

# Building a New Model of Care for Diabetes Management

Anthony Russell

Director, Dept Diabetes and Endocrinology, PAH  
Clinical Director ICDMS, Inala

Sept 2007



# The Current Problem in Queensland

---

Less than 35% of patients with diabetes mellitus are reaching treatment targets resulting in increased morbidity, mortality and therefore increased burden on the health system

# ...leading to increased demands on hospitals

- Diabetes-related hospitalisations increased by 20% between 2000-01 and 2003-04, and the average length of stay for someone with diabetes was more than three times the overall average length of stay.
  - Most common cause for renal dialysis
  - 2/3 of patients in the coronary care ward have pre-diabetes or diabetes

# Why are we not reaching targets...

- Inadequate resources
  - Doctors, educators, dietitian, podiatry, psychology
  - Traditional model of care
- Inadequate tools
  - Chronic disease with no cure
  - Medication increases the risk of hypoglycaemia
- “Inadequate” patients
  - Adherence
  - Lack of self-management

# Inadequate resources...

- Inadequate public hospital staffing levels for diabetes with long waiting lists eg. PAH
  - Cat 2 patient waits 6 months for review
  - Cat 3 – over 12 months
  - Old patient review – 30 weeks
- Inequitable access and access block to specialist services across the state.
  - No endocrinologist between Sunshine Coast and Townsville
- Need to double number of endocrinologists to see each patient with T2DM once a year.

...and the chances of that happening are...

© Original Artist  
Reproduction rights obtainable from  
[www.CartoonStock.com](http://www.CartoonStock.com)



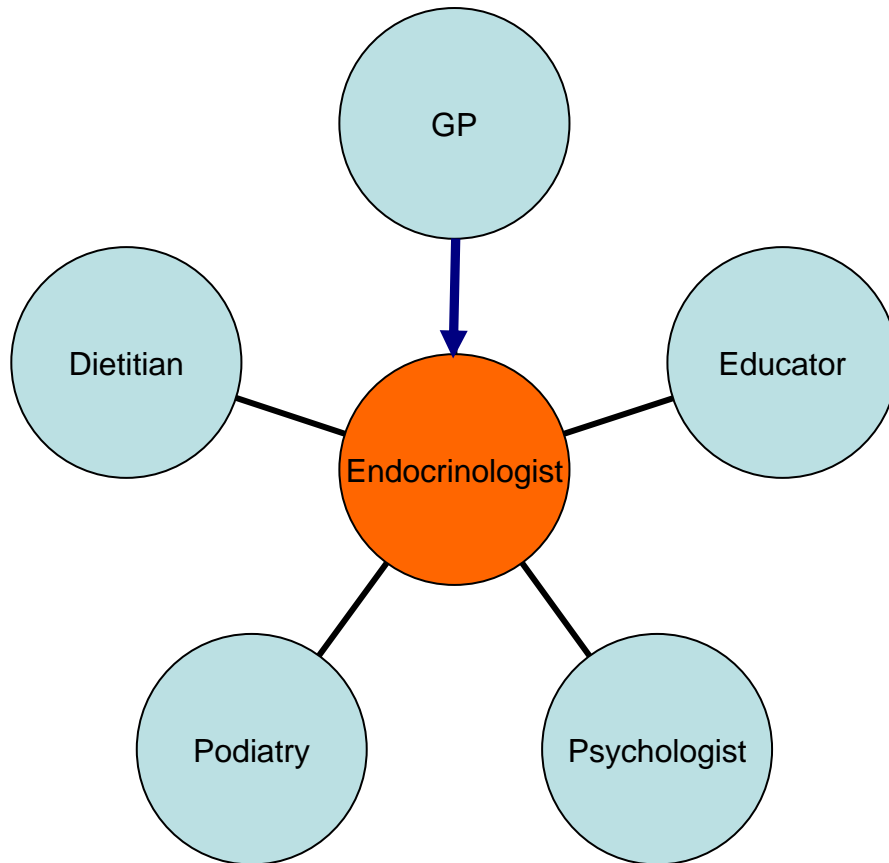
"FAT CHANCE!"

# We have to be innovative...

---

- The current model of a specialist clinic reviewing a patient with diabetes every 3-6 months and not returning care back to the GP needs to be reconsidered

# Current Model of Care for T2DM at PAH



- Removing focus of care away from GP
- Specialist centre holds onto patient – why?
  - For junior staff safest option is to arrange review
  - To date no particular consultant responsible for a patient – now changed
  - Patients have confidence in specialist
  - Specialists lack confidence in GP

# Chronic Illness Management: What Is the Role of Primary Care?

Arlyss Anderson Rothman, PhD, MHS, and Edward H. Wagner, MD, MPH

An estimated 99 million Americans live with a chronic illness. Meeting the needs of this population is one of the major challenges facing the U.S. health care system today and in the future. Dozens of studies, surveys, and audits have revealed that sizable proportions of chronically ill patients have not received effective therapy and do not have optimal disease control. The consistent findings of generally substandard care for many chronic conditions have spurred proposals that care be shifted to specialists or disease management programs. Published evidence to date does not indicate any clear superiority of these alternatives to primary care.

The defining features of primary care (that is, continuity, coordination, and comprehensiveness) are well suited to care of chronic illness. A rapidly growing body of health services research points to the design of the care system, not the specialty of the physician, as the primary determinant of chronic care quality. The future of primary care in the United States may depend on its ability to successfully redesign care systems that can meet the needs of a growing population of chronically ill patients.

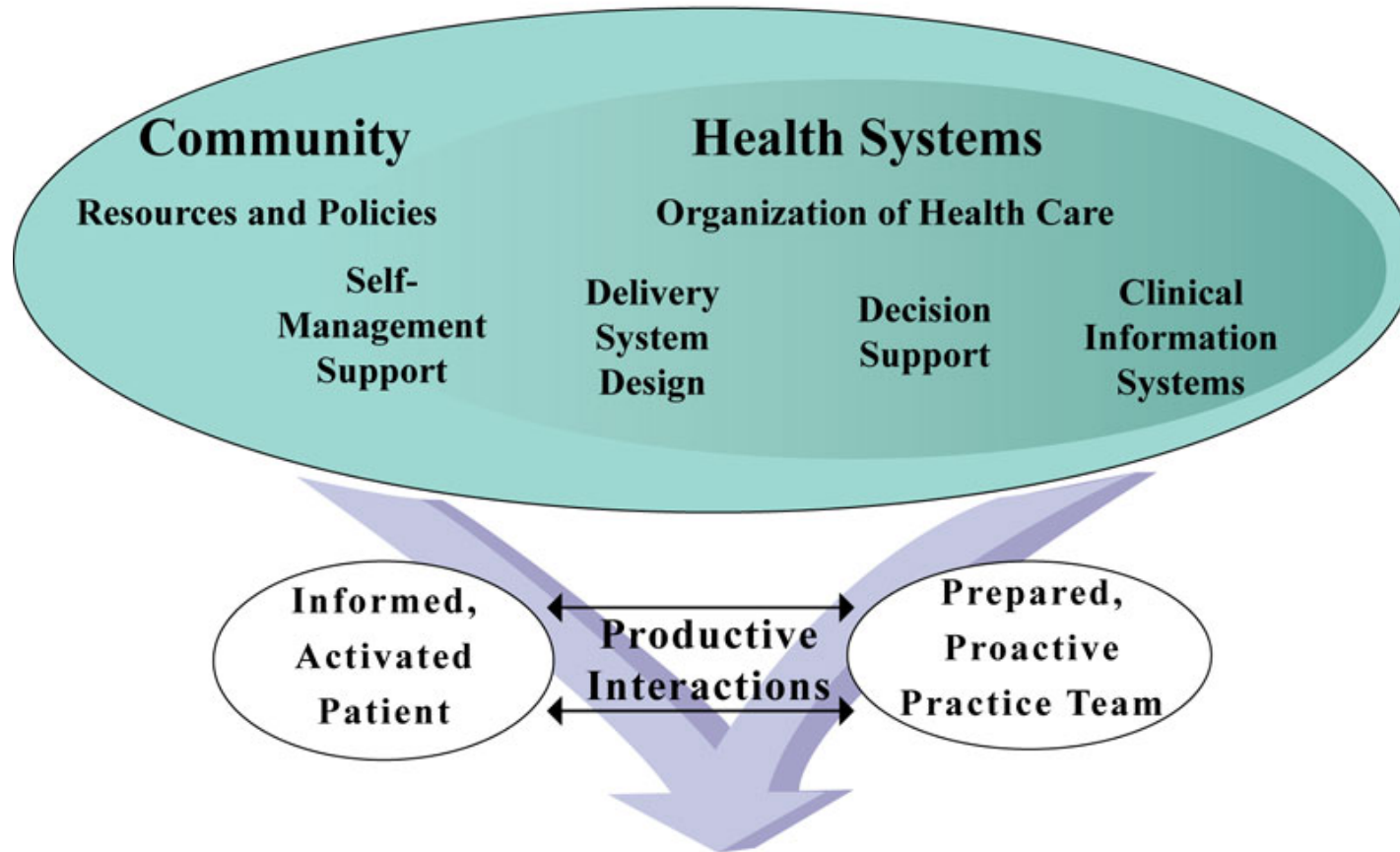
*Ann Intern Med.* 2003;138:256-261.

