Chronic Kidney Disease: The AusDiab Study 2005

Dr Kevan Polkinghorne, Associate Professor Steven Chadban, Professor Robert Atkins

INTERNATIONAL DIABETES INSTITUTE

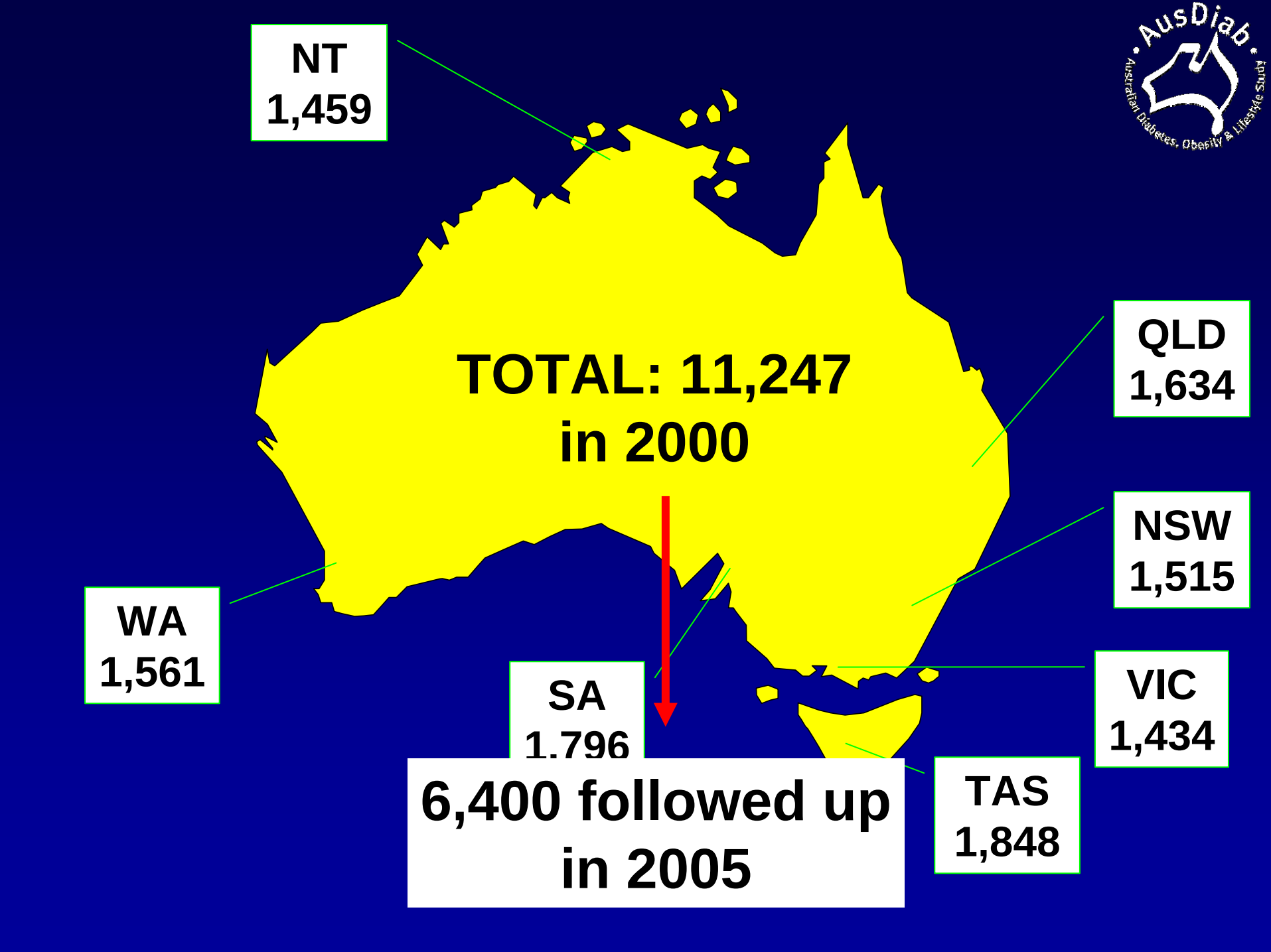
1/7 adult Australians have early CKD

AusDiab Survey April 2001

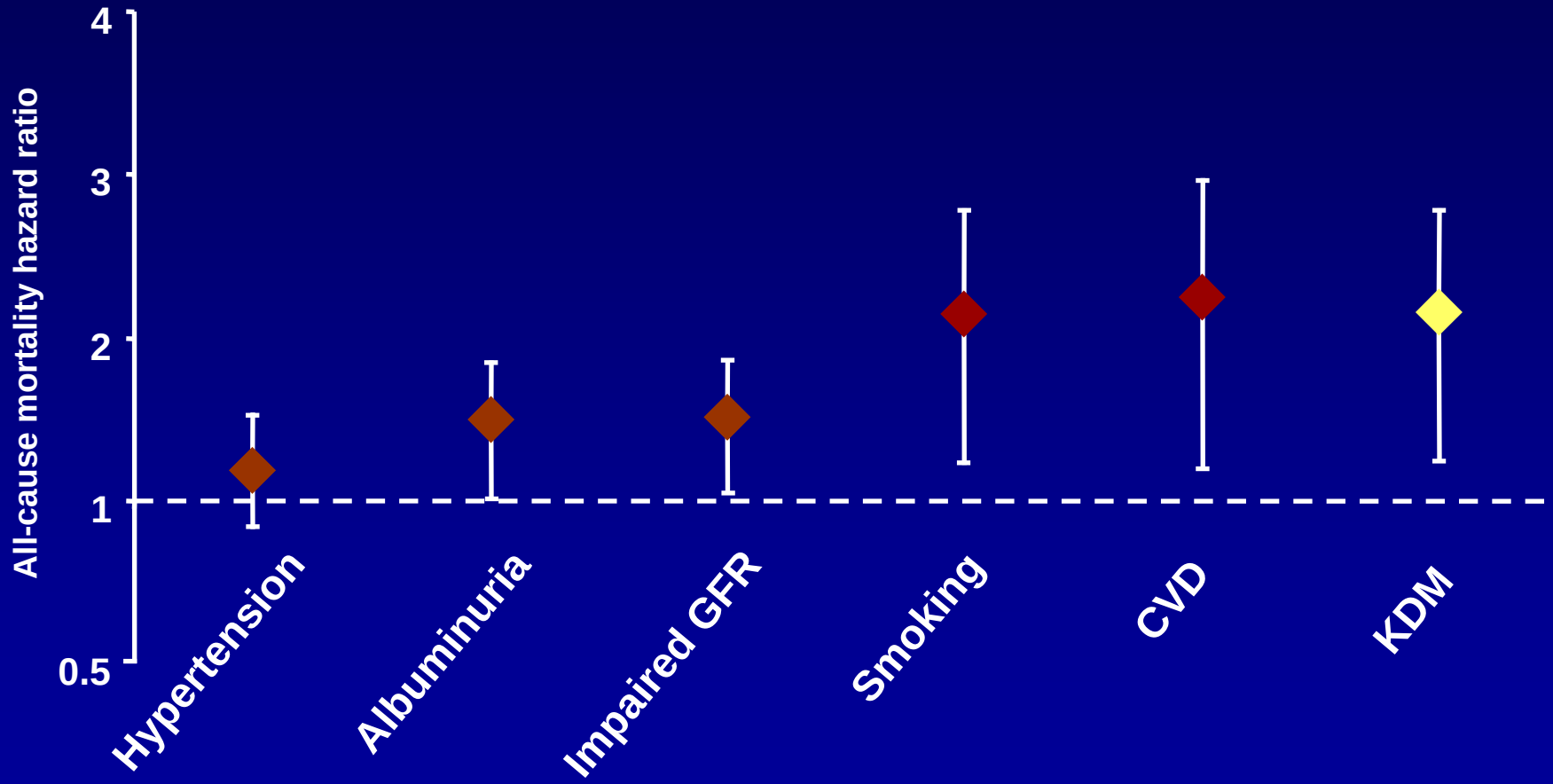
- **11,247 adults (>25yrs) chosen by census district**
- **Australian nation-representative sample**
- **16% had evidence of kidney damage**
  - **Proteinuria: 2.4% (300,000 people)**
  - **GFR < 60ml/min/1.7m²: 11.2% (1.4m people)**

Chadban et al, JASN 14:S131, 2003

  - **Haematuria: 4.6%**


NT
1,459
TOTAL: 11,247
in 2000
QLD
1,634
NSW
1,515
WA
1,561
SA
1,796
VIC
1,434
TAS
1,848
6,400 followed up
in 2005
AusDiab
Australian Diabetes, Obesity & Lifestyle Study

Adjusted HR for all-cause mortality according to baseline risk factors



Adjusted for age, sex, total cholesterol, taking lipid-lowering medication, triglycerides and WHR

Background

- The number of new cases (incidence) of end-stage kidney disease in Australia is currently 95/million population per annum, with diabetes being the leading cause
- 30% of all new end-stage kidney disease is due to diabetes - compared with 17% in 1994
- The AusDiab study has enabled, for the first time, the opportunity to determine the rate at which new cases of chronic kidney disease emerge among Australian adults who were free from chronic kidney disease at the time of the initial survey

Objectives

- The objectives are:
- (i) to estimate the incidence (% per year) of both chronic kidney disease and early kidney damage, and
- (ii) to present the risk factors associated with these conditions.

