

# Diabetes Network News



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Dear Readers,

Welcome to the November edition of Diabetes Network News. We would like to thank our sponsors and volunteers for 2010 - Sanofi-Aventis for their sponsorship of our Regional Education Series, and the Diabetes Action Group (DAGS – Diabetes Centre TQEH) for their generous assistance throughout the year.

We would like to thank all of the guest presenters from the diabetes videoconferencing series, the diabetes audioconferencing series and the regional education series;

Dr Pat Phillips, (previous) Director Endocrinology, TQEH

Dr Elaine Pretorius, Directory Endocrinology LMHS

Dr David Mills, GP, Adelaide

Sandy Wilson, Aboriginal Health Worker, Murray Bridge

Pauline Hill, Senior Lecturer, University of SA

Dee Travis, Education Facilitator, FMC

Dr Sara Jones, Senior Podiatrist, University of SA

Dr Ian Chapman, Endocrinologist, RAH

Marc Campbell, Dietitian, QEH

Barbie Sawyer, Nurse Practitioner, Mt Gambier

Diana Sonnack, CNC, RDNS

Kate Williams, CN, WCH

Without the generous contributions of these specialist health professionals Diabetes Outreach would not be able to provide such high quality education programs and resources.

Jane Giles, Manager - Education

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## Diabetes Outreach

Diabetes Outreach is a program of Country Health SA co-located with The Queen Elizabeth Hospital Diabetes Centre. The service provides continuing education and support programs for health care providers and assistance with service planning.

### Diabetes Outreach

- > Provides training and support for rural and remote health professionals.
- > Contributes to local and regional networks.
- > Promotes evidence based standards of care.
- > Facilitates access to information about quality assurance and documentation.
- > Facilitates access to information about population health needs.

### We offer:

- > Education resources for health professionals and people with diabetes.
- > Education programs conducted in rural and remote areas.
- > Distance education programs.
- > Peer support.

### The vision of Diabetes Outreach is:

**Better health for rural and remote South Australians by supporting health service providers towards best practice in diabetes care.**

The Diabetes Outreach team is located at 8 Woodville Rd, Woodville SA 5001. Visit our website [www.diabetesoutreach.org.au](http://www.diabetesoutreach.org.au) for access to and information about education programs and free resources for both people with diabetes and health professionals.



L-R: Dr. Pat Phillips, Jane Giles, Kate Visentin, Sharee Westlake  
Cover pict: Country Diabetes Educator Network

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## South East Regional Community Health Service

Alison Aston RN DE and Barbie Sawyer MN(NP) CDE RN,  
Diabetes Nurse Practitioner

The South East Regional Community Health Service (SERCHS) Lower South East Diabetes Education Team consists of Diabetes Educator Alison Aston, Diabetes Nurse Practitioner, Barbie Sawyer, and casual Diabetes Educator, Alba Kraatz. The area serviced by our team covers a population of around 43,000 people which includes Mount Gambier and outreach clinics at Penola and Millicent and delivers diabetes education and care for people with type 1 diabetes (including paediatrics), type 2 diabetes, gestational diabetes and pre-diabetes. We work in collaboration with the SERCHS dietetics and podiatry teams.

Services offered by the team include group and one on one education for people newly diagnosed with type 2 diabetes; one to one education for people newly diagnosed with type 1 diabetes including families of children with type 1 diabetes; and in collaboration with general practitioners (GP), education for commencement of insulin therapy and dose adjustment and titration. We also offer continuous glucose monitoring and DCA point of care HbA1c.

The Diabetes Nurse Practitioner (NP) has a special interest in type 1 diabetes and in partnership with the Mount Gambier Private Hospital and local GP Dr Ronan Mackle has enabled the introduction of continuous subcutaneous insulin infusion pump, a service for which clients previously travelled to the city to access. We have received very positive feedback from 'pumpers', and are currently undertaking staff education in the Mount Gambier Health Service around management of inpatients with an insulin pump. The local Mount Gambier Health Service Nurses Education Fund organised an evening education session for nursing staff from the lower South East which was very well attended. Excellent feedback was received following the session.

We also offer adults with type 1 diabetes the Dose Adjustment for Normal Eating (DAFNE) program. Our DAFNE accredited staff include Credentialed Diabetes Educator Diana Vine from the upper South East, Diabetes NP Barbie Sawyer who facilitates the program, and lower South East SERCHS dietitians Esther Ang and Belinda Carpenter. This five day program is run twice a year with a group limit of 6-9 people. Outcomes from the program have been very positive with improvements in quality of life indicators and HbA1c of participants. Participants also meet informally for a DAFNE lunch 4 or 5 times per year.

We have recently commenced a paediatric diabetes clinic in collaboration with the local paediatrician, paediatric endocrine registrar and the paediatric endocrinologist from the Women's and Children's Hospital. This is in addition to

our usual 6 monthly Paediatric Endocrine Clinic. The extra clinic will run 2nd monthly and children will be seen by the local paediatrician and paediatric endocrine registrar with a video conferencing link with the paediatric endocrinologist. The diabetes educators will assist to coordinate care and carry out HbA1c testing using the DCA machine, weigh the child and measure blood pressure. We have well established rapport with most families, and general discussion regarding the family, diabetes management and issues arising from this discussion can then be considered during the consultation with the paediatric endocrinologist.

CSII pumps are downloaded and reports printed by the Diabetes NP who discusses management of the CSII with the family. The report is reviewed by the paediatric endocrinologist and adjustments to pump settings are made by the child or family with the assistance of the Diabetes NP as required. We have recently had two local children diagnosed with type 1 diabetes with both families being able to be educated locally. We consulted the CNC of the Women's and Children Hospital, Marianne Lambert on any issues we needed assistance with and were appreciative of her support. The families of both children were very appreciative of being able to access this service at a local level. We also assist with preparation of school care plans, and act as a resource for school education when teacher, class or school changes occur.

This year we decided to increase our involvement with the Juvenile Diabetes Research Foundation Walk for a Cure. A small dedicated group of mothers of children with type 1 diabetes, and a client with type 1 diabetes ably assisted by Alison have been very busy organising this important community event. Local mother Narelle Klingberg has largely facilitated the event, which included organising monthly committee meetings, gaining council approval, organising entertainment and sponsorships, fund raising and organising teams. We are all involved in promoting and progressing this event.

We are also keen to establish a support group for people with type 2 diabetes. Alison is facilitating this in conjunction with the local Obesity Prevention and Lifestyle (OPAL) project officer. The initial plan is to organise a community walk followed by a meeting to gauge interest in formation of the diabetes support group. The idea is to enable support and networking plus encourage increased physical activity for people with type 2 diabetes.

Alison and Barbie both attended the annual ADS/ADEA Scientific Conference, with Barbie presenting posters on DAFNE program outcomes. Barbie is also presenting an oral abstract at the International Nurse Practitioner Conference in Brisbane in early September. Our year has been very busy as we also provide education to local aged care workers, TAFE students and hospital staff. Alison is also very busy organising her portfolio to apply for her Diabetes Educator Credentialing.

## News from the South East

Di Vine, RN CDE and Helen Grummett RN DE

South East Regional Community Health Service (SERCHS) provides services to an estimated population of 63,040 people, approximately 5,000 of whom have diabetes, living in the south east of the state. Four diabetes educators are employed at 2.8 FTE with two based at Mt. Gambier in the Lower South East and two in Naracoorte and in the Upper SE. Diabetes clinics are held weekly at Bordertown, Naracoorte and Kingston and monthly at Lucindale and Robe in the Upper South East. The Lower South East has a five day a week service in Mt Gambier and clinics are held second weekly in Millicent and monthly at Penola.

The team of diabetes educators along with the regional community nurse manager gets together monthly at network meetings held alternately in Naracoorte and Mt. Gambier and planned to coincide with the Diabetes Outreach Videoconferencing Education sessions. The SE Diabetes Network has a wider membership that includes other members of the multidisciplinary team but due to a number of circumstances it is not possible for the larger group to meet on a regular basis.

Over the last three years, as part of SERHS Diabetes Unit Continuous Quality Improvement Plan, there has been a strong focus on capacity building and workforce development.

### Performance indicators include:

- > Up-skilling registered nurses and Aboriginal health workers in the acute, residential, community health and Aboriginal health sectors in the region regarding the care and management of people with diabetes and to enable the introduction of Diabetes Resource Nurses into all health units.
- > Developing an education model to enable the provision of consistent and regular in-service training to nurses, Aboriginal health and aged care workers working in both the hospital and community setting in the South East.
- > Facilitating an annual South East Diabetes Update Day for registered and enrolled nurses and other health professionals in the region.

In 2008 after receiving a grant funded by Eli Lilly and with support from directors of nursing in the region SERCHS was in a position to offer a four day diabetes training program. Using the accredited National Association Diabetes Centre program 'Diabetes Management in the General Care Setting' a total of 36 registered nurses from hospitals and general practice as well as 3 Aboriginal health workers completed the program in November and again in March 2009. Delivered by two credentialled diabetes educators (CDE), dietitian, podiatrist and exercise physiologist, the program enabled many new

diabetes resource nurses to be introduced into local hospitals. Other positive outcomes included improved communication between nurses and diabetes educators across the private and public sectors and some improvement in discharge planning in a number of hospitals in the region.

In May 2009 the two diabetes educators from the Upper South East enrolled in Certificate 4 in Training and Assessment at TAFE with the aim of developing a diabetes training program for nurses that could be run over a number of 30-60 minute sessions. The TAFE course provided training in needs analysis, session and delivery planning, and development of assessment tools. There were also opportunities to work on group presentation skills both face to face and via videoconferencing.

After completing a needs analysis, a four part training program focussing on several key areas of diabetes self-management was developed. Topics included 'Blood glucose and ketone monitoring', 'Sick day management', 'Insulin administration' and 'Hypoglycaemia management'. This year the diabetes team have been working on fine tuning and trialling the program and it will be ready to roll out across the region in the next couple of months.

Early this year a non-government organisation providing aged care services in the South East asked SERCHS to provide training in diabetes management to their aged care workers. An education package was developed that included a two hour session plan, assessment and evaluation tools and a list of written resources. The training was delivered by two CDEs to approximately 100 aged care workers at their annual mandatory training day held in March and August at both Naracoorte and Mt. Gambier.

In September this year the fourth annual SE Diabetes Update Day was held in Naracoorte. Alternating between Naracoorte and Mount Gambier the event is growing each year and coincides with a visit to the South East by the Diabetes Outreach team. This year the focus of the morning sessions was on the role of health professionals in diabetes care including the new role played by nurse practitioners, practice nurses and pharmacists. The keynote speaker in the afternoon was endocrinologist Dr. Elaine Pretorius talking on 'Diabetes in the elderly'.

Collaborative diabetes care with the Aboriginal health workers at the Aboriginal health centre Pangula Mannamurna in Mt. Gambier has been established and regular diabetes clinics are planned to commence there later this year.

Ensuring the provision of quality care for people with diabetes in the region is the overarching goal of SERCHS diabetes education unit and increasing the skills and knowledge of staff is an important contributing factor in achieving this.

## Podiatry services in the South East

Sophie Henke, Podiatrist

In the South East there are three Podiatrists (Sophie, Claire and Les) providing services across the region for the South East Regional Community Health Service.