For author affiliations, see end of text.

[www.annals.org](http://www.annals.org)

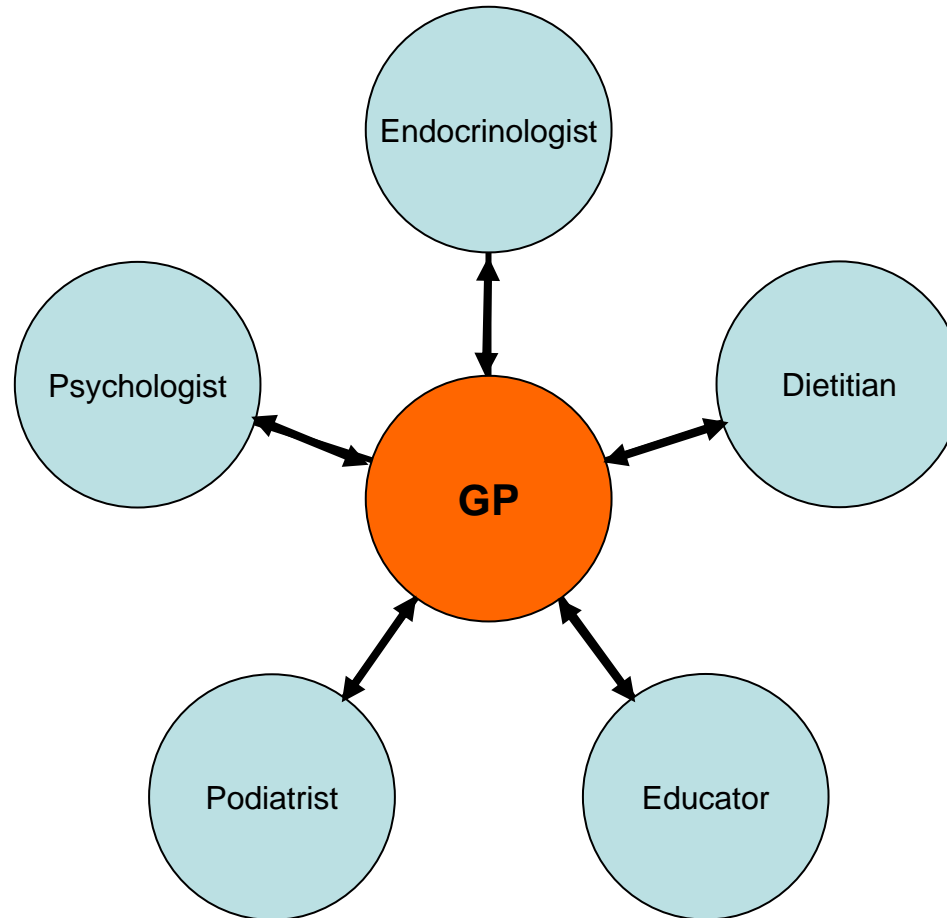
- Little evidence that chronic disease managed by specialists is superior to management in primary care.

# The Chronic Care Model



**Improved Outcomes**

# Primary Care Coordinator



# The solution – a new model of care

- A new model of care that is scalable and incorporates:
  - continuity of care across primary & tertiary sectors
  - a one-stop shop under the direction of a care coordinator
  - chronic disease care planning
  - systematic chronic disease management approach by the multidisciplinary team
  - Encourage self-management



# Inala Chronic Disease Management Service

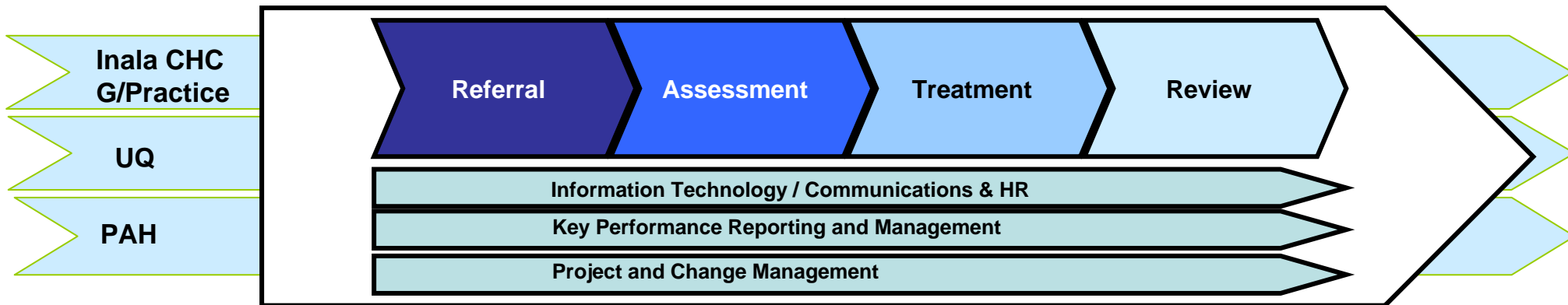
the overall aim is:

to improve the quality of life for people with type II diabetes, living in the Inala catchment area, by building the capacity of the primary care sector and providing localised care via a multi-disciplinary acute and community sector partnership



**Shared Approach**

**Patient Centred Service Redesign**



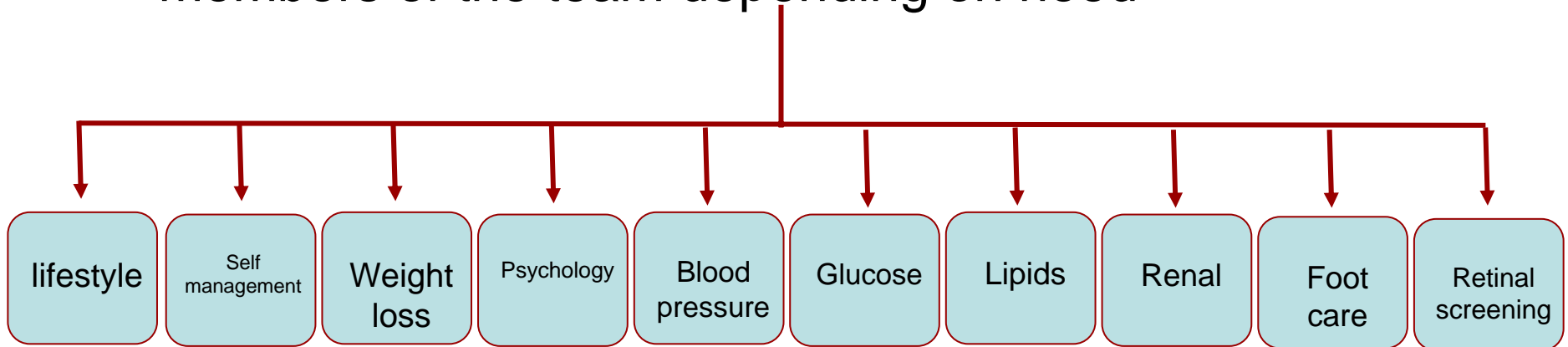
# Methods: The Intervention...

- Where
  - Inala community health centre
  - Local, easy access and parking
- Patients
  - Any patients from Inala area who have been referred to PAH Diabetes and Endocrine outpatients. (250 patients identified)
  - Eventually would aim for direct referrals to the ICDMS
  - (Exclude Transplant patients, ESRF, pregnant)
- Staff
  - Specialist, Clinical Fellows and GP's, Allied Health (CNC, Dietician, Diabetic Educator, Psychologist, Podiatrist from Acute and Community settings)

# Intervention...

- Process

- CNC case manager assesses patient with a screening tool
- Determines and arranges review with appropriate members of the team depending on need



# Intervention...

- Patient lifestyle and self management programs incorporating patient goal
  - Group sessions or individual - right program, right patient, right time, right place
  - Address lifestyle and weight loss
  - Infrastructure & self management programs are already well established in Brisbane South Community Health service.