Definitions: Impaired glomerular filtration rate

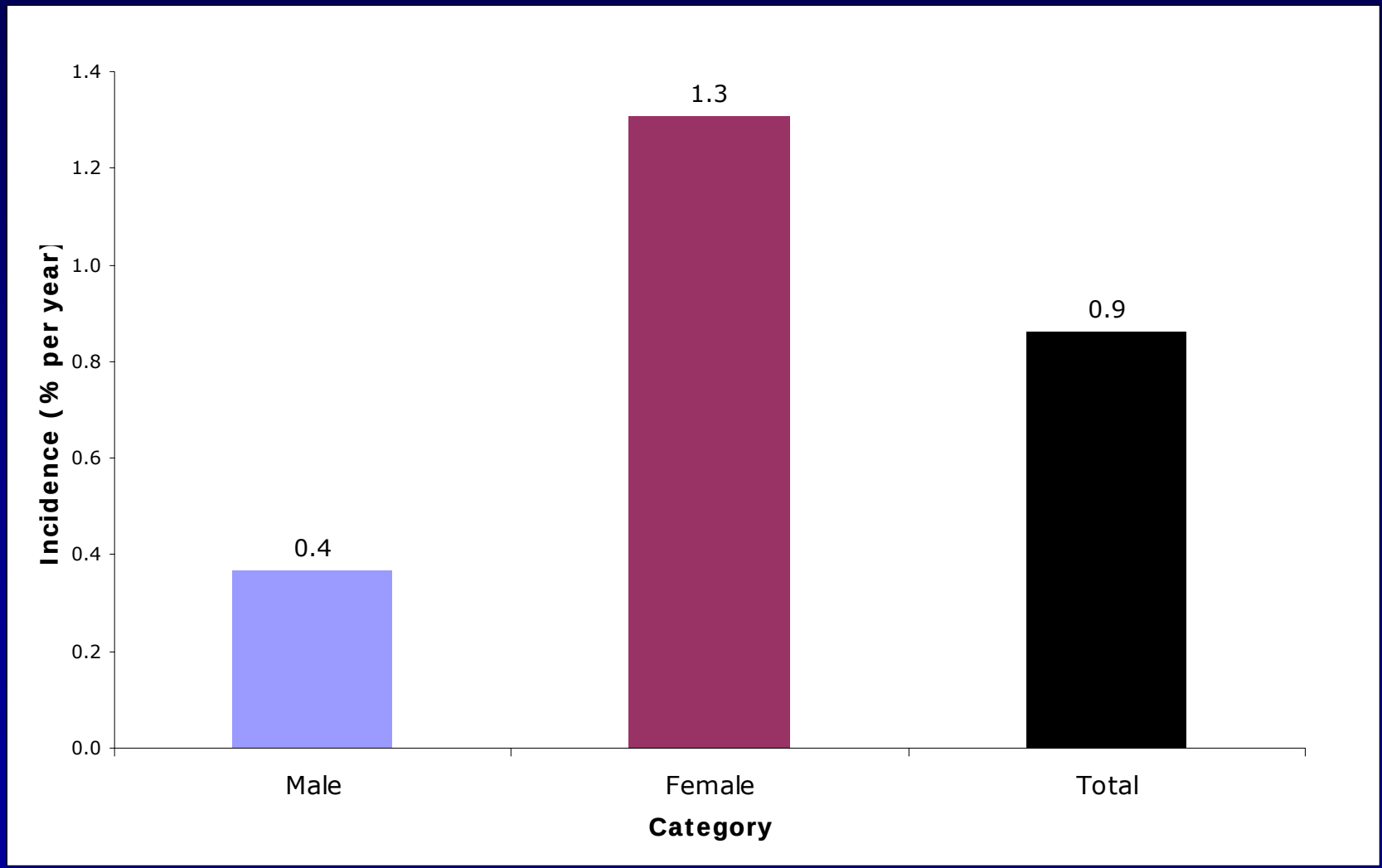
- New (incident) cases of impaired GFR were defined as:
  - individuals who had a normal eGFR (>60 mL/min/1.73m^2) at baseline, but had an eGFR of <60 mL/min/1.73m^2 at follow-up.

Definitions: Albuminuria

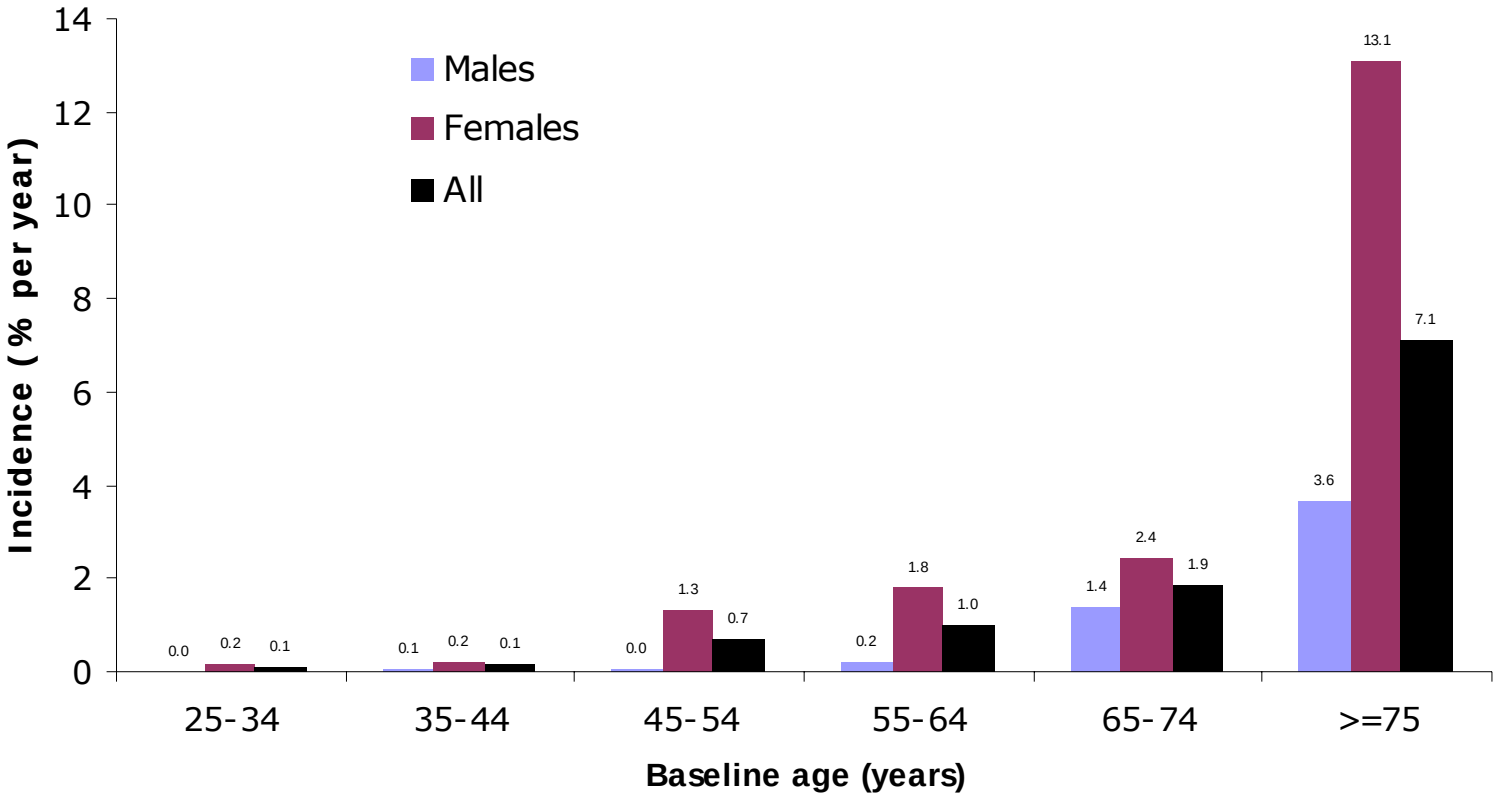
- New (incident) cases of albuminuria were defined as:
  - people who had normal albumin levels in the urine at baseline, but had a spot urine albumin:creatinine ratio (≥2.5 mg/mmol for males and ≥3.5 mg/mmol for females) at follow-up.

