Diabetes Mellitus

Primary and Secondary Care.

Getting the Twain to Meet

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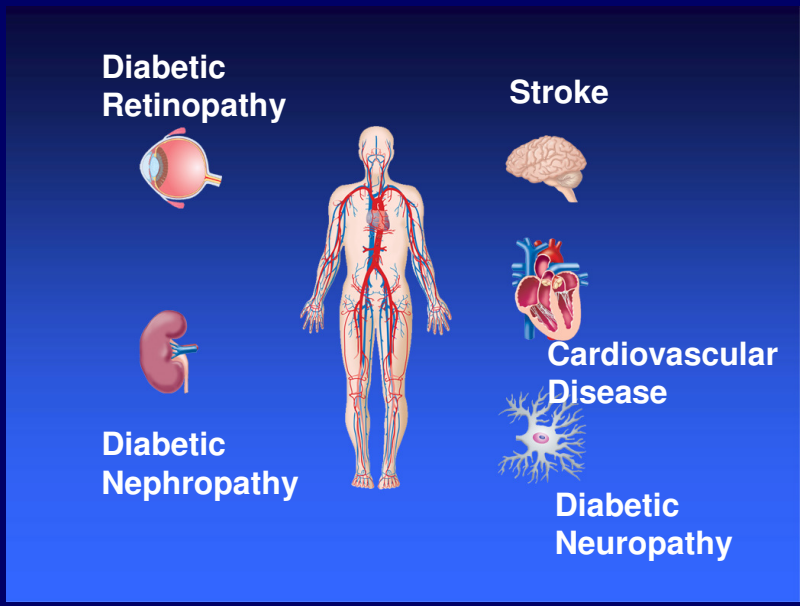
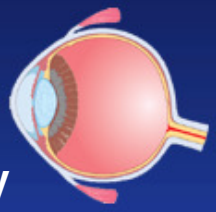
What are we Diagnosing?

- What is diabetes?
- Defined by **glucose** but risk is
  - Microvascular
  - Macrovascular



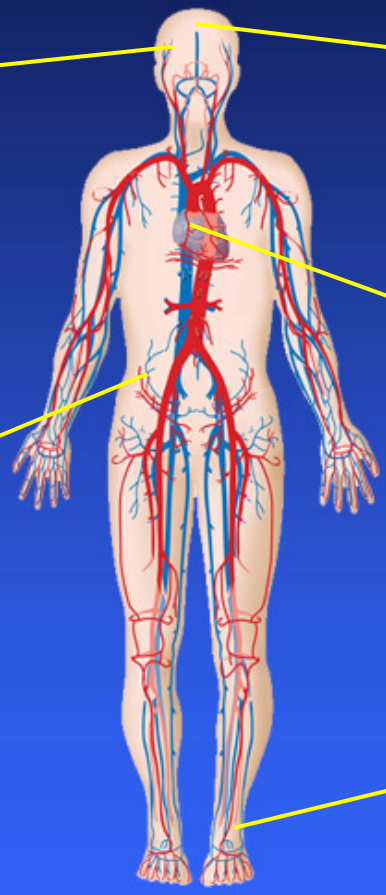


Diabetic Retinopathy

Leading cause of blindness in working age adults[1]

Diabetic Nephropathy

Leading cause of end-stage renal disease[2]



Stroke

2 to 4 fold increase in cardiovascular mortality and stroke[3]

Cardiovascular Disease

8/10 diabetic patients die from CV events[4]

Diabetic Neuropathy

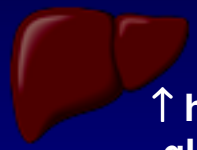
Leading cause of non-traumatic lower extremity amputations[5]

