The role of the specialist in managing complex disease

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Baker IDI Heart and Diabetes Institute
Levels of Care

INTENSIVE
- Detailed care coordination
- Specialist management
- Continuous, frequent interventions
- Diabetes education & self-management support

ACTIVE
- Management of unstable diabetes & complications
- Insulin management
- Management of co-morbidities
- Continuous, frequent interventions
- Diabetes education & self-management support

PROACTIVE
- Diabetes education & self-management support
- Support with lifestyle changes and/or psychosocial support

PREVENTIVE
- Education & support with adopting healthy lifestyle behaviours

Service Providers

Hospital
- Specialists
- Dietitian/Nutritionist
- Specialised clinics
- General Practice

Private services
- Lifestyle programs & support groups

Community Health
- General Practice
- Community Health

Peak organisations
- General Practice
- Community Health

The psychosocial, demographic and non-health needs influencing self-management must be considered with every client/patient.
BakerIDI clinics in Melbourne

- 22 specialist diabetes clinics per week in Prahran, 6 per week in Footscray
- On site PoCT pathology lab
- Education, dietetics, psychology services
- Ophthalmology clinics
- Renal physician
- Clinical research
- Referrals GPs predominantly
- Mostly complex patients but full range from prediabetes, newly diagnosed type 2 to complicated type 1 and type 2
## Melbourne type 2 diabetes 2009-2010

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Melbourne Type 1 diabetes 2009-2010

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HbA1c type 1 diabetes

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Frequency

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Diabetes management

- The majority of patients with diabetes are managed and should be managed in primary care
- Diabetes is a progressive disease
- As diabetes progresses treatment options become more complex and diverse
- As diabetes progresses there is often poor response to treatment
Management Algorithm for Blood Glucose Control in Type 2 Diabetes in Australia

Lifestyle Modification
- diet modification
- weight control
- physical activity

Metformin

Sulphonylurea

Basal → Premixed

Basal Bolus insulin
Management Algorithm for Blood Glucose Control in Type 2 Diabetes in Australia 2010 and beyond

- Lifestyle Modification
  - diet modification
  - weight control
  - physical activity
- Metformin
- Sulphonylurea
- Acarbose
- DPP-4 inhibitor #
- Glitazone*
- Insulin
- Basal plus insulin
- New insulin analogues
- GLP-1 analogues
- Bariatric surgery
- Other new agents: SGLT2 inhibitors, glucokinase activators

- The algorithm includes only therapeutic agents available through the PBS.
- If HbA1c >7% consider intensifying treatment provided hypoglycaemia is not a problem.
  # Authorised only as dual therapy with metformin or sulphonylurea where combination metformin and sulphonylurea is contraindicated or not tolerated.
  * Rosiglitazone is not authorised for triple therapy or for use with insulin (from February 1, 2009) but is approved only as dual therapy with metformin or sulphonylurea where combination metformin and sulphonylurea is contraindicated or not tolerated.
Goals in management of diabetes are becoming increasingly controversial

- What level HbA1c
- Beta cell preservation
- Hypoglycaemia and mortality
- Which is most important BP/lipids/glucose
- New treatments
- Early use of insulin

Which treatment for lower CV/cancer risk
Referral types to specialist diabetes centers

Patients with severe complications. Early aggressive treatment may have significant impact on outcomes

CVD: lipids, blood pressure, antiplatelets, smoking cessation, (glucose control)
Nephropathy: heavy proteinuria, renal impairment
ACEI, ARB, BP control, dialysis unit
Neuropathy: painful, ulceration, charcot’s deformity, autonomic neuropathy

TCAs, antiepileptic/antiarrhythmic agents, narcotic analgesia, podiatry, surgery, treatment for postural hypotension, gastroparesis
Retinopathy: proliferative, vision threatening
Laser treatment, blood pressure, glucose control, fibrates, ARBs
Patients with complex needs

• Insulin initiation
• Multiple insulin injections
• Pumps, CGMS, RTGM
• Weight loss programs, exercise physiology
• Foot clinics
• New treatments eg. exenatide injections
• Psychological needs that are impacting on therapy, eg. eating disorders
Patients resistant to conventional treatments

• Not achieving targets for HbA1c, lipids, blood pressure, antiplatelet treatment

• Explore other treatment options including:
  – new therapies
  – multidisciplinary approach to improve compliance or more optimal use of medications
  – patient support, education, identify treatment barriers
  – Weight loss, exercise programs
Targeted patient groups

• Younger patients: growing evidence that early intervention is most important in long term outcomes
• Gestational diabetes: a major cause of morbidity and strong evidence for aggressive treatment with multidisciplinary team
• Type 1 diabetes; all type 1 patients should have specialist involvement, ? Pumps, CGMS, RTGMS, new insulins, carb counting, associated illnesses eg. coeliac, hypothyroidism
Secondary and other categories of diabetes

- LADA or latent autoimmune diabetes in adults (GAD +ve, slow onset type 1), ≈5% of the type 2 population
- Extreme insulin resistance associated with acanthosis nigricans, very high insulin doses
- Secondary diabetes: pancreatic failure, acromegaly, cushings, haemochromatosis
New or novel therapies-advantages over conventional therapies

- Beta cell preservation
  - Prevent relentless progression of type 2 diabetes
- Hypoglycaemia recognized as harmful with increased mortality
- CV morbidity and mortality: metformin and others
- Weight loss rather than the usual weight gain seen with treatment options
Incretins

The Entero-insular Axis

Creutzfeldt W, Diabetologia 16: 75-85; 1979
The Incretin Effect Demonstrates the Response to Oral vs IV Glucose

Mean ± SE; N = 6; *p≤.05; 0₁-0₂ = glucose infusion time.

Ingestion of food

Pancreas

Glucose-dependent

↑ Insulin from β cells
(GLP-1 and GIP)

Glucose dependent

↓ Glucagon from α cells
(GLP-1)

Blood glucose in fasting and postprandial states

Glucose uptake by muscles

Glucose production by liver

DPP-4 enzyme

*Incretins are also released throughout the day at basal levels.

Incretins

• GLP 1 analogues
  • Exenatide
  • Liraglutide
  • Once weekly GLP – 1 analogues

• DPP 4 inhibitors
  • Sitagliptin
  • Vildagliptin
Incretins: new agents

• GLP 1 analogues are associated with improved glycaemic control and significant weight loss

• DPP 4 inhibitors are weight neutral and do not cause hypoglycaemia

• Side effects, precautions and patient suitability need to be carefully reviewed and may require multidisciplinary approach
Other agents in development

- SGLT 2 inhibitors
- Glucokinase activators
- Combined glucagon receptor antagonists and GLP 1 agonists
- Longer acting insulin analogues
- Hepatoselective insulins
Highly specialized treatments

• Bariatric surgery
  – For patients obesity/morbid obesity
  – Requires intensive multidisciplinary approach and ongoing follow up
  – Associated with marked weight loss, diabetes remission

• Transplant
  – Islet cell or dual pancreas/renal transplant in type 1 diabetes
Conclusions

• Diabetes is and should be managed predominantly in primary care.
• Diabetes specialists and centers can provide and coordinate a *multidisciplinary* approach to complex management problems. This should be done with close links to primary care.
• There are many patient groups that benefit from specialist involvement including those with poorly responsive diabetes, severe complications, younger patients and those suitable for new and complex treatment regimes.