



Type 2 Diabetes Mellitus Guideline Series Learning Guide

Primary Prevention, Case Detection & Diagnosis

Blood Glucose Control, Patient Education in Type 2 Diabetes

Diabetic Retinopathy, Chronic Kidney Disease

Diabetes & Indigenous Australians

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About the Rural Health Education Foundation

Originally established in 1992, the Rural Health Education Foundation provides independent accredited education services to General Practitioners and other health professionals, working in rural and remote Australia.

Health education via satellite, the Internet and DVD

The Foundation produces and broadcasts distance education programs using digital satellite technology, the Internet, "enduring" materials (DVDs) and other television services. The Foundation operates a growing network of more than 660 receiving sites, called the Rural Health Satellite Network.

Today, the Foundation's satellite network is one of the largest dedicated networks of its kind in the world, reaching more than 90 per cent of rural doctors and other health professionals.

A non-profit lifeline to the bush

The Rural Health Education Foundation is a non-government, not-for-profit organisation that provides an education and information "lifeline" to rural and remote health professionals.

The latest topics via the latest technology

The satellite and Internet technology ensures these health professionals gain access to continuing education, without the need for them to find locum support or leave their communities.

The Foundation's programs are broadcast and distributed in Australia a number of times each month and meet the professional development needs of all disciplines. They dissect major health issues and provide information on the latest and best health and community care practices. They also address the prevention and current management of common health problems.

Presented by experts

The programs feature presentations from medical and health professionals who are leaders in their disciplines to allow for input from our audience on the material presented. The panels usually include a rural health professional. The Foundation aims to address the unique education and information needs of medical practitioners, health professionals and communities in rural and remote Australia.

Introduction to Diabetes Learning Guides

The Rural Health Education Foundation has developed a series of four professional development programs, based around the recently released Clinical Guidelines put out by Diabetes Australia and approved by the National Health and Medical Research Council (NHMRC).

Diabetes is the fastest growing chronic disease globally and currently affects 246 million people worldwide. This is expected to rise to 380 million by 2025. Type 2 Diabetes Mellitus (T2DM) accounts for 85% of this figure. In Australia, 275 people are diagnosed with T2DM daily. That's over 100,000 people annually. However, up to 60% of this disease is preventable by adopting a healthy diet and increasing physical activity.

The new national guidelines for detection and management of diabetes, matching recommended patient treatment with the latest evidence and research, have been published by Diabetes Australia and were funded by the Australian Government Department of Health and Ageing.

Specifically, six new or revised Guidelines have recently been released:

- Evidence Based Guideline for the Primary Prevention of Type 2 Diabetes.
- Evidence Based Guideline for Case Detection and Diagnosis of Type 2 Diabetes.
- Evidence Based Guideline for Blood Glucose Control in Type 2 Diabetes.
- Evidence Based Guideline for Patient Education in Type 2 Diabetes.
- Evidence Based Guideline for Diagnosis, Prevention and Management of Chronic Kidney Disease in Type 2 Diabetes.
- Evidence Based Guideline for the Management of Diabetic Retinopathy.

The Foundation's programs focus on the key practice points and goals for management of T2DM presented in the Guidelines in order to assist clinicians, health services and policy makers. The programs feature live panel discussions with leading clinicians in the area of diabetes and are chaired by Dr Norman Swan. Case studies, filmed on location, showcase innovative approaches to best practice prevention, diagnosis and management of T2DM.

This Learning Guide has been designed with a number of activities that can be used to facilitate group discussion and engage with the material covered in the DVD. It covers the four programs (Case Detection and Primary Prevention, Blood Glucose Control and Patient Education, Chronic Kidney Disease and Diabetic Retinopathy, and Diabetes and Indigenous Australians). It has been designed to provide a framework for facilitating discussion of the key issues raised in the programs. The Learning Guide has also been designed to support the learning of participants and to provide a record of the information presented in the broadcast and the activities covered in the group facilitation.

Use of the Diabetes Guidelines

The Guideline for Patient Education in type 2 diabetes offers the following comment on how the Guidelines should be used (Appendix 6, p. 6):

“They are systematically generated statements which are designed to assist health care clinicians and consumers to make informed decisions about appropriate treatment in specific circumstances. Guidelines are not applicable to all people in all circumstances at all times. The recommendations contained in these guidelines are a general guide to appropriate practice and are based on the best information available at the time of their development. The clinical guidelines should be interpreted and applied on an individual basis in the light of the health care practitioner’s clinical experience, common sense, and the personal judgments of consumers about what is appropriate for, and acceptable to them”.

Use of the Learning Guides

In a similar fashion, the Learning Guides should be used in whatever way best supports your professional needs or those of your group. A number of activities have been suggested in relation to the program discussion, from which you are encouraged to select, depending on your own particular circumstances.

A Guide to Facilitating Adult Learning has been developed by the Foundation to support the facilitation of discussion with small groups. It covers the basic aspects of how people think and learn, and is designed to provide some basic instructional information to assist group and face-to-face learning. The Guide can be found on the Foundation’s website on the Programs page.
(<http://www.rhef.com.au/programs/learning-guides/>)

The programs covered in this Learning Guide include the following:

913a T2DM Guideline Series: Primary Prevention, Case Detection and Diagnosis

913b T2DM Guideline Series: Blood Glucose Control, Patient Education in Type 2 Diabetes

913c T2DM Guideline Series: Diabetic Retinopathy, Chronic Kidney Disease

913d T2DM Guideline Series: Diabetes and Indigenous Australians

Some Fundamental Facts on Type 2 Diabetes

- The global prevalence of diabetes among adults aged ≥ 20 years was estimated in 2000 to be around 171 million (2.8% of the world’s population), and is expected to rise to 366 million (4.4% of the estimated world population) by the year 2030.

- The Australian national prevalence study, *AusDiab* (the Australian Diabetes, Obesity and Lifestyle Study, 2002), showed that type 2 diabetes affects 7.4% of the Australian population in people aged 25 years or older and that there is one undiagnosed for every diagnosed person with type 2 diabetes. An additional 16% of adults had impaired glucose tolerance or impaired fasting glucose.
- This data means that the prevalence of diabetes has more than doubled in Australia since 1981.
- Some populations have also been identified as having a particularly high risk of developing type 2 diabetes. Aboriginal and Torres Strait Islanders are at least three times more likely to have type 2 diabetes than non-Indigenous Australians and their overall rates of death and hospitalisation from diabetes complications are also much greater (Australian Institute of Health and Welfare, 2008). Moreover, in Aboriginal and Torres Strait Islander people, type 2 diabetes appears earlier in life.
- Diabetes, both diagnosed and undiagnosed, is a major independent risk factor for cardiovascular disease, blindness, renal failure and lower limb amputation.
- Nearly 80% of people with undiagnosed type 2 diabetes have readily identifiable risk factors.
- Many people with type 2 diabetes have the disease for a number of years before it becomes clinically apparent.
- Studies are now reporting the appearance of type 2 diabetes in overweight and obese individuals at an increasingly younger age, including adolescents and children.
- In 2004-5, diabetes related complications added nearly \$1 billion to total health expenditure in Australia (AIHW, 2008).

It's no longer an epidemic; it's now a tsunami (Ashim Sinha in Program 913a)

Preliminary Activity

Preliminary Activity

Prior to working through the Learning Guides, think of two patients you have seen in the last 6 months with type 2 diabetes, about whom you have felt concerned. Keep them in mind as you work through the materials.

T2DM Guideline Series: Primary Prevention, Case Detection & Diagnosis

This program is the first in a four part series on type 2 diabetes; it looks at two evidence based guidelines:

- Primary Prevention of Type 2 Diabetes, and
- Case Detection and Diagnosis of Type 2 Diabetes.

The program discusses practice points and changes in goals for prevention and detection related to these guidelines.

Program Presenters:

Chair: **Dr Norman Swan** - Presenter of the Health Report on ABC Radio National

Professor Alan Barclay - Accredited Practicing Dietitian, University of Sydney NSW.

Professor Mark Harris - General Practitioner and Director of the Centre for Primary Health Care, University of New South Wales, Sydney, NSW.

Associate Professor Ashim Sinha - Director of Diabetes and Endocrinology at the Cairns Base Hospital and Diabetes Centre, Associate Professor and Senior Research Fellow at James Cook University, Qld.

Chapter 1

Chapter 1: Introduction, Prevention and Complications

- Type 2 Diabetes affects 7.4% of the Australian population in people aged 25 years or older. However, for every person diagnosed with type 2 diabetes, there is one person who goes undiagnosed.
- Diabetes, diagnosed and undiagnosed, is a major risk factor for causing cardiovascular disease, blindness, renal failure, and lower limb amputation.
- Many people with type 2 diabetes have the disease for a number of years before it becomes clinically apparent.
- Nearly 80% of people with undiagnosed diabetes have identifiable risk factors.
- Screening for type 2 diabetes in asymptomatic individuals is one strategy for decreasing the diabetes burden, with the rationale that diagnosis and intervention earlier in the disease process may more effectively prevent or delay the development of diabetes-related complications.
- One approach to preventing type 2 diabetes is to target those individuals known to be at a particularly high risk. Lifestyle modifications, such as physical activity, dietary change, and weight loss are all methods used in the prevention of type 2 diabetes.
- Case detection in the primary health care setting provides an opportunity to identify the estimated 500,000 Australians with undiagnosed type 2 diabetes.

Activity 1**Activity 1**

Review the data on prevalence in the Introduction to the series (pp. 4-5 of the Learning Guide) and the above figures, and then discuss the implications for your local community. How many people may currently have undiagnosed diabetes? How good are your systems of practice for identifying those at high risk of diabetes, and those who may already have the condition?