Pathogenesis of Type 2 Diabetes: Insulin Resistance and β-cell dysfunction

Genetic Susceptibility
Obesity, Sedentary Lifestyle

Insulin Resistance

↓ glucose uptake



↑ hepatic glucose production

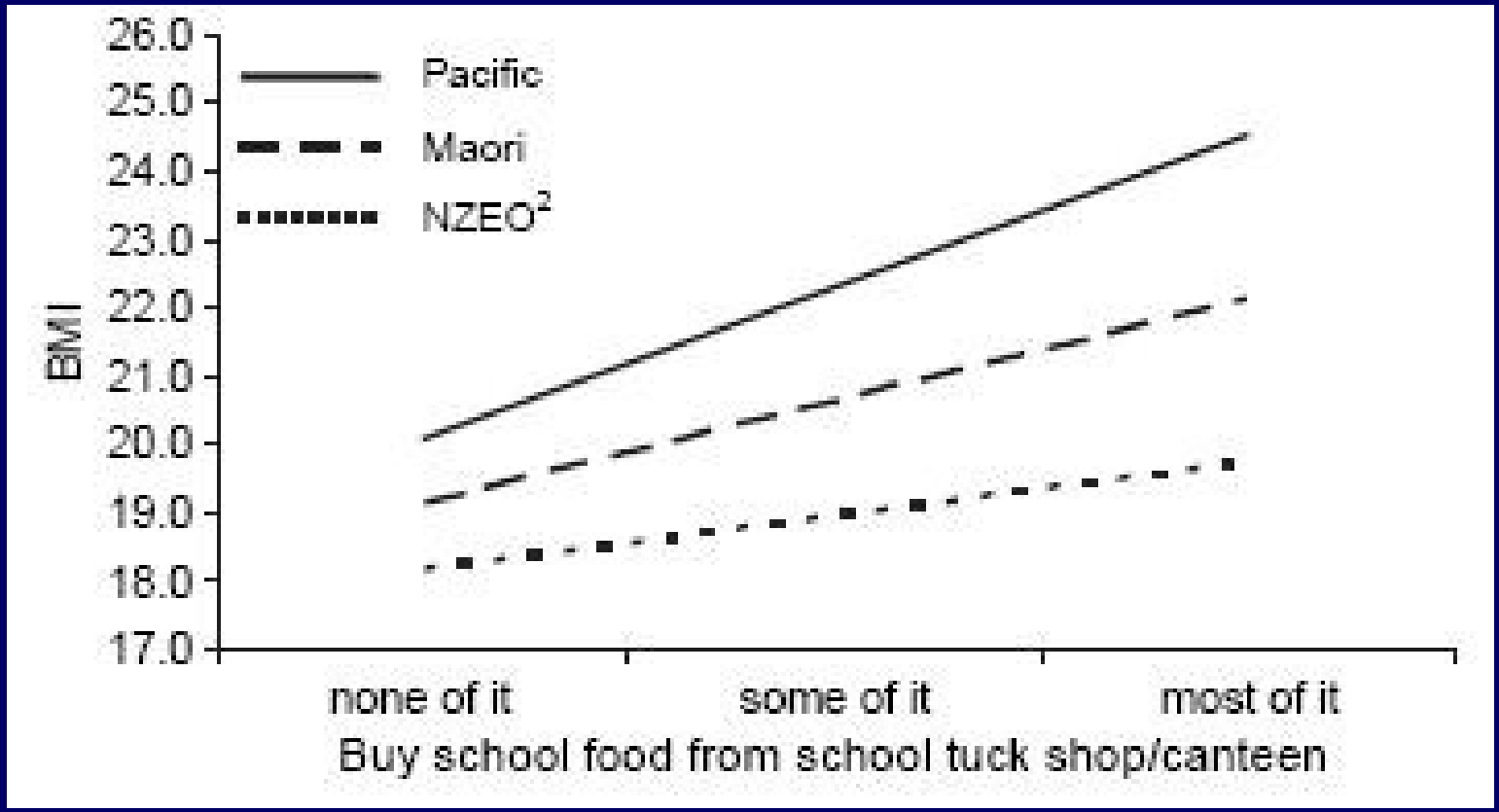
β-cell Dysfunction

impaired insulin secretion

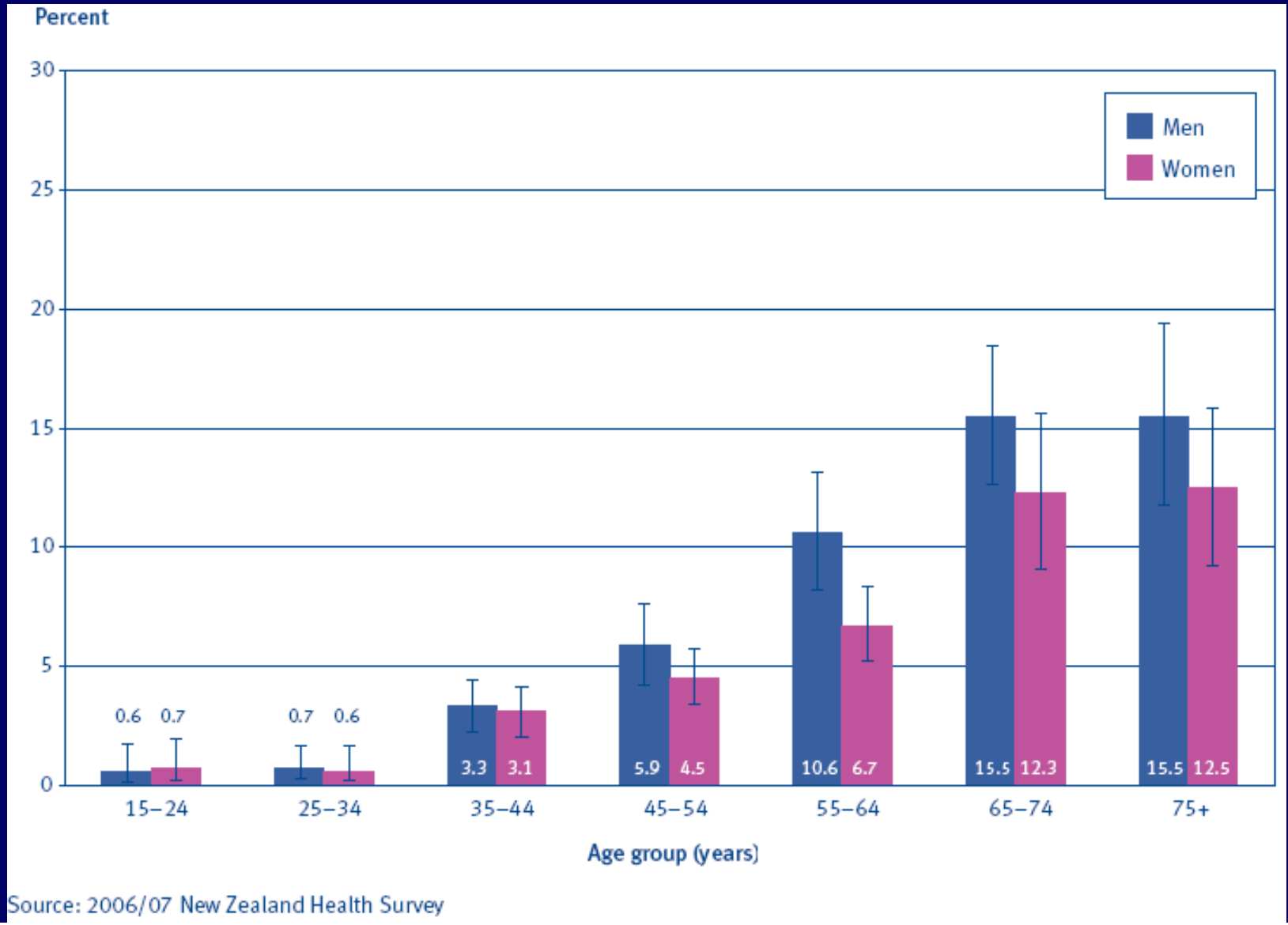
Type 2 Diabetes

De Fronzo J. *Diabetes* 1998; 37:667–687.

