The University of Auckland, The University of Waikato & NZSSD

PRESENTS

PACIFIC DIABETES MANAGEMENT COURSE

THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

New Zealand Society for the Study of Diabetes
NZSSD

Your session will start shortly

with support & facilitation from AOTEAROA DIABETES COLLECTIVE Aotearoa Diabetes Collective

Your session will start shortly

Welcome to the 2025

Pacific Diabetes Management Course

Housekeeping

- Please stay on **mute** during the webinar
- You can ask questions anytime during the webinar using the **Q+A function**
  - Any question is fine and will be answered at the end of the session
  - You can **upvote** questions that you want answered first
  - You can also ask questions verbally at the end of the session – please use the hand function if able
- **Confidentiality is a must** – These sessions will be recorded and available in a public format
- **Respect** one another
  - This is a collaborative, non-judgemental learning environment for everyone

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PACIFIC DIABETES MANAGEMENT COURSE

with support & facilitation from Aotearoa Diabetes Collective

Webinar 6.

Management of complications related to diabetes

What are the complications of diabetes?

Complications of diabetes

- **Vascular complications**
  - **Micro**vascular complications
    - **Diabetic renal disease**
    - **Diabetic eye disease**
    - **Diabetic foot disease**
    - **Autonomic neuropathy**
  - **Macro**vascular complications
    - Ischaemic heart disease
    - Cerebrovascular disease
    - Peripheral arterial disease

Complications of diabetes

- **Other complications**
  - Recurrent skin + genitourinary infections
  - **Dental + periodontal disease**
  - **Mental health** e.g. depression, dementia + disordered eating
  - Cardiac e.g. congestive heart failure + AF
  - **Falls**
  - Gastrointestinal e.g. metabolic liver disease + diarrhoea
  - Dermatological e.g. acanthosis nigricans, diabetic dermopathy
  - Musculoskeletal e.g. frozen shoulder + myopathy
  - Solid cancers e.g. bowel, breast, lung, pancreas etc.

Risk factors for developing complications

- Long duration of diabetes
- Prolonged high glucose levels
- Hypertension
- Dyslipidaemia
- Obesity
- Pre-existing comorbidities e.g. CV or renal disease
- Smoking + vaping
- Reduced contact with healthcare
- Non-European ethnicity
- Socioeconomic deprivation

How do you manage the complications of diabetes?

Aim of management of complications of diabetes

- Prevent + delay complications
- Screen to detect complications early
- Prevent progression of complications
- Manage end-stage complications to reduce morbidity + mortality → **refer when indicated**

Preventing the complications of diabetes

- Healthy living interventions including smoking + vaping cessation
  - Aim for weight loss if overweight

- **Glucose levels to target** → repeat HbA1c 3 monthly + **escalate** therapy as needed
  - Metformin + empagliflozin and/or GLP1Ra if renal or CV disease or equivalent risk
    - Consider pioglitazone if HbA1c still above target
  - Rapid improvement in severe hyperglycaemia may aggravate severe eye disease

Preventing the complications of diabetes

- **BP + lipids to target** → repeat at least 3 monthly + **escalate** therapy as needed
  - **Systolic BP 120 – 129 mmHg + LDLc < 1.4 mmol/L** if any vascular complications or and/or 5 year CV risk > 5%
    - Systolic BP < 120 mmHg is not concerning if well tolerated + likely preferable if young
    - Aim for lowest reasonably safely achievable BP if frail, elderly, limited life expectancy etc.
  - BP < 140/90 mmHg if no vascular complications + 5 year CV risk < 5%

Management of diabetic eye disease

Management of diabetic eye disease

- Diabetic eye disease includes retinopathy, macular oedema + cataracts

- **Refer for retinal photoscreening at diagnosis, if pregnant or delayed recommended follow up**
  - **NB:** If macular oedema and/or moderate or vision threatening retinopathy refer to Eye Clinic
  - Everyone with diabetes should have retinal photoscreening at least every 2-3 years