Our team covers the region with visits fortnightly to Naracoorte, Bordertown and Kingston and weekly to Millicent. We are all based in Mount Gambier where the bulk of the population resides. The SE has a population of 63,000 with two thirds in the Lower SE. The longest journey is to Bordertown and Kingston – a two hour drive away and involves an overnight stay in Bordertown.

The majority of clients we assist have diabetes and a comprehensive range of podiatry services are provided to all age groups and in addition to clinical services include

a monthly education programme for people with newly diagnosed diabetes. The programme is run in conjunction with the dietitians and diabetes educators. We also see a number of clients referred from the local Aboriginal Community Controlled Health Organisation, Pangula Mannamurnna and participate in their Annual Diabetes day.

We manage a high number of clients with leg ulcers and work closely with the Flinders Medical Centre Podiatry Team in managing mutual clients. We also liaise with the clients general practitioners (GP's) in providing neurovascular reports as well as wound clinic reports. To ensure a comprehensive approach we also work closely with a range of other health care professionals, including private podiatrists to deliver the best outcomes for the clients.

Working in the South East is full of challenges, especially when we are short staffed, but the support of our colleagues and our good working relationships with other health professionals including the local GP's all help to achieve positive outcomes which is very rewarding.

## Ferrers Medical Clinic- Mount Gambier

Ruth Heaver, Practice Nurse and Denise McIntosh, Diabetes Support Person

In 2006 I was approached by our Practice Manager to implement a nurse led Diabetes Clinic. The aim of establishing the clinic was to provide a proactive and systematic management system which benefited both the patient and the General Practitioner (GP).

### Why did we do it?

The impetus for establishing the diabetes clinic came about from our involvement with the National Primary Care Collaborative (NPCC). It became obvious that the practice was not routinely offering GP management plans and Team Care Arrangements to people with diabetes. This often occurred because patients were presenting when they were unwell, and then they found they were unable to see their usual doctor.

### How did we do it?

Established clear outcomes for both GPs and patient

#### GP outcomes

- > Improved use of resources.
- > More efficient use of consulting time – all pathology etc organised prior to appointment.
- > All measurements eg BP, weight, waist etc taken prior to appointment.
- > Improved access and continuity of care for their patients with diabetes.

#### Patient outcomes

- > Regular monitoring of key indicators such as HbA1c, weight.
- > Continuity of care – automatic recall allows patients to see their own doctor in a timely manner.

- > Preventive action – problems identified early and appropriate treatment implemented.
- > Maximising uptake of entitlements under the enhanced primary care scheme such as podiatrist, dental care.
- > GP management plan – a hand held document which enables patient to monitor their own progress and set goals. Also becomes a medical summary which can be used if taken to hospital or to other appointments.

### Identified our patients with diabetes

As part of being involved in the NPCC program we were able to collate our data and extract a list of all patients who had a diagnosis of diabetes.

### Improved access to continuing diabetes education for the nursing team

The diabetes educator, dietitian and podiatrist from the South East Community Health Services provided education sessions to update our knowledge and ensure we were all working as a team to help people self manage their diabetes.

### Developed diabetes template

We set up generic GP Management Plans and Team Care Arrangements templates within our clinical software in which we could add current measures and pathology test results.

### Liaised with our local private Allied Health Professionals

A Team Care Arrangement (TCA) involves referral to Allied Health Professionals. We contacted private podiatrists, physiotherapist and dentists in Mount Gambier to see if they were able to participate in TCA.

### Developed database

It became obvious that our clinical software was not suitable for the level of documentation and tracking that we required. A separate database was established which effectively allowed tracking of pathology results, referrals to allied health professionals without having to constantly scan through patient files.

### Establish a structure

It was important that we established a recall and appointment structure that was efficient and would have minimal impact on the overall running of the practice. For us, this meant three monthly reviews, with the diabetes clinic scheduled for one day of the week. We found that this allowed for better utilisation of staff.

### Ensured that we were sufficiently resourced

As we moved through the process it became apparent that it was impossible for our nurses to entirely manage the program. It was more efficient to pass administration duties to a clerical person, hence the role of the Diabetes Support Person was created, and the Diabetes Team was established with clearly defined roles for the Diabetes Practice Nurse and Diabetes Support Person.

### Sold it to our patients

Once we were able to establish a list of our patients with diabetes each doctor was asked to nominate those patients who would be suitable for the program. These patients were sent a letter of invitation to attend the clinic. Patients were also bulkbilled for consultations and this provided further encouragement to attend.

### How does it work?

The clinic is structured on three monthly reviews. The first appointment is 30 minutes with the diabetes practice nurse then there is a follow up appointment with the GP on the same day. The clinic is scheduled for one day of the week, for better utilisation of staff.

- > GP Management Plan claimed every 2 years.
- > GP Management Plan Review claimed every 6 months.
- > Diabetes Annual Cycle of Care every 11 to 13 months.

### Prior to the diabetes clinic appointments

The patient is sent a reminder letter as well as any necessary pathology form ensuring that all results are available on the day of the consultation. A data collection sheet is prepared for the nurse with details of the available results as well as details of attendances with allied health professionals.

### At the diabetes clinic consult

At each consult the patient receives a comprehensive resource pack.

- > At each consult the nurse works through the data collection sheet which is formulated to ensure that the Diabetes Annual Cycle of Care requirements are met.
- > Check self blood glucose monitoring technique, check insulin injecting sites.
- > Smoking/Alcohol status - If interested in giving up offer Quitline program information.
- > Discuss physical activity recommendations and strategies for increasing exercise
- > Discuss hypoglycaemia including how to recognise a hypo and use of a hypo kit. Fact sheet provided.
- > Foot exam including checking pedal, tibial pulses and sensation. If patient not seeing a podiatrist regularly nurses check feet every 6 months. Foot care fact sheet is also given.

Ensure that;

- > B12 is checked annually if on Metformin.
- > Patients have regular dental check.
- > Patients are informed about the need to notify motor vehicle licensing authorities and their insurance companies about their diagnosis of diabetes.
- > Immunisation status is up to date.
- > Patients are registered with the National Diabetes Service Scheme.

Check need for referral to

- > Diabetes educator, initially, then as needed.
- > Dietitian, initially, then as needed.
- > Podiatrist as required.
- > Ophthalmologist/Optician, initially, then every two years.

### Behind the scenes

Once the nurse has completed the consultation the data collection sheet is delivered to the diabetes support person, who enters the information into the GP Management Plan template. The document is then printed out and delivered to the treating doctor.

### At the GP consultation

The doctor reviews the GP Management Plan with the patient and if both in agreement the doctor signs and gives the plan to the patient.

Role of the Diabetes Practice Nurse

- > Data collection – carrying out observations such as weight, BMI, blood pressure etc and recording measurements.
- > Foot examinations.
- > Providing education, encouragement and support to patient.
- > Maintaining the Diabetes Annual Cycle of Care.
- > Co-ordinating referrals to allied health professionals.
- > Continual research and education to ensure that the program is operating to its full potential.
- > Support and promote clinics benefits.

### Role of the Diabetes Support Person

- > Preparation of the Data Collection sheet for the nurse.
- > Calculating the recommended item numbers which can be charged on the day.
- > Preparing the GP Management Plan. Entering data collected from the nurse consultation, printing and delivering the document to doctor for review.
- > Maintaining and operating the recall and reminder system.
- > Organising pathology forms. Ensuring appropriate forms are sent with recall/reminder letters.
- > Maintaining the data base.
- > Support and promote the clinics benefits

### What have we learnt?

- > It is important to start small, don't try and target all patients at once.
- > There is a lot of help and advice out there, don't be afraid to ask.

- > Good relationships with local allied health professionals are essential.
- > The development of our dataset has been crucial. We eventually sought professional help in this area.
- > It is important for us to have more than one nurse and one support person so absences can be covered.
- > If something is not working, change it. We have made many modifications along the way.

### Growth of the Diabetes Clinic

In 2006 we had 200 patients on our data base; we have slowly built our way through to presently caring for over 565 people with diabetes.

### Evaluation/Feedback

From a former GP at the clinic

*'For me and my patients this clinic has been excellent. I can tell you the few patients that aren't part of the clinic have a very bad glycaemic control and are at high risk for complications. Doing the ground work for us before we see the patient is excellent and helps reduce the workload'.*

### Patients Evaluation Form

Evaluation for the patents has demonstrated that they value the clinic. This is highlighted by comments such as:

*'I like the way they keep a check on my health and the advice they give me on my test levels. They help me to stay on the right path'.*

*'Level of information supplied. Follow up for upcoming appointments.'*

*'Keeps me informed of how my diabetes is going with blood tests etc'.*

*'I think they do a wonderful job. They have helped me a lot'.*

*'Staff are always helpful and courteous. I would like the diabetes clinic to keep operating'.*

*'Keep up the good work. I appreciate the effort in monitoring my diabetes'.*

Thank you to Jane Giles, Diabetes Outreach who I consulted with when setting up our data collection sheet (way back in 2006)



Photo. Linda Blazseka Practice Nurse, Denise McIntosh Diabetes Support Person, Ruth Heaver Practice Nurse

Sitting. Fay Attiwill 'a happy customer'

## ADEA/ADS Conference report 2010

Jane Giles, RN CDE and Kate Visentin, RN CDE

The 2010 ADS/ADEA conference was held in Sydney on the 1st, 2nd and 3rd of September. It was a great three days and we have included a selection of interesting abstracts that were submitted as part of the conference. We have also attempted to summarise some of the sessions we attended.

### Health literacy

#### Dr Ann Albright

Understanding health literacy is an important part of the health professional role. Ann Albright was an invited speaker from the Division of Diabetes Translation, Centres for Disease Control and Prevention, Atlanta, United States ([www.cdc.gov/diabetes](http://www.cdc.gov/diabetes)). She defined health literacy as the 'degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions'. Health literacy is not just about reading and writing. This means that a person can be literate but still have limited health literacy. General literacy is only one factor that affects health literacy. Numeracy is another area that needs to be addressed as part of health literacy.

Dr Albright highlighted that individuals with limited health literacy tend to be less frequent users of preventative services such as flu injections. They are frequently less effective at managing chronic disease such as diabetes. They are also less likely to successfully navigate the health system and report a sense of shame about literacy skills. Some of the barriers to health literacy include:

- > Use of technical or medical technology.
- > Reliance on print communication.
- > Focusing on information rather than actions.
- > Limited awareness of cultural differences.

How can we improve health literacy?

- > Generate interest in health literacy within your organisation.
- > Measure health literacy using tools.
- > Use plain language.
- > Use familiar language in an active voice.
- > Place the most important message first.
- > Use "chunking" (put similar information together).
- > Train staff.

## HbA1c – Things are changing – Diagnostic role and new reporting

**Dr Peter Colman**

The presentation reminded us that A1C is the well established standard for measuring glycaemia control, and that it reflects blood glucose control over the past 6-10 weeks. The role of A1C in diagnosis of diabetes has been discussed at various times and it is again on the agenda. Problems associated with securing a fasting blood sample and the variability associated with the oral glucose tolerated test puts the consideration of A1C for diagnosis forward.

Australian research and the American Diabetes Association (ADA) have found that an A1C of 6.5% was associated with diagnosis, and the ADA has now recommended that A1C can be used for diagnosis. In Australia it is not yet recommended as there are some issues that still need to be clarified to ensure accuracy and consistency. These issues include;

- > Maintaining precision and consistency of measures between laboratories using different assay methods.
- > A1C identifies 1/3rd less than if looking at fasting blood glucose less than 7mmol/L (ADA).
- > A1C affected by factors such as haemoglobinopathies, anaemia and disorders that increased red cell turnover.
- > Impractical in diagnosing gestational diabetes due to altered red blood cell turnover and haemodilution.

