2009	2010	2011	2012
New Zealand				
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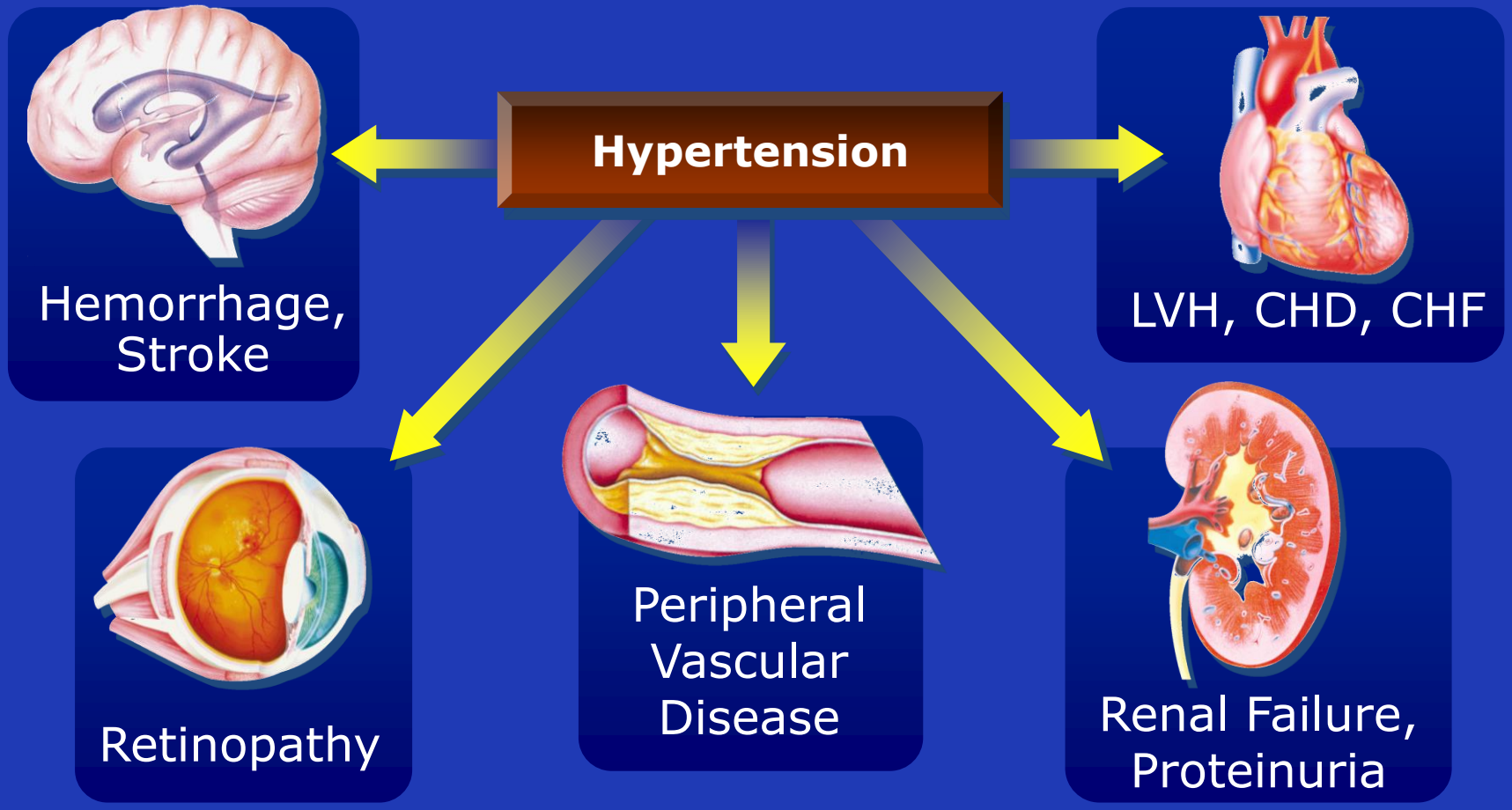
Source : Google images