One Factor Causing Obesity



Prevalence of Diagnosed Diabetes by Age and Gender in New Zealand 2006



Source: 2006/07 New Zealand Health Survey

Prevalence of Diagnosed Diabetes in New Zealand 2006

Ethnic group	Prevalence (95% CI)	Number of adults
European/ Other	4.3 (3.8–4.8)	109200
Māori	5.8 (4.9–6.7)	20800
Pacific	10.0 (8.1–11.8)	16400
Asian	6.5 (5.4–7.7)	18100

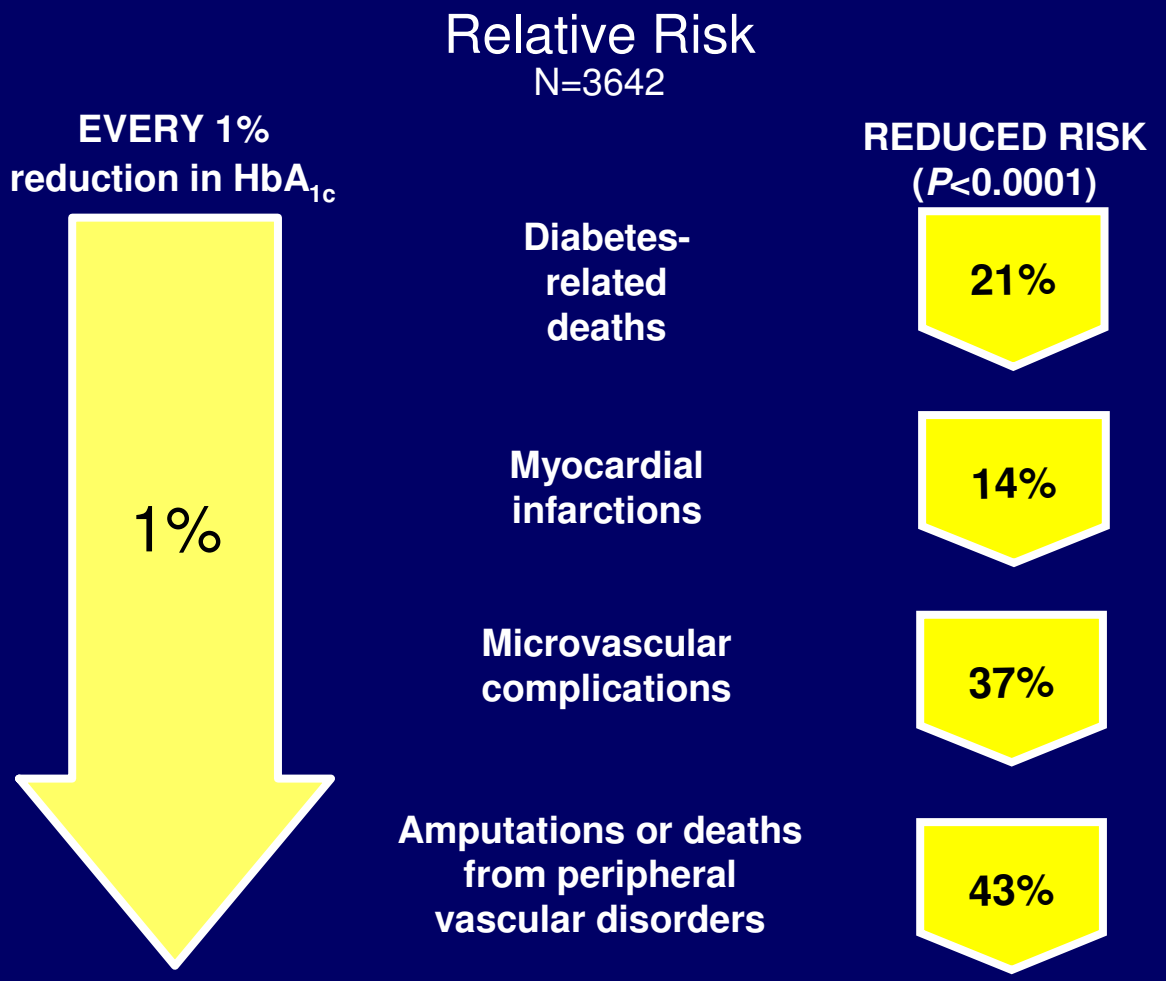
Source: 2006/07 New Zealand Health Survey

Management Goals for Diabetes

Cardiovascular Guidelines 2009

- Glycaemic control
  - HbA1c **< 7.0%**
- Blood Pressure
  - <130/80 mmHg (125/75)
- Lipids
  - TC<4.0mmol/L (**LDL<2.0**, HDL>1.0)
  - TG<1.7mmol/L
  - **TC:HDL Ratio <4.0**

UKPDS: Improving HbA_{1c} Control Reduced Diabetes-Related Complications



UKPDF=United Kingdom Prospective Diabetes Study.
Data adjusted for age, sex, and ethnic group, expressed for white men aged 50–54 years at diagnosis and with mean duration of diabetes of 10 years.
Stratton IM et al. UKPDS 35. *BMJ* 2000;321:405–412.

Longitudinal 5 Year Analysis of “Get Checked” Cohort from Primary Care in the Wellington Region

Bob Smith, Jeremy Krebs, Lynn McBain, Michael Hullah,, Michael Shapleski for Wellington Regional Diabetes Trust