# Intervention...

- Doctor review
  - Seen by up-skilled GP “clinical fellow” under supervision of specialist on a clinic day when allied health also in attendance
  - Following an assessment proforma
  - Rapid turn-around
  - Aim of returning care back to usual GP (who will participate in education programme)

# Intervention

## Doctor Training

- 8 week programme
  - Adopt protocols for management of lipids, hypertension, blood sugar and renal disease with evidence-based guidelines for referral
  - Observe specialist
  - Co-consult with specialist on their own patients
  - Case conference and care planning – directly or phone, email
- Lunch and learn

# Intervention...

- Other Training
  - Case conferencing and care planning
  - Establishment of a **GP training registrar** position at Inala focusing on chronic disease management
  - Provision of training research and work experience opportunities to under-graduates and post-graduates; Medical, Nursing (**Nurse Practitioners**) and Allied Health
  - Close liaison and training of **GP practice nurses**

# Intervention...

- Retinal screening
  - Clinical Fellows x 2 (both Inala GPs) trained to read all ICDMS retinal photos (taken by Co-ordinator)
  - PAH ophthalmologist review via Email on all images for 12 /12, allowing appropriate quality control and partnership with PAH
  - Separate UQ/QH/RANZCO research pilot state-wide
- Foot care – high risk foot
  - Utilise the team - Up-skilled community podiatrist, endocrinologist, Clinical Fellow
  - Link in with hospital in the home, PAH wound review
  - Easier access than to PAH
  - Prevent admissions and reduce length of stay
  - Using state protocol via another Innovation project

# Communication

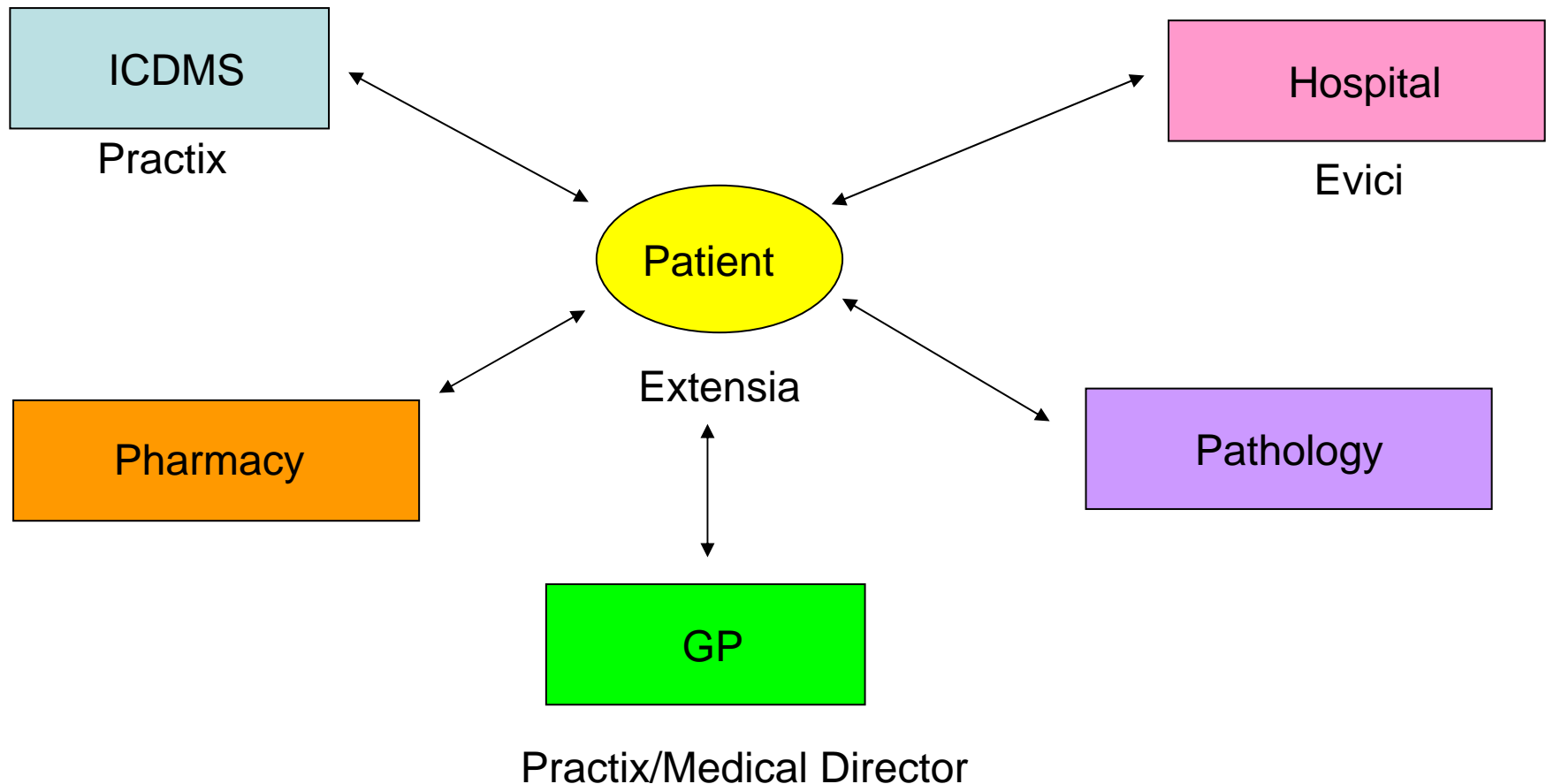


" He has excellent communication skills. "

# Intervention...

- Innovative use of Information Technology
  - Use an electronic patient record that links with the Tertiary hospital and provides a database for research – Evici/Extensia/Practix
  - Future possibilities
    - E-referrals to PAH
    - Direct Patient contact electronically
    - Virtual consulting, Web-cam consultations
    - Tele-consulting

# Inala Chronic Disease Management Service - Communication



# Assessment...

- Research
  - Patients and GP's will be assessed
  - Comprehensive research program using the expertise of the PAH and University of Queensland
  - Allow proper assessment of interventions
  - Once assessed and determined to work then roll out to other centres

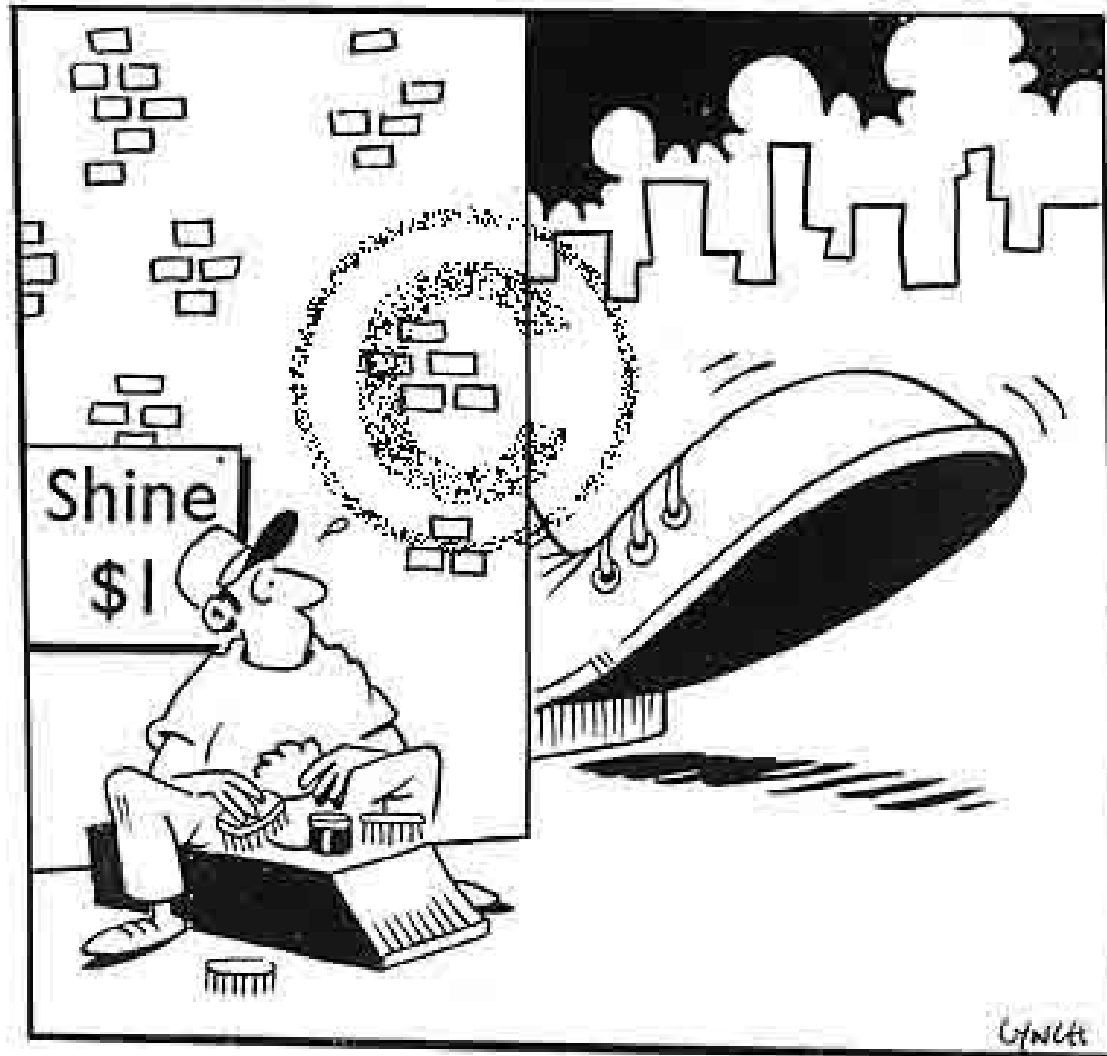
# Expected Benefits...