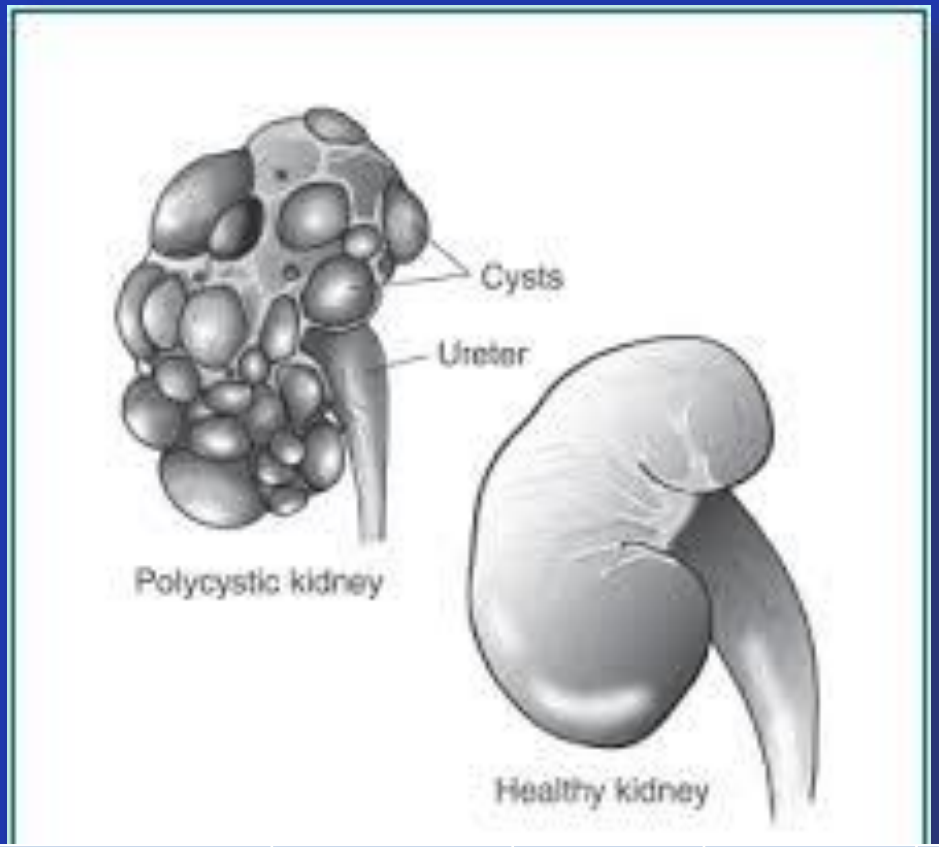
Complications of Hypertension: End-Organ Damage



CHD = coronary heart disease
CHF = congestive heart failure
LVH = left ventricular hypertrophy

Chobanian AV, et al. *JAMA*. 2003;289:2560-2572.