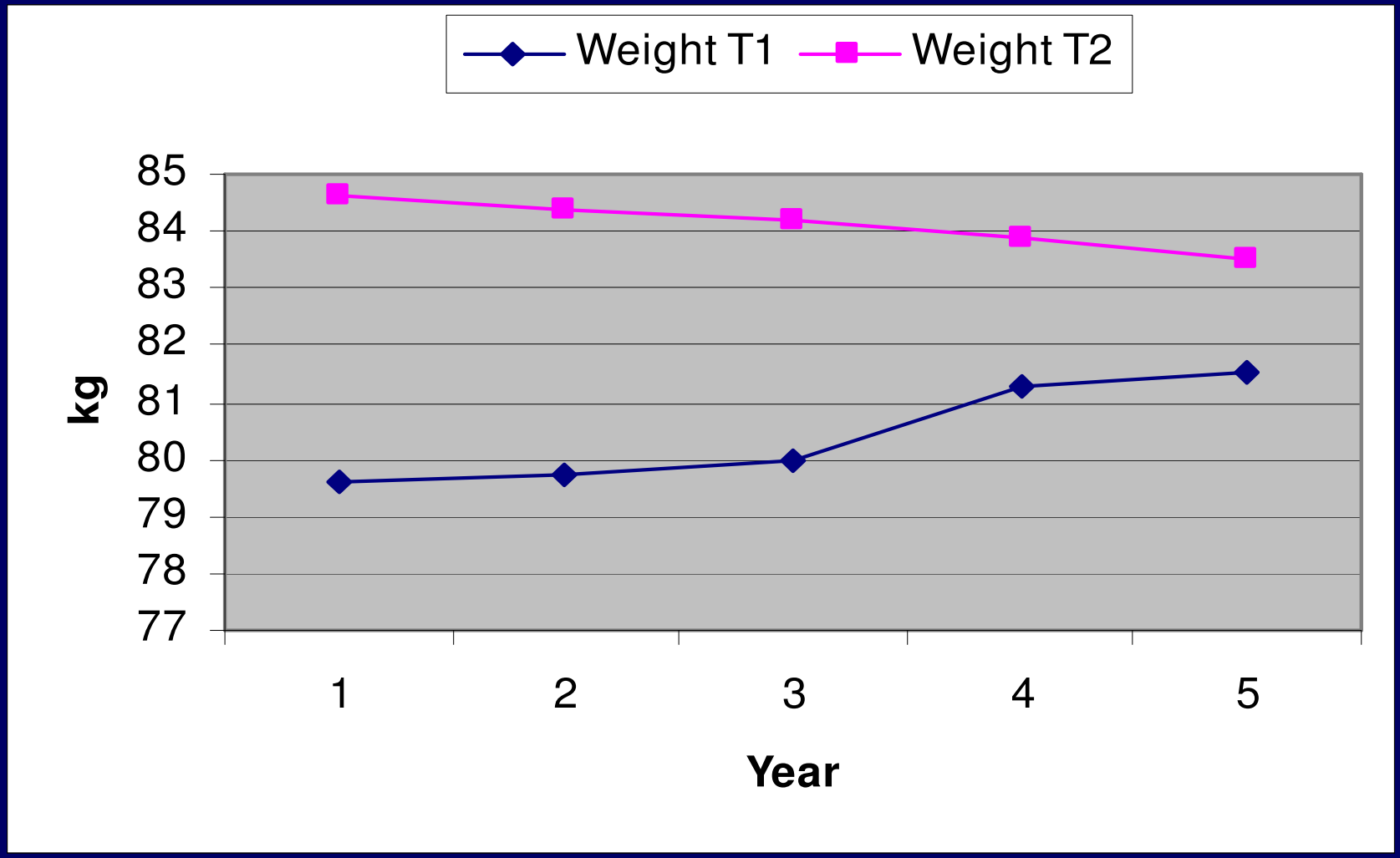
PO Box 27 380 Marion Square,

Wellington, NZ

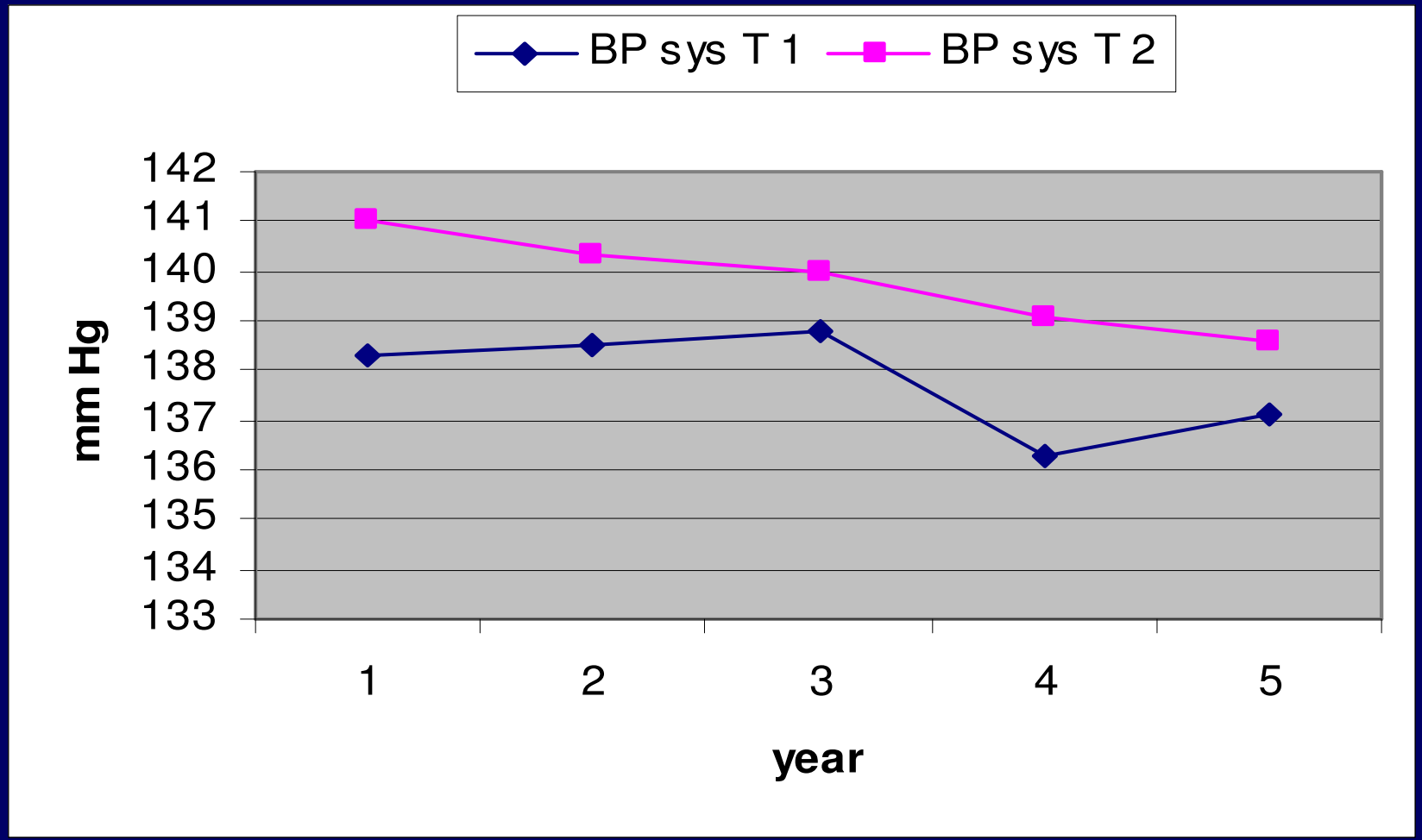
Methods

- Data from July 2000 to December 2006
  - Total data base 49,965 diabetes annual reviews on 19,054 patients
  - Selected all 3,140 with 5 or more a/reviews
- Cohort comprised:
  - Type 2 - 94.5%;
  - males - 51%;
  - median age latest review – 69 years; ethnicity % – Asian 10, European 70, Maori 10, Pacific 8, other 2