## Cognitive impairment in type 2 diabetes the why's and wherefores' (sic)

**Dr. David Bruce**

David described how older people with type 2 diabetes have an increased risk of developing cognitive impairment compared to the non diabetes population. This impairment presented as various clinical syndromes that result in memory loss, frontal-executive function and frank dementia. There is a 1.5 – 2.0 times increase in both Alzheimer's disease and vascular dementia as compared to the general population. There is some evidence linking microvascular disease with dementia and increased susceptibility and duration of diabetes appears to be an independent risk factor.

## 'Such sweet sorrow' - A liaison psychiatrist looks at diabetes and depression

**Dr. Ralph Ilchef**

Risk factors for depression are similar to those for type 2 diabetes. More than a quarter of people with diabetes have clinically significant depressive symptoms. In addition it can also be said that having diabetes doubles a person's risk of depression.

It has also been found that only 51% of cases of depression are recognised, and that only 46% of these receive antidepressant medication, and only 4.6% of these receive psychotherapy treatment (Petra, 2009, Current Opinion in Psychiatry Issue 22, Nth American figures)

## Double, double toil and trouble – Mental illness and metabolic disease

**Dr. Roger Chen**

Schizophrenia is the most serious mental illness with only 1/3rd of people resuming a life close to normal. 1/3rd are functionally impaired and 1/3rd are permanently disabled. Life expectancy is reduced by 15-20 years mostly due to the significant increase in cardiovascular disease. They also have an increased risk of obesity, diabetes, dyslipidaemia, hypertension and smoking. There is a 2-3 times higher prevalence (15 – 20%) of diabetes.

There is an important role for medication therapy, using atypical antipsychotics. There are positive effects such as improving quality of life and reducing the risk of suicide. There are however some problems such as the medications can induce weight gain and can potentially worsen other risk factors such as dyslipidaemia. Weight gain is generally early and rapid with a dramatic increase in hunger in the early days. The subsequent intake increases particularly visceral fat and causes a rapid induction of insulin resistance. Physiological changes such as the effects on satiety, the feeding centre and receptor affinity with histamine all contribute to the multiple mechanisms controlling food intake. Other effects include reduced activity and reduction in energy expenditure. It was noted that if medications are stopped there is an improvement in blood glucose even without weight loss, showing the direct effect of the medications aside from weight gain.

## Diagnosing and treating diabetic neuropathy: Can we do better?

**Dr Rayaz Malik**

We know that diabetic neuropathy is common and causes substantial morbidity in the form of pain and ulceration. Dr Rayaz Malik's presentation focused on the way that neuropathy is diagnosed and he discussed how we have focused on large fibres with little assessment of the small fibres. Large fibres are often assessed using a 10gram monofilament. To assess the small fibres a skin biopsy needs to be performed but Dr Malik's work is looking at assessing small fibres through examining the cornea.

Dr Malik highlighted that

- > 90% of fibres are small.
- > 10% of fibres are large.
- > The earliest damage is to the small fibres but we are diagnosing until large fibres are damaged.
- > In impaired glucose tolerance small fibres are picked off very early and so the early stages of neuropathy have already occurred.

How Dr Malik's work can be incorporated into current practice remains unclear at this stage however further research into corneal examinations and the clinical relevance of diagnosing neuropathy by looking at the short fibres will be important for diabetes educators to refine their education strategies.

## Diabetes and related conditions in urban Indigenous Australians: the Druid Study

### Dr. Louise Maple-Brown

The Darwin Region Urban Indigenous Diabetes (Druid Study) was designed to address a knowledge gap about diabetes care and complications in the urban setting where the majority of Indigenous Australians live.

#### Aim:

- > To get a better understanding of diabetes and related conditions in an urban area.
- > The Druid methods were designed to match AusDiab.

#### Method:

- > Druid involved approximately 1000 Aboriginal and Torres Strait Islander adults.
- > Assessment included 75gram oral glucose tolerance test, fasting bloods, urine specimen and clinical measures.
- > Participants with diabetes underwent further assessment for complications of diabetes.
- > Albuminuria and renal impairment were also assessed.

#### Results:

The study has found that urban Indigenous Australians had a higher rate of diabetes and albuminuria but not renal impairment. These results highlight that either albuminuria is a superior prognostic marker of kidney disease or that differences in the pathophysiology of chronic kidney disease exists between Indigenous and non-Indigenous populations.

## Families, Fridges, Faith, Feasts and Famine. Nutrition and Diabetes in Indigenous Communities in Far North Queensland

### Alison Kempe

This was an interesting presentation which highlighted many of the issues for Aboriginal people in Far North Queensland. Alison commenced her presentation by providing information regarding what the health staff said when she asked them what they thought were the issues for Indigenous communities:

- > Closing the gap – Which gap?
- > Health Workers the key – Should be up skilled and mentored?
- > No one asked the Health Worker.

Alison then talked about what she called the 'F factors'.

#### The 1st F factor - Families

She talked about the importance of extended families which often included visitor.

- > Within these families there were mutual obligations to share resources such as food.
- > Whilst this can be viewed as a strength, it can also cause problems.
- > There are also housing shortages and over crowding.
- > There is also an extended burden of responsibilities.

#### The 2nd F factor - Fridges

What Alison said was don't assume that there is one.

- > There are a number of people for one fridge in a household, so even though there may be a fridge there can be so many people living in the house that the fridge is inadequate.
- > There can also be maintenance issues of the fridge particular in remote areas.

#### The 3rd F factor – Faith/Beliefs.

- > Torres Strait churches 'God will heal me'.
- > There may also be traditional beliefs in 'black magic'.
- > What caused the problem (diabetes).
- > For some people there may be a sense of fatalism and expectation that you will get diabetes and its complications no matter what.
- > Insulin may be associated with being sick or dying.
- > People may be in denial.
- > It is important to ask people what their beliefs are.

#### The 4th F factor – Feast, Famines and Finances.

- > Feasting tradition in the Torres Strait is common; during this time you need to eat a lot and it is rude to refuse.
- > It has become more frequent these days than what it traditionally was.
- > Food security can be an issue.

## Healthy Australian Aborigines have different body composition compared with non-Indigenous Australians (sic)

### Dr Jaqui Hughes

This was an interesting study which looked at the way Aboriginal people distribute their fat. The study:

- > looked at the differences in skeletal dimensions
- > looked at the differences in body fat distribution between Aboriginal and non – Aboriginal women; particularly central fat distribution.

Dr Hughes' study showed that there were significant differences in body fat composition between healthy young adult Aboriginal and non-Aboriginal people. Namely that;

- > Aboriginal females display striking central adiposity despite a similar body mass index.
- > Aboriginal males had similar measures of adiposity at lower body mass index than non-Aboriginal males.

Dr Hughes suggested that:

- > Future risk modification is needed.
- > We need to start primary health messages early and control weight gain of young Aboriginal people, so as to limit central abdominal fat.
- > In Aboriginal people a waist hip ratio is a simple tool to use to provide more information about their risk.

## Diabetes Mellitus and the Migrant Experience.

### Dr Sundram Sivamalai

This presentation looked at how diabetes is managed in

migrants. In Australia 28% of people are born overseas; and there are 190 languages according to Dr Sivamalai.

Some of the issues he raised were;

There are many language barriers both with verbal and written communication.

- > Low literacy rates are barriers to accessing services.
- > Migrants have language challenges including accent, body language, eg female eye contact with males, nodding of the head or smiling.
- > There may be stigmatisation.
- > It may be hard to access ingredients and difficulty in finding traditional foods.
- > The traditional foods may be very expensive.
- > There maybe staff misunderstanding about settlement stresses for migrants;

Example:

- > New place.
- > Isolation.
- > Poor social network for migrants.
- > Financially poor or unemployed.
- > Migrants are becoming less active since they arrived in Australia and this also contributes to the rates of diabetes.

Dr Sivamalai spoke about the importance of service providers being culturally sensitive. He stated that a person who is culturally sensitive understands that when ones own beliefs, values and attitudes are imposed on others, it can hurt others. He also discussed the importance of using qualified interpreters and where possible appropriately qualified staff.

### Illness Prevention in Culturally and Linguistically Diverse (CALD) Background Communities.

#### Dr Marta Menendez

Dr Menendez spoke about the concept of self management and how this can be foreign to people from CALD backgrounds. For example taking a participatory role is not often something that they do. She also spoke about the importance of cultural competence. Cultural competence is much more than awareness of cultural difference as the focus is on the capacity of the health system to improve health and well being by integrating culture into the delivery of health services.

### The Routine Pathology Tests in Diabetes.

#### Graeme Jones

This was a useful presentation as it gave a comprehensive overview of issues to consider. Dr Jones spoke about 'patient noise' in laboratory testing. 'Noise' refers to interference and variability of results. For example patient noise can refer to consideration of the time of day, food, other illnesses, medication, random variation and how all of these factors can contribute to variations in results. There can also be patient blunders and measurement noise, bias between labs, imprecision and inpatient specific factors. Sometimes there can be reporting noise by units, reference intervals and or transcription errors. There may also be also random variation

eg within the persons own biological variation. In summary all tests have 'noise'.

#### Glycated haemoglobin (HbA1c)

Some of the patient factors that can affect HbA1c include:

- > Other illnesses, eg: haemolytic anemia, chronic kidney disease.
- > Sometimes medication, blood transfusions, erythropoietin (EPO) can cause variation.
- > In terms of measurement there can be bias between labs as well as imprecision and so he suggested monitoring at the same laboratory where ever possible.

There will be some reporting changes to HbA1c in the future. The units that HbA1c is measured will be changed to millimole/mole. This will affect decision points. There will also be an estimated average glucose and this will be reported on the form.

#### Urine albumin

Urine Albumin samples can be affected by some aspects such as:

- > Generally it is recommended that patients obtain their urine sample first thing in the morning when they get up so that posture does not affect the results.
- > Other illness such as urinary tract infection, fever, menstruation, severe exercise can also affect the result.

If there is a positive result then the test will need to be repeated.

### The Value of Blood Glucose Monitoring in Insulin-Naïve Type 2 Diabetes: Results from the Structured Testing Program (STeP) Study.

#### Professor William H. Polonsky

Bill Polonsky identified some of the problems with current studies looking at the benefits of self blood glucose monitoring (SBGM) include;

- > Choice of participants often limited to those with an already low A1C. This is called a 'floor effect'. If just looking at A1C, then there isn't much opportunity to show improvement.
- > Clinical changes aren't being made based on these results, thus no improvement in A1C.
- > If participants show poor adherence to SBGM, they are still included in the study. If this was a medication adherence issue the person would be excluded from the study results.
- > Testing was structured and schedules were left to the patients to work out.

Questions to ask oneself when considering instigating SBGM include;

- > How are the results organised so action can be taken based on these results.
- > Is testing structured and the results displayed in a meaningful way.
- > Does the person share the results with their health professionals.

A study that is currently being undertaken is looking at more than 500 participants from 34 primary care locations. The

active group received point of care A1C, 4 times a year visits, and blood glucose monitoring equipment. The intervention group receives the above plus structured BGM education and the expectation they will do a 3 day blood glucose profile prior to medical review appointments.