Activity 2**Activity 2**

Review and discuss Recommendations and Practice Points from both the Primary Prevention (PP) and Case Detection and Diagnosis (CDD) guidelines. Identify those of particular relevance to your professional needs.

Activity 3**Activity 3**

The Practice Points in the Case Detection and Diagnosis guidelines recommend that the 2006 WHO/IDF criteria for diagnosing diabetes be used. What are those criteria? See the recently updated guidelines, together with the rationale, from the WHO and IDF at http://www.idf.org/webdata/docs/WHO_IDF_definition_diagnosis_of_diabetes.pdf

Primary Prevention

“There is good evidence that we can prevent almost 3 out of 5 cases of type 2 diabetes through a lifestyle intervention. It’s about twice as effective as medication”

Alan Barclay

The Primary Prevention Guideline (p. 27) indicates that “A large body of evidence demonstrates that type 2 diabetes can be prevented in individuals at high risk of developing diabetes”. In people with impaired glucose tolerance, the evidence clearly demonstrated that lifestyle interventions (including changes to dietary and exercise habits) can prevent or delay diabetes in half the subjects. “The challenge is for policy makers, population health practitioners, researchers, and clinicians to implement those proven interventions. Small gains in prevention are likely to have significant population benefits.”

Main Points from program discussion

- People with pre-diabetes are at equal risk of cardio-vascular disease.
- Important to start interventions early.
- Only need to lose relatively small amounts of weight (between 5 and absolute maximum 10% of body weight) to achieve dramatic reduction of risk, especially in high risk people.

- This means small and incremental changes to diet and increasing regular physical activity rather than dramatic changes.
- Exercise is an important part of prevention – the evidence around physical activity is very strong.
- Important to tailor dietary changes and physical activity programs to people’s needs and these will differ depending on different life circumstances.
- The presence of other factors, such as social and financial disadvantage, can make it quite difficult for people to make these changes.
- Motivating people to make the changes is a very important part of any intervention program; making the link between diabetes and cardiovascular disease can be helpful.
- General population screening is now being recommended to identify those with diabetes or at high risk of developing the illness; there is a move to lower the age of initial screening from 50 to 40 (and to 18 for those of Aboriginal and Torres Strait Islander background).

Activity 4

Activity 4

Discuss the risk factors for the development of type 2 diabetes, and identify which ones are modifiable (see Primary Prevention guideline, pp. 32-35).

Activity 5

Activity 5

- What are the suggested risk assessment tools? Have a look at the AUSDRISK tool (see Resources) and use it to assess your own risk. When would you include laboratory measures?
- When would you consider referring a patient for further investigations even if their AUSDRISK score was less than 15?

Activity 6

Activity 6

What do you think of Ashim Sinha’s comment: “In today’s world, in 2009, I would define diabetes as a vascular disease in which hypoglycaemia plays an important role”? What are the implications?

Chapter 2

Chapter 2: Lifestyle Interventions

“Lifestyle modification that focuses on increased physical activity, dietary change and weight loss should be offered to all individuals at high risk of developing type 2 diabetes” (from the Primary Prevention Guideline p. 6).

Activity 7 Case Study 1 - Joe

Activity 7 Case Study 1 - Joe

Joe is a 27 year old male. He has a job as a truck driver, is a smoker and likes to have a few social drinks with friends on the weekend. Joe's family has a history of type 2 diabetes and Joe is overweight. He comes to see you for his annual work related medical.

- Using the AUSDRISK risk assessment tool, rate his risk of type 2 diabetes. If you are working in a group, compare scores and discuss.
- On the basis of this limited information, design a comprehensive life-style modification program for Joe, including both dietary and exercise measures. What extra information would you need in order to better individualise this program?
- What do you think of the suggestions the panel members made?
- What do you anticipate might be the barriers for Joe in undertaking these changes, and how would you motivate him to begin a prevention program?

Main Points from Program Discussion

- Various risk factors need to be taken into account in addition to those on the AUSDRISK scale.
- Intervention needs to be tailored to individual's circumstances.
- There is a discussion of different diets (see also NHMRC dietary guidelines for all Australians at <http://www.nhmrc.gov.au/publications/synopses/dietsyn.htm>).
- A dietary check-list is presented.
- It's important to educate parents to help them help their kids make healthy dietary choices.
- There is evidence that weight training for those with pre-diabetes can reduce progression to diabetes.
- There is good evidence that weight-loss from dietary changes and increase in physical activity can be sustained over the longer term.
- There is an important role for the practice nurse in diabetes assessment.
- It is important to carefully monitor the effects of life-style interventions.

Activity 8

Activity 8

- Identify the different roles played by the GP, practice nurse, dietitian, diabetes educator, and counsellor in supporting the development and maintenance of lifestyle interventions. Are there other professionals you would consider introducing?
- Access to this range of professionals is often limited in rural/remote areas. What cross-professional skills are available in your area, and what extra training is needed in order to provide these services?

- (c) Discuss the reasons for the panel's emphasis on closely monitoring the effects of lifestyle interventions. What systems are in place already in your area? What else could be added to ensure that such monitoring reliably occurs, especially for high-risk individuals?

Activity 9 Case Study 2 - The Beat It program

Activity 9 Case Study 2 - The Beat It program

The Beat It program, developed by Diabetes NSW, targets fitness trainers in developing exercise resistance and cardiovascular training for people with or at risk of type 2 diabetes, as well as education about exercise and diabetes.

- (a) What are the factors that make this a successful program?
(b) What opportunities exist in your community for increasing the awareness of people like fitness trainers of the special needs of people with diabetes, and for developing programs such as the one described here?

Activity 10

Activity 10

- (a) Note the principles that have been identified as promoting the effectiveness of such programs under the Practice Points in the Primary Prevention Guideline (p.7). Review the evidence base for effective community intervention programs on pp. 66-80 of the Primary Prevention Guideline.
(b) Identify groups within your community for whom you could develop prevention programs (eg., school-children, the aged etc). What cultural factors need to be taken into account (see also Program 4 in the series: Diabetes and Indigenous Australians)?

Chapter 3

Chapter 3: *Screening and Managing Risk*

Main Points from Program Discussion

- Risk assessment (the AUSDRISK tool) should begin at age 40 and from age 18 for Aboriginal and Torres Strait Islanders.
- If a person has a score of 15, they need to be referred to a lifestyle program, and to undergo a fasting glucose test.
- People who have other high-risk factors should proceed straight to a fasting glucose test, and should be followed up annually.
- An oral glucose tolerance test should be performed if the fasting blood glucose measurement is between 5.5 to 6.9 mmol/L (a measurement higher than 6.9 constitutes a diagnosis of diabetes).
- A measurement that is high but under 5.5 requires retesting, as there is variability in fasting glucose (especially if there are other high-risk factors).

- There is a risk of micro and macro vascular changes with a measurement over 5.
- Pharmacological interventions (such as Metformin) could be considered, but this is seen as a ‘second-best’ option.
- Bariatric surgery can be considered in selected patients suffering from obesity and at high risk of developing diabetes, although issues of cost effectiveness need to be taken into account.

Activity 11

Activity 11

Outline the three-step case detection and diagnosis procedure for identifying people with undiagnosed type 2 diabetes (see Recommendations in Case Detection and Diagnosis guideline, p. 5).

Activity 12

Activity 12

Discuss the issues involved in screening. Should everyone take the AUSDRISK test? What are your thoughts about screening children (see the discussion in Chapter 1)?

Activity 13

Activity 13

After listening to the discussion, what are your thoughts about the use of pharmacological agents, whether to help with weight loss, or to counter vascular changes? Find the relevant discussion in the guidelines and check how closely it supports your position.

Activity 14

Activity 14

In the light of the discussion, what is your opinion of the role of bariatric surgery? Do you think Joe (Case Study 1) would be a candidate? Think of a patient you have seen recently who might be a candidate. What factors would need to be taken into account before such a step was considered?

Take-Home Messages

1. **ALAN BARCLAY:** I think we need to tell patients “Don’t go on a diet; make small changes to achieve long term goals; try to lose small amounts of weight by changing your diet in a way that’s achievable and sustainable.”
2. **MARK HARRIS:** The evidence is – and it applies particularly in General Practice - that we can be most effective with that high risk group. So it’s a matter of finding the people who are high risk and really trying to offer them a lifestyle intervention, as well as ruling out diabetes of course.

3. **ASHIM SINHA:** I think as an endocrinologist we should be working closely with our General Practice colleagues. Just because we are specialists we don't have to take that step of not looking at primary prevention. We need to do this if we are going to stop the tsunami of diabetes - it's no longer an epidemic it's now a tsunami. I think primary prevention is the way to go forward - early detection, early treatment, and treating diabetes as a vascular disease.

Activity 15

Activity 15

Review the Learning Outcomes for this program.

After viewing this program, participants will be able to:

- Outline the three-step case detection and diagnosis procedure for identifying people with undiagnosed type 2 diabetes.
- Identify and treat type 2 diabetes at a stage before clinical presentation.
- Apply a systems based approach to developing lifestyle modification plans for patients at risk of developing T2DM.
- Develop culturally appropriate lifestyle interventions.

How well do you think the program achieved these objectives? What further information would be helpful? Where would you locate this? Does the guideline enable you to make more targeted interventions?

T2DM Guideline Series: Blood Glucose Control, Patient Education in Type 2 Diabetes

This program is the second in a four part series on type 2 diabetes; it looks at two evidence based guidelines:

- Blood Glucose Control in Type 2 diabetes, and
- Patient Education in Type 2 diabetes.