Results: Impaired glomerular filtration rate

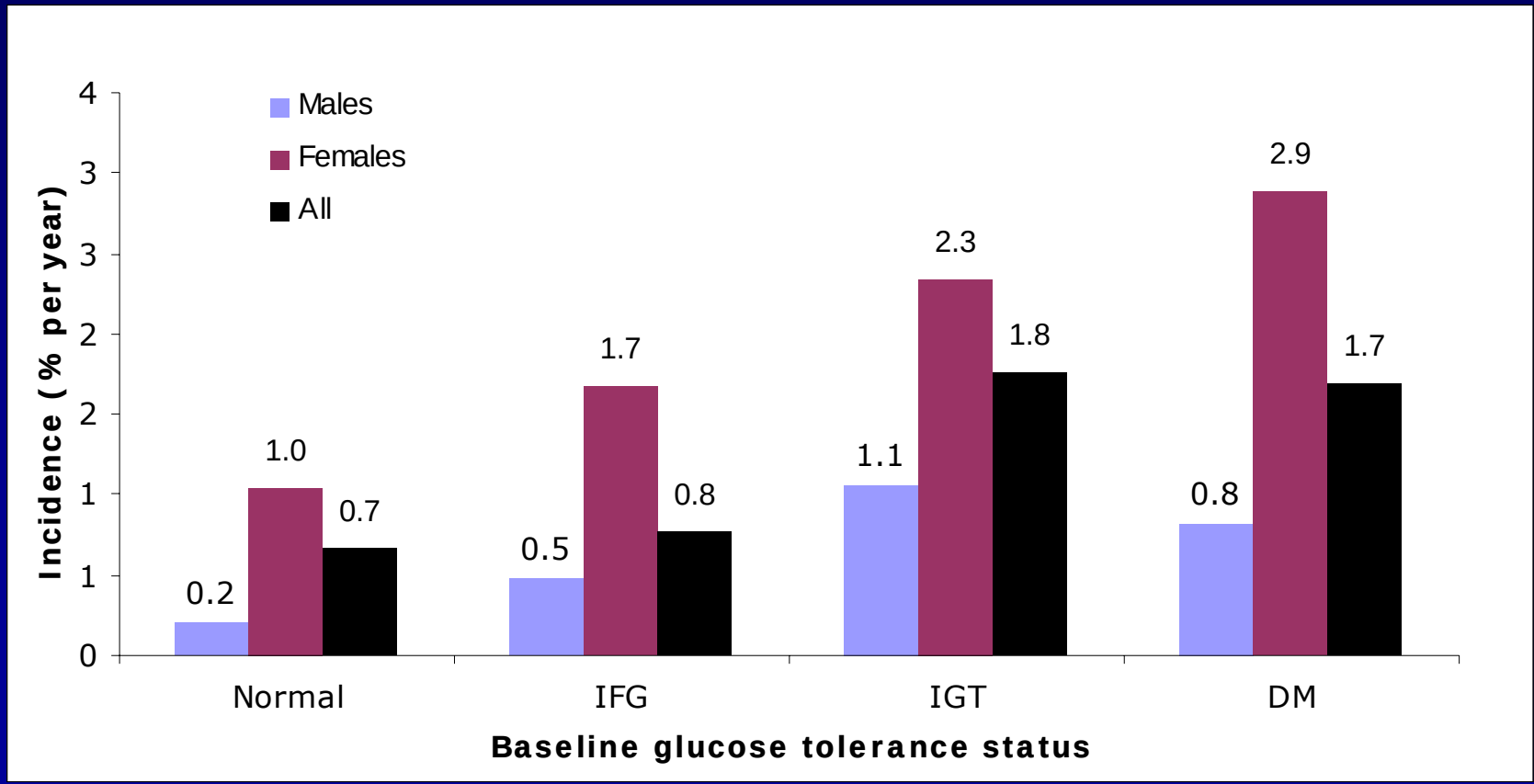
Incidence of impaired glomerular filtration rate according to sex



