

Diabetes WA Submission to the Education and Health Standing Committee ***The Role of Diet in Type 2 Diabetes Prevention and Management***

1. Costs of Type 2 diabetes in the Community

1.1 Prevention:

At least 2.5 million Australians have pre-diabetes and at a high risk of developing type 2 diabetes. Strong evidence shows that this condition can be prevented or delayed in up to 58% of cases in high risk cases as demonstrated in Finnish Diabetes Prevention Study (DPS) and Diabetes Prevention Program in the USA (DPP).

1.2 Type 2 diabetes:

By 2023, Type 2 diabetes is projected to become the leading cause of disease burden for men and the second leading cause for women, with the number of Australians diagnosed with diabetes expected to grow to 3.5 million by 2033. The total annual cost of diabetes to the community in Australia is estimated at \$14.5 billion including healthcare costs, the cost of carers and Commonwealth government subsidies, and is forecasted to increase to \$30 billion by 2025³.

The costs of diabetes (or cost savings in the case of prevention) are largely attributable to the long-term secondary complications. Annual direct costs for individuals with complications (\$9600) is more than double than those without (\$3500). Complications from diabetes alone currently consume 30% of acute care hospital bed capacity in the metro area and up to 80% in some regional centres.

Aboriginal and Torres Strait Islander communities experience a disproportionate share of the diabetes burden with rates of 33% reported in some studies, hence the costs to these communities would be disproportionately higher. This is compounded by people living in rural and remote communities having less access to health services close to home and the costs associated with travel to major centres for treatment.

Other high-risk groups that need to be prioritised are people from South-East Asia, North Africa, Middle East, Southern and Eastern Europe and older Australians.

Poor emotional wellbeing, diabetes distress and mental health issues such as anxiety and depression are over represented in the type 2 diabetes cohort but remain largely 'un-costed' in health economics reports.

1.3 Gestational Diabetes:

In the last ten years, more than 200,000 women have developed gestational diabetes in Australia with predictions this will rise to more than 500 000 women in the next decade.

GDM can be a serious risk to mother and baby during pregnancy. After pregnancy, 1 in 2 women will go on to develop type 2 diabetes later in life and children born to mothers who have GDM are at increased risk of obesity and developing type 2 diabetes. A diagnosis of gestational diabetes often results in pregnancy care and deliveries in more expensive tertiary centres.

2. The Adequacy of Prevention and Intervention Programs and Effective Diabetes Self-Management

There are large scale international research trials using lifestyle interventions to show a significant reduction in the onset of type 2 diabetes compared with a control group such as the Diabetes Prevention Project (USA), the Finnish Diabetes Prevention Study (Finland) and the Da Qing IGT and Diabetes Study.

The results of these studies have been well published and found a modest reduction in body weight of 5-7%, dietary changes and increasing physical activity levels resulted in a delay or prevention of type 2 diabetes. The benefits of these interventions were shown to be effective over significant time periods. One meta-analysis of prevention and intervention trials demonstrated that people with pre-diabetes who made lifestyle changes were 40% less likely to progress to diabetes after one year and 37% less likely to progress after three years, compared to those who made no lifestyle changes. The DPP and Finnish studies had a relative risk reduction at 3 years of 58%.

Other shorter research studies have shown reductions in type 2 diabetes but focused on trialling a specific type of dietary intake, rather than a comprehensive prevention trial and will be described in the next section.

How has the WA health system responded to this evidence base?

The current approach to diabetes prevention and management within the WA Health System is largely based on the acute care model, with consumers attending individual face to face appointments with registered health professionals. A smaller funding pool is allocated to telehealth and structured education programs which are aligned with the chronic care model and behavioural theory and are often under-utilised and could be a significant part of the solution. Both are outlined below to address the adequacy of the current status quo.