Management of diabetic eye disease

- **Recommended management of diabetic eye disease:**
  - Lifestyle management + smoking/vaping cessation
  - Glycaemic control to target → only need to stop pioglitazone if active treatment for macular oedema
  - Blood pressure to target → any of ACEi/ARB, Ca^{2+} channel blocker or thiazide satisfactory
  - Lipids to target → statins first-line but fibrates may be considered if macular oedema

- **Refer urgently to ophthalmology if any sudden deterioration in vision**

Management of diabetic kidney disease

Management of diabetic kidney disease

- May present as albuminuria (UACR > 3 mg/mmol) **AND/OR** low eGFR (< 60 mL/min)
  - **Need 2 out of 3 +ve UACR samples to ensure not false +ve** → early morning outside of period best
- Once present should ideally monitor UACR, eGFR, K^+, HbA1c + BP 3 monthly
- Remember **glucose lowering therapies may need to be reduced as renal function declines**
  - Doses of metformin need to be reduced once eGFR < 45 mL/min
  - Maximum dose of vildagliptin is 50 mg daily once eGFR < 50 mL/min
  - Do not start empagliflozin if eGFR < 20 mL/min + stop GLP1RA if eGFR < 15 mL/min
  - Doses of insulin + sulfonylureas may need to be reduced at any time to prevent hypoglycaemia

Management of diabetic kidney disease

- Lifestyle management + **smoking/vaping cessation**
- **Glucose levels to target → add in SGLT2i** unless contraindicated (GLP1RA best alternative)

- **Start ACEi/ARB if no hypotension + increase to maximal tolerated dose**
  - Aim for target BP → home BP monitor often useful
  - Check eGFR + K^+ 2-4 weeks after starting
    - If > 30% decrease in eGFR reduce or stop ACEi/ARB + consider renal artery stenosis
    - If K^+ > 6 mmol/L reduce or stop ACEi/ARB + consider dietitian and/or renal review
      - Beware most cases of hyperkalaemia are spurious
  - If BP above target on maximal dose → add Ca^{2+} channel blocker or thiazide (chlorthalidone likely best)
  - If BP still above target consider aldosterone blockade → beware of hyperkalaemia

- **Start lipid lowering therapy aiming for LDLc < 1.4 mmol/L irrespective of CV disease/risk**

When to refer to secondary care for kidney disease

- **At any time if there is suspicion of non-diabetic renal disease**
  - Short duration of diabetes e.g. < 5 years
  - Young patients e.g. < 30 years of age
  - Decline in eGFR > 1 mL/min per month OR > 15 mL/min per year
  - Decline in eGFR by > 30% with ACEi or ARB
  - No evidence of diabetic retinopathy
  - Family history of renal disease
  - Overt alternative causes of renal disease e.g. connective tissue disease, recurrent UTIs etc.

- **ASAP** once renal disease **progresses to severity threshold** for your country
  - NZ → **refer if eGFR < 30 mL/min OR eGFR < 45 mL/min with UACR > 30 mg/mmol**

Management of diabetic foot disease

Management of diabetic foot disease

- 50% of people with T2D will develop significant foot disease
  - Examine feet at least yearly + every chance if high risk

- **All patients with diabetes should be advised on basic foot cares including:**
  - Regular self-checks of their feet including daily if high-risk + notify if any deterioration
  - Always wearing suitable footwear inside + outside
  - Advice on nail cares + moisturise dry feet regularly → sorbolene cream useful

- **Recommended management of diabetic foot disease:**
  - Lifestyle management + smoking cessation
  - Glycaemic control to target → empagliflozin and/or GLP1RA useful if peripheral arterial disease
  - Blood pressure to target → any of ACEi/ARB, Ca^{2+} channel blocker or thiazide satisfactory
  - Lipid lowering therapy aiming for LDLc < 1.4 mmol/L
  - Early antimicrobial treatment of bacterial + fungal infections