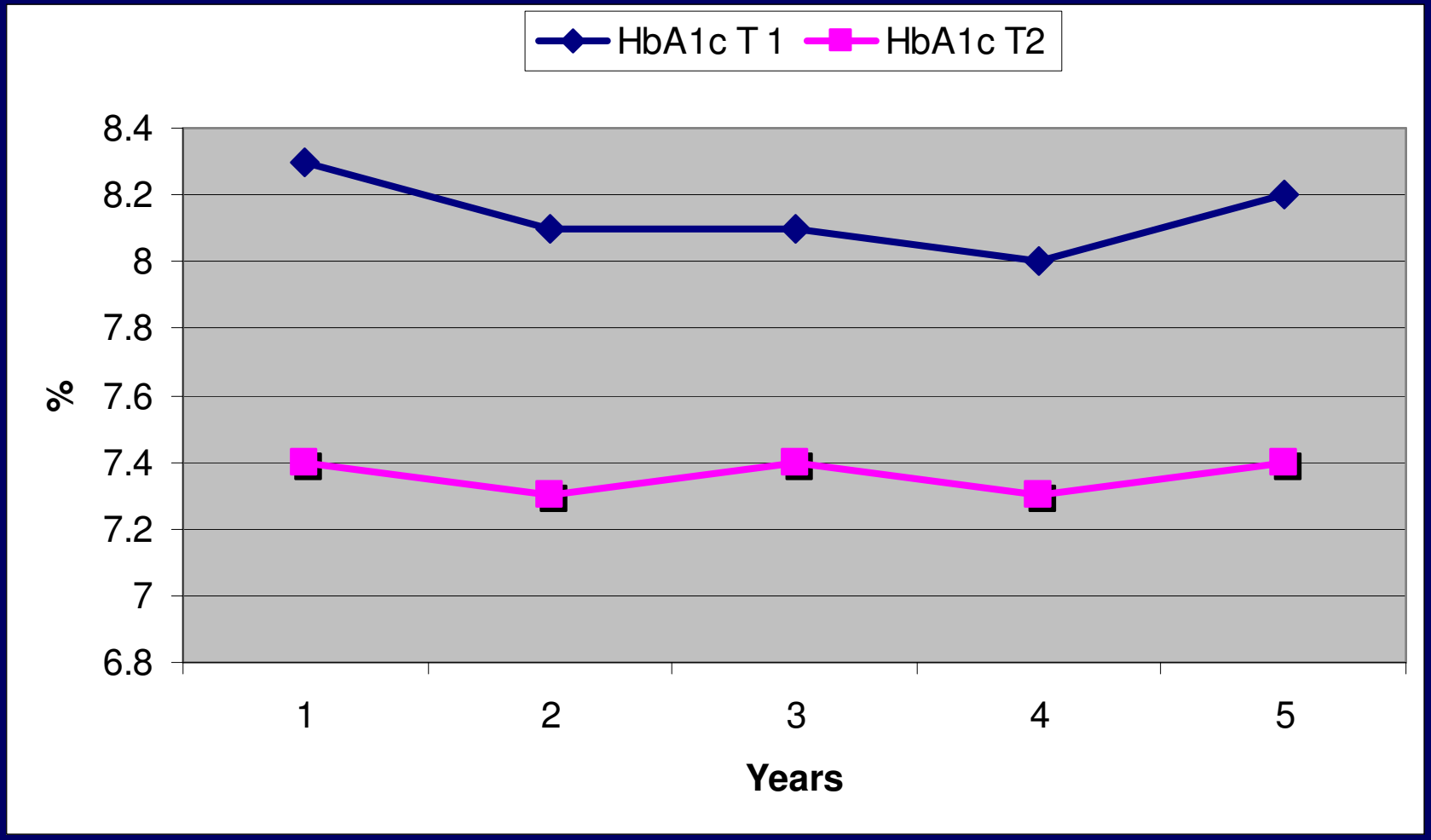
Weight



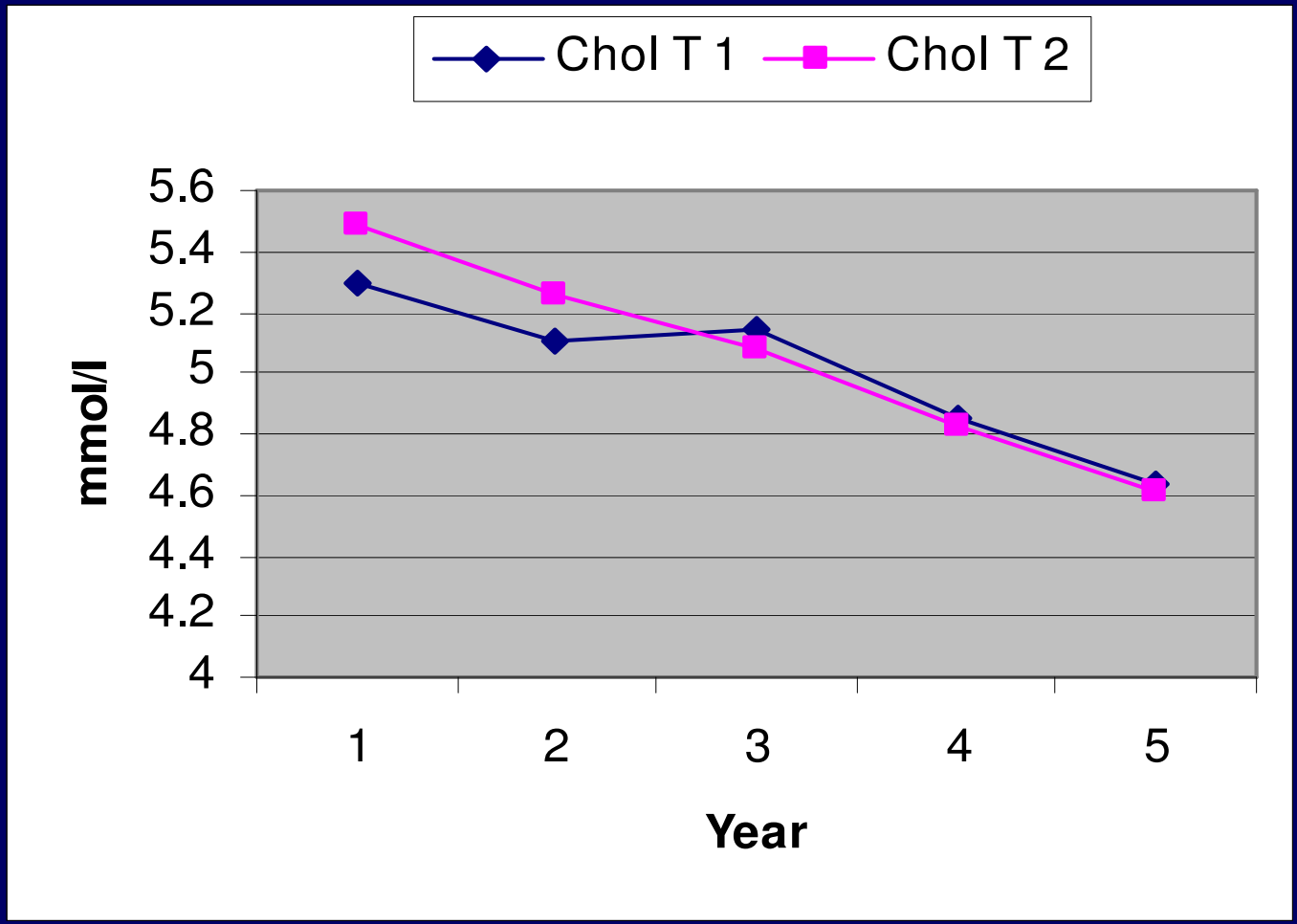
Systolic Blood Pressure



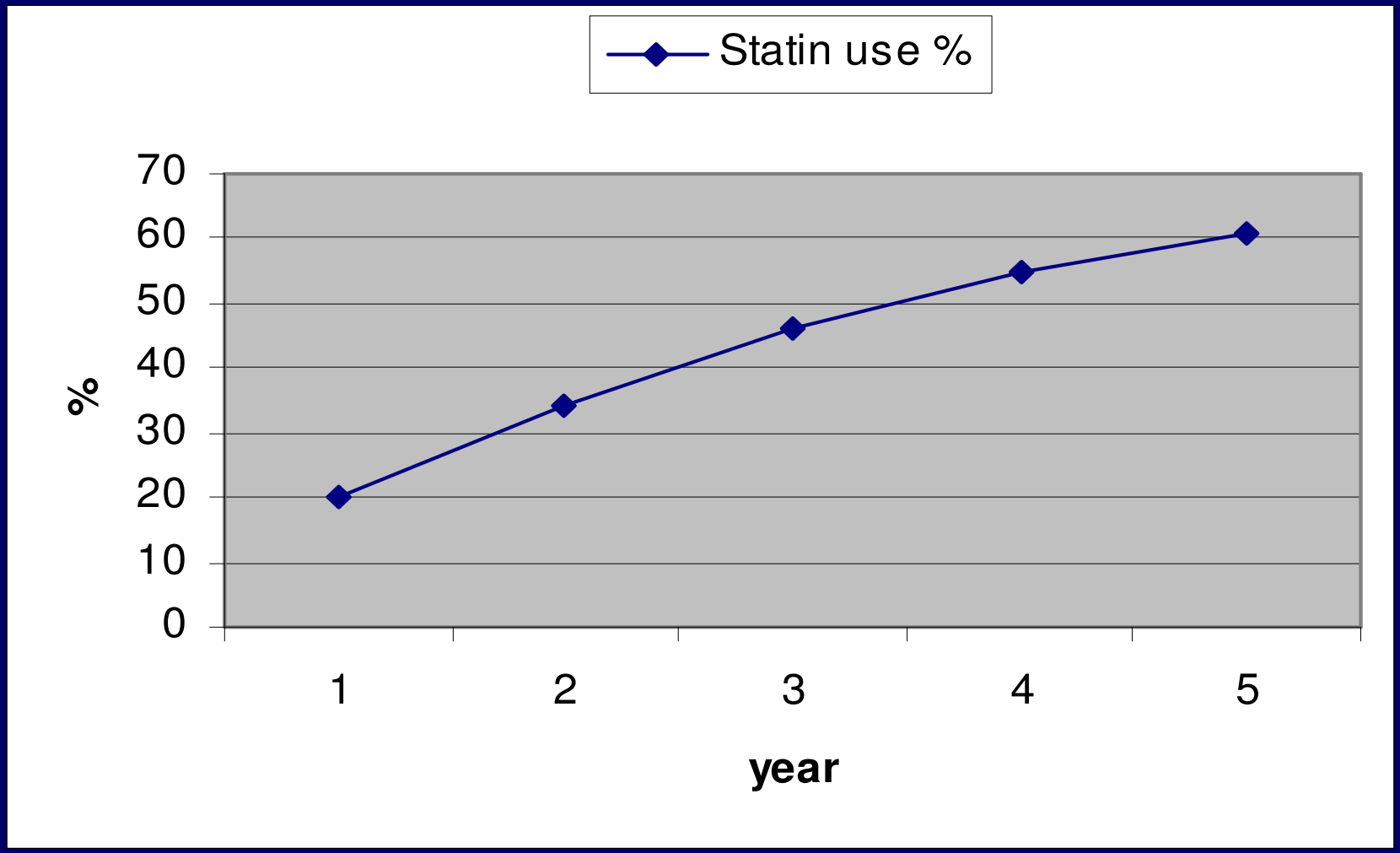
HbA1c