The 3 day profile enables blood glucose patterns to be identified. These patterns inform clinical decisions. Having a 3 day profile prior to appointments also gives quality of results rather than quantity. Eg a detailed picture of the past 3 days versus 3 months of results that are scattered over many days.

Because there is evidence that BGM can make people depressed, the researchers will use the PHQ-8 to assess and monitor depression. Both intention to treat (ITT) and per protocol (PP) analysis was undertaken.

Finally a closing thought. There was some discussion about blood glucose monitoring being subjected to randomised clinical trials to prove its effectiveness.

The question being; is blood glucose monitoring seen as a monitoring tool or as a therapeutic intervention? If it is a monitoring tool, subjecting it to a clinical trial seems ridiculous. Health services don't subject thermometers to clinical trials to prove their usefulness in the management of fever?

## Gestational diabetes and type 2 diabetes in pregnancy in Australia

Dr Wah Cheung

It was described as a tsunami of gestational diabetes (GDM) followed by a growing wave of type 2 diabetes in pregnancy. The influencing factors contributing to the growing numbers of type 2 diabetes in pregnancy include obesity, cultural issues and socioeconomic disadvantage (table 1). In addition, type 2 diabetes in pregnancy and the adverse pregnancy outcomes are more common. It was also noted that women with type 2 diabetes who were pregnant received less pre pregnancy counselling and less preparation for the pregnancy eg folate (table 2).

Table 1

	Age	Prev %
Australia + New Zealand	29.4	2.7%
NE + SE Asia	31.6	9.4%
North Africa	2.9	6.4%
South Asia	30	11.5%
Pacific	30	8.2

Table 2

180 diabetic pregnancies from 10 hospitals (2009)		
	T1	T2
No	81	99
Neonatal deaths	1	5
Pre counselling	28%	12%
Folate	57%	36%

A study conducted by the author where by they examined traditional and non-traditional risk factors for GDM and for

the progression of GDM to type 2 diabetes included;

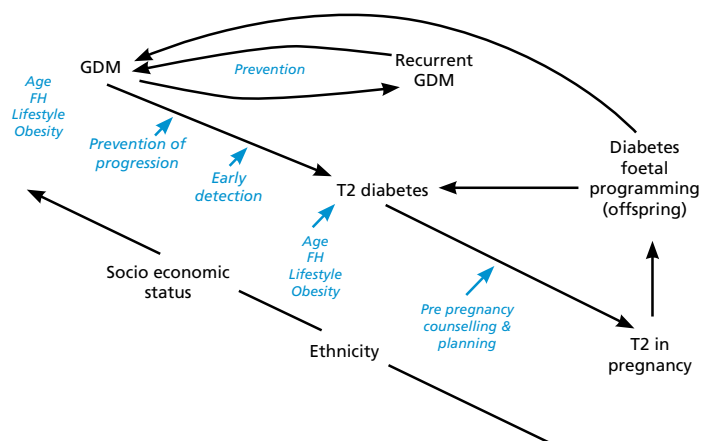
- > Those who were socially disadvantaged were 1.5 times more likely to develop GDM and progress to type 2 diabetes
- > 21 – 31% of type 2 diabetes in Australia is associated with prior GDM
- > Following GDM, 33% of women were sufficiently active (greater than 50 mins/week)
- > 5% met the vegetable intake recommendations
- > 44% met the fruit intake recommendations
- > 33% meet fat intake recommendations

Barriers to health lifestyle post GDM included;

- > Negative experience during pregnancy and delivery
- > Home situation
- > Support

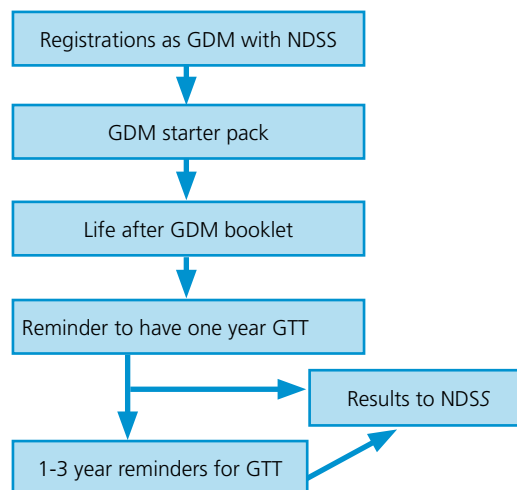
The concept of a GDM – type 2 diabetes – type 2 diabetes and pregnancy nexus describes the influences of the progression of GDM onto type 2 diabetes and the issues that arise due to type 2 diabetes and pregnancy (diagram 1).

Diagram 1: Nexus of T2D + T2D in pregnancy



Dr Wah Cheung also provided an overview of gestational diabetes and type 2 diabetes in pregnancy. Of interest from this session was that a national NDSS GDM Recall and Screening Program is currently being developed and should be launched in 2011.

Diagram 2: A National NDSS GDM Recall and Screening Program



## Selected abstracts from the ADS/ADEA Annual Scientific Meeting

### Evolution of draft design principles that guide the development of an internet based education intervention for children with type 1 diabetes

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<sup>2</sup>Faculty of Education, University of Wollongong, Wollongong, NSW, Australia

**Background:** For many children living with Type 1 diabetes the opportunity to be engaged in supportive self-management education over sustained periods of time is currently limited. Educational and social-cognitive theory suggests that Internet facilitated approaches have potential to support flexible, authentic, active learning, to enable appropriate support, and to facilitate sustained engagement.

**Aim:** To determine the design principles required for supportive, authentic, patient-centred, technology-enabled learning interventions for young people. This paper reports on Phase 1 of our study - the determination of the draft design principles that could be used to guide the building and implementation of a pilot Internet based intervention.

**Method:** In 2009, 5 children (11-13 years, >12 months post diagnosis, HbA1c <12), their parents, young adults with Type 1 diabetes, and clinicians participated in the study. A range of qualitative instruments was used.

**Results:** Analysis of data resulted in six draft design principles -

1. Enable ways to securely connect children with each other on line and support them develop positive online social interactions.
2. Actively involve and support parents.
3. Provide learning contexts that are engaging, interactive and reflect the ways in which knowledge and skills are acquired and used in real-life.
4. Enable activities that are authentic, that support articulation, provide feedback, and reflection, and that develop a range of diabetes self-management competencies.
5. Provide expert moderation, coaching and guidance.
6. Provide access to expert modelling.

**Discussion:** These draft principles have been used to guide the design and implementation of a pilot Internet based learning intervention. A secure website has been built as the hub for social contact, as well as the place where authentic learning activities are initiated, supported and discussed. The learning intervention provides ongoing monitoring, support and feedback. Further refinement of these draft design principles is expected from implementation data.

\*This research is an exploratory study and is being done as part of my PhD within the Faculty of Education, University of Wollongong. It is being conducted at the Women's & Children's Hospital and I would like to acknowledge the children, parents and the support of Marianne Lambert CDE and the Diabetes Unit staff. Presentation available at

<https://prezi.com/secure/ef7e1183b318d912d52300a62368c5dc2a9a7590/>

### Ankle brachial index: a comparison of measurement by palpation and doppler

R. Cox, M. Hodgson, J. Wang, P. Phillips

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**Introduction:** The Ankle Brachial Index (ABI) is a gold standard for the diagnosis of peripheral arterial disease (PAD) and it is defined as the ratio of the systolic blood pressure in the ankle divided by the systolic blood pressure in the arm. ABI can be measured by using a blood pressure cuff with palpation, a Doppler ultrasound device that magnifies vascular sounds or by a toe Doppler. The aim is to compare two techniques, Palpable and Doppler in measuring the ABI, using The Queen Elizabeth Hospital (TQEH) protocol by two experienced operators in diabetes patients attending a Diabetes Assessment Clinic

**Method:** The study included 71 patients (41 males and 30 females) with a mean age of 61.5 years in a 4 week period. Initially the use of a Toe Doppler was included as a reference value but equipment malfunction and limited availability of equipment prevented this.

The highest Brachial pressures was measured. The dorsalis pedis and posterior tibial artery pressure were then measured by palpation and Doppler in both feet (only the higher used) and the respective ABI's calculated.

**Results:** The ABI measured by Doppler technique is significantly greater than the measurement obtained using palpation technique ( $P < 0.001$ ). The difference in ABI is greater in the first 2 weeks of the study, 0.15 and 0.13 respectively and the difference is reduced to 0.06 in the last 2 weeks. The proportion of abnormal ( $ABI > 1.3$ ) is much higher if the Doppler measurement is used to calculate ABI.

**Table 1: ABI by palpation (P) or Doppler (D) techniques (Mean and SD)**

Week	N	ABI (P)	ABI (D)	ABI Difference between P and D	% classified as abnormal P vs D
1	17	1.09 (0.18)	1.24 (0.23)	0.15	12% vs 41%
2	18	1.04 (0.16)	1.17 (0.19)	0.13	0% vs 17%
3	16	1.14 (0.11)	1.20 (0.21)	0.06	6% vs 13%
4	20	1.14 (0.13)	1.19 (0.18)	0.06	16% vs 25%
Total	71	1.10 (0.15)	1.20 (0.20)	0.10	9% vs 24%

Discussion and Conclusions: The ABI is a simple inexpensive and non invasive test that can be used as part of a peripheral vascular assessment. Although palpation or Doppler should get similar ABI, even experienced operators obtain higher ABI using Doppler technique. There seemed to be a trend of gradual reduction in difference over the study period probably due to refined skills and accuracy.

## Highs and lows: evaluating the documentation and management of hyperglycaemia and hypoglycaemia

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Introduction: Insulin is a high-risk drug, accounting for about 15% of reported medication-related incidents<sup>1</sup>. Forms incorporating safety and enabling features have been implemented statewide for in-hospital intravenous and subcutaneous insulin and blood glucose management. Despite their introduction, the documentation of management of hypoglycaemic and hyperglycaemic events on these new forms remained poor<sup>2</sup>.

Aim: This project aimed to evaluate the documented recognition and management of glycaemic events and recommend possible improvements in insulin form design to assist clinicians in appropriate recognition, management and documentation in the future.

Method: Previous snapshot audit data was used to identify a pool of patients who had experienced glycaemic events. An audit tool was developed to evaluate hypo/hyperglycaemic events and implemented for the data from two large hospitals. Available medical records were reviewed for documentation of treatment; correspondence; follow up blood glucose levels (BGL); adherence to protocols and changes to ongoing diabetes management.

Results: Of the 40 patients identified as experiencing glycaemic events, 22 medical records were available and reviewed and 111 glycaemic events identified. The audit results showed recognition and treatment of glycaemic events was 75% for hypoglycaemia (documentation and treatment), 79.5% for hyperglycaemia documentation and 66% for treatment. 14.2% of hypoglycaemic events were not treated, compared to 18% of hyperglycaemic episodes. 50% of hypoglycaemia and 61% of hyperglycaemia resulted in no change to client management. Only 21.4% of hypoglycaemia and 9.6% of hyperglycaemic events were documented correctly as per protocols.

Conclusions: These results confirm that the documentation of the recognition and management of glycaemic events is suboptimal and adherence to protocols is poor. Changes intended to improve the recognition and overall management of glycaemic events have been incorporated into the statewide insulin forms in response to this study. Repeat audits will be conducted to assess the success of the modifications and guide further form development.