Management of neuropathic pain

- Simple analgesia often effective in mild pain e.g. paracetamol – avoid NSAIDs

- If moderate or severe neuropathic pain then **'stepwise ladder'** often useful:
  - Low dose tricyclics e.g. nortriptyline 10 - 20 mg nocte
  - Pregabalin e.g. 75-150 mg nocte + titrate as required → reduce dose with renal impairment
  - Carbamazepine then valproate often useful adjuncts

- Topical capsaicin 0.075% 3-4 times daily useful **if localisable neuropathic pain**
  - Do not massage in + do not use on skin or unintended areas
  - Need to wash hands thoroughly after applying
  - Reassure burning sensation will settle + full effects take 4-6 weeks

When to refer to secondary care for diabetic foot disease

- **All patients with active foot disease should be URGENTLY referred:**
  - Foot ulcer
  - Spreading infection
  - Critical limb ischaemia
  - Gangrene
  - Possible active Charcot foot e.g. hot swollen foot +/- pain
  - Deterioration in postoperative wound/tissue

- Severe active foot disease needs to be referred to vascular surgery **immediately**
  - Otherwise can refer to diabetes services

When to refer to secondary care for diabetic foot disease

- **All high risk patients without active foot disease should be referred:**
  - Previous amputation
  - Previous ulceration
  - Consolidated Charcot foot
  - **Or any two of the following:**
    - Loss of sensation
    - Significant callous
    - Any significant deformity
    - Pre-ulcerative lesion
    - eGFR < 15 mL/min
    - Known PVD – includes claudication and/or an absent pulse
- Funding for podiatry differs between countries

Management of diabetic autonomic neuropathy

Diabetic autonomic neuropathy

- **Postural hypotension**
  - Important to assess postural hypotension in those with longstanding diabetes
  - Hydration, compression stockings/abdominal binder, fludrocortisone +/- midodrine if severe

- **Gastroparesis**
  - May occur in prolonged disease → exclude other causes + confirm with gastric imaging studies
  - Typically respond to dietitian input + domperidone 10 mg 20 – 30 minutes before meals

- **Sexual dysfunction**
  - Common + typically multifactorial in both men + women → screen at least annually
  - 'Traditional management' useful e.g. PDE5i in men, lubrication + Ovestin cream in women

Diabetic autonomic neuropathy

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Reduction in hyperglycaemia often significantly improves both autonomic neuropathy + neuropathic pain

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  - 'Traditional management' useful e.g. PDE5i in men, lubrication + Ovestin cream in women