The program will discuss practice points and changes in goals for management related to these guidelines.

Program Presenters:

Chair: **Dr Norman Swan** - Presenter of the Health Report on ABC Radio National

Professor Stephen Colagiuri - Professor of Metabolic Health Medicine, Faculty of Medicine Boden Institute of Obesity, Nutrition and Exercise, The University of Sydney, NSW

Professor Mark Harris - General Practitioner and Director of the Centre for Primary Health Care

Ms Leigh Spokes - Credentialed Diabetes Educator, Wagga Wagga, NSW

Chapter 1

Chapter 1: Introduction and Blood Glucose Control

The Blood Glucose Control Guideline (BGC) reiterates that “Type 2 diabetes is associated with reduced life expectancy, significant morbidity due to the specific diabetes related microvascular complications (retinopathy, nephropathy and neuropathy), and the increased risk of macrovascular complications (ischaemic heart disease, stroke and peripheral vascular disease). The development of these complications impacts on quality of life” (Blood Glucose Control Guideline, p. 8). It goes on to examine in detail intervention studies over the past decade that have looked at the effect of lowering blood glucose levels in people with type 2 diabetes.

“These studies concluded that improved glycaemic control can reduce retinopathy, renal disease and neuropathy in people with type 2 diabetes” (Blood Glucose Control guideline, p. 10).

Main Points from Program Discussion:

- Every ten seconds a person dies from diabetes-related causes and two people develop the condition. In Australia, diabetes is the fastest growing chronic disease and ranks as the sixth most common cause of premature death.
- It's associated with significant morbidity such as vascular complications, blindness and renal failure. Good control of blood glucose has been shown to reduce complications.

- A key recommendation in the blood glucose control guideline was that glycated haemoglobin (HBA1c) should be used to assess diabetes control and that the target is one of less than or equal to 7.
- In addition, the guidelines advocate adjustment to treatment if this level is exceeded.
- HBA1c levels should be measured at least twice a year in people with type 2 diabetes who have stable control, and more often if it's not stable (*NB this is a change from the previous recommendation, which was that these levels should be checked on an annual basis*).
- HBA1c in general is a good measure; glycated haemoglobin is quite stable, with little natural variation, but some things influence its levels and produce slightly misleading results (such as anaemia, blood transfusions, and uraemia).
- There is no doubt that blood glucose control improves the microvascular complications; but none of the studies showed an absolute benefit in terms of the cardiovascular risk.
- Aggressive management of blood sugar, driving the HBA1c below 6.5, showed no benefit, and maybe even some risk.
- The potential harmful effects, particularly of an aggressive management regime, include hypoglycaemia and weight gain.
- One of the problems often found, particularly with indigenous people, is that there are often early signs of complications at the point of diagnosis - such as renal disease - and that makes managing it a lot more complicated.

Activity 1

Activity 1

After viewing this segment of the DVD, review and discuss the effect of improving blood glucose control on: a) microvascular complications (retinopathy, neuropathy, nephropathy) b) macrovascular complications (heart disease, stroke, peripheral vascular disease) c) quality of life (see discussion of the research in Blood Glucose Control guideline pp. 10-22).

Activity 2

Activity 2

How should blood glucose control be assessed, and what are the targets for blood glucose control? When might a target above the nominated level above be appropriate? (See Blood Glucose Control guideline p. 87).

Activity 3

Activity 3

Discuss the potential harmful effects of optimising blood glucose control (see also Blood Glucose Control guideline pp. 47-49).

Activity 4

Activity 4

Think of a patient who has a particular fear of hypoglycaemia, and discuss the impact on their diabetes management.

Chapters 2 and 3

Chapters 2 and 3: *Treatment Options and Management Issues*

Main Points from Program Discussion:

- The algorithm recommends starting off with lifestyle modification – changes in diet, weight control, increased physical activity - for a period of time (around 3 months) in order to see the response.
- Many factors influence the success or otherwise of this intervention.
- The use of a multi-disciplinary team is the best way to intervene.
- Metformin is usually the next step, provided that there are no contra-indications to its use (the main one relates to renal impairment).
- If metformin fails then sulphonylurea still remains the most commonly used second line therapy.
- However, if there are contra-indications or side-effects in the use of either of those agents, then there are lists of other agents that can be used, including Acabose, newer DPP-4 inhibitors, glitazones, or insulin therapy.
- Concern about the use of glitazones with regard to the increased risk of CVD has not been confirmed in the recent studies. However it should not be used in people who have a history of heart failure or cardiovascular disease.

Activity 5

Activity 5

- (a) Have a look at the treatment algorithm used in the program and the section in the guideline on Blood Glucose Control (pp. 97-99). The guideline suggests lifestyle intervention for a period of about 3-6 months. The panellists noted that many factors influence the outcome of this intervention. What are some of the most important factors?
- (b) The majority of respondents to the poll question thought that the length of time for trying lifestyle intervention should vary with the particular patient. What are your thoughts about this? Think of a patient with whom you might vary the guideline's recommendation – what would be your reasons?

Activity 6

Activity 6

- Think of a particular patient for whom lifestyle interventions have proved difficult to sustain. What factors contributed to the difficulty?
- What structures can be put in place to better support lifestyle interventions?
- Why do you think Mark Harris emphasised the importance of a multi-disciplinary team for initiating and supporting lifestyle interventions? Who makes up the ‘diabetes team’ in your community, and how can these relationships be facilitated?
- Some guidelines have recommended starting metformin at the same time as lifestyle interventions, because of the concern that the latter do not have the desired effect. The panel had quite a discussion about this. What is your opinion? Think of a particular patient whom you would consider starting on metformin as well as lifestyle intervention. What would be your reasons?
- Have a look at the guideline, and find the relevant research data.

Activity 7

Activity 7


What are the various side effects and contra-indications of the drugs mentioned in the guideline? Think of a patient where this has influenced decisions about medication.

Activity 8 Case Study 1 - Dan

Activity 8 Case Study 1 - Dan


Dan is a 43 year old man who works full time as a grader driver. He lives in a remote community, is married with 4 children, and 2 grandchildren, He comes to his GP, brought in by his wife. He has a family history of diabetes, and now he’s saying he’s a bit sleepy, he’s passing more urine, he’s a bit more moody than normal, and his wife worries that he’s got the family disease. He used to play football and has had an ACL reconstruction. He’s overweight, he smokes about a pack a day, and he drinks a reasonable amount, particularly at the weekends. He takes glucosamine, about one and a half grams a day.

Findings



- Weight 109kg, waist 135cm (BMI 34 & WHR 1.1)
- BP 155/100mmHg
- CVS – normal Chest-clear

- (a) Have a go at answering the question Dr Swan posed to the panel: what would you do with this man? What investigations would the GP likely undertake at the point of initial contact?
- (b) Once the diagnosis is confirmed and the patient is referred to the diabetes educator, what factors need to be considered? What would you discuss at the point of initial contact, and what would be your plan for subsequent contact? What other professionals might be involved at this point?
- (c) Do you agree with the treatment plan advocated by the panellists? Any other factors that you would think are important?
- (d) What are the implications of his geographical location?
- (e) Leigh Spokes refers to the significance of the involvement of partners and other family members. How actively do you involve other family members in patient management and education?



Investigations

- Random BGL 15mmol/l
- HbA1C – 11.5%
- Albumin-creatinine ratio (ACR) – <2.5
- eGFR > 90 ml/min/1.73m²
- Lipids – Chol 5.7mmol/l Tg 3.8mmol/l HDL-
chol 0.85mmol/l

Main Points from Program Discussion:

- Cardiovascular risk needs to be assessed in a situation like this. Recent studies have not shown that simply reducing HbA1c levels improves cardiovascular outcomes or mortality; but as part of a multi-factorial intervention it is a contributor.
- An individual who is asymptomatic but returns measurements between 6.1 – 6.9 should have an oral glucose tolerance test – but only 30% of people who should have had an oral glucose tolerant test actually get one.
- The current guidelines indicate that aspirin should be considered in a person with type 2 diabetes over the age of 55 who has had a vascular event - unless it's contra-indicated.
- Approximately 25% of patients end up on insulin; there are no outcome studies which have actually shown that starting insulin early leads to better outcomes.
- Self blood glucose monitoring is an intervention that needs to be individually tailored.

Activity 9**Activity 9**

What are your thoughts on the issue of self blood glucose monitoring? (See also Blood Glucose Control guideline p. 53, and pp. 70-79). Think of a patient for whom this has been a helpful adjunct, and one for whom it has not. What are the factors that make a difference?

Activity 10**Activity 10**

Why do you think that only 30% of people who should be referred for an oral glucose tolerance test actually end up having one? What can be done to increase that percentage?

Activity 11
*Case Study 2 - Mary***Activity 11**
Case Study 2 - Mary

Mary is a new patient to the practice. She is 60 years old, lives alone, and runs a fish and chip shop in a small country town. She was diagnosed with T2DM 2 years ago, and is on a controlled diet, but even though she has exercised regularly since that time (walks 5 times a week for 30 mins.), she has had no significant weight loss. She is on an ACE inhibitor, and has a past medical history of inflammatory bowel disease and hypertension. She used to be a smoker but quit 5 years ago. She has a family history of diabetes; her father died aged 40 from an MI; and her 55 year old brother also has T2DM, is on insulin, and has recently undergone a coronary artery bypass graft.