- Patient
  - Improved quality of care reaching targets
  - Easier access to care and improved attendance
  - One-stop shop
  - Fewer complications necessitating hospitalisation
- Workforce redesign
  - Skill transfer between primary and tertiary teams

# What's different ?

- Uniform approach to active patient involvement
- Joint approach to improving access to evidence-based care for complex patients
- Culture
- GP buy-in / involvement / training
- Increased skilling and capacity for primary care
- Sustainability focus and capacity to deal with much greater demand

# Challenges



# Challenges

- Re-modelling 2 very separate systems and approaches to intersect
- Focus on long term sustainability and applicability to other settings
- Relationship building and understanding across sectors
- Ability to cope with potential increased demand
- Information systems - shared models and information
- Engaging local GPs – “gatekeepers into the system”
- Navigating the MBS Schedule to avoid duplication
- Administrative “red tape” - particularly involving PAH
- Culture change, territory, history

# Funding

- Innovative Funding
  - Q Health
    - CPIC and Diabetes Network
  - Currently non-recurrent but if demonstrated to work would hope to receive recurrent funding and extend to other community centers around the State.
  - Applicability to other chronic diseases eg CKD, Asthma

# Where are we at?

- 7 GPs participating in GP training
- Allied health recruited
- Seeing patients for 3 weeks
- Overwhelming impression is that patients prefer it
- Some significant clinical improvements already
- GPs applying knowledge to own patients
- Discharging patients who did not need to be seen at PAH

# Progress to Date

Source of referral	IPC	PAH
Total = 28	14	14
Discharge	9	5
Review	5	9
Insulin Stabilization	5	5

# People

- Deb Askew
- Jenny Doust
- Claire Jackson
- Clare Maher
- Pat Matthews
- Deb Miller
- John Prins
- Ian Scott

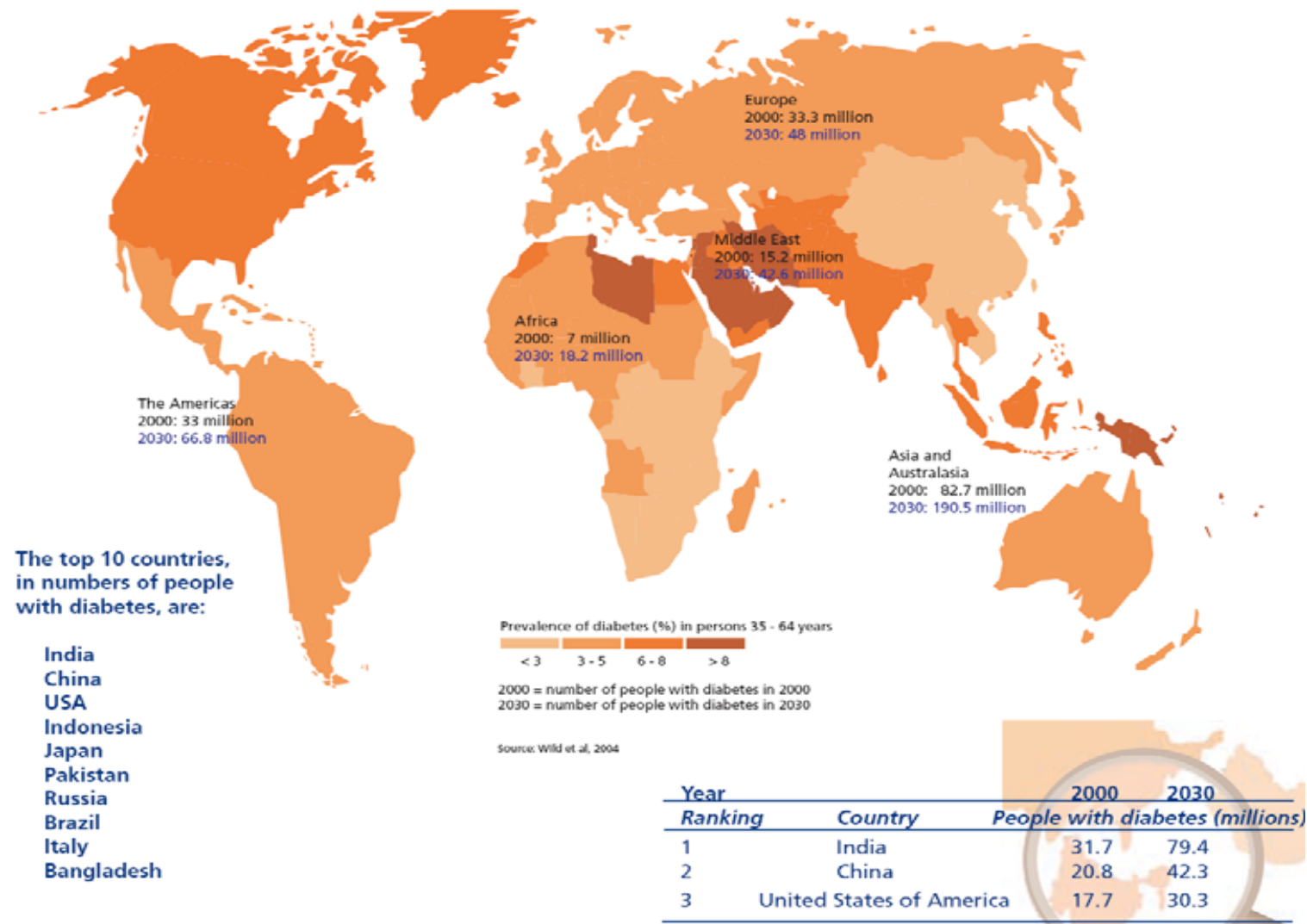




A Family, Fernando Botero, 1996

# Diabetes is an epidemic...

## Prevalence of diabetes



# Lower HbA1c decreases complications...

Observational study of UKPDS data

1%  
reduction  
in HbA<sub>1c</sub>

=

37%

reduction in  
microvascular  
complications

21%

reduction  
in diabetes-  
related deaths

21%

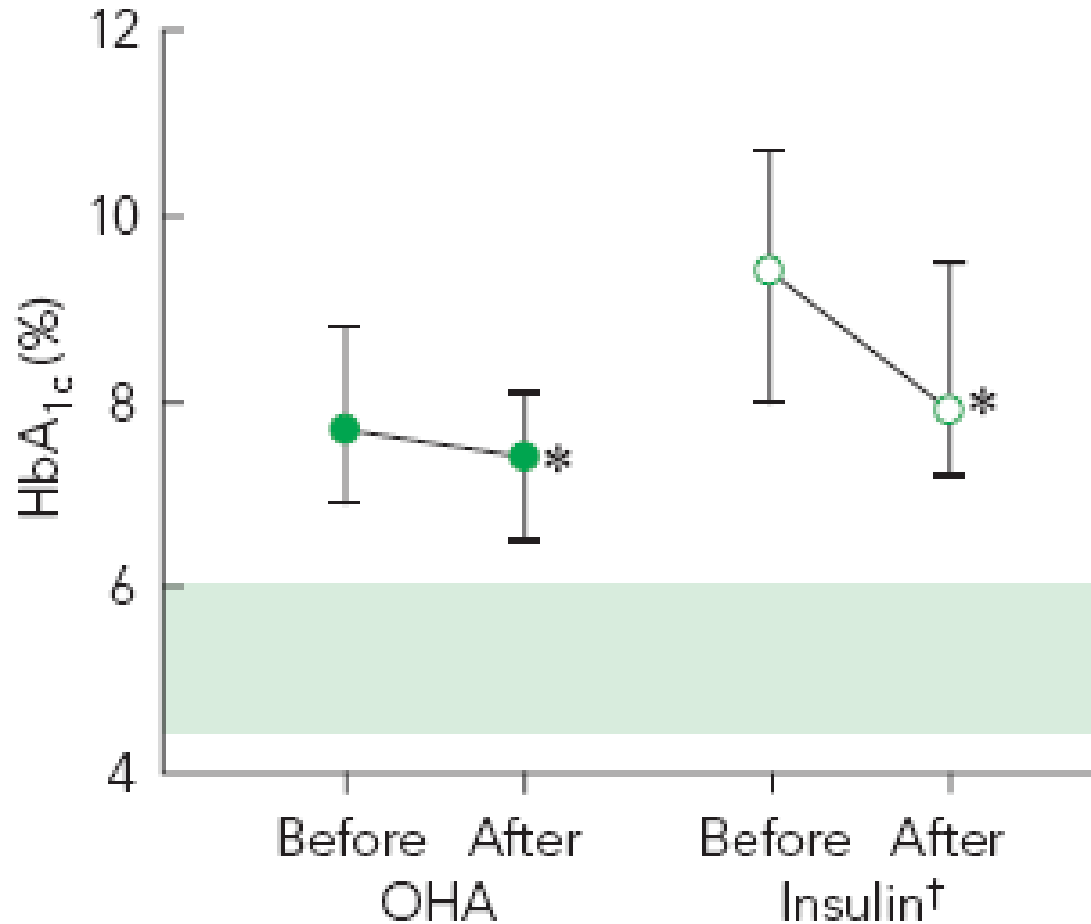
reduction in  
any diabetes-  
related  
endpoint