2.1 Individual Services:

2.1.1 Prevention:

While the results of the large research trials have provided evidence that type 2 diabetes can be prevented or delayed for at least 10 years, the intensity of trial interventions translates to very costly models to replicate and sustain in the primary care setting. For

example; in the Diabetes Prevention Program participants received 16 individual sessions with an accredited practising dietitian, supervised exercise classes and telephone support. If the most credible prevention studies are to be reproducible and the fidelity of the research outcomes maintained, one option would be to fund Accredited Practising Dietitians across the health system and enable the intensity of these intervention to be replicated and provided to those at risk.

Currently in WA, if a person is at high risk of diabetes they cannot access an accredited practising dietitian through Medicare Benefit Scheme. Additionally, under state referral criteria, accredited practising dietitians employed within the state public health system at the tertiary or secondary levels cannot see people 'at risk' of diabetes or those who are overweight or obese unless significant co-morbidities are already present.

While this 'at risk' group rightly belongs in the primary care setting, there is currently a limited publicly funded primary care workforce for the individual services that targets the prevention of diabetes. Only those people with private health insurance can access these services and the gap is largely prohibitive for the high-risk groups. The ability to access a private accredited practising dietitian in rural and remote areas is significantly limited. There are state health funded initiatives through the Healthy Lifestyle Programs in North and South Metro areas of Perth but the effectiveness and impact of these interventions should be determined before reinvesting in such initiatives. The Healthy Weight Service is available for severely obese children up to the age of 16, which does include access to a dietitian as part of a multidisciplinary team. Diabetes WA is unaware of the outcomes of this service.

The financial sustainability of a model to increase access to accredited practising dietitians in WA for those at risk would need to include significant changes to the MBS and must include a telehealth option. Clinical and psychosocial complexity should be considered in the development of service pathways to ensure intensive services are reaching those most at risk.

2.1.2 Type 2 (Secondary Prevention):

Those diagnosed with type 2 diabetes can access a primary care workforce through limited individual allied health visits, diabetes telehealth (in rural and remote) and community based structured diabetes education under the National Diabetes Services Scheme. Unfortunately, due to poorly integrated pathways, a lack of an appropriately trained workforce and funding models that focus on widgets instead of quality outcomes, these services are often under-utilised and a disproportionate amount of people with type 2 diabetes are seen in the tertiary and secondary services.

Credentialed diabetes educators (CDE) are a small workforce and retaining experienced CDEs in rural and remote areas of WA can be challenging. Diabetes WA has the largest workforce of CDEs in the primary care setting including nurse; dietitian; exercise physiologist

and accredited pharmacist CDE's. Since 2015, people with diabetes in regional and remote WA have had access to the Diabetes Telehealth for Country WA Service which includes:

- Individual Diabetes Education
- GDM (Gestational Diabetes Mellitus) specialised support
- Diabetes Telehealth Endocrinology
- Health Professional Upskilling for regional clinicians
- Diabetes Helpline; information and advice for consumers and health professionals

Housing diabetes telehealth in the primary care setting instead of a tertiary hospital has proven to be more cost effective and efficient with current DNA rates of 4% compared with a 25% DNA rate at tertiary diabetes clinics. Linking this service with the Diabetes Helpline has enabled the addition of a reactive 'video call' service for those people who find attending a booked appointment challenging.

Diabetes Telehealth received the Director General Health Service award in 2017 after providing over 2463 occasions of service and saving 1 million kilometres of travel for people with diabetes in rural and remote WA who would otherwise not have had access to a localised service. Diabetes WA is continuing to break down perceived cultural barriers to accessing telehealth in the Aboriginal communities with an aim to bring care closer to country.

Unfortunately, despite the success, the Diabetes Telehealth Service has never been scaled up to be a state-wide initiative or fully funded to represent the multidisciplinary team and is yet to secure funding beyond June 2019.

