



# CKD in Europe

## Insights from population-based studies in Iceland

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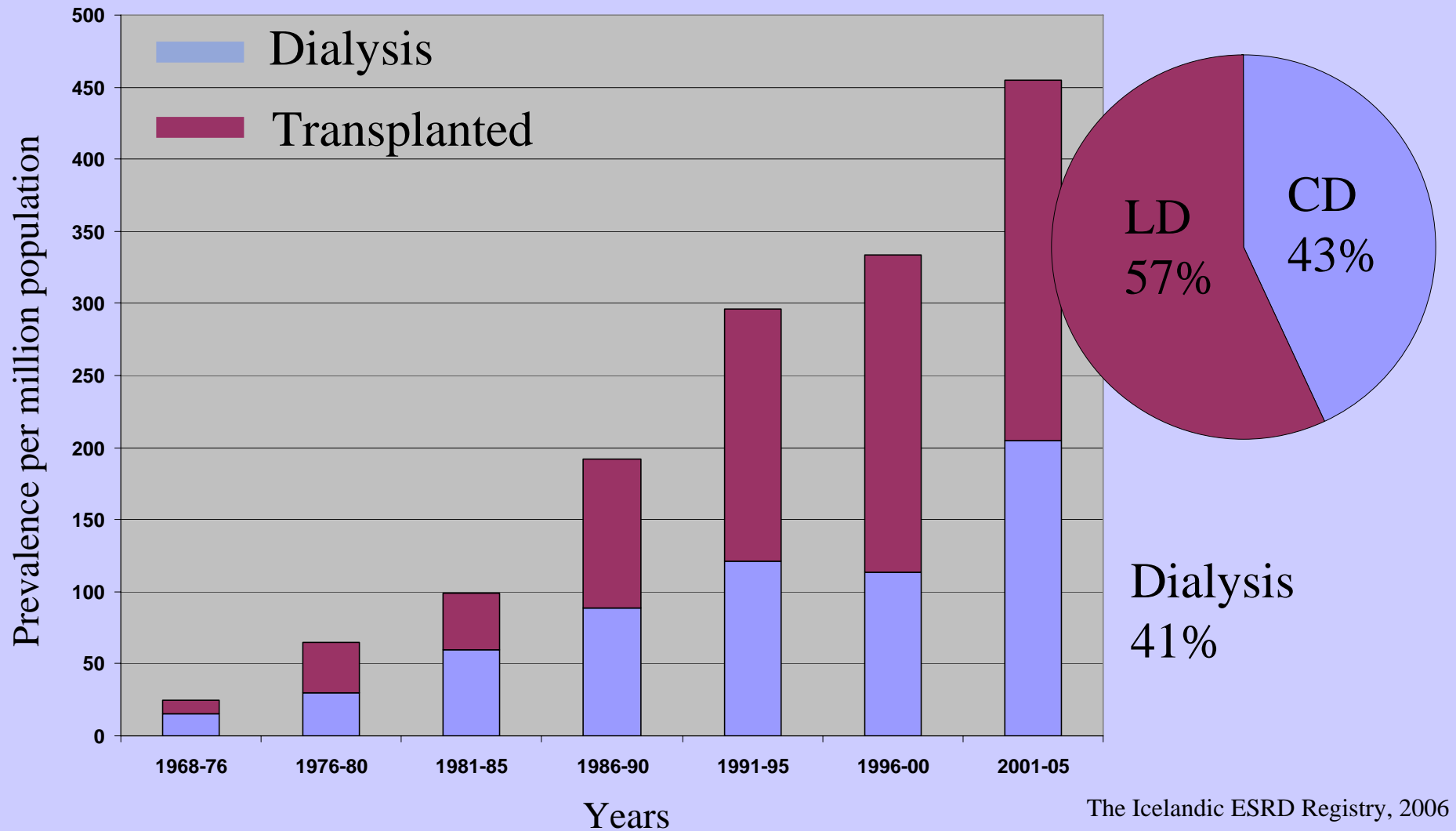
Landspítali University Hospital

Reykjavik, Iceland

# Iceland: a small European country

- 300,000 inhabitants
- Homogenous population
  - Caucasians 99%
- High standard of living
  - Universal health insurance/unrestricted access to RRT
  - Longevity
- Diabetes Mellitus (Vilbergsson et al, Diabet Med 14:491, 1997)
  - Low prevalence (2-3%)
  - Low incidence (300-400 per 100,000)
- Low prevalence and incidence of ESRD