Polycystic Kidney Disease



Disease	2009	2010	2011	2012
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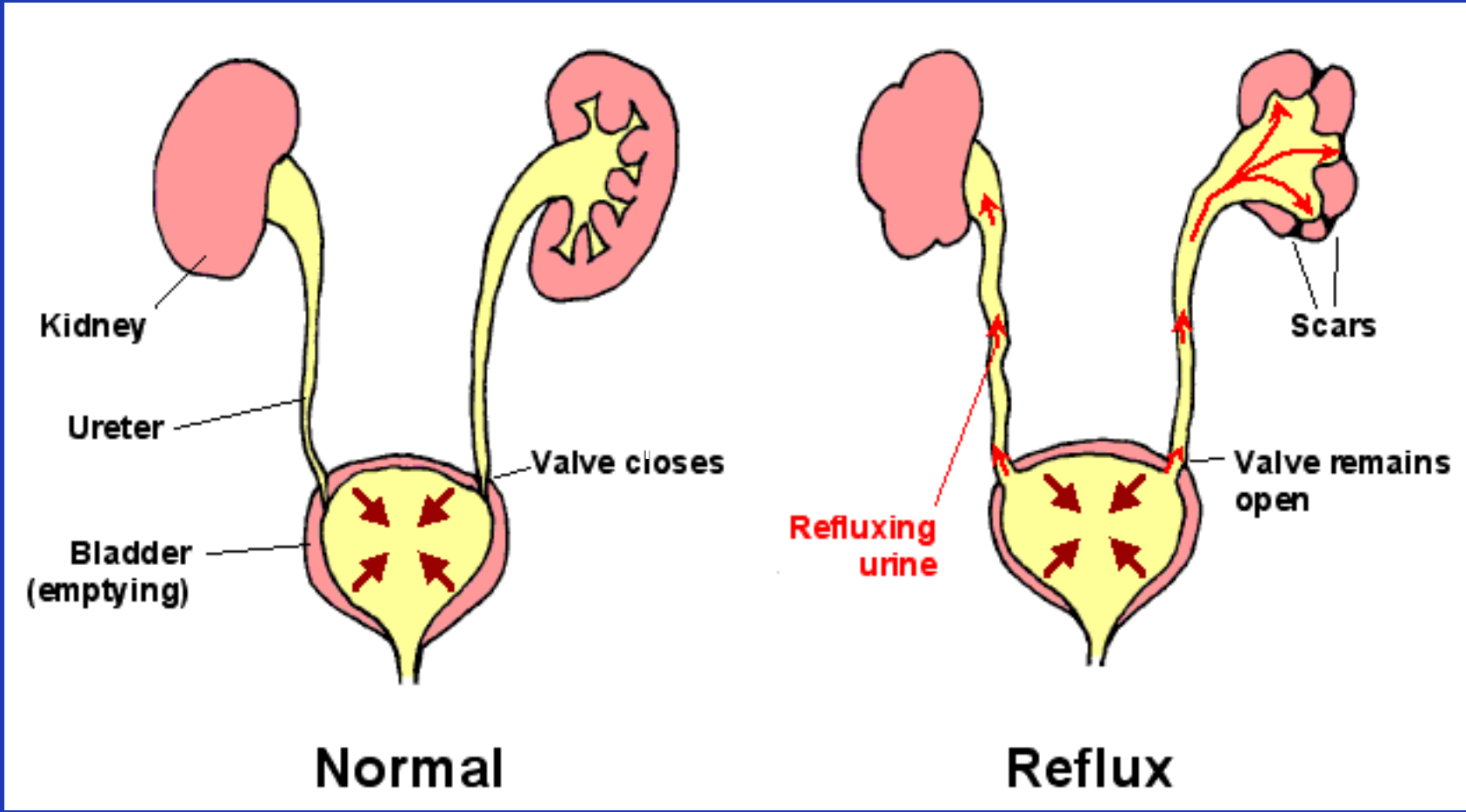
Reflux Nephropathy



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Source : Google images

Prognosis of CKD by GFR and Albuminuria Categories: KDIGO 2012 (units changed to SI)				Persistent albuminuria categories Description and range		
				A1 Normal to mildly increased < 3 mg/mmol	**A2** Moderately increased 3–30 mg/mmol	**A3** Severely increased > 30 mg/mmol
GFR categories (ml/min/1.73 m^2) Description and range	G1	Normal or high	≥ 90			
	G2	Mildly decreased	60–89			
	G3a	Mildly to moderately decreased	45–59			
	G3b	Moderately to severely decreased	30–44			
	G4	Severely decreased	15–29			
	G5	Kidney failure	< 15			

Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk; Orange: high risk; Red: very high risk.

Important work done by Kidney Health New Zealand

Education Manager, Carmel Gregan-Ford and KHNZ Team:

- Community education targeting groups at high risk of kidney disease.
- Support for education of kidney health professionals.
- Kidney Awareness Week and World Kidney Day activities.
- KHNZ, funded by Ministry of Health, has developed 15 web-based patient information resources – 5 for children and their families
- Working with other groups
- Diabetes New Zealand, Christchurch & Auckland Diabetes Societies.