Recommendations:

1. Long term support (as a joint service agreement across government agencies) for the Diabetes Telehealth Service as a cost effective, essential service for people with type 2, type 1 and gestational diabetes in rural and remote locations and an extension of this service to outer metro and hard to reach metro populations. Expansion of this service to include all members of the multidisciplinary diabetes team would significantly impact on outcomes.
2. Advocacy at a Commonwealth Level for MBS items to enable people at high risk to access accredited practising dietitians
3. Advocacy at a Commonwealth Level for MBS item numbers to include telehealth consultations for credentialled diabetes educators and accredited practising dietitians.

2.2 Structured Education Programs for effective self-management:

Diabetes is a chronic condition that requires the person with diabetes and those at risk to make a multitude of daily self-management decisions, often without input from a health professional. Structured diabetes self-management education (SDSME) has long been considered an essential element of care for all people with diabetes. SDSME provides the foundation to help people with diabetes navigate these decisions and has been shown to improve physical and psychological health outcomes.

The *quality* of the SDSME program is key to achieving optimal consumer outcomes: programs that are evidence-based, person-centred, based on behavioural change theories and delivered as soon as possible after diagnosis, are likely to be more effective in resulting in positive behaviour change.

It is important when examining the adequacy of structured programs that there is a strong evidence base for the program beyond standard care and an ability to translate this research into practice that is sustainable (financially and socially) for both the health system and the consumer. Evidence based interventions must be funded based on quality standards, reproducible outcomes and a person-centred focus that aligns with the directions of the sustainable health review. Diabetes WA is aware of funded programs that, while marketed well, do not have the evidence base, quality assurance or financial modelling to indicate any impact on diabetes outcomes.

National Institute for Excellence in Care (NICE) guidelines exist in the United Kingdom to guide the quality of effective interventions and ensure standards are applied to funded programs that target both the diagnosed and at risk. At a Commonwealth level, the National Diabetes Services Scheme has developed Standards for Structured Diabetes Education that could be applied at a state-based level to both prevention and management initiatives to drive quality and outcomes similar to the UK. The Western Australia Framework for Action on Diabetes and Diabetes Service Standards 2014:

Standard 2.3 indicates what structured diabetes education should include and that:

‘From the time of diagnosis, people with diabetes and their carers should have access to structured diabetes self-management education and support, with access to an annual review and ongoing education and support.’

Standard 1.2 (b) advises that:

Care should be co-ordinated and integrated to ensure that the person at risk of diabetes has access to community based diabetes prevention services including evidence-based, intensive lifestyle behaviour change programs, delivered by an appropriately trained health care professional.

2.2.1 Prevention Structured Education Programs

As discussed previously, replicating the individual face to face interventions used in the large-scale prevention trials would not be cost effective in the current health system, unless significant changes were made to the MBS system. A second, more financially sustainable option is a lower cost, group based, structured education program, delivered to groups of 'at risk' people that replicates the outcomes of the larger scale prevention trials. The 'Let's Prevent' program developed by the Leicester Diabetes Research Centre in the UK modified the Diabetes Prevention Program and incorporated the behaviour model used in the successful DESMOND program. In the Let's Prevent randomised control trial, participants who attended just two sessions were 62% less likely to develop Type 2 diabetes compared with a control group.

Let's Prevent meets NICE, NDSS and WA standards for structured education.

Health Minister, Roger Cook recognised the evidence base and significant value of the Let's Prevent program and has funded a pilot program in the Greater Bunbury area which is currently funded until June 2020. It is an Australian first to have a prevention program that has an embedded quality assurance pathway to ensure the research outcomes are reproduced.

Gaps exist in the cultural adaption of the Let's Prevent program for the Aboriginal and Torres Strait Islander peoples and the ability to empower Aboriginal Health Practitioners to deliver the program to their own communities.