(1) Institute for Safe Medication Practices. List of high alert medications. 2008. Available at: <http://www.ismp.org/Tools/highalertmedications.pdf> (cited Aug 2008).

(2) McIver F, Mitchell C, Finn C, Kamp M. Standardising practices through form design and education improves insulin management. Australian Health Review. 2009 33 (3) 434:444

## A rural audit on preliminary csii therapeutic outcomes

J. Wilkinson, G. Chockalingam, S. Bohra, C. C. Lim, G. M. Kilmartin, J. F. Kilmartin

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Background: Current literature reports that compared to Multi Dose Injections (MDI), Continuous Subcutaneous Insulin Infusion (CSII) may be more effective in achieving better glycaemic control and quality of life in type 1 diabetes<sup>1</sup>. In Australia, the majority of paediatric, adult and obstetric diabetes services that currently offer and support CSII therapy are based in metropolitan teaching hospitals<sup>2</sup>. Although the benefits of CSII have been demonstrated in multi-centre studies, therapeutic outcomes in rural centres commencing CSII independently have been under reported<sup>1</sup>.

Aims: To investigate initial therapeutic outcomes of initiating CSII in a rural diabetes centre and to identify factors impacting on delivering a rural CSII service.

Methods: A retrospective audit was performed on patients commenced on CSII at the Goulburn Valley Health Diabetes Centre. Data including HbA1c, total daily insulin (TDI) requirements and weight at commencement, 6 and 12 months were collected and statistically analysed. Anecdotal observations on the establishment of the CSII service were documented.

Results: 7 female and 2 male patients with type 1 diabetes (12 to 52 yo) commenced on CSII over 12 months. The initial mean HbA1c of 8.4% improved 0.8% to 7.6%. (P=0.05), mean reduction between MDI and CSII TDI was 19 units (P=0.05). There was a statistically insignificant weight increase of 2.09 kilograms (P=0.48), one patient was excluded from weight calculation due to pregnancy.

Discussion: Improvements in HbA1c was close to statistical significance even with this small population; TDI requirements were lower with CSII as expected. Similar to most recent reports<sup>1</sup> mean weight increase was minimal and not statistically significant possibly due to improved patient lifestyle, but further evaluation is required. Anecdotally patient feedback was positive and continues to be quantified with validated scales. Observations showed that health administrators remain reluctant to support CSII programs which are not equitably accessible and financially responsible benefiting all patients with diabetes.

Conclusion: Introduction of CSII to a rural diabetes population demonstrated improved therapeutic outcomes. Lower patient numbers suggest that CSII programs can be more readily incorporated into existing diabetes clinics. Local challenges with delivery continue to exist and further locally based cost-benefit evaluation is required.

(1) Misso ML, Egberts KJ, Page M, O'Connor D, Shaw J. Continuous subcutaneous insulin infusion (CSII) versus multiple insulin injections for type I diabetes mellitus. Cochrane Database of Systematic Review

(2) Kilmartin GM, Kilmartin JF, Wilkinson J, Bohra S, O'Neal D, Jenkins A. Providing CSII Care Outside a Major Metropolitan Centre. *Infusystems Asia* 2008 Vol.3 NoA

## Nurses' and PCAs' diabetes knowledge: in regional public residential care

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Background: Diabetes management is complicated in residential aged care facilities. Although guidelines for elder care exist, they relate to community dwelling elders and do not account for and the complexity of care in institutional settings. Little is known about the impact of the current staffing mix in residential care on diabetes knowledge and its application.

Aim: Identify the staffing knowledge and organisational factors that influence diabetes care in two regional public residential aged care services. This presentation focuses on findings related to safe medicine administration.

Methods: A data triangulation strategy was used to collect the data: questionnaire (ADKnowl), staff interviews and a case file audit. Questionnaires were distributed to division 1 and 2 registered nurses and patient care attendants (PCA) (N=540) in two regional public residential aged care services. The ADKnowl was supplemented with additional questions and case vignettes specific to aged care. Twenty case file audits were undertaken in high and low care settings in both health services. Interviews were conducted with staff from both organisations to clarify practice issues.

Results: Sixty-eight people completed the surveys (12.5% response rate). Knowledge deficits were evident in administering OHAs, aspects of managing insulin, what HbA1c levels indicate, and diabetes comorbidities. Division 1 nurses achieved higher average knowledge scores of 74.3% compared to Division 2 nurses and PCAs with a score of 49%. The interviews suggested lack of time, unclear communication processes, inadequate knowledge about medications and resident behaviour compromised optimal diabetes management and medicine administration.

Conclusion: Staff involved in caring for residents with diabetes had suboptimal general and aged care-specific diabetes knowledge to deliver optimal care. System issues and unpredictable resident behaviours made care difficult including administering medicines.

(1) Bradley, C. (2003). The audit of diabetes knowledge (ADKnowl) user guidelines, 4th draft. Health Psychology Research, Royal Holloway University of London, Egham, Surrey, UK.

## Virtual nursing and the client with diabetes: technology influenced care

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Chronic conditions including diabetes will continue to exert pressure on the health care system and providers. New innovative solutions to practice and service delivery are high on the Federal and State health agendas, including skill mix and the introduction of Telemedicine. The Royal District Nursing Service SA Inc. (RDNS) introduced a Tele Health Program to address the increasing demand for once or twice daily medication management and supervision of clients with early onset of memory loss or mental health illness, who are living in the community.

Suitable clients have a 'video phone' installed, which is used- by the client and RDNS staff to provide a 'virtual visit', prompting oral medication and in addition for clients with diabetes, supervision and support with blood glucose monitoring and insulin administration.

The RDNS diabetes portfolio has a significant role to play in the assessment of potential clients for the program. Specific protocols and guidelines have been developed and implemented, together with a review process aimed at risk minimisation, maintaining clients independence and improving health outcomes.

The RDNS Tele Health Program will expand to one hundred and fifty (150) clients and it is anticipated that 15 - 20% of clients will require diabetes management and support.

Anecdotal evidence suggests that for a number of clients on insulin therapy, the virtual nurse program through daily contact and a weekly 'in home' visit undertaken by a diabetes nurse educator/or key nurse, has significantly improved clients glycaemic control, reduced hospital admissions and enhanced self care capacity.

A formal evaluation employing quantitative and qualitative data and analysis, including glycaemic control, hospital separation, client and service provider interviews and focus groups ,will be undertaken to demonstrate improvement in client health outcomes and value of this innovative technology supported service in delivering timely, safe and efficient nursing care.

## Standardising the treatment of hypoglycaemia in metropolitan public hospitals

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<sup>7</sup>*Diabetes Centre, Modbury Hospital, Modbury, SA, Australia*

<sup>8</sup>*Diabetes Centre, The Queen Elizabeth Hospital, Woodville, SA, Australia*

Background: Hypoglycaemia is one of the most common acute complications of diabetes treatment with insulin and some oral hypoglycaemic agents. The Metropolitan Public Hospital Diabetes Nurse Manager Forum has representation from eight public hospitals across Adelaide. This forum identified a lack of standardisation in the treatment and management of hypoglycaemia experienced by inpatients in the eight hospitals. Some hospitals already had flow charts and hypoglycaemia management kits available in clinical areas but some did not. This led to a review of the management of hypoglycaemia in four metropolitan public hospitals.

Aims: To ascertain if hospital nursing staff can correctly identify hypoglycaemic events; To identify if hypoglycaemic events were treated appropriately; To determine areas of documentation that require further education/improvement.

Method: An audit totalling 50 retrospective medical record entries identifying hypoglycaemia was undertaken in a broad range of clinical areas in four metropolitan public hospitals in Adelaide. To ensure consistency amongst sites, the audit tool was developed by the Metropolitan Public Hospital Diabetes Nurse Manager Forum.

Results: The medical record audit revealed that 36% (n=18) episodes of hypoglycaemia were correctly identified and treated in accordance with the individual hospital's guideline and documented appropriately. However, 64% (n=32) of hypoglycaemia events were treated inappropriately.

Conclusion: As a metropolitan-wide initiative the diabetes nurse managers collaborated with the aim of producing a standardised, evidence-based hypoglycaemia flow-chart and management kit. These are now being used in seven of the eight metropolitan public hospitals in Adelaide.

## Ward hypo management- what really happens?

[A. A. Stack, G. Dicker](#)

*Metro South Health Service District, Logan- Beaudesert Diabetes Service, Meadowbrook, QLD, Australia*

Background: The Logan Beaudesert Diabetes Service recognised that hypoglycaemia was not being managed appropriately on Lo hospital wards. This was leading to patients using inappropriate hypo management after discharge from hospital. Historically inservices had been presented for hospital ward nursing staff with limited impact. The diabetes service trialled an innovative process of evaluating the needs of the wards and then providing an interactive targeted education session.

Method: A survey was distributed to nursing staff on all wards to assess current knowledge of clinical characteristics of hypo's and practical application including what to do when a patient had a hypo. An interactive 30 min inservice was provided by the Diabetes CNC and Advanced Dietitian including feedback on survey results.

Results: 90 nursing staff and students participated in the 15 question pre inservice survey. The overall result was 39.48% correct answers. The survey highlighted the lack of knowledge of patients at risk of hypos and difficulties with current hypo

management including inappropriate poly joule preparation.

From the survey responses and discussions with the nursing staff a simple flow chart for hypo management was developed and placed in the medication charts for all patients to be trialled on two medical wards. Lucozade was trialled as hypo treatment as it requires no preparation.

The surveys were redistributed to all nursing staff two weeks after the inservice.

58 nursing staff and students completed the post inservice survey.

The overall score for all wards improved to 49.42% correct answers. The trial of the simple flow chart for hypoglycaemia management was successful and it was implemented in all wards in the hospital. Lucozade is now used on all wards in the hospital as hypo treatment.

Discussion: Engaging team members and providing interactive inservicing to nursing staff on Logan hospital wards has improved inpatient hypo management.

## Cognitive load and task complexity: a case study of teaching blood glucose monitoring

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<sup>2</sup>*School of Education, Flinders University, BEDFORD PARK, SA, Australia*

Introduction: A woman newly diagnosed with type 2 diabetes presents for her second diabetes education session. Her appointment was to learn how to monitor her blood glucose level. She identifies little confidence in her ability to use technology.

Description of issue and relevant observations: The woman was educated about the purpose of blood glucose monitoring, target levels for blood glucose and then shown step by step how to use the meter and finger pricking device. She was given the instruction booklet, an education leaflet, warranty card, NDSS registration and the educators' phone number in case she had any questions or problems using the meter. Despite the large cognitive load associated with learning the complex task of blood glucose monitoring, she said she was happy that she could follow the demonstration and understood what she needed to do when she went home.

Outcome: At home she was unable to use the meter. She tried multiple times that night and again the next morning. She remained unsuccessful. At the follow up appointment she was feeling very upset and discouraged. She reported feeling stupid about being unable to monitor. She demonstrated how she had tried to use the meter at home. The problem was 'incorrect insertion of the strip into the meter'. It was the only step she did not do herself when learning to use the meter. The relief was obvious and her previously happy demeanour was restored.

Recommendations: Diabetes Educators need to remember that:

- > blood glucose monitoring is a multifaceted activity with between 8 to 20 discreet steps or pieces of information;
- > cognitive load is a crucial component of the education process;

- > opportunity to practice is an essential element of learning;
- > many people need encouragement to seek assistance outside scheduled appointments.