Guide to CKD management in general practice

- Most CKD is managed in primary care.
- Most people with CKD do not know they have the condition.
- Groups at high risk of CKD can be screened with simple blood and urine tests.
- KHNZ has developed a GP Guide for the Management of Chronic kidney Disease16 and a number of DHBs have guidelines for patient referral for specialist care.

Source : Kidney Health NZ

Goals for best practice in managing CKD

- Those people with, or at risk of, progressive CKD are identified and effectively managed.
- Cardiovascular risk is reduced through optimal lifestyle modification, smoking cessation, blood pressure control, glycaemic control, and use of statins.
- Effective blood pressure control reduces albuminuria and slows the rate of decline of eGFR in many patients.
- The incidence and prevalence of CVD, progressive CKD and ESKD, and their associated morbidity and mortality rates, fall over time.

Source : Ministry of Health

NDT Advance Access published April 6, 2010

Nephrol Dial Transplant (2010) 1 of 6
doi: 10.1093/ndt/gfq168

Original Article

NDT
Nephrology Dialysis Transplantation

A community-based model of care improves blood pressure control and delays progression of proteinuria, left ventricular hypertrophy and diastolic dysfunction in Māori and Pacific patients with type 2 diabetes and chronic kidney disease: a randomized controlled trial

Cheri Hotu[1], Warwick Bagg[1], John Collins[2], Lorraine Harwood[1], Gillian Whalley[1], Robert Doughty[1], Greg Gamble[1], Geoffrey Braatvedt[1] on behalf of the DEFEND investigators

Maori, Pacific People, and Renal Failure

Diabetes as a primary cause of new ESRD

- Maori 63%
- Pacific 65%
- European 17%

Compared to people of European origin

- The diabetes prevalence in Maori 2.5 x
- ESRD incidence in Maori secondary to Diabetes is **13.6** x and GN is 1.9 x
- ESRD incidence in Pacific people secondary to diabetes is **14.7** x and GN 2.3 x

Ministry of Health. Tatau Kahukura: Maori health Chartbook.2006 ANZDATA

DEFEND Study

- All had baseline and 1 year evaluation
- All patients had standard GP, Diabetic clinic and Renal Clinic care
- Half of the patients were randomised to the Community Care group.
- They had **monthly home visits** by a Health Care Assistant (polynesian) to check BP and compliance and in concert with the study nurse and Research Fellow change meds according to a simple algorithm (single daily dosing –ACEi/diuretic/CCB/other- doses optimised)

Source :April 6th Nephrology Dialysis Transplantation 2010

Table 1. Baseline Characteristics

	UC (n=32)	CC (n=33)
Age (years)	63 (6.6)	60 (7.1)
Gender M/F (n)	17/15	18/15
Duration of diabetes (years)	12 (6)	12 (8)
Body Mass Index (kg/m^2)	35.8(6.9)	35.3(7.6)
Diabetic retinopathy (%)	78	83
Peripheral neuropathy (%)	84	91
Ischaemic heart disease (%)	19	15
Cerebrovascular disease (%)	13	9
Peripheral vascular disease (%)	19	18
Office systolic BP (mmHg)	161 (20)	161 (20)
Office diastolic BP (mmHg)	85 (12)	88 (9)
Serum creatinine (umol/l)	164 (52)	184 (69)
GF R (ml/min/1.73m^2)	39 (14)	36 (15)
24-hr urine protein (g/l)	3.0 (3.1)	4.3 (4.5)
HbA1c (%)	8.5 (1.9)	8.3 (1.6)
Mean no. antihypertensive agents (n)	1.9	2.2