14%

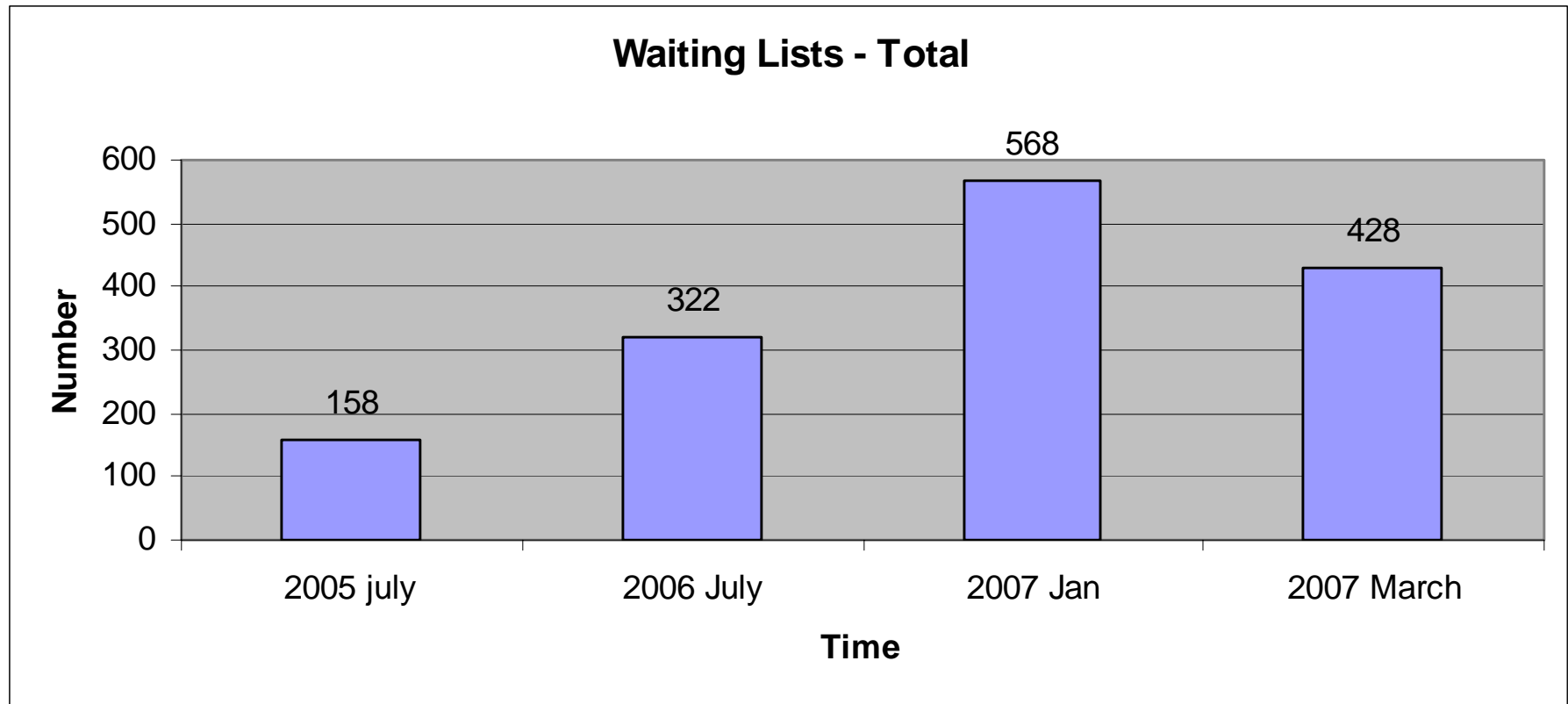
reduction  
in myocardial  
infarction

# But we are not achieving targets...

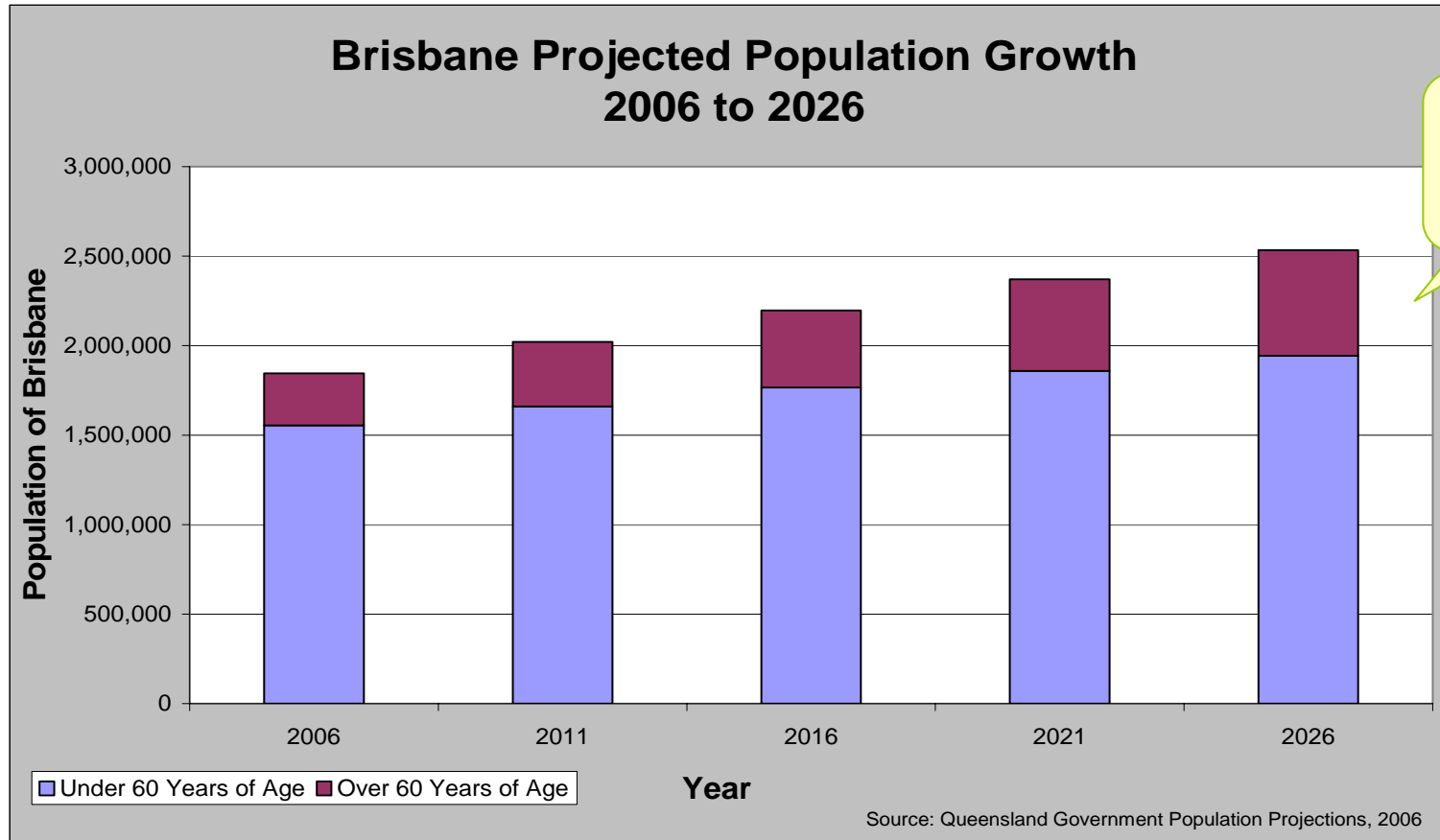
## Fremantle Study: Trigger points for initiation of therapy



# PAH: Diab and Endo Waiting List



# ...and it is expected to get worse...



28% increase in population over the next 20 years

# Interventions to Improve the Management of Diabetes in Primary Care, Outpatient, and Community Settings

A systematic review

CARRY M. RENDERS, MSc<sup>1</sup>  
GERLOF D. VALK, MD, PHD<sup>1</sup>  
SIMON J. GRIFFIN, MBBS, MSc, DM, MRCP<sup>2</sup>

EDWARD H. WAGNER, MD, MPH<sup>3</sup>  
JACQUES TH.M. EIJK VAN, PHD<sup>4</sup>  
WILLEM J.J. ASSENDELFT, MD, PHD<sup>5,6</sup>

*Diabetes Care* 24:1821–1833, 2001

**CONCLUSIONS**— Multifaceted professional interventions and organizational interventions that facilitate structured and regular review of patients were effective in improving the process of care. The addition of patient education to these interventions and the enhancement of the role of nurses in diabetes care led to improvements in patient outcomes and the process of care.

# Issues with delivery of care...now

---

- Fragmented services with a disconnect between primary and secondary health care services
- Organisational rather than patient focus
- Increasing numbers of patients waiting specialist outpatient clinic appointments
- Access for indigenous and poorer clients sub-optimal

# Issues (2)...

- Funding & focus is on acute care services with little prevention, health promotion, 'wellness' focus
- Increasing numbers of Patients with complex co-morbidities which require multiple specialist referrals and therefore a system of coordinated health care interventions
- Increasing number of Frequent and Avoidable presentations to ED with subsequent admissions

- postgraduate education seemed to improve the process of care when combined with other professional interventions.
- interventions targeting arrangements for follow-up also improved process measures. This was achieved by central computerized tracking systems or by nurses who regularly contacted patients.
  - This intervention may also decrease the number of patients lost to follow-up, which is particularly important because loss to follow-up is associated with an increased risk of diabetic complications (68).