## "Type 1 weight matters" – a pilot study

H. Edwards, K. Marsh, H. Wilde, K. Philp

*Diabetes Counselling Online, Adelaide, SA, Australia*

Background: Diabetes Counselling Online (DCO) often receives requests for counselling around diabetes and eating disorders. Eating disorders are twice as likely to occur in teenage girls with type 1<sup>1</sup> diabetes and research suggests adolescent girls and young women frequently use insulin omission to achieve weight control or weight loss<sup>2</sup>. With support of Novo Nordisk and Webber Shandwick, DCO developed the "Type 1 Weight Matters" programme in 2009.

Aim: Primary aims to provide a forum for discussion around weight and insulin manipulation and increase wellbeing and diabetes self efficacy in participants. Secondary aims to evaluate impact of an online programme and increase awareness amongst health care professionals.

Method: Participants recruited via DCO and media outreach - 7 enrolled; 5 took part. Pre-group and exit surveys, and Who(5) and Diabetes Management Self Efficacy (DMSE) questionnaires used to evaluate participant satisfaction and impact on wellbeing and diabetes self management. Programme was 6 weekly 1 - 1.5 hour sessions in chat room, facilitated by DCO counsellor, with attendance by dietitian one week. Topics included managing diabetes, psychology of diabetes, developing support networks; diet and exercise. Results: 3 out of 5

participants returned pre and exit data thus qualitative data only presented. Additional findings will be presented following further groups.

Comments included: "Good discussions on manipulating insulin"; "Discovered I want to look after myself, not just lose weight"; "Trying harder to deal with diabetes, not just feeling out of control"; "I have diabetes, but that doesn't define who I am"; "I'm not the only one experiencing feelings of hopelessness and anger at having diabetes". Not all members had insulin manipulation as an overt problem. Most had skipped insulin at some stage. This became a component of discussion with healthy weight/diabetes management the focus.

Conclusion and recommendations: Feedback indicated increasing programme to 8 weeks would give longer to work on goals and some modules need reviewing to best meet the needs of participants.

(1) Eating Disorders in Adolescent Girls and Young Adult Women With Type I Diabetes, *Diabetes Spectrum* 15:83-105,2002

(2) Jones JM, Lawson ML, Daneman D, Olmsted MP, Rodin G: Eating disorders in adolescent females with and without type 1 diabetes: cross sectional study. *BMI* 320: 1563-1566,2000.

## Dose adjustment for normal eating and participants perceptions of type 1 diabetes knowledge

B. Sawyer

*Diabetes Education, South East Regional Community Health Services, Mount Gambier, SA, Australia*

Background: The Dose Adjustment For Normal Eating (DAFNE) program is a skills based, interactive group education program for people with type 1 diabetes which commenced locally in 2006 following feedback on the paucity of programs for clients with type 1 diabetes. Following completion of our local DAFNE program clients have reported great benefit to their diabetes self-management, knowledge and skills. It was decided to evaluate self-reported gains in levels of knowledge of participants and the importance of this knowledge to the participants, also to gauge awareness of any knowledge deficit that the participants had pre-DAFNE that they were unaware of, and how they would rate this reflectively once identified.

Aim: Evaluate the DAFNE participant's self-perceived level of knowledge, how important this knowledge was to them, and the difference between their perceptions of knowledge deficit pre and post-DAFNE.

Method: An evaluation form was developed based on information from the DAFNE curriculum on aspects of diabetes management and self-care. The evaluation was completed prior to commencement of the DAFNE program, and also on completion of the DAFNE program. The participants were also asked to reflect back on the answers to the first evaluation, and were given the opportunity to alter them in different coloured pen to identify self-reported knowledge deficit.

Result: Results showed that all participants reported increased knowledge of all aspects of diabetes management and self-care. The results also indicated that participants, who changed their pre-DAFNE evaluation reflectively post-DAFNE reported that they had a greater degree of knowledge deficit than they had originally thought, reinforcing the contention that self-perceived knowledge deficit can be difficult to determine, and people may be unaware of the depth of their knowledge deficit until they receive education and highlight what they didn't know.

## Identification of steroid-induced diabetes

S. Wyatt<sup>1</sup>, D. Topliss<sup>1,4</sup>, M. Wiseman<sup>2</sup>, A. Wan<sup>2</sup>, S. Poole<sup>2</sup>, M. Dooley<sup>2,3</sup>

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Aim: To identify inpatients of a major tertiary referral hospital at high risk of developing steroid-induced diabetes and to develop a management guideline.

Methods: All inpatients discharged on steroids (prednisolone, dexamethasone hydrocortisone, methylprednisolone) were identified over one month in 2009. Concomitant use of other 'high-risk' drugs (tacrolimus, cyclosporin, sirolimus, everolimus, azathioprine) was recorded. The blood glucose (BG) records during the inpatient stay were assessed. Diabetes was defined as a random BG  $\geq 11.1$  mM and/or a fasting BG  $\geq 7$  mmol/L. A guideline was developed after literature review for detection and management of steroid-induced diabetes.

Results: One hundred and ten patients were identified (11.6% of all discharges during the study period); records of 95 patients on steroids were assessed (median length of-stay 5.0 days). Twenty four patients (25%) had pre-existing diabetes. Of the remaining 71 patients, only 43 (61%) had one or more BG measured during admission. Of the 43 monitored patients not previously known to have diabetes a total of 21 (49%) met diagnostic criteria. Referral to Endocrinology & Diabetes Education had been made for only three patients. The managing medical unit had commenced four patients on insulin therapy. Over 10 months (07/09-04/11) 57 new cases of steroid-induced diabetes were identified.

Conclusion: At least 50% of patients discharged on oral steroids are at high risk of developing diabetes. Surveillance was inadequate. A guideline for managing patients on steroids was therefore developed to improve monitoring and follow-up during the inpatient stay and after discharge. The effectiveness of this guideline requires assessment. Steroid-induced diabetes is increasing in incidence.

## Diabetes Handprint program in Australia

At the national diabetes conference in Sydney August 2010 it was announced that Diabetes Counselling Online and the Type 1 Diabetes Network are to be one of the charity recipients of the Diabetes Handprint program. The handprint program was launched by Johnson and Johnson and the web site is [www.diabeteshandprint.com.au](http://www.diabeteshandprint.com.au)

People upload a drawing of a hand with a word/words describing what they think or feel about diabetes, their experiences etc. You can also design a hand on the site. For every hand uploaded they will donate \$5. You don't have to have diabetes – you just need to have a word and a hand!



## VADEA Smart steps

ADEA has updated the Diabetes self care: 7 steps to success booklet so that it now focuses on 'smart steps'. Whilst much of the content is similar the concept has changed. The booklet is free to download from the website; however there is a fee if you wish to purchase hard copies. You can access the booklet and order it at [www.adea.com.au/main/diabeteseducators/diabetes-education-practice/our-resources](http://www.adea.com.au/main/diabeteseducators/diabetes-education-practice/our-resources)



## Diabetes Management in General Practice

The Royal Australian College of General Practitioners 'Diabetes management in General Practice' 2010/2011 guidelines are now available. View a copy online at [www.racgp.org.au/guidelines](http://www.racgp.org.au/guidelines) or obtain a hard copy by calling 02 95271951.

## Diabetes Counselling Online

This website is for all people living with diabetes, their families and friends. It includes private counselling via e-mail, group discussion forums, chat rooms and blog and a range of groups, such as Weight Matters groups. The sites aim is to address connections between diabetes, mental health and wellbeing. There are resources to download, information about stress management, mental health and relaxation and opportunities for people with diabetes to share their story and read other people stories about life with diabetes. [www.diabetescounselling.com.au/](http://www.diabetescounselling.com.au/)

## Lab Test Online-AU website

This Lab Tests Online-AU website <http://labtestsonline.org.au/> is specifically designed for the Australian healthcare consumer. You can search for information about tests for information about conditions and diseases and many other aspects of laboratory testing.

The **features and services** page explains how to get the most from this site.

The **Article index** will give you an overview of what you can find here.

## Long Term Management Factsheet Update

Diabetes Outreach has updated the 'Long term management' factsheet. Topics outlined in the factsheet include:

- > Planning you long term management'
- > Regular checks
- > Emergencies
- > Social and economic issues
- > Managing diabetes
  - > Management goals for lifestyle
  - > Self care action plan
  - > Reviews
  - > Goals of management



You can go to [www.diabetesoutreach.org.au/consumer](http://www.diabetesoutreach.org.au/consumer) to download the new factsheets. Feedback about Diabetes Outreach factsheets is always welcome by emailing [diabetesoutreach@health.sa.gov.au](mailto:diabetesoutreach@health.sa.gov.au)

## Gestational Diabetes Starter Pack

The National Diabetes Services Scheme (NDSS) has developed a starter pack for women with gestational diabetes. The starter pack contains two booklets:

- > Gestational diabetes – Caring for yourself and your baby. This booklet is sent to women once they have been registered with the NDSS.
- > Life after gestational diabetes. This a booklet which explains the risks of developing type 2 diabetes later in life and how these risks can be reduced. The booklet is sent 10 months after the date of their initial registration.



To view the starter pack go to [www.ndss.com.au](http://www.ndss.com.au)

**All women with gestational diabetes should be encouraged to register with the NDSS.**

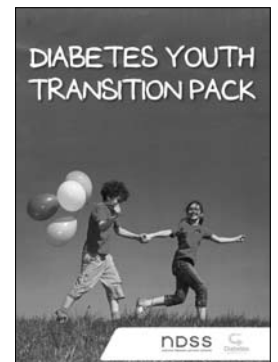
## NDSS Diabetes Youth Transition Project

The project has been looking at ways to increase the number of young people with diabetes who stay connected with adult diabetes health care when they transfer from paediatric (child) to adult diabetes services. The project is funded by the Department of Health and Ageing through a NDSS Strategic Development Grant and delivered through state and territory NDSS Agents.

The first stage of the project has just been launched and it involves NDSS sending a birthday card to every NDSS Registrant aged 12 to 20 each year on their birthday. In addition a series of letters will be sent to parents/carers every year from age 12 to 18. Each letter has been developed so that the information is relevant to the parent and this child at that age. To view examples of each of the letters go to [www.myd.net.au](http://www.myd.net.au)

The aim of the birthday cards and letters is to:

- > remind young people and their parents to continue to think about diabetes care as the young person matures through adolescence.
- > To help maintain the teenager's and parents' connection with a diabetes health team pre, during and post transition.
- > To promote teenagers independence.



To view information about this project go to <http://www.ndss.com.au/en/MyD/Transition/>

## Dealing with Diabetes

'Dealing with Diabetes' is a teaching and overhead package that has been designed by Diabetes Outreach to support diabetes health professionals in providing in-service education. The first reviewed sessions are now live on the website and are titled 'Types of diabetes' and 'Healthy eating and diabetes'. New versions are more interactive in nature. Other sections will be updated over the coming months.

To download go to [www.diabetesoutreach.org.au/professional/dealingwithdiabetes.asp](http://www.diabetesoutreach.org.au/professional/dealingwithdiabetes.asp) .

Speaker's notes are included with all the PowerPoint files. First download the PowerPoint file to your computer. Open the downloaded File and select VIEW from the Menu, then select NOTES PAGE. Each slide will then appear in the upper part of the page, and any 'notes' associated with that Slide will be shown below.