# Prevalence of treated ESRD in Iceland



# Incidence of treated ESRD in Europe

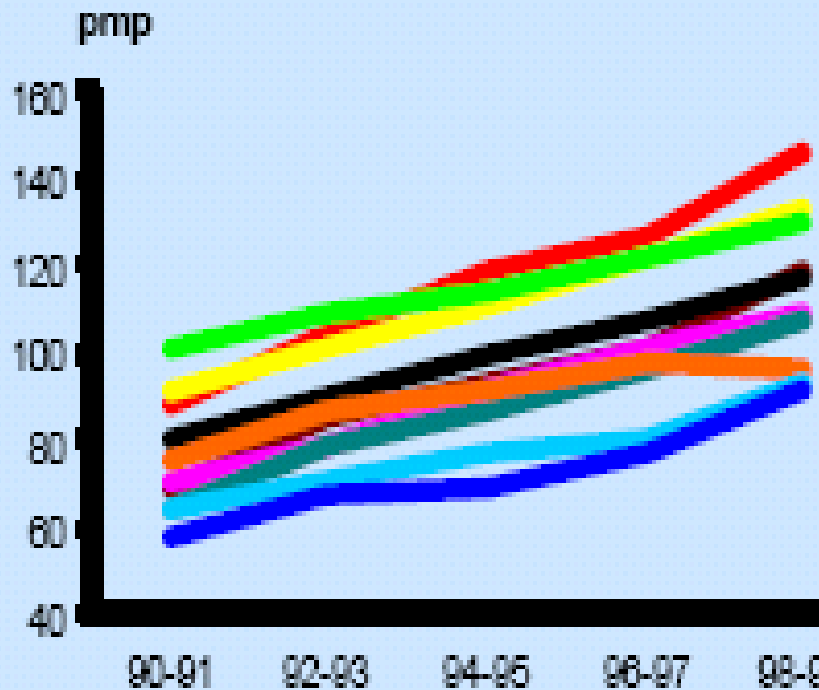
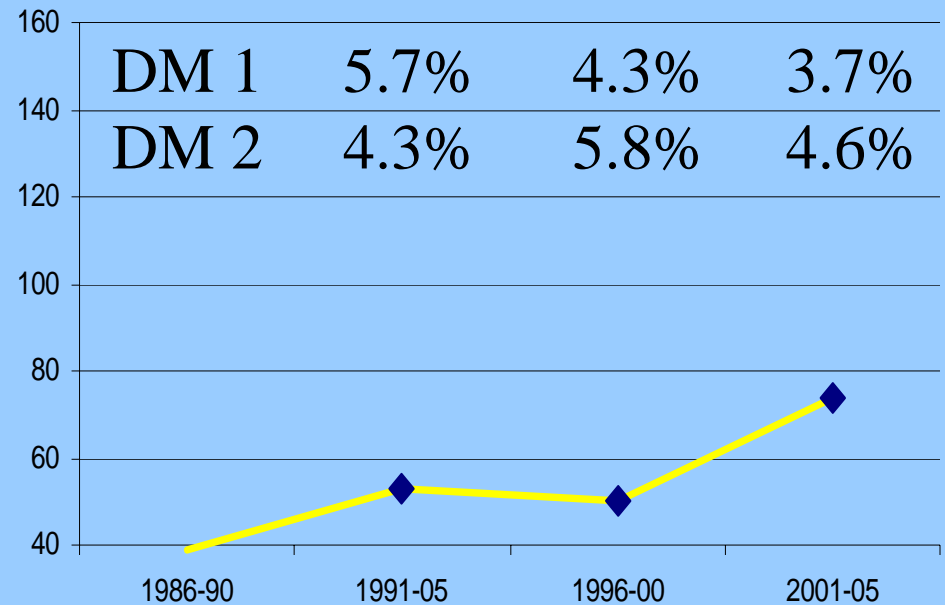