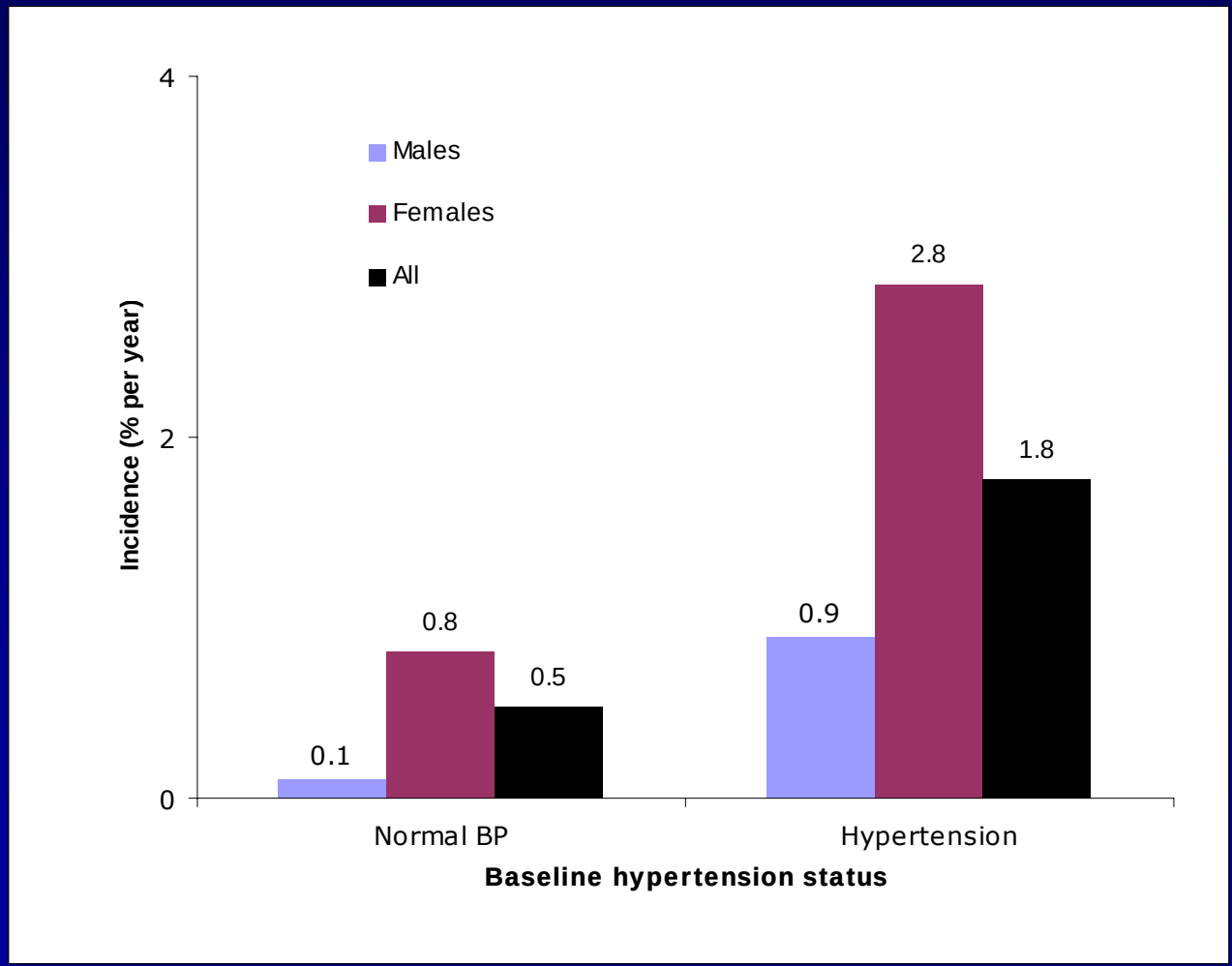
Incidence of impaired glomerular filtration rate according to baseline age



Incidence of impaired glomerular filtration rate according to baseline glucose tolerance status



Incidence of impaired glomerular filtration rate according to baseline hypertension status