# Multidisciplinary High Risk Foot Clinics

Noami Zakarias, Chronic Condition Lead Podiatrist, Country Health SA

Note: This article builds on the 'Foot Care' article published in Diabetes Network News, No. 62, June 2010.

## Introduction

The pathophysiologic mechanisms underlying diabetic foot complications such as ulceration and amputation are multifactorial and include neuropathy, infection, ischemia, and abnormal foot structure and biomechanics.<sup>1</sup> Due to the complexity of diabetic foot complications it is not surprising that the management of the diabetic foot requires a multidisciplinary approach.

## What is a multidisciplinary high risk foot clinic?

There is no universal definition of a multidisciplinary high risk foot clinic, and the settings in which such care is offered vary from primary care to hospital specialist referral clinics.<sup>2</sup> Dedicated diabetic foot clinics were first set up in the United Kingdom in the 1980s.<sup>3,4</sup> The multidisciplinary high risk foot clinic is a 'one-stop-shop' for access to all the health professionals involved in the care of the high risk foot. The clinical care available at a multidisciplinary high risk foot clinic includes:

- > assessment of aetiology
- > ordering of diagnostic tests: blood tests, medical imaging, pathology
- > wound debridement and dressing selection
- > antibiotic selection for treatment of infection
- > vascular management
- > diabetes management
- > offloading (eg insoles, removable walkers, total contact casting)
- > coordination of care with other services (eg personal hygiene assistance in the home).
- > education.

## Who is in the multidisciplinary high risk foot team?

A systematic review by the National Health Medical Research Council<sup>2</sup> found that 'the multidisciplinary specialist foot care team commonly includes a physician, podiatrist, specialist wound care nurse, orthotist and vascular surgeon'. Multidisciplinary diabetic foot teams can also include: dietitians, diabetes educators and endocrinologists.<sup>5</sup>

## What is the evidence behind multidisciplinary high risk foot clinics?

The multidisciplinary approach to the high risk diabetic foot has been widely advocated in the literature.<sup>1,6,2,5,7,4</sup> The multidisciplinary high risk foot clinic is considered best practice in managing multifaceted diabetic foot complications such as ulceration and amputation.<sup>8,9,10</sup>

A recent study found that multidisciplinary high risk foot clinic care including vascular intervention resulted in avoiding amputation in >70% of cases and wound healing in >60%.<sup>11</sup>

It was also highlighted that foot ulcer recurrence rates were found to decrease by 48% with a multidisciplinary approach and four podiatry visits yearly.<sup>12</sup> Another large study found that podiatry led multidisciplinary high risk foot clinics resulted in significantly increased mortality when compared to multidisciplinary foot clinics without podiatrists.<sup>13</sup> It was also found that the multidisciplinary high risk foot team approach reduced hospital stay by one-third.<sup>13</sup>

The significance of early and comprehensive management of foot ulceration has been well demonstrated, with a large study in 2000 by the Fremantle Group finding 1 in 5 foot ulcers required amputation and inpatient cost for a LEA admission ranging from A\$ 6,037–24,415.<sup>14</sup> For many patients with end stage limb complications, numerous admissions often occur for limb salvage until an amputation is inevitable.

## In what clinical circumstances should I refer to a multidisciplinary high risk foot clinic?

The recent September 2010 "Draft National Evidence-Based Guideline On Prevention, Identification and Management of Foot Complications in Diabetes" states that: given the limited access to multidisciplinary foot care teams, at a minimum, the following factors should always precipitate referral to such a team:

- > deep ulcers (probe to tendon, joint or bone)
- > ulcers not reducing in size after 4 weeks despite appropriate treatment
- > the absence of foot pulses
- > ascending cellulitis
- > Charcot's neuroarthropathy.

## How do multidisciplinary high risk foot clinics work?

Typically multidisciplinary high risk foot clinics operate on scheduled days to ensure attendance by all the health professionals in the team. Clients are usually given longer appointments to allow for treatment and/or assessment by several health professionals, and development of a coordinated care plan. Sometimes several members of the multidisciplinary team are in the room with the client at once, undertaking group assessment, treatment or discussion with the client. If further diagnostic tests, antibiotic coverage, change in medication regime or referral to other services is required, this is usually organised on the day.

The client will have a coordinated care plan created after their initial visit, which may include individual regular appointments with some of the multidisciplinary high risk foot team members (eg nursing wound redressing, podiatry wound debridement, diabetes educator counselling) and specific services from others (eg orthotist custom offloading devices, vascular surgery for revascularisation). The client and their care plan may be reviewed in the multidisciplinary high risk foot clinic periodically until their condition is stable or improved.

## What is available in Country Health SA?

There are some multidisciplinary high risk foot clinics in Country Health SA. These clinics have varying frequencies and availability of specialists. There are differences in eligibility and referral requirements at each site, therefore please contact the podiatry department at your closest site for more information.

### **Pt. Lincoln Community Health Service – Podiatry Clinic**

Multidisciplinary high risk foot clinic with podiatrist, orthotist and visiting vascular surgeon. Contact Tel. 8683 2077

### **Whyalla Hospital and Health Service – Podiatry Clinic**

Multidisciplinary high risk foot clinic with podiatrist, orthotist and visiting vascular surgeon. Contact Tel. 8648 8327

### **Pt. Augusta Hospital and Regional Health Service- Podiatry Clinic**

Multidisciplinary high risk foot clinic with podiatrist, diabetes educator, sonographer and visiting vascular surgeon. Contact Tel. 8648 5563

### **South East Regional Health Service (Mt. Gambier) – Podiatry Clinic**

Fortnightly, multidisciplinary high risk foot clinic with GP, podiatrist, community health nurse, and diabetes educator, dietitian and visiting vascular surgeon. Contact Tel. 8721 1460

### **Yorke & Lower North Health (Snowtown Hospital) – Podiatry Clinic**

Multidisciplinary high risk foot clinic with GP, diabetes educator, dietitian, practice nurse and podiatrist. Contact Tel. 8721 1460

### **Clare Medical Centre**

Monthly multidisciplinary high risk foot clinic with GP, diabetes educator, dietitian, practice nurse and podiatrist. Contact Tel. 8842 6500

### **What is available for country people at the Adelaide Health Service multidisciplinary high risk foot clinics?**

In general, the following Adelaide Health Services accept referrals from GPs, medical specialists and podiatrists for their multidisciplinary high risk foot clinics. To be eligible clients are at high risk of limb loss through infection, diabetes, peripheral vascular disease and/or severe rheumatoid arthritis. More detailed information about each clinic is contained below:

### **Flinders Medical Centre – Podiatry Clinic**

Weekly multidisciplinary high risk foot clinic once a week with vascular surgeon, endocrinologist, podiatrist, wound care nurse and orthotist/prosthetist. Contact Tel: (08) 8204 4884, Monday to Friday, 8.30am to 4.45pm

### **Lyell McEwin Hospital - Podiatry Outpatient Services**

Weekly multidisciplinary high risk foot clinic with vascular surgeon, endocrinologist, podiatrist, wound care nurse, pharmacist and orthotist/prosthetist. Contact Tel: (08) 8182 9000

### **Queen Elizabeth Hospital - Allied Health Clinic**

Weekly multidisciplinary high risk foot clinics with vascular surgeon, endocrinologist, podiatrist, wound care nurse and orthotist/prosthetist. To contact Tel: (08) 8222 6734

### **Repatriation General Hospital - Veterans Foot Clinic**

Multidisciplinary high risk foot clinics with podiatrist, vascular surgeon, endocrinologist, diabetes educator, orthotist/prosthetist, vascular nursing, orthopaedic surgeon, dermatologist and rehabilitation services available. Veterans and high risk clients are eligible. Contact Tel: (08)8275 1662

### **Royal Adelaide Hospital - Podiatry Clinic**

Fortnightly multidisciplinary high risk foot clinics with endocrinologist, podiatrist, vascular surgeon, wound nurse and orthotist/prosthetist. Podiatry is the primary contact for the multidisciplinary diabetic foot clinic. Referrals can be faxed to (08) 8222 2053.

### **What do I need to tell clients?**

- > The multidisciplinary high risk foot clinic is a short term clinic and you will be discharged to or back to appropriate services for your needs.
- > The appointment may take longer than your usual appointment, so take a snack and drink.
- > There may be multiple people in the treatment room with you during your assessment.
- > Bring:
  - > List of current medication (prescribed and over the counter).
  - > List of allergies or adverse reactions (drug and food related).
  - > Previous or current medical imaging of feet and legs.
  - > Any correspondence from local health professionals (eg GP, podiatrist, diabetes educator, etc).
  - > Blood glucose record book (if relevant).
  - > Current footwear.
  - > Current offloading devices (eg orthotics, post operative shoes, removable walkers).
  - > Current GP and other health professional contact details.

### **Summary**

A multidisciplinary high risk foot team can improve the rate of ulcer healing and reduce ulcer recurrence rate and the rate of amputation in people with diabetes and high risk feet. The common components of a multidisciplinary high risk foot team have been a physician and podiatrist. Most have also included a specialist nurse and orthotist and have involved or had ready access to a surgeon.<sup>2</sup>

## Recommendation

People with diabetes who have foot ulcers or with high risk feet should be cared for by a multidisciplinary team which should include a physician and podiatrist and have ready access to a specialist nurse, orthotist and surgeon.<sup>2</sup>

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## Additional reference for extra reading

Baker IDI (2010) *Draft National Evidence-Based Guideline for the Prevention, Identification and Management of Foot Complications in Diabetes*, Accessed online on 12/10/10 at <http://t2dgr.bakeridi.edu.au/Home/tabid/172/language/en-AU/Default.aspx>

From L to R *Ellisa Bayly (Community Nurse Port Lincoln Health Service), Neil Wright (Visiting vascular surgeon TQEH), Robert Fitridge (Visiting vascular surgeon TQEH) Julie Tunbridge (Podiatrist Port Lincoln Health Service)*



## Nutritional Supplements in Diabetes

Marc Campbell, APD, TQEH Diabetes Centre

People with diabetes are 1.6 times more likely to use complementary or alternative medicines, such as herbal medicines, relaxation techniques and nutritional supplements, compared to people without diabetes<sup>1</sup>. A 2003 Australian study of 351 people with diabetes found that 23% of participants had used at least one complementary or alternative medicine product in the previous year.<sup>2</sup>

In this article three supplements that patients may ask about are reviewed.

### Chromium:

Chromium is an essential trace mineral which is necessary for normal glucose and lipid metabolism. Dietary sources of chromium include wholegrains, meat, nuts, egg yolks and green vegetables, however much research has focussed on its use as a supplement. Chromium supplements are available in different formulations including chromium chloride, chromium nicotinate and chromium picolinate, and chromium is also in brewer's yeast. Some supplements will also include chromium in combination with other ingredients, such as biotin or magnesium. The dose of chromium varies between supplements, but many tablets include 200-400µg chromium, with doses often 1-3 tablets per day. In the US it is estimated that chromium makes up 6% of the mineral supplement market<sup>3</sup>, where it is permissible to include a health claim about chromium picolinate and its benefit on reducing insulin resistance.