On examination, she has

- BMI 29, waist circumference 107cm
- BP 140/85
- Nil else of note

Investigations:

- HbA1c: 7.3%
- Serum Creatinine: 123 $\mu\text{mol/L}$
- eGRF: 39 $\text{mL}/\text{min}/1.73\text{m}^2$
- Total cholesterol: 5.7 mmol/L
- LDL-c: 4.2 mmol/L
- HDL-c: 0.9 mmol/L

- (a) What treatment targets do you think are appropriate for Mary e.g. HbA1c, BP, cholesterol, weight?
- (b) What would you estimate Mary's cardiovascular risk to be? What other investigations would you suggest?
- (c) Management issues:
 - Given the concern about using metformin, what oral hypoglycaemic agents would you consider using in this patient?
 - How would you help Mary begin to better manage her weight?
 - What would be the difficulties trying to manage Mary in a rural environment?
 - Prof. Colagiuri makes the point that if proteinuria is not present, then consideration needs to be given to other causes of renal impairment, unrelated to the diabetes. What would you consider?

Chapter 4**Chapter 4: Patient Education**

From the Patient Education in Type 2 Diabetes Guideline: “while there have been many advances in the medical treatment of diabetes, their implementation puts enormous demand on people with diabetes and their carers. Self-management underpinned by patient education and support are paramount for acquisition of necessary knowledge and problem solving skills” (p.7).

Activity 12**Activity 12**

Read the recommendations and practice points from the Patient Education guideline (p. 6).

The guideline recommends that all people with type 2 diabetes should be referred for structured diabetes patient education. How successfully does this happen in your community? Is there room for improvement, and if so, how?

Activity 13**Activity 13**

Look again at Case Study 1, or you might like to choose of a patient of your own for this activity.

Main points from the program discussion:

- Patients are often angry and reluctant to be involved, especially initially.
 - They can be quite aggressive, sometimes because their blood glucose levels are high.
 - Important to listen and to ask appropriate open-ended questions.
 - Need to be careful that there is not information overload.
 - The approach needs to be tailored to the needs and priorities of the particular patient.
 - Important to negotiate with a patient like Mary where we start – that is something the GP can do, but also the practice nurse, the diabetes educator, the dietitian, and whoever else is involved in the team – and there needs to be a common approach.
- (a) In your experience, what is the range of reactions that people have to the initial diagnosis of type 2 diabetes? At what point in the ‘patient journey’ would you normally begin a ‘patient education’ program?
 - (b) In light of the program discussion about Dan’s reactions, if you were the diabetes educator, what information and support would you aim to provide Dan and his family at the first visit? What information would you need from them?
 - (c) The guideline recommends that people with diabetes should be encouraged to actively participate in goal setting and decision making (p. 6). There is general agreement that the learner must be an active participant in the learning process and that there must be a variety of learning experiences for optimal learning to occur. How would you seek to involve Dan in the process? And his family? What difficulties would you anticipate?
 - (d) The guideline also recommends that diabetes education should be delivered individually or in groups (p. 6). What delivery mode is most commonly offered in your community? Are there advantages one way or the other? What do you think might be the most effective delivery mode for a patient like Dan?

Activity 14

Activity 14

A lot of the patients you see will describe themselves as “feeling fine” – what are the challenges to keeping them on track regarding regular monitoring and investigations?

Activity 15

Activity 15

How much can a patient education program support patients to be able to self manage blood-glucose monitoring?

Activity 16

Activity 16

In rural and remote communities, videos and web-based interventions are playing an increasingly important role in patient education. What do you think about the use of this medium? How would you go about accessing those resources?

Activity 17

Activity 17

The guideline also recommends that diabetes education should be culturally sensitive and tailored to the needs of socioeconomically disadvantaged populations. What factors would you need to consider if you were developing a patient education program for an Aboriginal and Torres Strait Islander community?

Activity 18

Activity 18

All the panel members stressed the importance of the multi-disciplinary team. The guideline (p. 68) notes that a variety of health care disciplines can successfully provide patient education (diabetes educators, nurses, dietitians, pharmacists, psychologists, podiatrists or physicians) but they stress that patient education delivered by a multi-disciplinary team may afford better opportunity for improving patient outcomes.

- (a) Do you agree with the guideline support for a ‘team’ approach to education? Give your reasons
- (b) How easily can you access different professionals in your area?
- (c) What are the difficulties in developing the ‘common approach’ to a patient’s education about their diabetes that Mark Harris emphasised in the program?

Activity 19

Activity 19

The guidelines for Blood Glucose Control note that fear of hypoglycaemic episodes may have significant clinical implications for diabetes management (p. 47). What are the clinical implications of this fear? How would you address this anxiety in an education program?

Activity 20
Case Study 3

Activity 20
Case Study 3

Case Study Description: The case study involves an education session between a practice nurse, a patient, and an independent diabetes educator. The case study begins with Leonie (the practice nurse) introducing herself and the patient, Nameejs, and Annabel, a Credentialed Diabetes Educator, helping to establish where Nameejs stands in his self-management of his type 2 diabetes. There are brief interviews with each of the participants, reviewing the process.

- (a) Discuss the collaboration between the practice nurse and the diabetes educator in this case. Leonie suggests that this approach is much more effective than an individual intervention. Think of a patient for whom this would be a helpful intervention.
- (b) What possibilities exist in your practice for an integrated care model such as outlined here? How would you go about setting up such an intervention?

Activity 21

Activity 21

- (a) Choose one of the case studies presented (Dan or Mary), or a patient that you are acquainted with, and outline the elements of a patient education program that would best suit their needs.
- (b) Compare your list with the areas identified in the National Consensus on Outcomes and Indicators for Diabetes Patient Education (Patient Education guideline, p. 13).

Activity 22

Activity 22

One of the practice points (p. 6) emphasises the importance of following up with diabetes patients in a regular and ongoing way after an educational intervention. Why is this such a high-profile recommendation for diabetes patients? How would you incorporate regular follow-up into a comprehensive education program?

Activity 23

Activity 23

On the basis of the above activities and the discussion in the program, develop a template for a patient education program for use in your practice that could be adapted to the needs of any particular patient.

Take-Home Messages

1. **LEIGH SPOKES:** There are three really – the first is to listen: it's very important to listen to the person that you are looking after; second, keep it simple, don't give too much information all at once, spread it out; and finally, to work as a team. I know it's hard if you are isolated in a remote area but try and access the network so that you can talk to people on the net or via the phone or teleconference but work as a team – then everything works much better.
2. **MARK HARRIS:** It's about controlling the glucose together with all the other risk factors. We really need to get more control. One of the keys to that is patient education, using the whole team, but also not to be afraid to add other medications.
3. **STEPHEN COLAGIURI:** I think that there is incontrovertible evidence that controlling the glucose and controlling the other risk factors does improve both microvascular and macrovascular outcomes. Obviously the challenge is achieving that improvement. I don't think it can be done without the team, as has already been emphasised; but it's also important to negotiate with the patient to see what they're prepared to do, and do it in a step by step fashion, and address any barriers to them making the changes that you would like them to make.

Activity 24

Activity 24

Review the Learning Outcomes for this program

After viewing this program, participants will be able to:

- Identify recommended targets for blood glucose control and strategies to achieve this.
- Outline the effects of improving blood glucose control on microvascular complications, macrovascular complications and quality of life.
- Apply a systems based approach to developing management plans for patients diagnosed with T2DM.
- Implement effective patient education at a local level.

How well do you think the program achieved these objectives? What further information would be helpful? Where would you locate this? Do the guidelines enable you to make more targeted interventions in relation to working with patients with type 2 diabetes?

T2DM Guideline Series: Diabetic Retinopathy, Chronic Kidney Disease

This program looks at two evidence-based guidelines that address co-morbidity in type 2 diabetes:

- Guidelines for the Management of Diabetic Retinopathy, and
- Evidence based Guidelines for Diagnosis and Management of Chronic Kidney Disease in Type Two Diabetes

Program Presenters:

Chair: **Dr Norman Swan** - Presenter of the Health Report on ABC Radio National

Professor Alan Cass - Director Renal and Metabolic Division, The George Institute for International Health; Professor and Director of the Poche Indigenous Health Centre, Faculty of Medicine, University of Sydney

Dr David Guest - General Practitioner, Goonellabah, NSW

Professor Paul Mitchell - Professor of Ophthalmology, University of Sydney, and Director of Ophthalmology for the Sydney West Area Health Service, NSW

Associate Professor Stephen Twigg – Endocrinologist, Department of Medicine, University of Sydney, and President of Australian Diabetes Society

Chapter 1

Chapter 1: Introduction and Risk Management

Main points from the discussion

- According to the AusDiab study, 1 million people in Australia (or 7.4% of adults aged over 25) have diabetes, and well over 90% of them have type 2 diabetes.
- 1 in 4 Australian adults have some form of glucose abnormality.
- The ability of the pancreas to produce insulin tends to deteriorate with time so nearly 1 in 4 Australian adults in their 70s will have diabetes, in comparison to a much lower percentage of people earlier in their life.
- Prevalence of diabetes in Aboriginal and Torres Strait Islander communities is between 2 and 4 times higher than in non-Aboriginal communities.
- Diabetes results in substantial morbidity and mortality, primarily from cardiovascular complications, eye and kidney diseases and limb amputations.
- Development of renal disease in people with diabetes is slow and patients may not feel unwell for years; however rigorous monitoring of risk factors and well controlled BGL will assist to lessen the potential renal effects of diabetes.