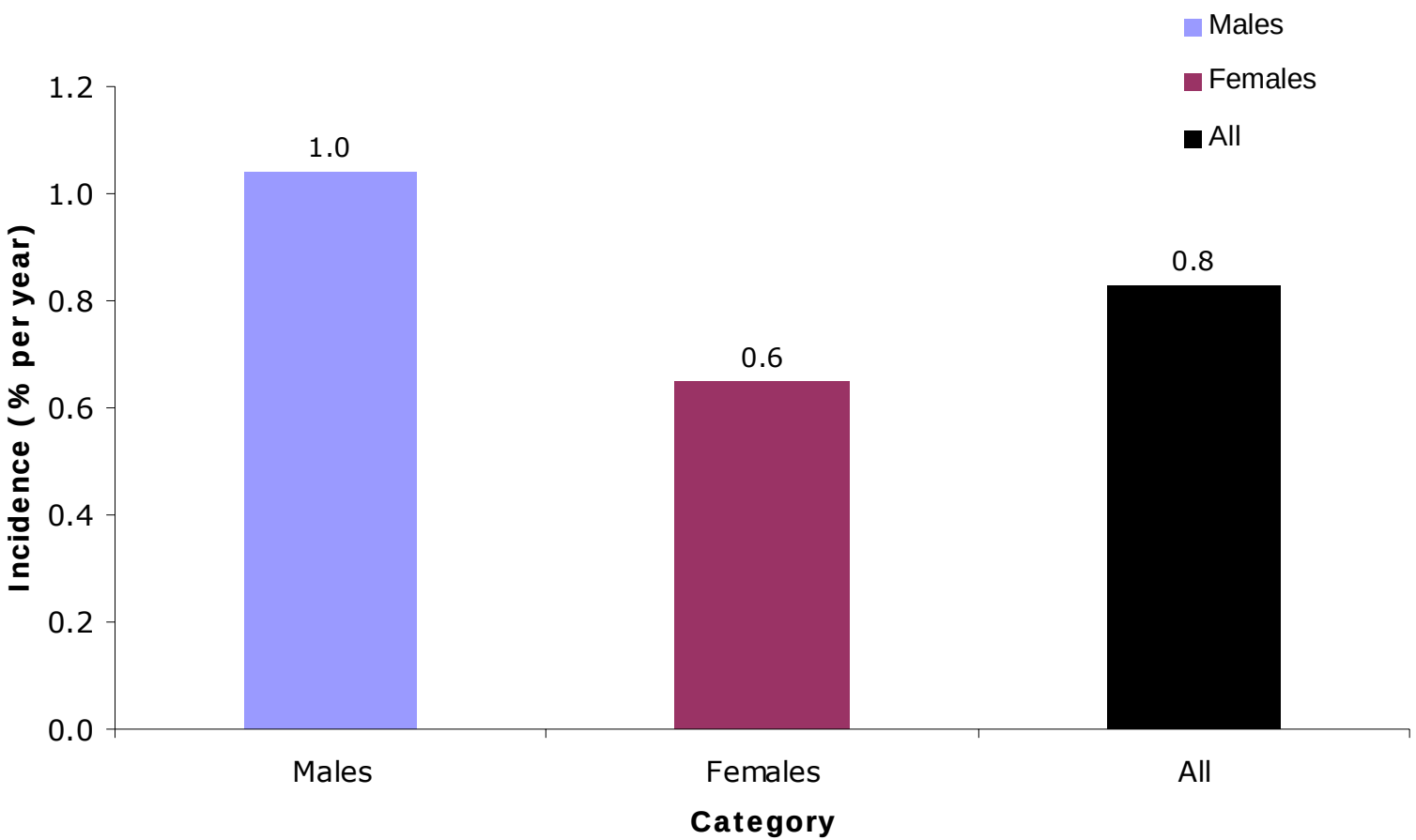
Impaired glomerular filtration rate: Age & sex adjusted risks

Impaired glomerular filtration rate	Univariate		Adjusted for Age & Sex	
	OR	95% C.I.	OR	95% C.I.
Glucose tolerance status:				
IFG vs normal GT	1.16	0.65 – 2.06	1.31	0.71 – 2.42
IGT vs normal GT	2.72	1.98 – 3.72**	1.60	1.14 – 2.24*
DM vs normal GT	2.60	1.75 – 3.87**	1.39	0.91 – 2.25
Hypertension vs normal	3.63	2.81 – 4.70**	1.73	1.29 – 2.31**