- In particular, combining patient education, a nurse, or both with arrangements for follow-up or multiple professional interventions led to improvements in patient outcomes as well as the process of care.

# Governance

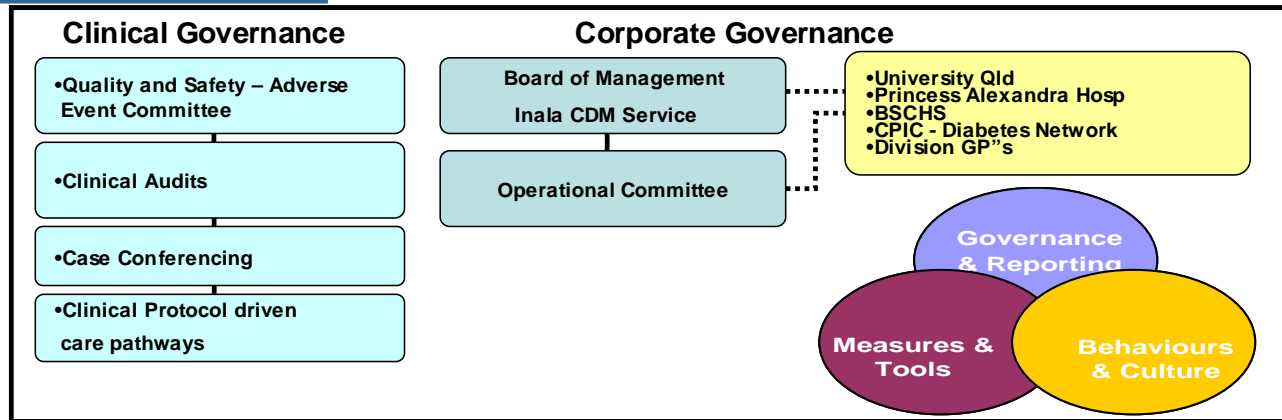
## Inala Chronic Disease Management Service

### Shared Vision

To improve the health related quality of life for people with diabetes, living in the Inala catchment area, by providing localised care via a multi-disciplinary acute and community sector partnership

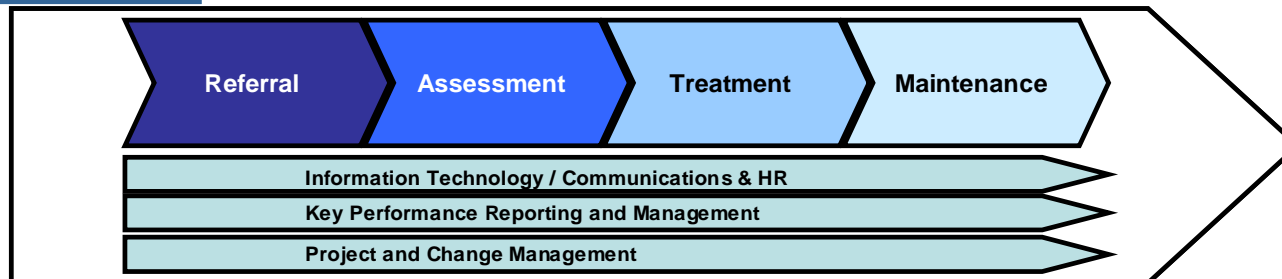
### Shared Accountability

### Performance Management Framework

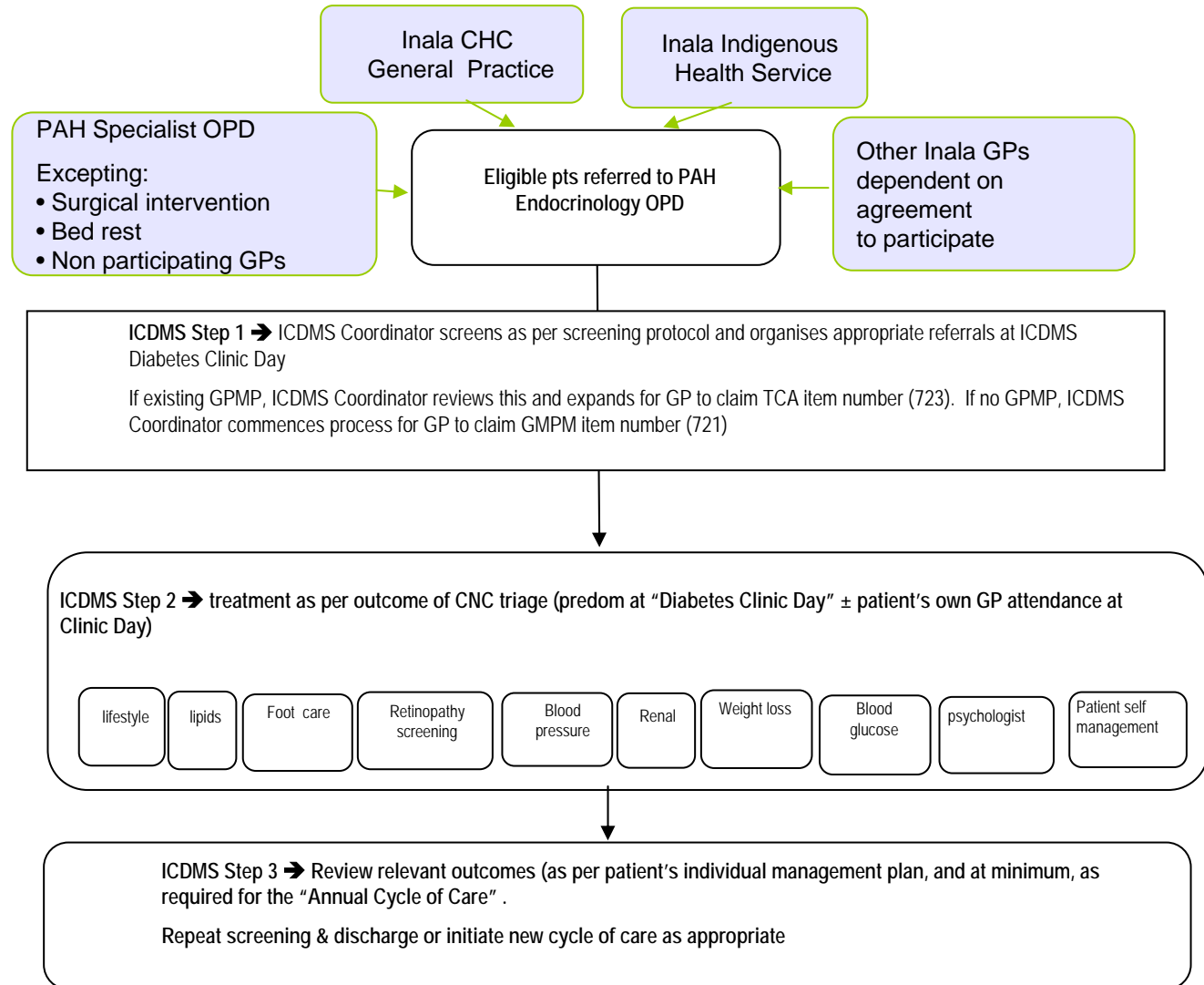
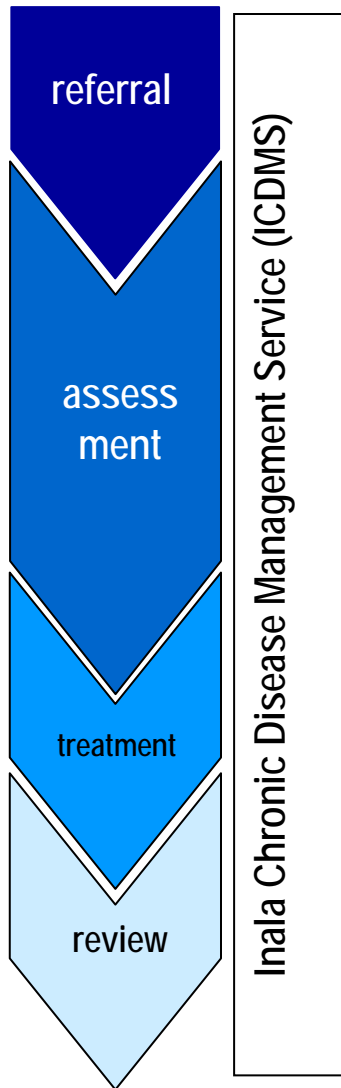