- The incidence of blindness is 25 times higher in people with diabetes than in the general population, and in Australia diabetes is the most common cause of blindness in people under the age of 60.
- Everyone with diabetes will eventually develop diabetic retinopathy and overall, between 25 and 44% of people with diabetes will have some form of diabetic retinopathy at any point in time.
- However vision loss or blindness is preventable through early detection and timely treatment.

Chapter 2

Chapter 2: *Chronic Kidney Disease*

The guideline defines Chronic Kidney Disease (CKD) in the following way:

A level of kidney function associated with an increased risk of adverse clinical outcomes. For example, diabetic individuals with increased amounts of albumin in their urine or those with a reduced glomerular filtration rate (GFR) have an increased risk of morbidity and mortality. This risk is continuous with respect to these parameters, such that lowering albuminuria or preventing decline in GFR in an individual with type 2 diabetes is important in preventing adverse outcomes (p. 10).

Main points from the discussion

- 27.6% of people with diabetes have CKD, and the prevalence is three times higher in those with diabetes compared to those without.
- Diabetes is now the leading cause of end stage kidney disease (ESKD); in Australia it accounts for 32% of all end stage renal disease.
- Diabetes is the leading cause of ESKD in Indigenous Australians accounting for approximately 48% of cases compared to approximately 23% in non Indigenous Australians.
- People with diabetes are at high risk of CVD, but they can be stratified on the bases of their systolic blood pressure, their cholesterol, HDL (High Density Lipoproteins) total cholesterol, HDL ratio, gender status and smoking status.
- Microalbuminuria is an independent risk factor.
- Blood pressure is a key factor to control, but also control of glycaemia is the key factor in terms of progression of kidney disease.
- Obesity is not the only risk factor.
- In terms of patient care we need to have tight blood pressure, blood glucose and cholesterol targets in order to monitor for complications.

Activity 1

Activity 1

- (a) What are the risk factors for CKD in people with type 2 diabetes (see Chronic Kidney Disease guideline pp. 17-19)?
- (b) Discuss the link between cardiovascular disease and chronic kidney disease (see Chronic Kidney Disease guideline pp. 16-17).

Activity 2

Activity 2

Screening for Chronic Kidney Disease

Look at the Recommendations and Practice Points for screening for CKD (Chronic Kidney Disease Guideline pp. 6-9). Both the panel and the guideline note that it's important to be aware of the factors that might confound the measurement of urinary albumin – do you know what those factors are? (See p. 8 of guideline).

Main Points from Discussion of Screening:

- Systolic blood pressure is the best indicator of risk of CKD in type 2 diabetes, but glycaemic levels are also a key factor in terms of the progression of kidney disease and diabetic retinopathy. So really tight blood pressure control, perhaps with modern blood pressure agents, ARBs, and good glucose control are central to patient care.
- It is important to be vigilant with respect to diabetes management, because targets can be difficult to maintain over time.
- A generic approach to monitoring is important; but individualised care, involving the assessment of cardiovascular risk, and targeting lipids, blood pressure and glycaemia, will achieve better outcomes.
- Issues of poverty, and poor access to medical care make monitoring and ongoing support more difficult.

Activity 3

Activity 3

How should kidney function be assessed, and how often?

Activity 4

Activity 4

Look at the Recommendations and Practice Points for Prevention and/or Management of Chronic Kidney Disease (p. 45), and the helpful summary on p. 94.

Main Points from the Discussion:

RACGP has the following generic targets for glycaemia, total cholesterol and blood pressure

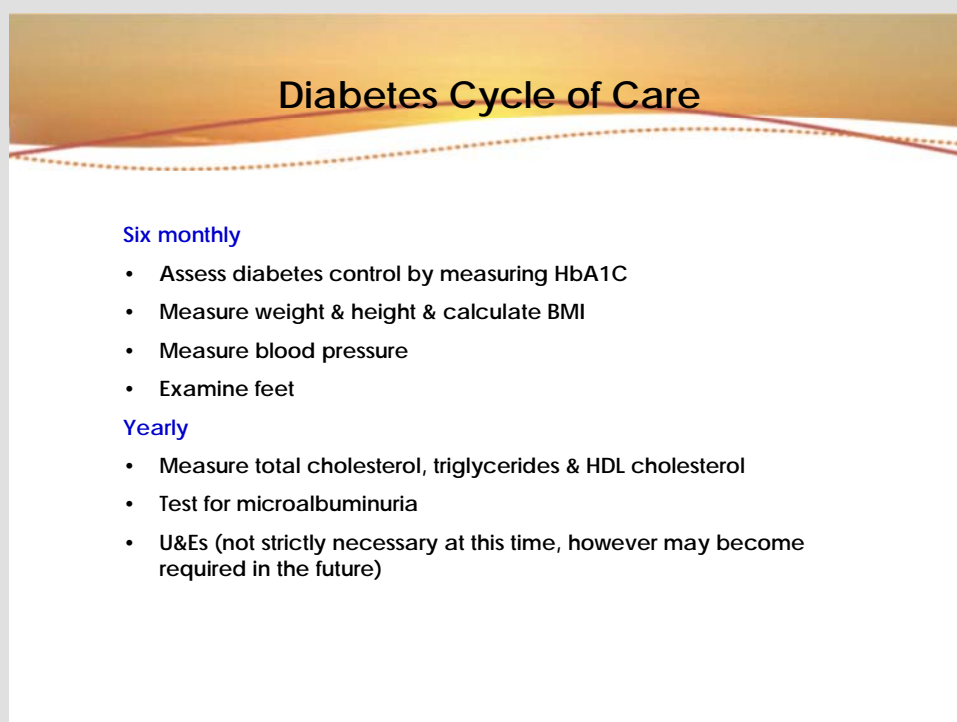
- HbA1c target less than or equal to 7%.
- Total cholesterol – less than 4%, with an LDL cholesterol less than 2.5 if not down to 2.
- Blood pressure less than or equal to 130/80.
- It is important to individualise these measures. For the person who has significant proteinuria, we want a tighter blood pressure target than that; for people with known ischaemic heart disease we want a tighter LDL cholesterol level - less than 1.8 - and we know that tight glycaemic control early can reap rewards decades down the track. There is even quite a push, though this is controversial, for HbA1C levels to go down to 6 or 6.5% early after the diagnosis.
- We need to get in early. There is now strong evidence that if we opportunistically screen 50-59 year olds for diabetes that we can then pick it up earlier and intervene and prevent heart attacks, strokes and premature mortality.

What is your understanding of ‘metabolic memory’ that Paul Mitchell refers to in the program?

Activity 5

Activity 5

See slides on *annual cycle of care*



The slide titled "Diabetes Cycle of Care" is set against a light blue background with a decorative wavy line at the top. It lists two categories of care: "Six monthly" and "Yearly".

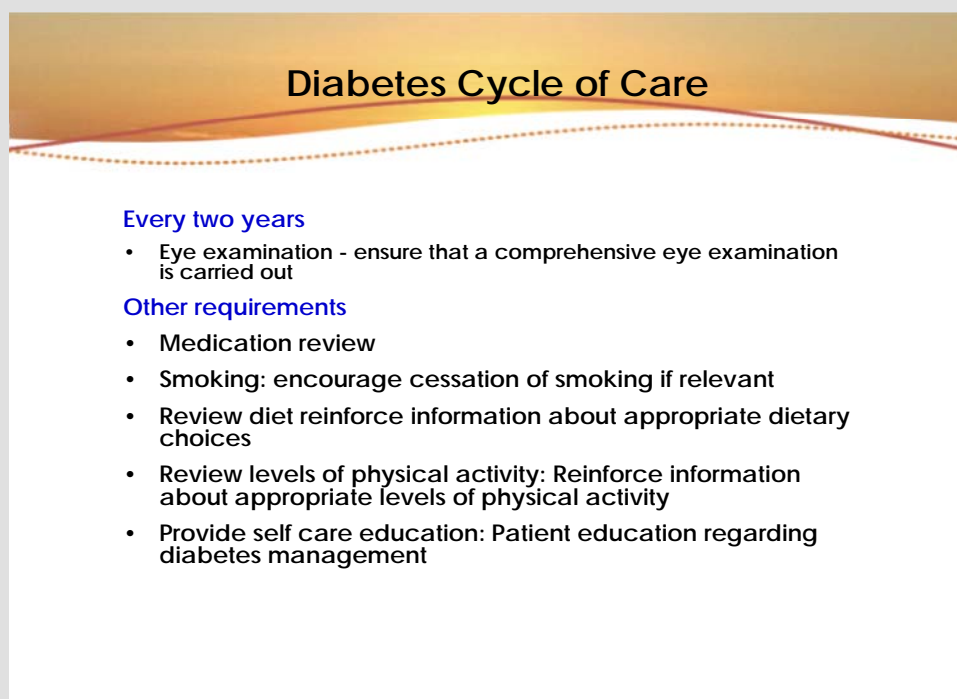
Diabetes Cycle of Care

Six monthly

- Assess diabetes control by measuring HbA1C
- Measure weight & height & calculate BMI
- Measure blood pressure
- Examine feet

Yearly

- Measure total cholesterol, triglycerides & HDL cholesterol
- Test for microalbuminuria
- U&Es (not strictly necessary at this time, however may become required in the future)



The slide is titled "Diabetes Cycle of Care" in a bold, black font, centered at the top. Below the title, there are two sections of bullet points. The first section is titled "Every two years" and contains one bullet point: "Eye examination - ensure that a comprehensive eye examination is carried out". The second section is titled "Other requirements" and contains five bullet points: "Medication review", "Smoking: encourage cessation of smoking if relevant", "Review diet reinforce information about appropriate dietary choices", "Review levels of physical activity: Reinforce information about appropriate levels of physical activity", and "Provide self care education: Patient education regarding diabetes management". The slide has a decorative orange and white border at the top.