Mean (SD), no differences between groups

Source :April 6th Nephrology Dialysis Transplantation 2010

Summary of the study

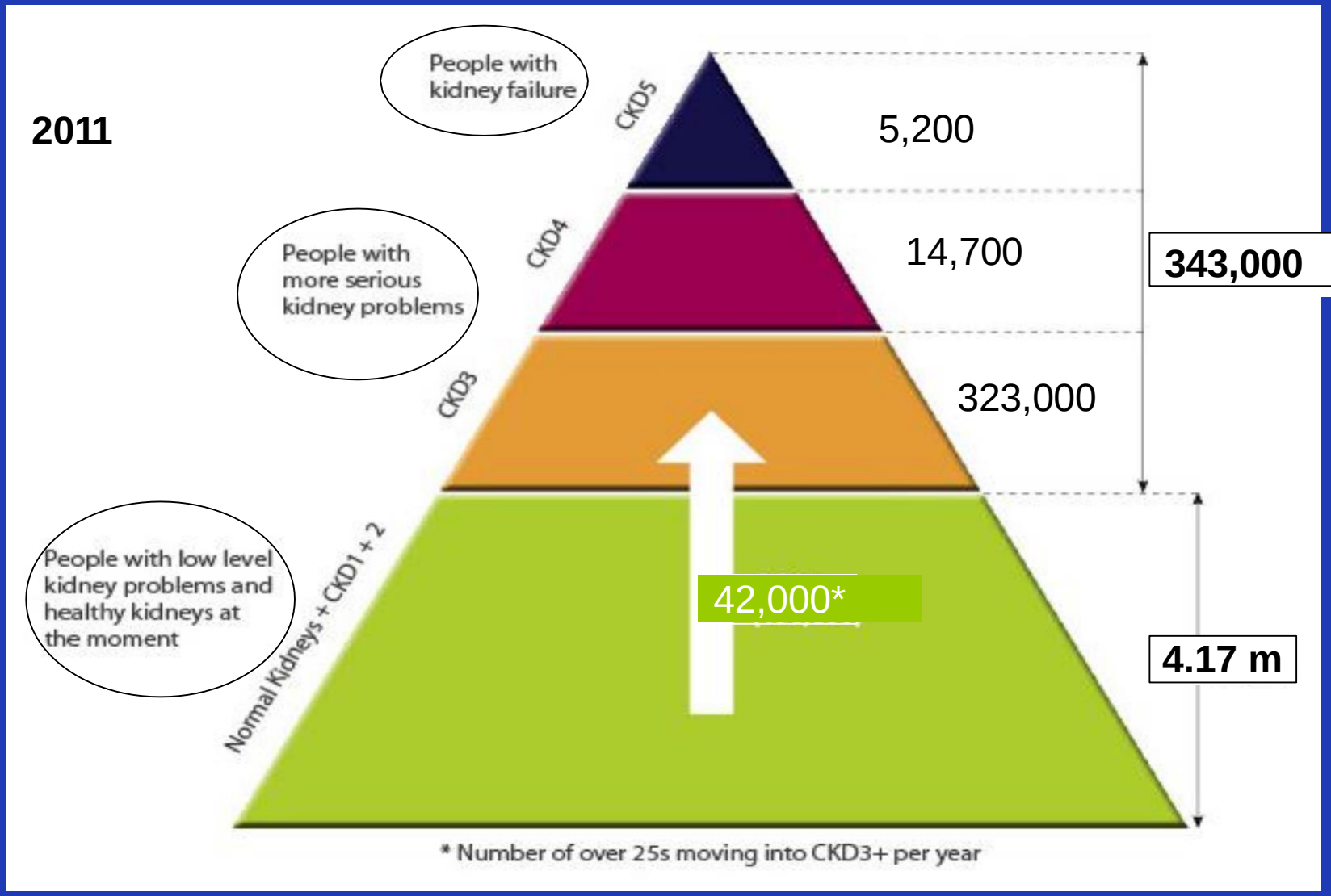
- Frequent home visiting led to improved BP control with associated reduction in proteinuria and stabilisation of LV mass
- This occurred because of improved medication prescribing and adherence.
- We could not demonstrate an effect on renal function (small numbers)