Fig 1 - RRT adjusted incidence rates (IR) &



# CKD in Iceland

- Is there a lower prevalence of CKD in Iceland?
  - The Reykjavik Heart study (1967-1996)
    - Cohort of more than 20.000 subjects; age range 35-85+ years
  - AB study (2001-2003)
    - 1600 subjects; age range 30-85 years
- Is there a lower incidence of diabetic nephropathy in Iceland?
  - Centralized registry of all patients with Type 1 DM

# Diabetic nephropathy in Iceland

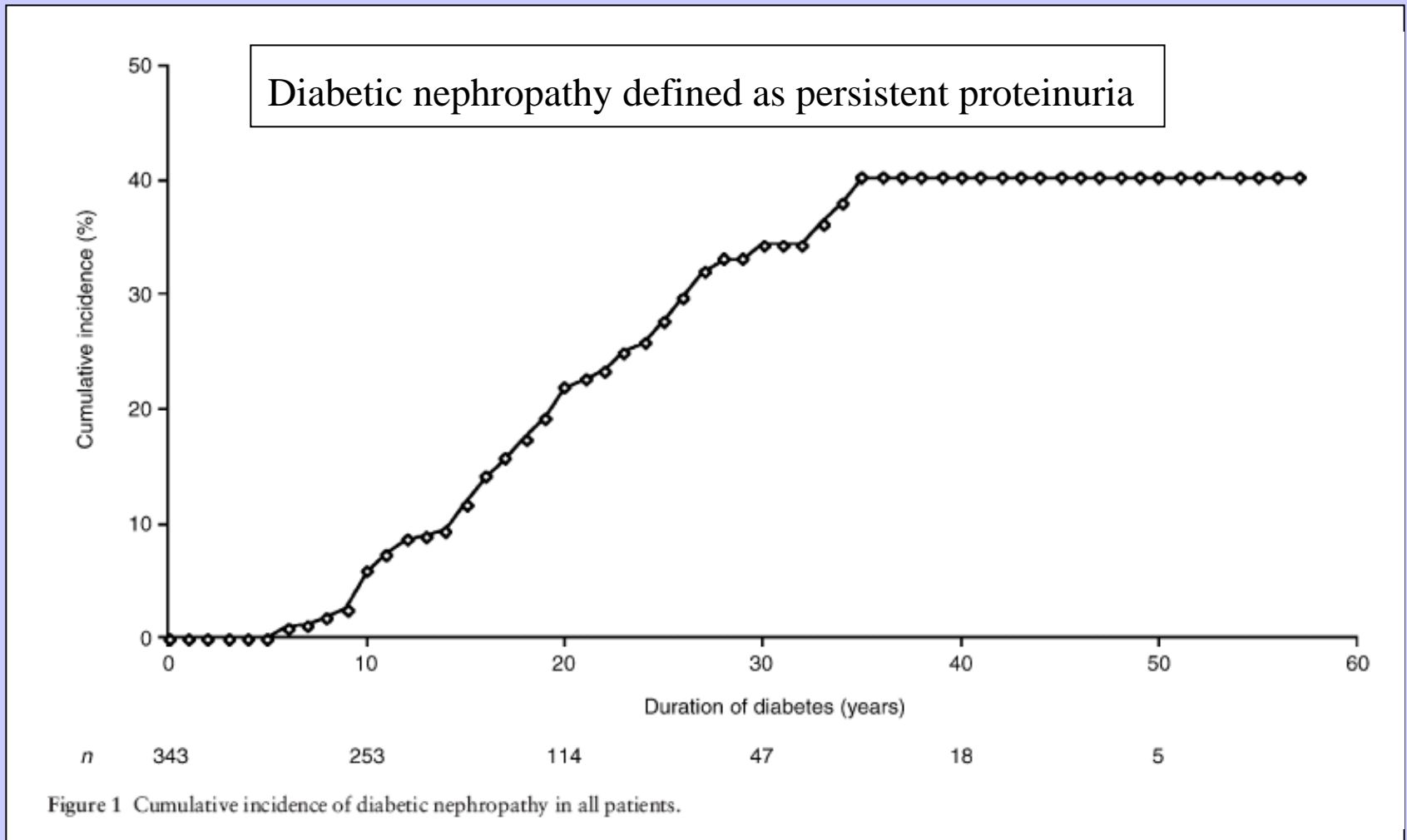
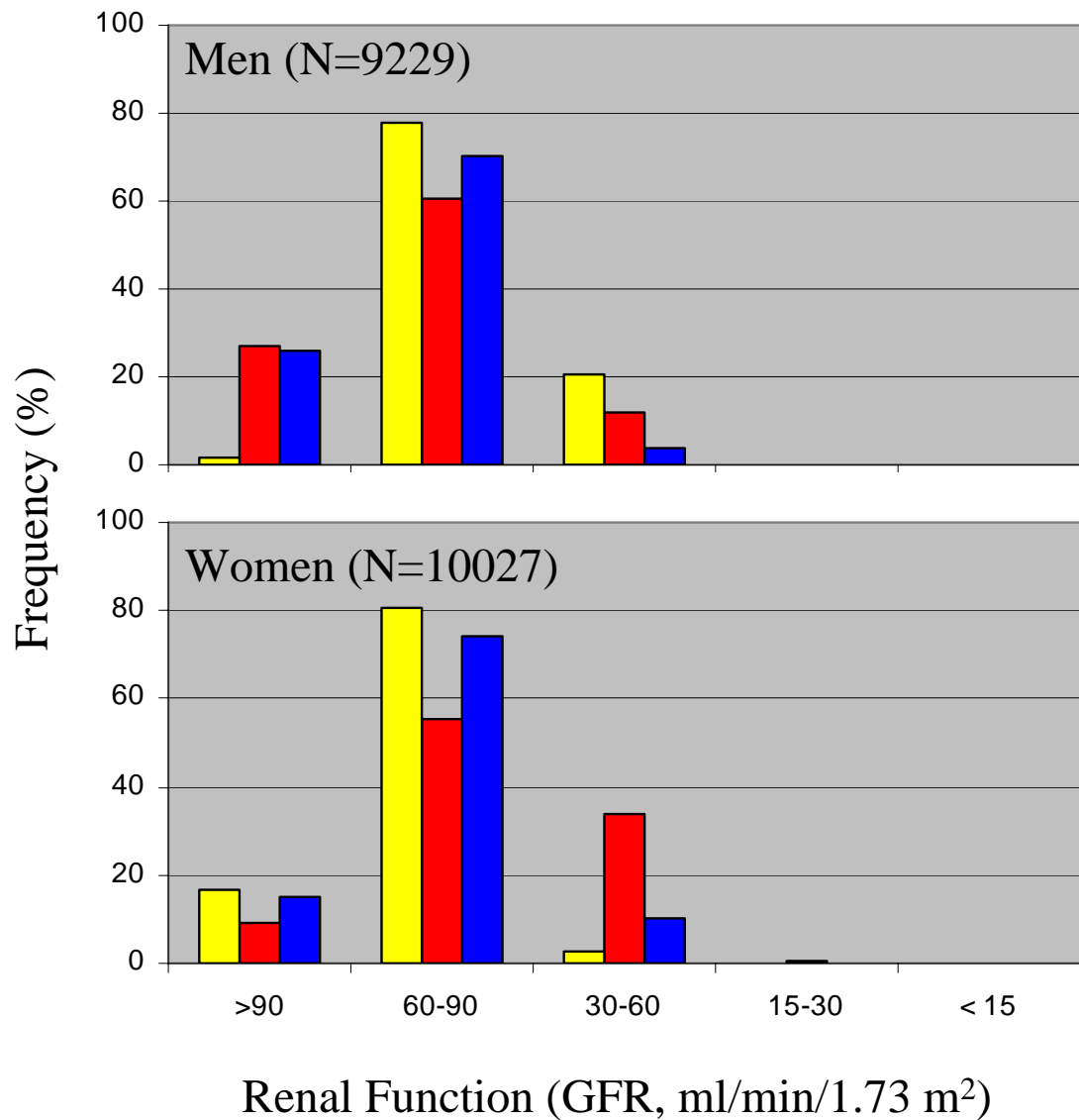