### Shared Approach

### Patient Centred Service Redesign



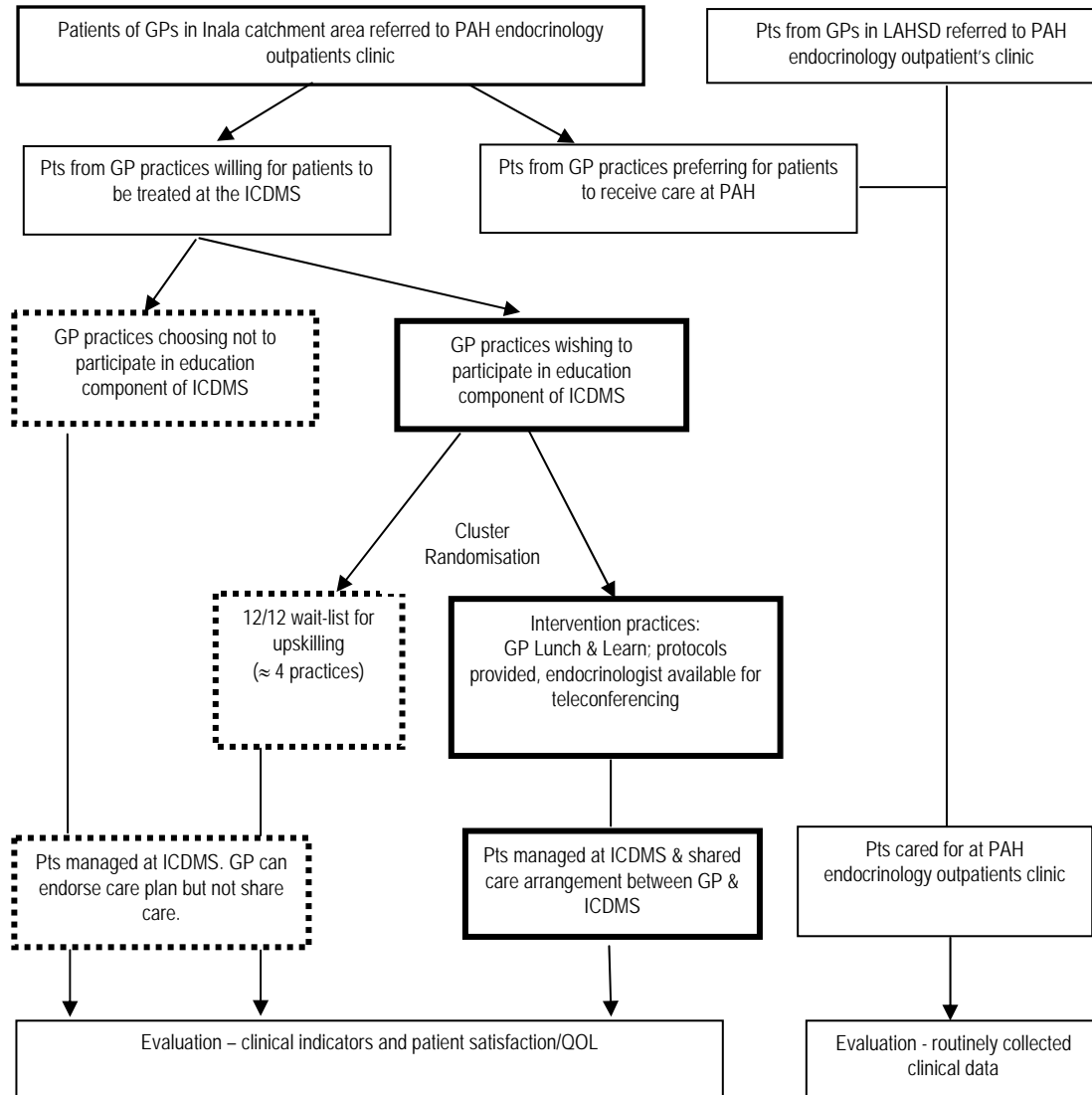
# The Model...how will it work?



# Intervention...

- Integrated clinical protocols for management of lipids, hypertension, blood sugar and renal disease with evidence-based guidelines for referral.
- Direct liaison with specialist (Endocrinologist) in the form of:
  - Co-consulting
    - Initially with clinical fellow and long term other GPs
  - Case-conferencing at end of clinic
  - After direct contact - case-conferencing via phone, email
  - Not just an outreach clinic – much closer GP liaison and active participation by local GPs building throughout the project

# Evaluation



# Evaluation

- Treatment targets
  - HbA1c, Blood pressure, Lipids, Weight
- Principles of best practice management
  - Number of patients on aspirin, on statin if abnormal lipids, on ACE-/AII/RB if microalbuminuria, have had appropriate foot and eye screening
- Access
  - Attendance, time to appointment, service and activity mix
  - Number of patients waiting SOPD

# Evaluation (cont)...

- Effectiveness
  - Number of hospital admissions
  - Average length of stay
  - Acute total bed days
  - Number of attendances to General Practitioner
  - Changes in service delivery model (clinical and business)
- Efficiency
  - Time, costs, deliverables, outputs
- Satisfaction
  - Patient and Health Professional
- Workforce
  - Training & advanced skills, team building, retention
- Research Funding and Publications

# Governance

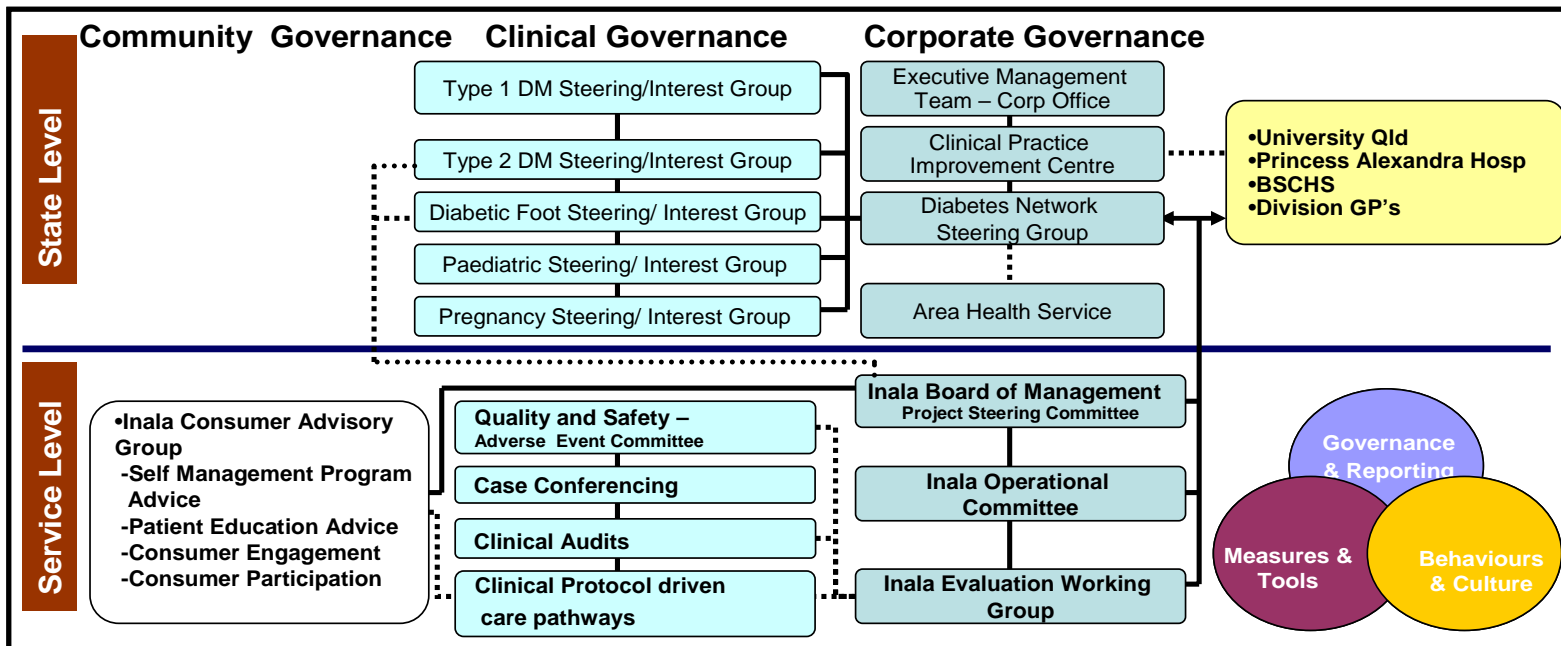
## Inala Chronic Disease Management Service

### Shared Vision

To improve the health related quality of life for people with diabetes, living in the Inala catchment area, by providing localised care via a multi-disciplinary acute and community sector partnership