Diabetes Cycle of Care

Every two years

- Eye examination - ensure that a comprehensive eye examination is carried out

Other requirements

- Medication review
- Smoking: encourage cessation of smoking if relevant
- Review diet reinforce information about appropriate dietary choices
- Review levels of physical activity: Reinforce information about appropriate levels of physical activity
- Provide self care education: Patient education regarding diabetes management

Panel members stressed the importance of routine testing:

1. Early detection occurs through picking up protein leakage into the urine - microalbuminuria. This occurs when someone has normal renal function.
 2. Actual kidney damage is picked up through a blood test, and estimation of the glomerular filtration rate. When that rate is less than 60mls per minute, there is evidence of significant kidney damage.
 3. The evidence is quite clear that both of these markers are predictors of heart attacks, strokes and of the progression of kidney disease to renal death or dialysis. People at highest risk are those with reduced kidney function and significant albumin leakage in the urine.
 4. Panel members note the importance of maintaining monitoring - "So if the GP can get into a regular pattern with that, either on your own or with help from your team, then you can keep your diabetic patients under control."
 5. *Please note* that the recommendation regarding testing for HbA1C levels has been changed in the new guideline to every six months, rather than annually (see under *Main Points* on page 14 above). The first slide above is different from the one used in the program and incorporates the change.
- (a) One of the poll questions was: *How frequently do you screen for micro albuminuria and GFR in your type 2 diabetic patients?* What is your answer to the question? What individual factors would you take into account that might make you vary that?
 - (b) What is your experience of the difficulties in maintaining regular screening of diabetes patients?
 - (c) It is often difficult for patients in rural and remote areas to access regular medical care – what can be done in your area to facilitate regular screening?

Activity 6
Case Study 1 – Ted and Judy’s Story

Activity 6
Case Study 1- Ted and Judy’s story

Ted, an Indigenous man living in North Queensland, developed diabetes due to a combination of lifestyle and family history factors and eventually suffered severe kidney failure. In this case study, Ted and his wife Judy talk about that experience and the changes to their lives as a result.

The panel make two interesting comments in relation to this case study:

- There were multiple missed opportunities for engagement in the management of this patient’s diabetes. He talked about all the factors that we know are crucial – his blood pressure, his diet, all the approaches to management that could have made the difference and prevented his severe kidney failure.
- It is helpful to use a team approach in order to ease the burden, particularly on rural GPs who don’t have much time.

- (a) What do you think contributed in this case to the failure to maintain a regular pattern of monitoring?
- (b) How might the team have ensured better monitoring and management of this patient’s diabetes? Who should be part of the team, and what would be the various roles?
- (c) What is the significance of Ted’s indigenous background in this story?

Activity 7

Activity 7

The panel notes throughout the program the significance of the ‘lifestyle factors’ such as diet, smoking, alcohol, and physical exercise in monitoring and intervening in CKD. Using the guidelines, discuss the role of diet modification (pp. 82-88) and of smoking cessation (pp. 89-90) in CKD. What are the implications for ongoing support for the patient by the diabetes educator or other members of the diabetes team?

Activity 8

Activity 8

The guidelines note that socio-economic status is an independent risk factor for CKD in people with type 2 diabetes (p. 102). Socio-economic status is associated with reduced access to primary medical care services and a lower level of utilisation of those services and this is likely to be associated with poorer outcomes in relation to CKD in people with type 2 diabetes.

Think of patients in your care, and discuss the significance of socio-economic factors in their management, and particularly in the use they make of the medical services that are available? How can this be better facilitated?

Chapter 3

Chapter 3: *Diabetic Retinopathy*

The Guidelines for Management of Diabetic Retinopathy (DR) define the condition as “the presence and characteristic evolution of typical retinal microvascular lesions in an individual with diabetes” (*Diabetic Retinopathy Guideline*, p. 22).

From the program: “DR and CKD go hand in hand. We know that once kidney disease really starts to accelerate, then retinopathy really gets a hold on, particularly macular edema; when a patient’s creatinine starts to rise, that’s the time we see retinopathy, if it hadn’t already needed treatment, really become aggressive” (Paul Mitchell).

“Glucose is the major factor that will contribute to that complication (DR)” (Stephen Twigg).

Activity 9

Activity 9

Look at the summary of guidelines for management (pp. 10-12) and the ‘good practice points’ for management (p. 13).

The guidelines note the **risk factors** for DR on p. 15:

- All people with diabetes are at risk
- The duration of diabetes is strongest factor
- Any lowering of HbA1c will assist in reducing the development and progression of DR
- Blood pressure is also a factor and any lowering of it will assist
- Normalising blood lipid levels may reduce cardiovascular risk and also DR
- Elevated lipids are associated with macular oedema specifically
- Other documented risk factors include renal impairment and pregnancy
- Blood pressure and glycaemic control are also related to progression of kidney disease so similar approaches to management of these factors that complicate diabetes can reap the rewards in terms of keeping people’s vision and keeping their kidney function

In relation to these risk factors, the guideline makes the point that a multidisciplinary approach should be undertaken in all patients with diabetes to achieve optimal glycaemic control and to adequately manage blood pressure and serum lipid levels (p. 23). How would you think of a multi-disciplinary approach in this area? What are the different roles that are needed, and who is available in your community to provide them?

Detection of Diabetic Retinopathy

It is important to note the following (also discussed at various points in the program):

- DR is reversible with really tight blood pressure control if it is detected early
 - this puts a real emphasis on a preventative focus.

- The development of retinopathy happens relatively slowly so it is sufficient to screen every two years; but if someone has diabetes that is difficult to control, or if they have already got other complications, then they need to be seen more frequently.
- Clinical examinations to detect DR may use slit lamp biomicroscopy, ophthalmoscopy or retinal photography. Pupils should normally be dilated. An exception is non-mydriatic photography with adequate photographic quality and sensitivity. Clinical assessments to screen for DR should usually include measurement of visual acuity and a dilated fundus examination. Alternately, retinal photographic screening (which may be non-mydriatic) with adequate sensitivity should be performed.
- GPs, general physicians, endocrinologists, and optometrists are all potentially able to screen for DR until the point at which any significant retinopathy is present. From that point people should really see an ophthalmologist.
- Digital photography has allowed screening services to reach rural and remote areas via tele-ophthalmology.

Activity 10

Activity 10

See guidelines and discussion pp. 62-5 for detailed consideration of the procedures for detecting DR.

- (a) Paul Mitchell notes in the program that *“if you had retinopathy at the first two stages - micro aneurisms only or a few micro aneurisms and retinal haemorrhages - those stages were reversible with really tight blood pressure control. But once the retinopathy became slightly more advanced than that then in fact it was not reversible”*. Discuss the implications of this for early intervention.
- (b) A lot of rural/remote communities will not have all these resources, even for preliminary screening for DR. How would you go about finding an ophthalmologist, for example, who could be available to your area of practice through the use of tele-ophthalmology?

Activity 11 Case Study 2 - Darren

Activity 11 Case Study 2 - Darren

“Darren’s Story Part 1” – Development & Diagnosis of Diabetic Retinopathy

Diagnosed with type 2 diabetes at 27, Darren’s lifestyle and erratic diabetes management led to complications. This case study examines the factors leading up to the development and diagnosis of Darren’s diabetic retinopathy.

“Darren’s Story Part 2” - Management of Diabetic Retinopathy

In 2007, Darren was declared legally blind. Everyday tasks and activities like reading, walking and shopping became very difficult. Darren entered a spiral of depression and attempted suicide. With support from Vision Australia and local mental health services Darren says his “sense of humour has been restored”.

Main Points from the Program Discussion:

- The panel reiterates in relation to this case history that blindness from diabetic retinopathy should be preventable – “there really should not be any cases of people who go blind from this disease any more”.
 - Darren was poorly managed, he put his head in the sand, maybe his doctors didn’t impress on him the absolute importance of having regular checks - but it should have been prevented.
 - Darren has been through the gamut of therapy, and usually the vision is stable from this point because the disease becomes relatively quiescent after it’s done all that damage.
 - Dr Swan refers to the importance of the psycho-social issues in a situation like this - “the depression goes along with it, it makes diabetes worse.” Stephen Twigg adds that people with diabetes have a two to three fold higher prevalence rate of depression - it’s a vicious cycle.
- (a) What makes any patient “put his head in the sand” and what are the implications for GP management and for ongoing patient education and support?
 - (b) Darren says that he reported “feeling fine” when he saw his GP. Does this make it harder to get a patient involved in the annual cycle of care? How might you address this in a patient education situation?
 - (c) What does the history of this case demonstrate about the significance of the initial contact and diagnosis of diabetes? How successfully do you hold patients in regular ongoing contact? What structures might you put in place – along the lines of a register, as David Guest suggests – preventing people “falling through the cracks”?
 - (d) There is reference in the program to the fact that people with diabetes have a two to three fold higher prevalence rate of depression. What are the implications for intervention? Who in your team is available to help patients with the ‘psycho-social issues’ involved in being a person with diabetes?
 - (e) What other professionals or organizations are available in your community that you can call on to help support patients who develop complications such as DR?

Management of Diabetic Retinopathy

See the Summary of Key Points in the Management of Diabetic Retinopathy in the guideline (pp. 14-21)

Main Points from the Discussion:

- Management includes laser treatment, vitrectomy, medical and ancillary therapies (for glucose control, blood pressure, and lowering blood lipids).