A meta-analysis of randomised controlled trials in Diabetes Care concluded that "chromium supplementation in patients with type 2 diabetes may have a modest beneficial effect on glycaemia and dyslipidemia"<sup>3</sup>, and that chromium picolinate may be the most effective form.<sup>4</sup> The meta-analysis found that, on average, chromium picolinate supplementation reduced HbA1c by 0.6% and lowered fasting glucose by 0.8mmol/L. Brewer's yeast lowered fasting glucose by 1.1% and also increased HDL<sup>3</sup>. The doses of chromium used in the studies mainly ranged from 200µg to 1000µg. These benefits from chromium haven't been seen in impaired glucose tolerance or in people without diabetes.

Although no upper limit for chromium exists in the Nutrient Reference Values, possible side effects of excess intake include renal failure, hepatic dysfunction<sup>5</sup> and as chromium could have an influence on neurotransmitters it could affect people with depression, bipolar or schizophrenia.<sup>4</sup>

Overall, the data for the benefits of chromium in type 2 diabetes is limited due to the different forms of chromium used in different studies, different chromium doses, small study sizes, short-term study durations, and varying study protocols used in the trials.<sup>3</sup> Furthermore, it may be the people with low chromium levels who benefit most from chromium supplementation, but there is no adequate way to measure chromium status. Overall, because of these limitations, there are no guidelines for the use of chromium as a supplement for type 2 diabetes in Australia.

### Cinnamon

Cinnamon is reported to help improve blood sugar control as it contains biologically active substances which have insulin-mimetic properties. There are two main varieties of cinnamon, *Cinnamomum verum* (Ceylon cinnamon) and *Cinnamomum cassia*. Most of the cinnamon in the supermarket is cassia, and this is the form that has been used in most studies, and may be the more effective variety. Studies use cinnamon in either tablet or powdered spice form, with a teaspoon of cinnamon being equivalent to approximately 3g. There is good evidence from diabetic rat studies, however the results in humans have been less consistent. Whilst individual studies using doses of 1-6g of cassia cinnamon have shown improvements in post-prandial glucose levels and HbA1c<sup>6,7,8</sup>, a 2008 Diabetes Care meta-analysis of randomised controlled trials found no significant effect on HbA1c, blood glucose or lipids.<sup>9</sup> Current limitations such as relatively small and short-term studies, different doses and forms of cinnamon used in studies, and differing study protocols limit any conclusive recommendations for the use of cinnamon.

Furthermore cinnamon contains coumarin, which has a blood thinning effect, so caution is required with patients on anti-clotting medications or who have a medical history of bleeding disorders. Other side effects, which seem more common with larger doses in tablet form, include GI upsets, tachycardia and sweating. Using it as a spice rather than supplement may help limit any large-dose related side effects.

At this stage, with no long-term controlled trials, there is no routine recommendation for the use of cinnamon for diabetes. However, in suitable patients, it can represent a flavouring option which may have potential diabetes benefits.

### Chia

Chia seeds, or *Salvia Hispanica*, are black or white seeds, which have been used as a wholegrain food for about 5500, when it was part of the Aztec and Mayan diets. It is a very rich source of the plant-based omega-3 alpha-linolenic acid (ALA), as well as being very high in fibre, particularly soluble fibre, a good source of protein, anti-oxidants and it contains minerals such as calcium, magnesium and phosphorus. The ALA content of chia seeds is comparable to linseed, with a 15g (tablespoon) serving of chia seeds, providing 2.8g of ALA. The NHRMC recommends including 1.3g ALA per day for men, and 0.8g of ALA per day for women,<sup>10</sup> and the National Heart Foundation recommends including 2g of ALA per day to reduce the risk of coronary heart disease.<sup>11</sup> Other sources of ALA include soy, linseed and canola products, and walnuts. Chia seeds can be sprinkled on foods such as cereals, used in baking or added to liquids such as water, juice, smoothies or soups. Some commercial bakery products now also include chia seeds.

At this stage there are very few human studies using chia, especially in people with type 2 diabetes. A 2007 Diabetes Care study found that chia seeds may have some small improvement on cardiovascular risk factors, whilst still maintaining glycaemic and blood lipid control.<sup>12</sup> There has been concerns regarding high ALA intake increasing risk of prostate cancer.<sup>1</sup> However, a 2009 meta-analysis of ALA and prostate cancer describes many of these study results as "inconsistent"<sup>13</sup>, and although their meta-analysis showed there may small increased risk at the highest levels of ALA consumption, that several more recent well-controlled studies

show no evidence of any increased risk of prostate cancer from ALA consumption.<sup>13</sup>

Overall, chia seeds provide a great source of the short-chain omega 3's alpha-linolenic acid, as well as being an excellent source of fibre, especially soluble fibre. Chia seeds can provide another option for patients to help them reach the recommended intake of these nutrients.

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## Diabetes Outreach continuing education programs

### Videoconferencing program 2011.

The diabetes continuing education program is a series of topics and discussions led by specialists in the field of diabetes and related areas. The program is offered via videoconference. Videoconferencing is the linking of individuals or groups in two or more locations using television. Usually there are 10-12 sites booked each month. The series is designed to make available advanced, evidence based information about diabetes to rural and remote health professionals working in the area of diabetes education and care.

The aim of the program is to support the continued knowledge /skills and practice development of health professionals who have completed some initial diabetes education training and wish to further develop their knowledge and expertise in diabetes.

### The dates for 2011 are:

Wednesday 9th February	1.00 – 2.00pm
Wednesday 9th March	2.30 – 3.30pm
Wednesday 13th April	1.00 – 2.00pm
Wednesday 11th May	1.00 – 2.00pm
Wednesday 8th June	1.00 – 2.00pm
Wednesday 13th July	11.30 – 12.30pm
Wednesday 10th August	1.00 – 2.00pm
Wednesday 14th September	1.00 – 2.00pm
Wednesday 12th October	1.00 – 2.00pm
Wednesday 9th November	1.00 – 2.00pm

To find out more about the topics that will be presented in 2011 and to obtain a registration form go to [www.diabetesoutreach.org.au](http://www.diabetesoutreach.org.au). Or phone 8222 6775 for more information.

## 'Introduction to diabetes' for Aboriginal health workers working in country South Australia

The course includes 14 audioconferences offered on a weekly basis by telephone. The audioconferences are based on a 'Diabetes study guide and workbook' and sessions are run in an interactive way and presented by experienced health professionals. The course is facilitated and coordinated by a credentialed diabetes educator from Diabetes Outreach. We usually enrol between 10 and 15 participants in the course.

### Part 1

What is diabetes?	Thursday 10th March	10.00 – 11.15am
	Thursday 17th March	10.00 – 11.15am
Nutrition and diabetes	Thursday 24th March	10.00 – 11.15am
	Thursday 31st March	10.00 – 11.15am
Oral medications	Thursday 7th April	10.00 – 11.15am
	Thursday 14th April	10.00 – 11.15am

### Part 2

Insulin	Thursday 5th May	10.00 – 11.15am
	Thursday 12th May	10.00 – 11.15am
Acute Complications	Thursday 19th May	10.00 – 11.15am
	Thursday 26th May	10.00 – 11.15am
Monitoring and exercise	Thursday 2nd June	10.00 – 11.15am
	Thursday 9th June	10.00 – 11.15am
Long term complications and diabetes	Thursday 16th June	10.00 – 11.15am
	Thursday 23rd June	10.00 – 11.15am

## Introduction to diabetes' for health professionals (nurses and allied health) working in country South Australia

The course includes<sup>7</sup> audioconferences offered on a weekly basis by telephone. The audioconferences are based on a 'Diabetes study guide and workbook' and sessions are run in an interactive way and presented by experienced health professionals. The course is facilitated and coordinated by a credentialed diabetes educator from Diabetes Outreach. We usually enrol between 10 and 15 participants in the course.

What is diabetes?	Tuesday 3rd May	6.45 – 8.00pm
Nutrition and diabetes	Tuesday 10th May	6.45 – 8.00pm
Oral medications	Tuesday 17th May	6.45 – 8.00pm
Insulin regimes and administration	Tuesday 24th May	6.45 – 8.00pm
Acute complications	Tuesday 31st May	6.45 – 8.00pm
Monitoring and exercise	Tuesday 7th June	6.45 – 8.00pm
Long term complications and diabetes	Tuesday 14th June	6.45 – 8.00pm

## 'Introduction to diabetes' for practice nurses working in country South Australia

The course includes 14 audioconferences offered on a weekly basis by telephone. The audioconferences are based on a 'Diabetes study guide and workbook' and sessions are run in an interactive way and presented by experienced health professionals. The course is facilitated and coordinated by a credentialed diabetes educator from Diabetes Outreach. We usually enrol between 10 and 15 participants in the course. The course will commence on Monday 8th August with the final session being held on the 28th November.

To find out more about all of these courses and to obtain a registration form go to [www.diabetesoutreach.org.au](http://www.diabetesoutreach.org.au) Or phone 8222 6775 for more information.

### Regional education series

The 'Regional education series' will run again in 2011 with visits to the Riverland, South East, North and Far West and Eyre and Western areas. For information about these visits please contact Jane Giles on 8222 6775.

## Other Calendar dates

### 2011 ADS – ADEA Scientific Meeting

The 2011 conference will be held from the 31st August and finish on the 2nd September and will be held at the Perth Convention Centre.

### 11th National Rural Health Conference.

NRHC will be held in Perth from March 13th – 16th 2011. The Conference theme is Rural and remote Australia: the heart of a healthy nation. Abstract themes include:

- > Social and economic determinants
- > Health reform in rural and remote regions
- > A new generation of health professionals
- > Community and consumer engagement
- > The strength of Aboriginal and Torres Strait Islander communities
- > Economics and equity
- > Capturing and benefits of new technologies
- > Creative aged care in the community
- > Multidisciplinary health care teams
- > Adapting research results
- > Chronic conditions in the bush

For a full list of themes and everything you need to know about the 11th Conference visit

[www.11nrhc.ruralhealth.org.au/](http://www.11nrhc.ruralhealth.org.au/)

### Accredited post graduate certificates in diabetes

Courses	Institution	Faculty/contact	Delivery	Enrolment dates for 2011
Graduate Certificate in Diabetes Education and Health Care	Mayfield Education Melbourne Victoria	Senior Course Coordinator: Michelle McAlister MMcAlister@mayfield.edu.au	On campus	Closes: End of Feb 2011
Graduate Certificate of Diabetes Education	Deakin University Victoria	Faculty of Health, Medicine, Nursing and Behavioral Science bodilr@deakin.edu.au	Flexible	Closes: External - 20th Feb 2011 Internal - 27th Feb 2011
Graduate Certificate in Health-Diabetes Management and Education	Flinders University South Australia	School of Nursing and Midwifery rebecca.munt@flinders.edu.au	On campus delivery for 3 topics and 1 flexible	Closes: 6th December 2010
Graduate Certificate in Diabetes Education	Curtin University Western Australia	School of Nursing and Midwifery, Faculty of Health k.glaister@curtin.edu.au	Flexible	Closes: 15th December 2010

### Flinders Human Behaviour and Health Research Unit Courses

- > Certificate of Competence Chronic Condition Self-Management Workshop 2-day workshop
- > Communication and Motivational Skills Workshop
- > Certificate of Competence 2-Day Living Well Workshop
- > Certificate of Competence CCSM Refresher Workshop

Visit <http://som.flinders.edu.au/FUSA/CCTU/workshops.htm#Trainer> for more information on The Flinders Program Chronic Condition Self-Management Workshops.



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<http://www.gilf.gov.au/>

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