Management of other complications of diabetes

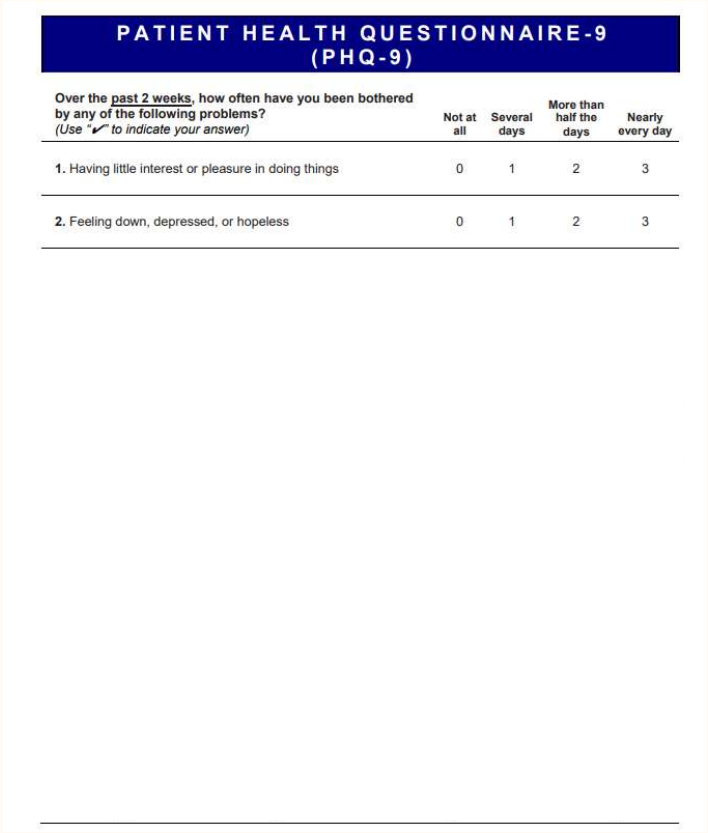
Dental + periodontal disease

- Diabetes major risk factor for dental + periodontal disease
  - Dental + periodontal disease independently increases glucose levels + complications
    - **Treatment of dental + periodontal disease vital to improve glycaemic control**
- Education on oral health + screening for oral disease important for all with diabetes
  - **Ideally do at diagnosis + at annual review**
- Access to dentists can be problematic
  - Use any assistance if available

Diabetes + depression

- Approximately 1 in 4 patients with diabetes have significant depressive symptoms
  - **More common in those with higher HbA1c and/or diabetes distress**
- Diabetes worsens mood + depression associated with increased glycacemia
  - **Treating depression improves glucose levels**
  - **Treating diabetes improves mood + decreases suicide risk**
- Important to screen for depression in patients with diabetes at least yearly
  - **PHQ-9 questionnaire useful part of diabetes annual review (can shorten to PHQ-2)**
- Psychotherapy + pharmacological treatment (e.g. SSRIs) both effective

PHQ-2 questionnaire



PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the past 2 weeks, how often have you been bothered by any of the following problems? *(Use "✔" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Having little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3

NB: 1st 2 questions often useful quick screening test

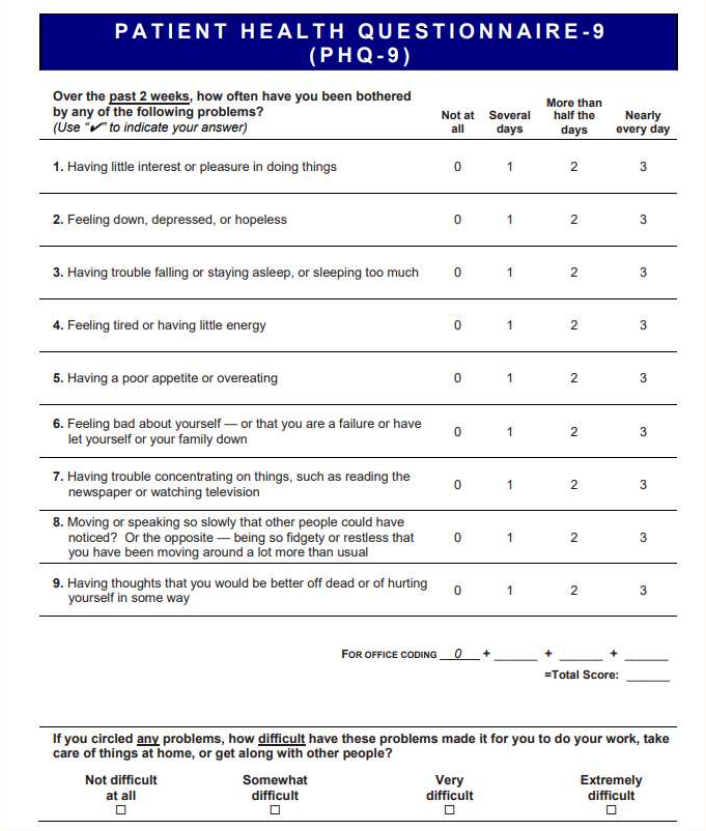
If score ≥ 3 then move on to do full PHQ-9

Over the past 2 weeks how often have you been bothered by:

1. Having little interest or pleasure in doing things
2. Feeling down depressed or hopeless

0 – not at all 1 – several days 2 – more than half the days 3 – nearly every day

PHQ-9 questionnaire



PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

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1. Having little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Having trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Having a poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Having trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Having thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING 0 + _____ + _____ + _____
=Total Score: _____