Preventive measures by Kidney Help trust

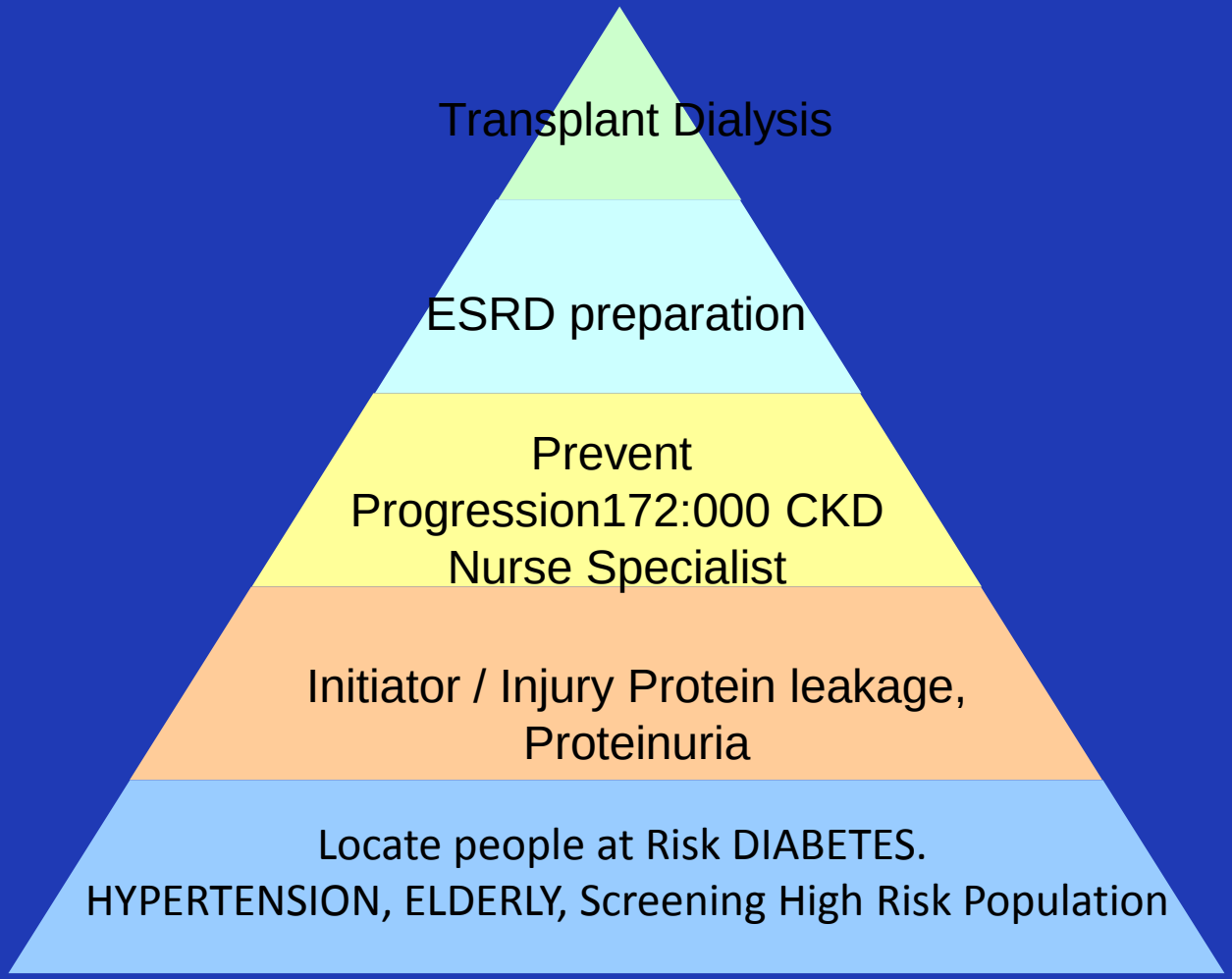
• Co-operated for survey	89.61%
• Disease known earlier	30.34%
• Preferred private therapy	24.60%
• Co-operated for treatment	78.91%
• Hypertension controlled to 140/90	95.77%
• Hb A1 C reduced 10% or more	76.79%
• New diabetes each year	0.32%
• New hypertension each year	0.55%

Probable number with CKD in NZ

(adapted from various sources)



CKD Nurse Specialist in NZ



Solutions to our problem

- Education
- Prevention & screening in community
- Early detection in the community
- Early treatment in primary care supported by specialists
- Awareness in the community
- All renal staff must take responsibility to promote prevention.