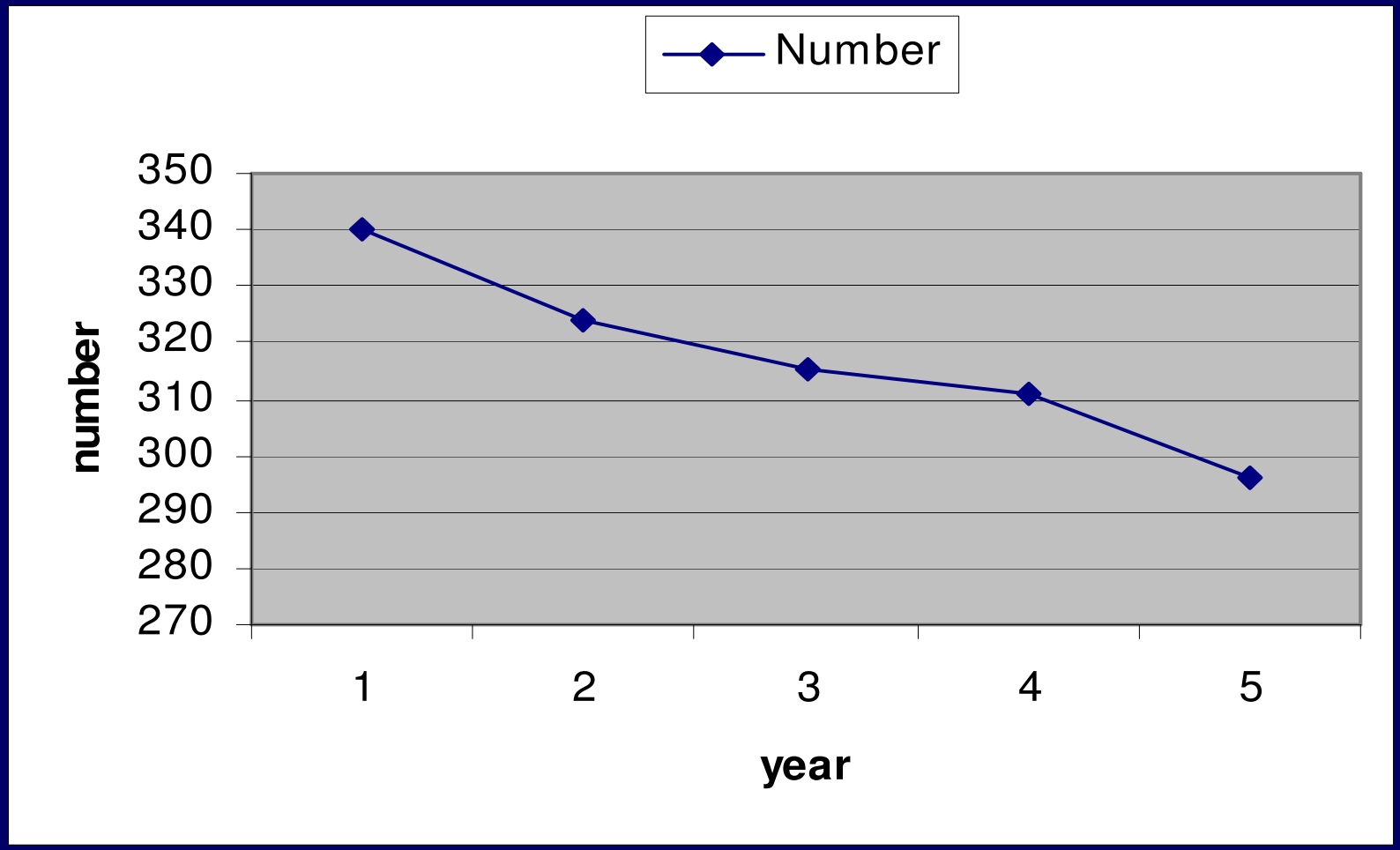
Serum Cholesterol



Statin Use



Current Smokers (10.8 - 9.4%)



Conclusions 1

- Over 5 years a cohort of 3,140 with 5 annual reviews
- Weight rose 1.9 kg in Type 1 and fell 1.1 kg in Type 2.
- **HbA1c unchanged though % of people with HbA1c over 7 not on oral therapy or insulin fell from 18 to 8.6.**
- Current smokers fell from 10.8 to 9.4%