If you circled any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

PHQ-9 score	Depression severity	Proposed treatment plan
0 - 4	None	None
5 - 9	Mild	Watch + repeat
10 - 14	Moderate	Consider counselling and/or psychotherapy
15 - 19	Moderately severe	Start counselling and/or psychotherapy
20 - 27	Severe	High risk - start counselling and/or psychotherapy + refer as needed

NB: Clinical assessment always most important guide

Management of diabetes distress

- Most people with diabetes will experience significant diabetes distress at some stage
  - More likely in young adults, Māori + Pacific peoples & with complex treatment regimens
- Diabetes distress is different to depression + can create significant treatment barriers
- Important to screen for diabetes distress in people with diabetes at least yearly
  - **DDS2 questionnaire useful part of diabetes annual review**
- Psychology input + wrap around supportive care likely both important

DDS-2 questionnaire

Consider the degree to which each of the 2 items may have distressed or bothered you during the **past month**

Item	Not a problem	A slight problem	A moderate problem	A somewhat serious problem	A serious problem	A very serious problem
Feeling overwhelmed by the demands of living with diabetes	1	2	3	4	5	6
Feeling that I am often failing with my diabetes routine	1	2	3	4	5	6

Score ≥ 3 suggestive of high diabetes distress

What are the take home messages?

Take home messages

- Regularly screen for complications → **annual review often most practical opportunity**
- **4 cornerstones of management to reduce progression of diabetic complications:**
  - Lifestyle management including smoking/vaping cessation
  - Glucose levels to target with best glucose-lowering therapies
  - BP to target particularly with ACEi or ARB in diabetic renal disease
  - LDLc < 1.4 mmol/L if microvascular or macrovascular complications or equivalent CV risk
- **Refer to secondary care, community podiatry + dental care when indicated**
- **Screen for + treat depression & diabetes distress**
  - **Ensure families receive all support available**

Upcoming webinars

1. **Lifestyle management, Metformin & Vildagliptin**
   Niue - Monday September 8th at 6pm
   Cook Islands - Monday September 8th at 7pm
   Aotearoa, NZ - Tuesday September 9th at 5pm
   Zoom link

2. **Sulfonylureas & Insulin + Management of Hypoglycaemia**
   Niue - Monday September 15th at 6pm
   Cook Islands - Monday September 15th at 7pm
   Aotearoa, NZ - Tuesday September 16th at 5pm
   Zoom link

3. **New Diabetes Medication, Technology & Management algorithm**
   Niue - Monday September 22nd at 6pm
   Cook Islands - Monday September 22nd at 7pm
   Aotearoa, NZ - Tuesday September 23rd at 5pm
   Zoom link

4. **Glycaemic, Blood Pressure & Lipid Targets + Management**
   Niue - Monday September 29th at 6pm
   Cook Islands - Monday September 29th at 7pm
   Aotearoa, NZ - Tuesday September 30th at 5pm
   Zoom link

5. **Diabetes and Sick Day Management, Driving & Pregnancy**
   Niue - Monday October 6th at 6pm
   Cook Islands - Monday October 6th at 7pm
   Aotearoa, NZ - Tuesday October 7th at 5pm
   Zoom link

6. **Management of Complications Related to Diabetes**
   Niue - Monday October 13th at 6pm
   Cook Islands - Monday October 13th at 7pm
   Aotearoa, NZ - Tuesday October 14th at 5pm
   Zoom link

7. **Inpatient Management of Diabetes**
   Niue - Monday October 20th at 6pm
   Cook Islands - Monday October 20th at 7pm
   Aotearoa, NZ - Tuesday October 21st at 5pm
   Zoom link

Case for discussion – Mr T

- 64 year old man with type 2 diabetes with previous right 5th toe amputation,
  - His main concern is increasing neuropathic pain in the right forefoot + difficulty mobilising
  - BP 150/90 mmHg + LDLc 3.6 mmol/L
  - HbA1c 86 mmol/mol (10%)
  - Cr 78 umol/L + no protein on urinary dipstick but significant retinopathy
  - Not taking any medications at present
- How will you manage his neuropathic pain?
- How will you reduce the progression of his diabetic complications?
- He refuses to take insulin – how will you manage this?

Discussion