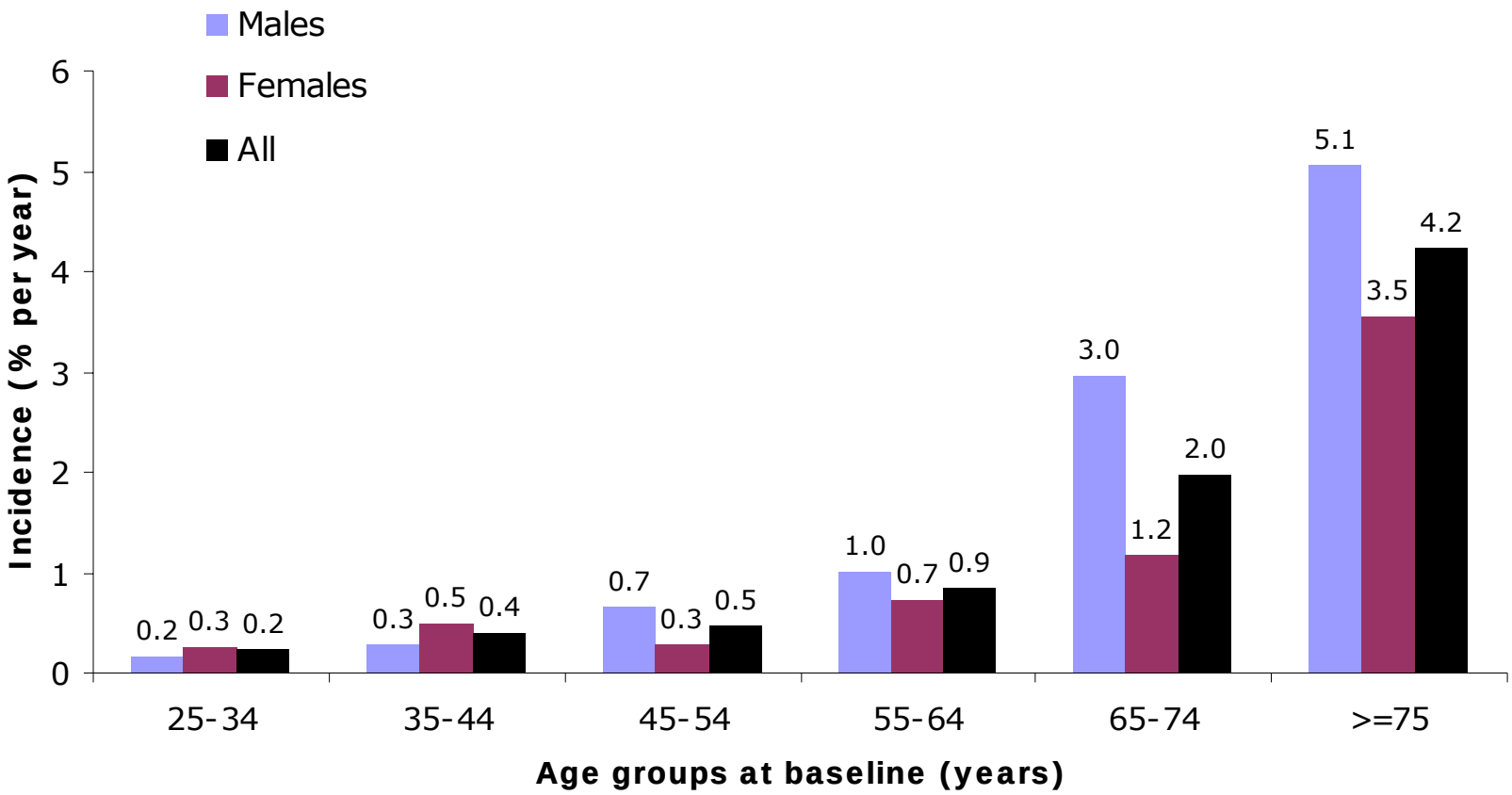
* p<0.05 ** P<0.001

Results: Albuminuria

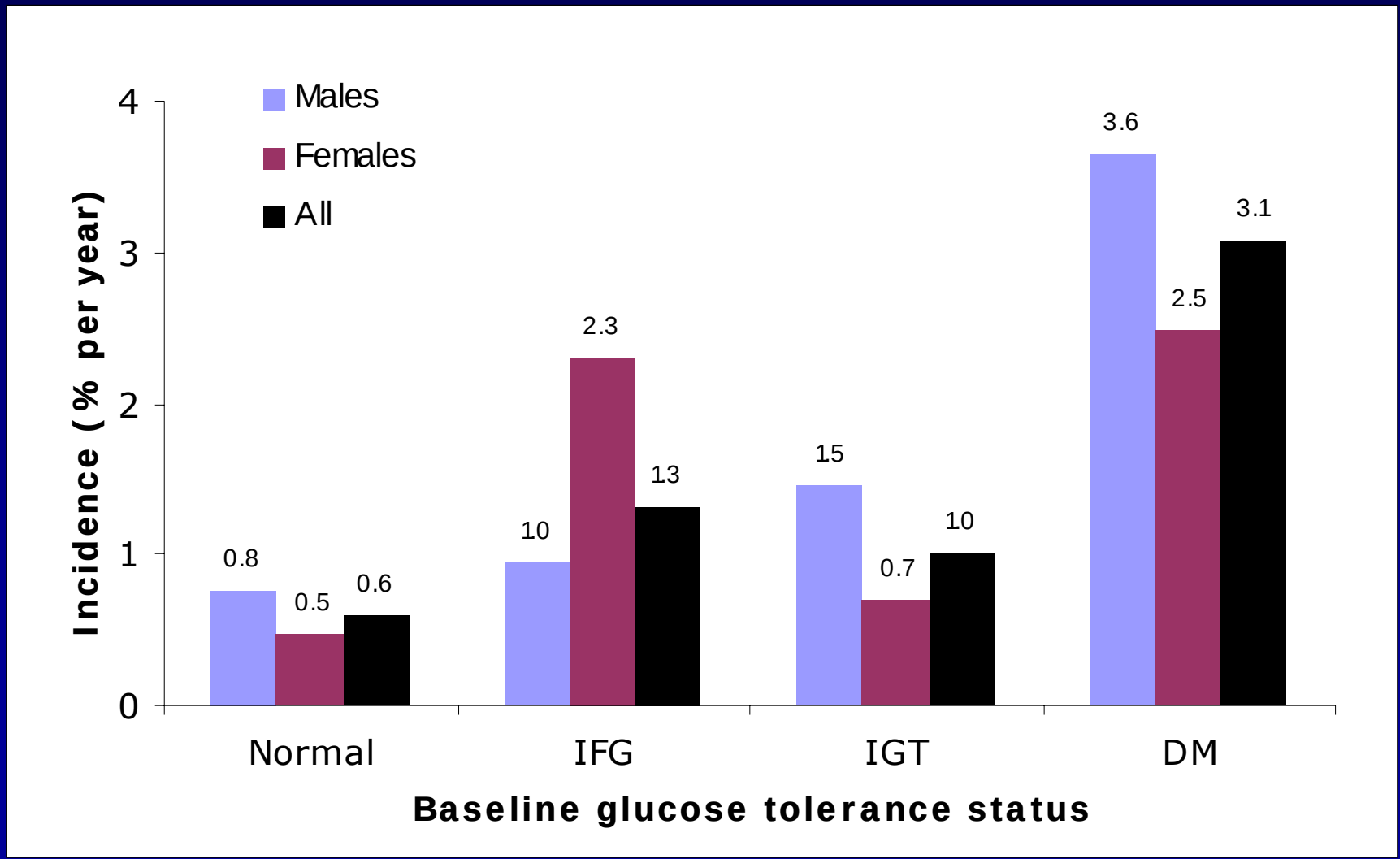
Incidence of albuminuria according to sex