What changes we need

- Television, print media and social media adds to raise awareness national wide
- Create Apps for awareness and prevention
- Free or affordable GP service for those who can't afford
- Screening renal functions starting from the age 25.
- Participation in screening programs
- More funds should be allocated for prevention programme

Auckland Kidney Society

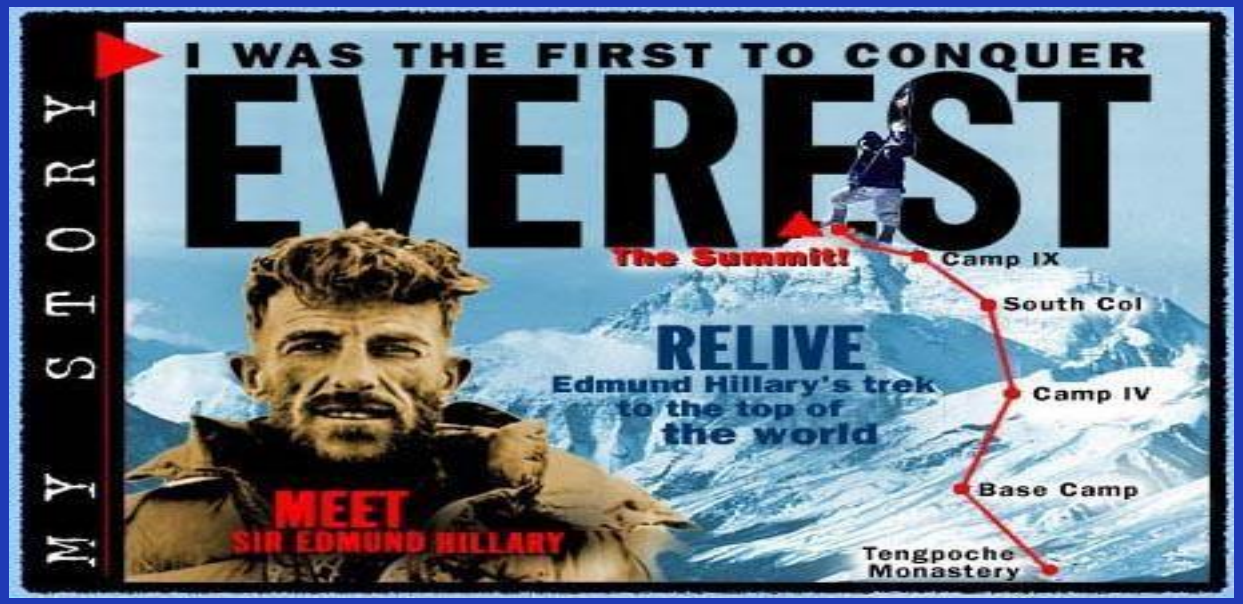
- Nora Van der Schrieck , Executive Director, Kidney Society
- 23 years Home haemo partner for husband
- Transformed a small support group into a professional organisation providing free community support for 3000 families living with kidney failure
- Encouraging people with CKD and their families to adopt a healthier lifestyle and avoid dialysis
- Partnering with a District Health Board to promote Live Kidney Donation

Acknowledgements

- WDHB, CEO and GM
- WDHB, Renal service CNM
- WDHB, Nephrologist's and all staff
- John Collins, Associate Prof Nephrology
- Kidney Health NZ, Education Manager and team
- Auckland Kidney society, Executive Director
- Diabetes NZ
- NZBDP
- Organizing committee of - *4th international conference on Nephrology*
- Thank my family

Treating Renal failure in NZ is the state of the art

But



Pursuit of prevention of renal failure in 21st century is the art of Possible