- There are two indications for laser treatment: the presence of new vessels, which indicates an advanced stage of the background type of retinopathy, because new vessels are fragile, they bleed, they don't bring new blood to the area; the second is macular oedema - this is the more frequent and more important complication to detect.
- Vitrectomy (micro dissection to remove scar tissue) is used in two circumstances: firstly, to get rid of the haemorrhage and scar tissue because the new vessels that bled will then develop scarring, and that scarring will cause traction on the retina; secondly, for traction on the macula itself, which can cause macula oedema to persist and be chronic. There are fewer vitrectomies nowadays because the physicians are really managing people with diabetes much better so we are seeing less people presented in need of this kind of surgery.
- When people with diabetes develop cataract, they may also be developing retinopathy and if there is any early macular oedema or moderate retinopathy then you can develop macular oedema after the cataract surgery. It is important to stabilize the retinopathy before cataract surgery as much as we possibly can.

Activity 12

Activity 12

- (a) On the basis of the discussion in the program, consider the benefits and risks of using aspirin in people with Diabetic Retinopathy. (Also see the section in the guidelines entitled Medical and Ancillary Therapies for Diabetic Retinopathy, pp. 96-104)
- (b) The panellists discuss a number of ways of managing diabetic retinopathy. Have a look at the detailed discussion of these interventions, and of the research underlying them, in the guideline, pp. 26-28.

Activity 13

Activity 13

The guidelines also note (p. 29) that:

- Prevalence of diabetes in Aboriginal and Torres Strait Islander communities is between 2-and 4-fold higher than in non-Aboriginal communities.
 - Australians in rural and remote communities experience considerably higher hospitalisation due to diabetes than in metropolitan areas.
 - Non-English speaking background (NESB) may be an independent risk factor for Diabetic Retinopathy, given the increased difficulty in achieving blood glucose, blood pressure and blood lipid control, and in communicating with medical personnel.
 - Annual screening should be conducted for Aboriginal or Torres Strait Islander groups with diabetes, because of their higher risk of Diabetic Retinopathy.
 - Annual screening should also be considered for persons with diabetes from non-English speaking backgrounds, and for those living in rural and remote communities.
- (a) What are the implications for management of people with diabetes in your particular community?
 - (b) Identify three resources in your community that might be helpful in supporting better screening and management of diabetes and its complications for Aboriginal and Torres Strait Islander patients or for those from a non-English speaking background.

Take-Home Messages

1. **DAVID GUEST:** Know who your diabetic patients are, keep them under careful close review, and don't try and do it all yourself. The diabetes educator, the dietitians, the podiatrists are all there to help, and to make sure that what needs to get done does get done.
2. **PAUL MITCHELL:** Institute a two yearly review, at least two yearly. Make sure that you really work hard at the control of blood pressure and blood lipids.
3. **ALAN CASS:** Chronic kidney disease is common; it can be readily detected and followed with simple blood and urine tests; and blood pressure and glycaemic control are crucial to preventing progression. For me the two case histories showed that too many people fall through the cracks, both as individuals in our own clinical practice and the health system generally. We need to do something better to try and prevent those disastrous outcomes.
4. **STEPHEN TWIGG:** Vigilance is the key. Diabetes does tend to be a progressive condition. We need to get to know our patients well, work with them as one of the key members of the team, and recognise that we can prevent at many different levels: we can prevent many people from developing diabetes, many others from developing diabetes complications once they've been diagnosed with diabetes, and there is a lot we can do now even for those who develop more severe later stage complications. So never give up, prevent at multiple different levels, and get to know your patient.

Activity 14

Activity 14

Review the Learning Outcomes for this program.

After viewing this program, participants will be able to:

- Use a system-based approach for assessing risk factors and co morbidity in patients with type 2 diabetes.
- Identify key goals for management in patients with either diabetic retinopathy or diabetes related kidney disease.
- Utilise the guidelines to develop a patient management plan for patients with either diabetic retinopathy or diabetes related renal disease.

How well do you think the program achieved these objectives? What further information would be helpful? Where would you locate this? Do the guidelines enable you to make more targeted interventions in relation to working with patients with type 2 diabetes?



Diabetes & Indigenous Australians

T2DM Guideline Series: Diabetes and Indigenous Australians

Aboriginal and Torres Strait Islander Australians have the fourth highest rate of type 2 diabetes in the world. It represents a major public health problem for Indigenous Australians, with a much earlier age of onset and the risk of developing diabetes-related complications resulting in a significant burden of disease in terms of mortality, hospitalizations and a range of financial and human costs. Chronic diseases such as diabetes and those related to it account for 59% of the difference in mortality between Indigenous and non-Indigenous Australians, making it imperative for health services to adopt a comprehensive and culturally appropriate response to risk factors and management in primary health care.

This program explores the question of how diabetes can be prevented in Indigenous communities and the issues around diet, obesity, physical activity, poor living conditions and low socio-economic status. This program focuses on a comprehensive and culturally appropriate multidisciplinary approach to prevention, detection, diagnosis and management amongst Indigenous Australians.

This is the fourth in a series of four professional development programs produced by the Rural Health Education Foundation, based around the recently released Clinical Guidelines put out by Diabetes Australia and approved by the National Health and Medical Research Council (NHMRC). The new national guidelines for detection and management of diabetes, matching recommended patient treatment with the latest evidence and research, have been published by Diabetes Australia and were funded by the Australian Government Department of Health and Ageing.

The program which this Learning Guide supports - T2DM Guideline Series: Diabetes and Indigenous Australians – was developed to explore the implications of the new evidence based guidelines for the prevention, detection and management of diabetes and related complications among Indigenous Australians. The Learning Guide is designed with a number of activities that can be used to facilitate group discussion and engage with the material covered in the DVD. It has been designed to provide a framework for facilitating discussion of the key issues raised in the programs.

Diabetes and Indigenous Australians

Chapter 1

Chapter 1: Ministerial Introduction, Statistics & Trends

Ministerial Introduction

Hi I'm Warren Snowden, Minister for Indigenous Health, Rural and Regional Health and Regional Services Delivery. It's my pleasure to introduce this program, produced by the Rural Health Education Foundation and which is funded by the Australian Government Department of Health and Ageing. 5 years ago, approximately 700,000 Australians had diabetes. Just 3 years later the number had jumped sharply to more than 818,000 or 4% of the population. The majority of those - 88% - were cases of type 2 diabetes. Every day in Australia about 275 adults develop some type of diabetes. There are on average 10,600 deaths each year where diabetes is the underlying and associated cause, a figure which represents about 8% of all deaths in Australia. In Indigenous populations the figures are far worse. The prevalence of type 2 diabetes amongst Aboriginal and Torres Strait Islander people is at least 3 times higher than for non Indigenous Australians. And incredibly, the rate of all types of diabetes amongst Indigenous Australians in some remote communities is as much as 10 times as higher. Yet type 2 diabetes is considered to be largely a preventable disease. This program examines evidence based approaches to the management of diabetes, hypoglycaemic control and diabetes related complications amongst Indigenous Australians and is part 4 in a series of type 2 diabetes and the new NHMRC endorsed type 2 diabetes Mellitus Clinical guidelines. This program will assist GPs, Aboriginal Health Workers, Diabetes Educators and all Primary Health Care Workers providing support and good care for Indigenous Australians with type 2 diabetes. I commend this broadcast as a key tool in improving Australia's performance on this important health issue. I strongly believe that better understanding on how to prevent, detect and diagnose diabetes in Indigenous Australian's will lead to improved health outcomes and life expectancy for all Indigenous communities.

Program Presenters:

Chair: Dr Norman Swan	Presenter of the Health Report on ABC Radio National
Ms Sumaria Corpus	Diabetes Educator, Royal Darwin Hospital, NT
Ms Bernadette Heenan	Credentialed Diabetes Educator and Registered Nurse, Far North Queensland Rural Division of General Practice, Cairns, QLD
Dr Pat Phillips	Senior Director Endocrinology, Queen Elizabeth Hospital, Adelaide, SA
Dr Rob Way	General Practitioner, Katungul Aboriginal Medical Service, Narooma, NSW

Main Points from Program Discussion

- Diabetes is very common - up to 50, 60, even 70% in some Aboriginal populations depending on their age.
- Diabetes accounts for a significant proportion of the gap in mortality rates between Indigenous and non Indigenous Australians.

- Indigenous people have more risk factors: they have more hypertension, and dyslipidaemia; many people are overweight; and there may be some genetic pre-disposition.
- Another potential factor for Indigenous people is the prenatal environment - it is often breeding a tendency towards diabetes metabolic syndrome and renal disease even before babies are born.
- While 30% of the non Indigenous population with type 2 diabetes may develop micro albuminuria and potentially chronic kidney disease, it's up to 70, 80, even 90% of Indigenous people with type 2 diabetes.
- There are higher rates of complications and of mortality amongst Indigenous people, especially in regard to CVD and renal disease.
- It has a big impact on communities - a lot of people go to town for dialysis so it's disrupting the family's everyday activities, or some have to leave their communities to get proper care.
- Children are presenting with type 2 diabetes from the age of 10, and some are now on oral medication.
- These children not only get the metabolic consequences of having type 2 diabetes; they also have the duration that occurs in type 1 diabetes. So they get the complications of type 1 diabetes as well as those associated with type 2.