Figure 1 Cumulative incidence of diabetic nephropathy in all patients.

# CKD in Iceland



Stages of kidney function assessed by three different equations

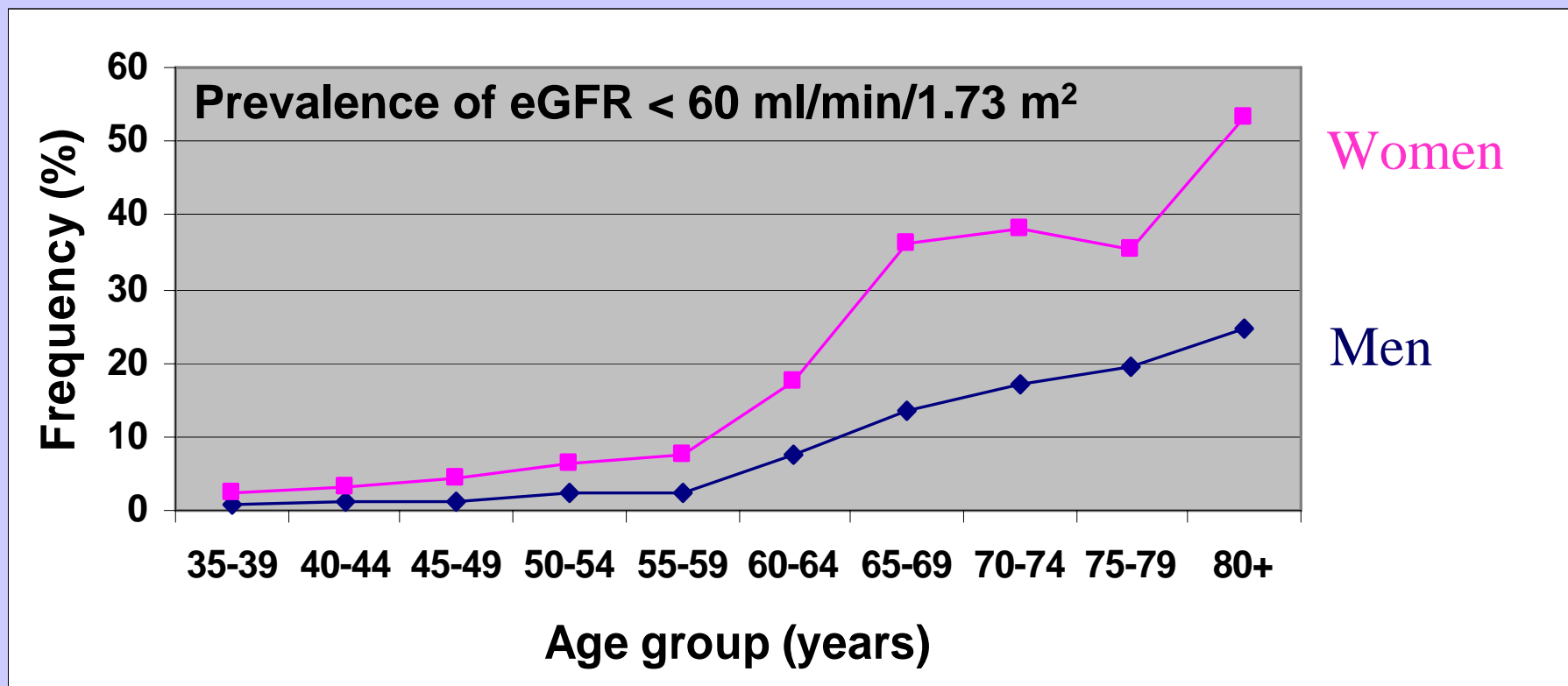
1/S-Creatinine Eq

Cockcroft-Gault Eq

MDRD Eq (4 variables)

Mean serum creatinine  
88±15.9 μmol/L in men  
79±30.0 μmol/L in women

# CKD in Iceland



Age-standardized prevalence of eGFR <60 ml/min/1.73 m<sup>2</sup>

Men: 4,7%    Women: 11,6%

Proteinuria (GFR >60)