### Shared Accountability

### Performance Management Framework



### Shared Approach

### Patient Centred Service Redesign



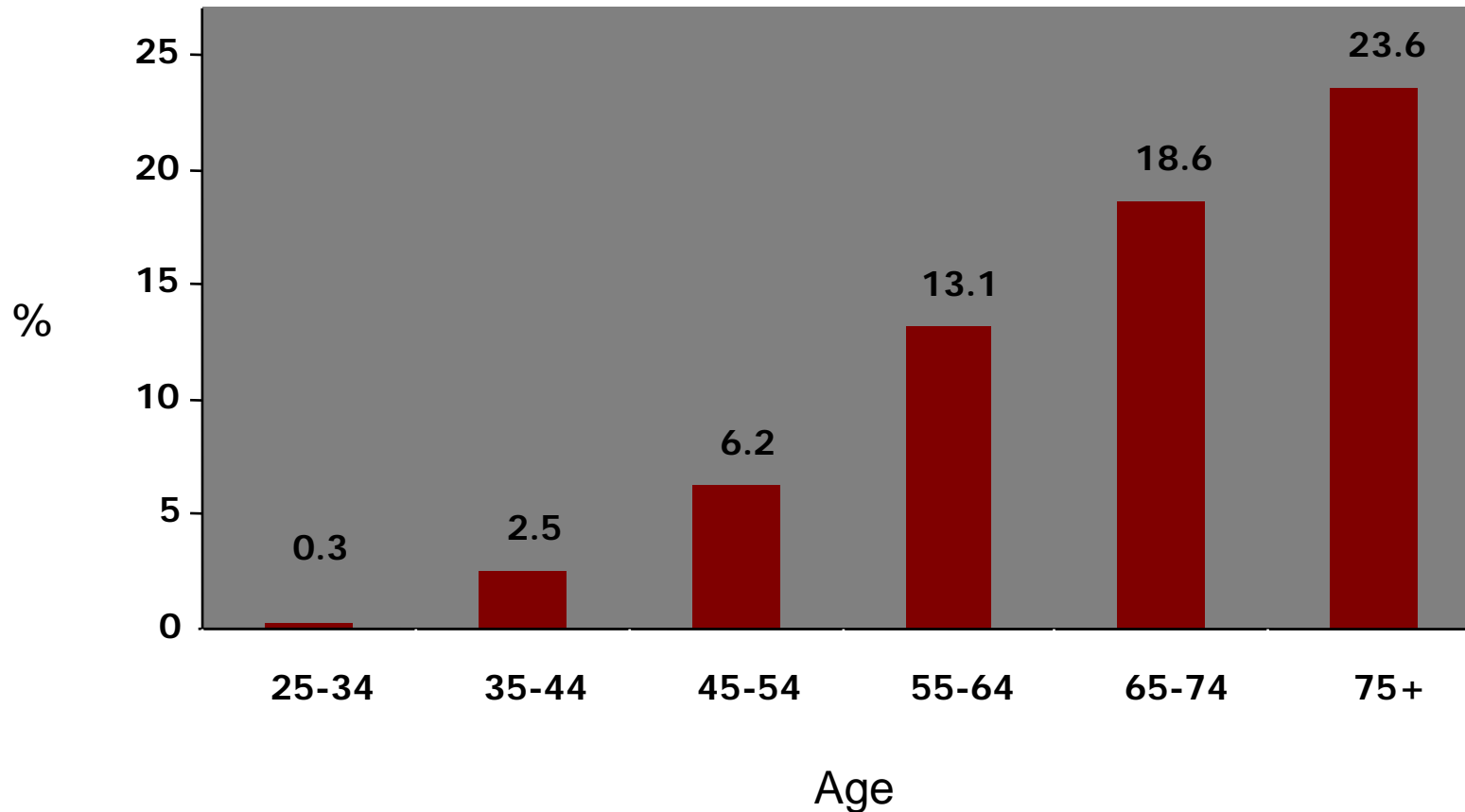
# Adaptable – Other initiatives

- Mt Isa/Cloncurry
- Burke Street
- Telephone Link Communication – computer based programme to coach and support patients with diabetes to adhere to lifestyle changes, glucose monitoring and medication.
  - Dr Brian Oldenberg

# Background

# Diabetes is an epidemic...

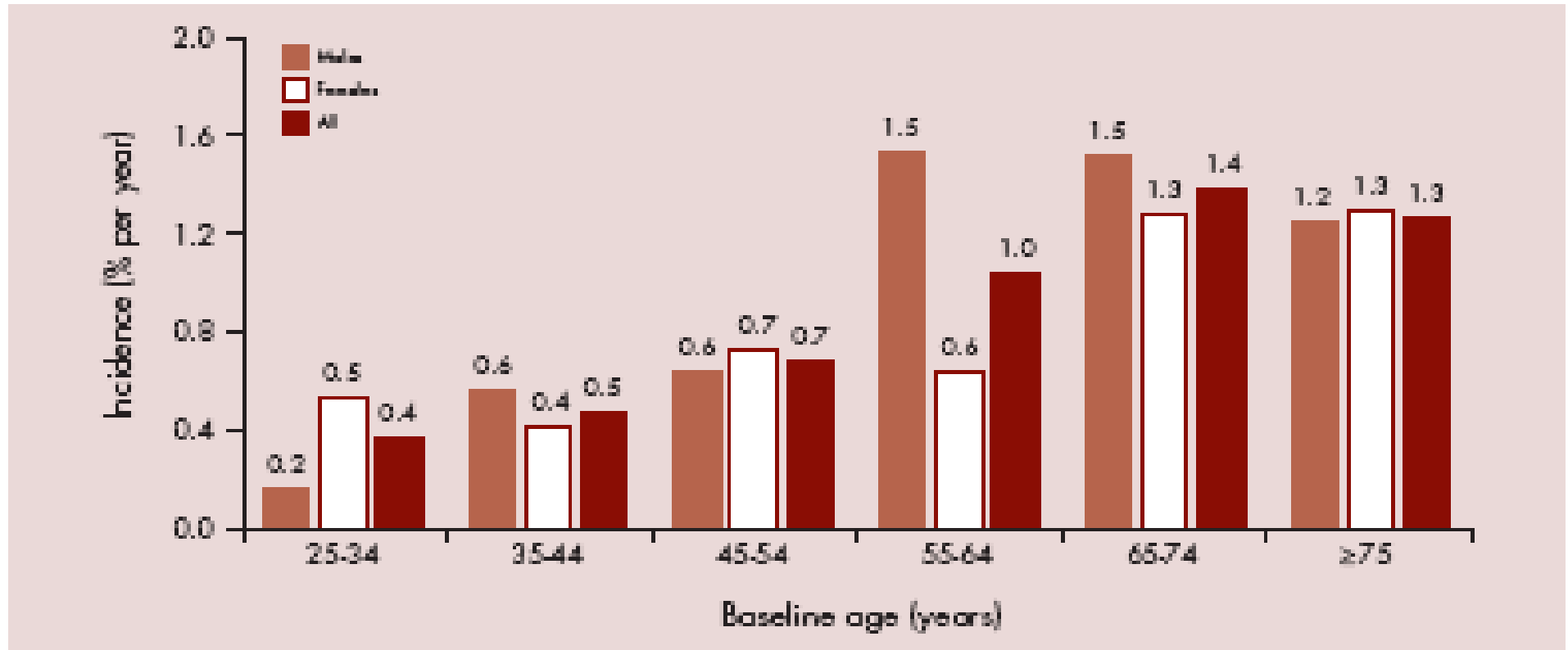
Prevalence (%) of diabetes by age in Australia



Close to 1 million Australians now have diabetes

# and the incidence of Diabetes is...

Figure 2.2. Incidence of diabetes according to baseline age: the AusDiab study.



**275 Australian adults develop diabetes every day**

# STENO2 - Treating the whole patient...

Table 1. Treatment Goals for the Conventional-Therapy Group and the Intensive-Therapy Group

Variable	Conventional Therapy		Intensive Therapy	
	1993-1999	2000-2001	1993-1999	2000-2001
Systolic blood pressure (mm Hg)	<160	<135	<140	<130
Diastolic blood pressure (mm Hg)	<95	<85	<85	<80
HbA <sub>1c</sub> (%)	<7.5	<6.5	<6.5	<6.5
Fasting serum total cholesterol (mg/dL)	<250	<190	<190	<175 4.5
Fasting serum triglycerides (mg/dL)	<195	<180	<150	<150 0.17
Treatment with ACE inhibitor irrespective of blood pressure	No	Yes	Yes	Yes
Aspirin therapy				
For patients with known ischemia	Yes	Yes	Yes	Yes
For patients with peripheral vascular disease	No	No	Yes	Yes
For patients without coronary heart disease or peripheral vascular disease	No	No	No	Yes

NOTE. To convert values for cholesterol to millimoles per liter, multiply by 0.02586. To convert values for triglycerides to millimoles per liter, multiply by 0.01129. Data from Gaede et al.<sup>2</sup>

# (STENO2)...reduces complications

N=160 Follow up 7.8 years	NNT / 10 years
Nephropathy	4.1
Retinopathy	4.8
Neuropathy	3.3
Death due to CVD	3.8

# Let's do the "math"...

- Estimated population in PAH catchment is 940,654
  - Prevalence of diabetes is 7.5% - ie 70,549
  - 210,901 aged between 50 and 75 with an incidence of diabetes per year of 1.5% ie 3163 new patients per year.
  - ie **73,712** patients needing review
- If a patient with T2DM was to be reviewed by an endocrinologist at least once a year
  - ...and if the endocrinologist sees a patient every half hour and works 40 hours a week, 52 weeks a year then would require **17 fulltime endocrinologists**