Conclusions 2

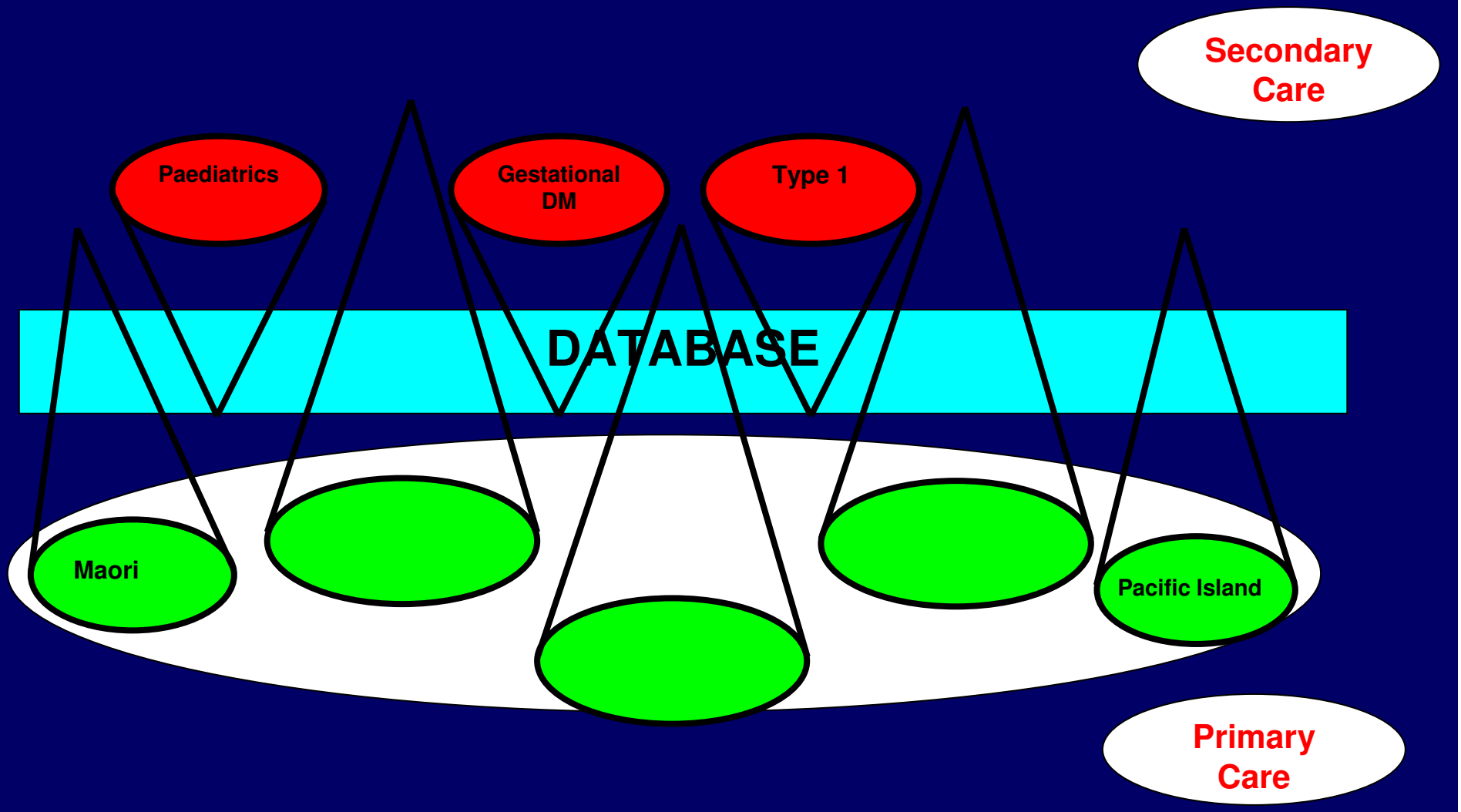
- % with raised U a/c women 25%, men 33% did not change
- **% with raised U a/c not treated with ACEI fell by about one third**
- Blood Pressure: in Type 1 fell by 1.2/4.4; in Type 2 fell by 2.4/3.2

The Future

How can we improve diabetes care?

- What? (Primary and Secondary Care)
  - Improved Communication
  - Improved Sharing of Data
  - Improved Two-way Flow of Patients
- How
  - Shared Care
  - Combined Community Clinics
  - More Multi-Disciplinary Approach

Krebs model for Diabetes Management in the Wellington Region



Capital and Coast Health Initiatives

- Translational research
  - Diabetes Self Management
  - High risk patients form Coronary Care
- Outreach – Community based clinics

NZ Group-based Self-Management Education for Patients / Whanau with Type 2 Diabetes

HRC funded Translational Research Project

Partnership between CCDHB, PHOs,
University of Otago

Background

- Current absence of standardised education programme for patients with Type 2 DM.
- Growing emphasis on patient self-management
- International tools need “Kiwifying”
    - XPERT programme

- New Zealand must develop an efficacious and cost-effective education programme that meets the specific needs of our population.
  - Deliverable in primary care,
  - Meet the needs of Maori and Pacific and be developed in partnership with them.
- Broad partnership between Secondary care, PHOs, Maori and Pacific stakeholders and University
- Reviews existing evidence-based programmes and develops a NZ equivalent including distinct Maori and Pacific components.
- The programme will be piloted and revised accordingly.
- It will then be tested in primary care environments in Wellington and Dunedin, including Maori and Pacific providers.

Preventing diabetes in people with acute coronary syndrome and hyperglycaemia

HRC funded Translational Research Project

Partnership between CCDHB, PHOs, Massey University

Background

- Hyperglycaemia in hospital is a risk factor for undiagnosed or future type 2 diabetes.
- Those with Acute coronary event at high risk of future events.
- Admission to CCU is opportunity to intervene.

Aim

- Translate the evidence that co-ordinated diet and lifestyle modification can reduce the incidence of diabetes and further cardiac events by optimising and co-ordinating the resources that are already present in the healthcare sector to provide a more strategic focus on the at-risk groups

Model for Outreach Clinics

- Secondary Specialist provide expertise to maximise Primary Care Services
- Case management sessions and Combined clinic patients with specialist and GP
  - Team approach (GP and nurses)
  - Trickle down
    - Wider benefit than small number seen
  - Up-skilling
    - Insulin

Primary and Secondary Care

- **Primary Care**
  - Large workforce
  - Good Infrastructure
  - Good data collection
  - Comprehensive Patient view
  - Limited numbers per GP. Confidence with some treatments
  - Cost to patients
- **Secondary Care**
  - Specialist knowledge and skills
  - Small workforce
  - Systems not currently as efficient or streamlined

What are the Big Issues for Diabetes Management in NZ

- Increasing Obesity – Increasing Diabetes
  - Prevention. Childhood / Youth Obesity
- Co-ordinating services
  - Primary / Secondary Interface
  - Getting best Bang for Buck
- Access to Obesity services
  - Bariatric surgery
- Best Modern therapy
  - Insulin Pumps
  - Analogue insulins and new oral agents