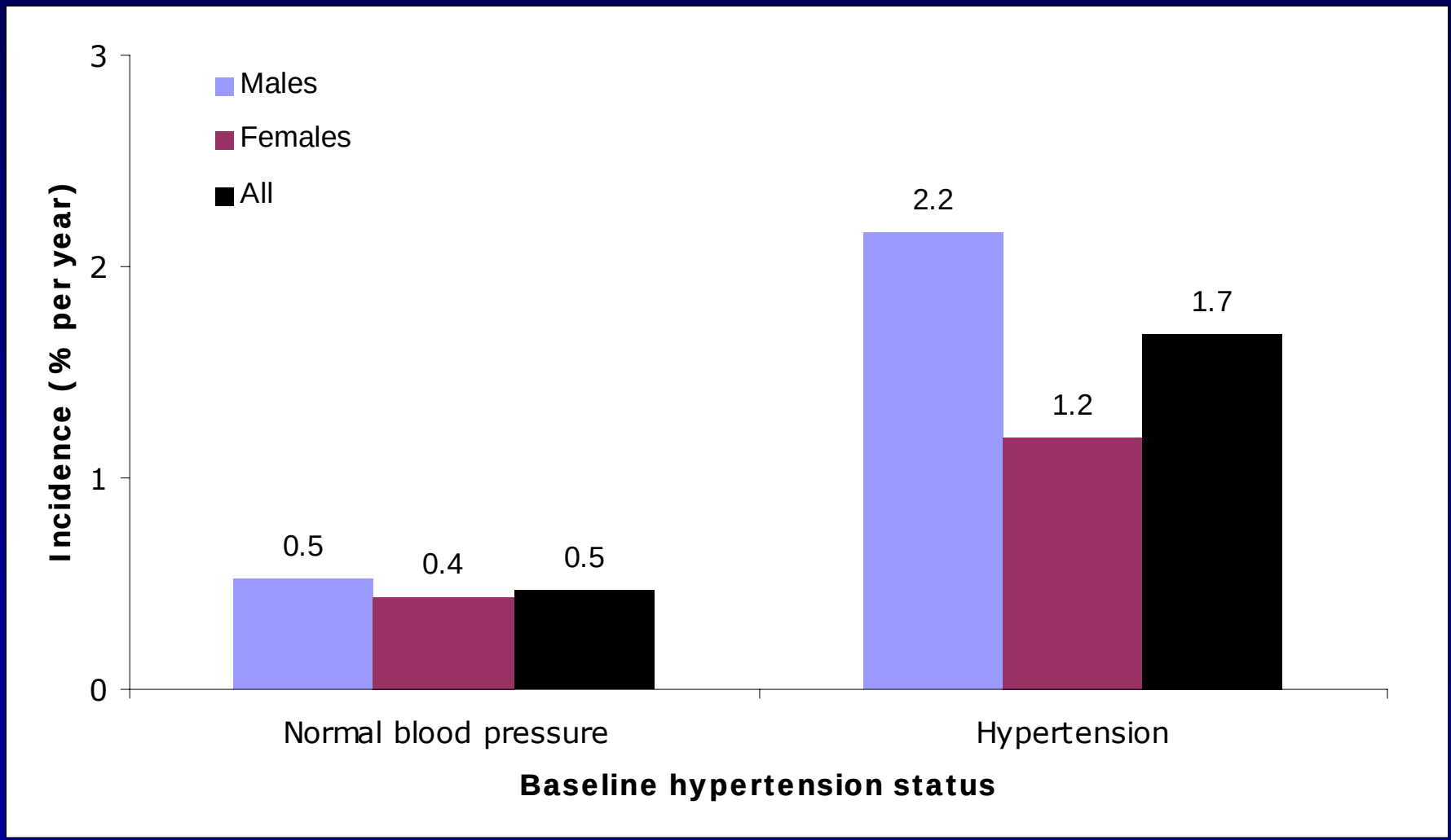
Incidence of albuminuria according to baseline age



Incidence of albuminuria according to baseline glucose tolerance status



Incidence of albuminuria according to baseline hypertension status



Albuminuria: Age & sex adjusted risks

Albuminuria	Univariate		Adjusted for Age & Sex	
	OR	95% C.I.	OR	95% C.I.
Glucose tolerance status:				
IFG vs normal GT	2.25	1.40 – 3.63**	1.69	1.04 – 2.75*
IGT vs normal GT	1.70	1.14 – 2.52*	1.13	0.75 – 1.70
DM vs normal GT	5.49	3.89 – 7.75**	3.18	2.22 – 4.56**
Hypertension vs normal	3.67	2.81 – 4.81**	1.86	1.37 – 2.51**

* $p<0.05$ ** $P<0.001$

Key findings (1)

- Every year, almost 1.0% of adults developed chronic kidney disease manifested by a reduction in kidney function (impaired glomerular filtration rate). The risks were higher females and in older people.

- Every year almost 1.0% of adults developed evidence of kidney damage as manifested by the leakage of albumin into the urine (albuminuria). The risks were higher in males and in older people.

Key findings (2)

- Having high blood pressure increased the incidence of impaired glomerular filtration rate and albuminuria three-fold.
- Having diabetes increased the incidence of albuminuria five-fold and of developing a reduction in kidney function two-fold.