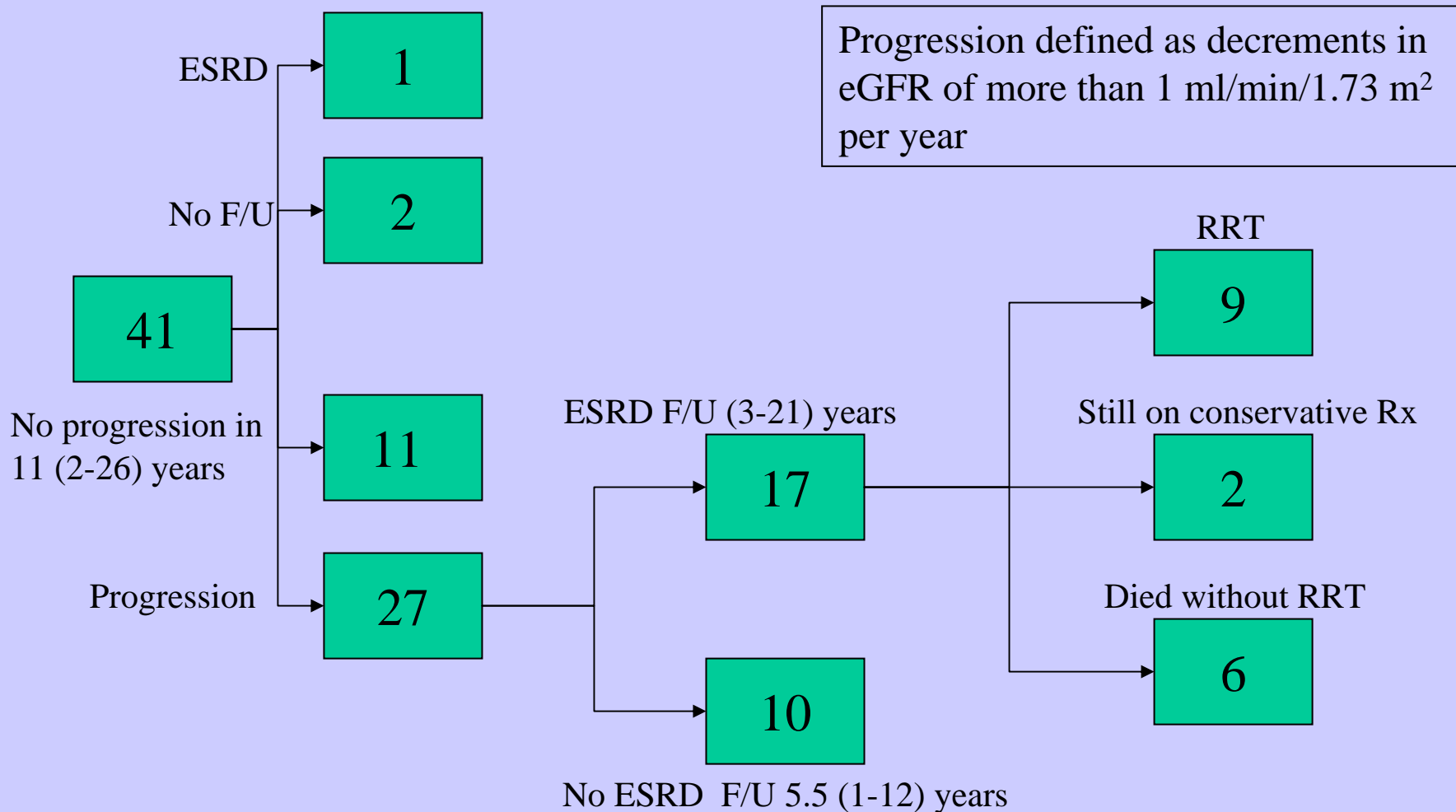
Men: 2,4%    Women: 0,9%



# CKD in Iceland

- Viktorsdottir et al
    - MDRD Eq GFR <60 ml/min and proteinuria
  - Magnason et al
    - S-Creatinine >150  $\mu\text{mol/L}$
  - AB study (unpublished)
    - MDRD Eq GFR <60 ml/min
- Men 7.1%
  - Women 12.5%
  - Men 0.42%
  - Women 0.23%
  - Men 7.1%
  - Women 12.5%

# Progression of CKD in Iceland



# Conclusions

- Despite a low incidence of ESRD, the incidence and prevalence of CKD are not lower than elsewhere
  - Different equations are not equivalent
  - Limitation
    - Serum creatinine measurements are not standardized
- The incidence of diabetic nephropathy is not lower than elsewhere
- Disease progress appears slow in a substantial number of subjects

# Future directions

- Study the progression of CKD in more detail
- Study the epidemiology of kidney diseases other than diabetic nephropathy
- Study the admission to the ESRD program

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## ■ Collaborators

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