Activity 1

Activity 1

- Pat Phillips suggests that type 2 diabetes might be thought of as a “different disease” for Indigenous people. What do you understand him to mean, and what do you think of the idea?
- Identify the risk factors for type 2 diabetes among Indigenous peoples. (Compare your list with the factors listed in the section on ‘Identifying Individuals at High Risk’ in the Primary Prevention guideline, pp. 33-35, and especially the ‘modifiable’ risk factors listed on pp. 34-35.)
- How significant do you think the influence of the ‘pre-natal’ environment is in increasing risk of type 2 diabetes for Indigenous peoples? What are the implications for intervention in ante-natal programs?
- What are the consequences for the communities of people having to leave to get proper care for their diabetes?

Activity 2

Activity 2

- What are the implications of Rob Way’s comment: “I treat everybody walking through my door with an Indigenous background as pre-diabetic”?
- The Evidence-based Guideline on Case Detection and Diagnosis (CDD guideline p. 28), recommends that risk assessment tools should be used with Indigenous people from the age of 18. What happens in your practice in regard to younger children, and what are the implications for screening of the information above in relation to age of presentation?

Activity 3**Activity 3**

Look at p. 15 of the Evidence-Based Guideline for Diagnosis, Prevention and Management of Chronic Kidney Disease in type 2 diabetes, which outlines the latest statistics on diabetes as the leading cause of ESKD in Indigenous Australians. What impact does ESKD have on the families in your care?

Chapter 2**Chapter 2: Risk Factors and Prevention****Activity 4**
*Case Study 1 - Jim***Activity 4**
Case Study 1 - Jim

Jim is a 30 year old Indigenous man with a wife and three kids, living in a remote community. He is unemployed, and the family shares a three bedroom house with another family of four. All four adults smoke and there is only one store in the community. Jim enjoys playing cards, having a few drinks with his mates, and occasionally goes hunting in the community Toyota. Jim's mum was diagnosed with type 2 diabetes at the age of 50.

- Identify the risk factors for type 2 diabetes that exist in Jim's story. How would you rate him, using the AUSDRISK risk assessment tool?
- Sumaria Corpus talks about the way she might try to motivate someone like Jim to change pre-disposing life-style factors. What barriers to change would you anticipate from this story? What are the realities for change in a situation like this?
- How would you try and motivate someone like Jim? What sort of intervention plan would you try to put in place for him, and how would you support it in an ongoing way?

Activity 5**Activity 5**

What do you think of the idea of encouraging bush tucker in Indigenous communities? What are the practical realities of such a program? What other interventions might you make to help a person who has recently been diagnosed with type 2 diabetes to change their diet?

Activity 6**Activity 6**

Go to the Diabetes Australia website and look at some of the materials available that support intervention in Indigenous communities.

Activity 7**Activity 7**

Have a look at the Practice Points in the Evidence-based Guideline for Primary Prevention (PP) on p. 7. How helpful are these in relation to working preventatively with Indigenous people at risk of type 2 diabetes? What other issues do you consider important?

Chapter 3**Chapter 3: Detection and Treatment****Activity 8**
*Case Study 2 - Greg***Activity 8**
Case Study 2 - Greg

Case Study Description Following screening, Greg returns to the Western Sydney Aboriginal Medical Service at Mt. Druitt in NSW and is informed by Dr Bill Coorey that he has diabetes.

Dr Coorey then briefs Louise Moore, the Aboriginal Health Worker in the Diabetes Clinic, and Greg is then engaged in a multidisciplinary approach to his diabetes management.

- (a) How typical is this story in your experience?
- (b) What do you think of Rob Way's position: "In an indigenous practice I screen everybody every time they walk through the door"? How regularly and in what way does your service screen Indigenous patients for type 2 diabetes?
- (c) How significant is the role of the Aboriginal Health Worker in a situation like this?

Activity 9**Activity 9**

Members of the panel have some different opinions about how useful the AUSDRISK tool for screening is with Indigenous people (see too the caveat on the use of AUSDRISK with Indigenous people in the Primary Prevention guideline, p. 32). What is your position on this?

Activity 10**Activity 10**

Dr Swan asks the viewers of the original program the following question: "*Does your service have a local Indigenous diabetes education program to which it can make referrals?*" How do you answer that question? If you do not have one in your local area, identify the resources – people and content – that you would need to put together such a program. What extra information or help would you need to begin?

Activity 11**Activity 11**

Outline an information/education program regarding one of the complications associated with diabetes (such as foot problems) and the need for ongoing monitoring that you might offer to a group of Indigenous patients with type 2 diabetes.

Activity 12**Activity 12**

If you were going to assemble your own version of the Self-Management folder that Bernadette Heenan describes in the program, what would go into it? Why do you think this might be a helpful intervention for Indigenous patients with type 2 diabetes?

Activity 13**Activity 13**

What opportunities exist in your area for an information pack or education session especially designed for Indigenous children?

Activity 14**Activity 14**

What are the advantages and risks of beginning with lifestyle interventions, as the Blood Glucose Control Guideline recommends (see p. 97 and following), rather than prescribing medications at the same time?

Chapter 4**Chapter 4: *Developing Indigenous-Specific Interventions*****Activity 15**
*Case Study 3 – Auntie Jean’s Good Health Team***Activity 15**
Case Study 3 – Auntie Jean’s Good Health Team

Case Study Description Aunty Jean’s Good Health Team Program provides the Illawarra and Shoalhaven Indigenous communities on the south coast of NSW with an ongoing, holistic approach to self-management of chronic diseases, including diabetes. Jean Turner, the Aboriginal Chronic Care Program Coordinator, and Caroline Harris, the Program Manager, talk about the concept behind the program and its benefits.

- (a) The Primary Prevention Guideline states the following as one of its ‘practice points’ (p. 7): “Culturally appropriate lifestyle interventions should be provided in accessible settings”. Discuss the importance of a ‘culturally safe environment’ for Indigenous people with diabetes.
- (b) What are the major factors to consider in developing a “culturally appropriate lifestyle intervention” for Indigenous Australians?
- (c) How would you begin the process of identifying “gaps in service provision” for Indigenous patients in your local area?

Activity 16**Activity 16**

Bernadette Heenan describes the central role of the Community Engagement Coordinator in the program in the Cape York area. Both that program and Auntie Jean’s Good Health approach suggest the importance of working with communities in a preventative fashion, and of establishing a supportive framework for those who have diabetes and those who are at high risk of it. What are the advantages to a ‘community’ – more than an individual - focus, whether in remote or in more urban areas?

Activity 17**Activity 17**

Throughout the discussion, panel members refer to the importance of a multi-disciplinary or team approach to diabetes care with Indigenous Australians. List the health – and other – professionals and support staff you would include in your ‘ideal’ team. What resources do you have in your local community – individual and organizational - that can contribute to broadening the reach and effectiveness of your service?

Activity 18**Activity 18**

- (a) Consult the targets for blood glucose control in the Blood Glucose Control Guideline (pp. 87-88) and look at the treatment algorithm provided in the same Guideline (pp. 97-99). How realistic are these targets for your patients?
- (b) In light of the program discussion, review the difficulties in managing medication use in an Indigenous population.
- (c) Sumaria Corpus emphasizes that with the right information and the right support appropriate use of medication is possible. What strategies do you employ to try to ensure this with your Indigenous patients?
- (d) There was discussion on the program about the possible use of insulin earlier than is recommended in the guideline. Under what circumstances would you advise this for a patient?

Activity 19**Activity 19**

There was discussion towards the end of the program regarding the use of tele-health, and of ‘visiting’ professionals such as podiatrists and endocrinologists. How possible is this in your area? How do you go about setting up links with the professionals you need to complement your team?

Activity 20**Activity 20**

Read the Executive Summary in the Evidence-Based Guideline for the Management of Diabetic Retinopathy (pp. 22-29), and assess its applicability to working with Indigenous patients. What other factors do you think need to be incorporated? (You could use this exercise to reflect on any of the new guidelines that have been released.)

Take-Home Messages

1. **BERNADETTE HEENAN:** Educate people as much as you can. Keep it simple so that you can empower them, because if they can be the boss of their diabetes that’s when we are going to see change. It’s when the people feel they are in control. Make it a positive story and no growling.
2. **SUMARIA CORPUS:** I think it is just being consistent, being supportive and being truthful. You know everyone has got holes in their feet, they do muck up, you know they get off track – what’s important is to have the patience to help them get back on track.
3. **ROB WAY:** Treat the individual and be positive about the story that they have. They’re actually the people who can control most of their risk factors in their diabetes.
4. **PAT PHILLIPS:** I assume that all people of Aboriginal descent are very likely to get diabetes. I think we should screen Aboriginal people at regular intervals (for example yearly), intervene actively in so far as one can with Metformin, ACE inhibitors in particular, and monitor for complications particularly for neuropathy because that is the way you will prevent foot problems.

Activity 21

Activity 21

Review the Learning Outcomes for this program.

After viewing this program, participants will be able to:

- Identify risk factors for type 2 diabetes in Indigenous Australian.
- Develop a culturally appropriate approach to prevention and management of type 2 diabetes.
- Demonstrate awareness of recommended treatments and management strategies.
- Develop an indigenous specific plan of care for a patient with type 2 diabetes.

How well do you think the program achieved these objectives? What further information would be helpful? Where would you locate this? Do the guidelines enable you to make more targeted interventions in relation to working with patients with type 2 diabetes?

Concluding Activity

- (a) At the beginning of the Learning Guide, you were asked to keep in mind two patients you have seen in the last 6 months with type 2 diabetes, about whom you have felt concerned. On the basis of the programs, and a more detailed acquaintance with the evidence base provided in the Guidelines, what would you now do differently with these patients?
- (b) What systems would you now put in place for good diabetes care?
- (c) How would you increase your team's uptake of the guidelines for better management of patients with type 2 diabetes?