Recommendation:

4. Future funding is made available for the implementation of the Let's Prevent program as a consistent offering to people at risk across Western Australia and adaptation of the training program for Aboriginal Health Practitioners

2.2.2 Type 2 Diabetes Structured Education Programs

The DESMOND (Diabetes Education Self-Management for the Ongoing and Newly Diagnosed) Structured Education program is a behavioural based program for people with Type 2 diabetes. DESMOND is the only program available in Australia that meets the NICE guidelines, NDSS National Standards for Structured Diabetes Education and WA Diabetes Service Standards. Diabetes WA has one of the largest data bases of evidence in the world showing the positive impact of SDSME via the DESMOND Program. This program is available in the metropolitan area funded under the NDSS. A grant provided by the Department of

Health (WA) has enabled this program to be extended to regional and remote WA. This grant will finish in December 2018.

Diabetes WA currently delivers the Aboriginal DESMOND program in collaboration with Aboriginal Medical Services and other health care providers across Western Australia. This program is the subject of an NHMRC research project. The ability to continue funding this program will be limited once the Self-Management Grant finishes in December 2018. While the program has been culturally adapted, limited funding is available to assist with the adaptation of the DESMOND training program and quality assurance pathway to ensure Aboriginal Health Practitioners external to Diabetes WA are empowered to deliver the Aboriginal DESMOND program to their own communities while maintaining the fidelity of the research outcomes.

A significant gap exists in the availability of a structured diabetes education program for other high-risk groups in the Culturally and Linguistically Diverse community. The DESMOND program has the potential to be adapted for use in these communities to ensure they are receiving equitable access.

Diabetes WA is committed to continuing the delivery of the DESMOND program in both metropolitan and regional and remote areas using Commonwealth funding through the National Diabetes Services Scheme. Unfortunately, there is under-utilisation of the DESMOND programs due to poor linkage and pathways between the secondary and tertiary systems, where people with type 2 diabetes are on lengthy waitlists and not referred to the DESMOND program. Previous attendance at a DESMOND program should be part of the criteria for people with type 2 diabetes prior to referral to tertiary care. This is coupled with poor understanding within the primary care system in WA of the DESMOND program and the interaction between the NDSS and the MBS item numbers for those with chronic conditions.

Diabetes WA has already had some success in providing support to the South West Diabetes Planning group to develop a simple, integrated pathway that maps the flow of the person with type 2 diabetes and at risk of diabetes across services from primary through to tertiary. This draft has yet to be endorsed or implemented but has potential beyond the South West region.

Enabling Diabetes WA to drive this pathway development across all regions and become the central hub of primary care diabetes services across WA would add significant economic value and sustainability to the WA Health system.

Recommendations:

5. Investment in Diabetes WA to drive the development and implementation of person-centred diabetes pathways that integrate across Commonwealth, Tertiary, Department of Health (WA) and primary care and build sustainable relationships between service providers.
6. Extension of current grant funding to provide support for Diabetes WA to be the centralised hub for the person with diabetes and health care professionals, particularly those in rural and remote locations.
7. Future funding to adapt the DESMOND training and Quality Assurance pathway for Aboriginal Health Practitioners
8. Future funding to adapt the DESMOND program for CALD communities at high risk of diabetes.

3. The use of restrictive diets to eliminate the need for type 2 diabetes medication and the behavioural aspects of healthy eating.

3.1 Use of Medications:

Medications are prescribed for a person with type 2 diabetes when their blood glucose remain higher than target levels, with the duration of time since diagnosis a strong predictor of medication need. Medications can be prescribed at diagnosis or after a period of behaviour modification. Losing weight and exercise can often result in less medication being needed. Many people with type 2 diabetes will require medication during their lifetime because on average 10 years post diagnosis the pancreas no longer produces enough effective insulin for the body to keep blood glucose levels in range. This also suggests that developing type 2 diabetes earlier in life means that a person is more likely to require medication at some stage. This is particularly relevant for higher risk groups such as Aboriginal and Torres Strait Islander peoples where the average age of diagnosis is much younger.

It is important to note that the requirement for medication can occur even if the person with diabetes is not overweight. There is significant evidence that the progressive nature of type 2 diabetes may have a genetic base with over 40 genes now being identified: most related to pancreatic insulin output. Five different types of type 2 diabetes have been identified by Professor Grant Morahan in his world leading genetic studies at Harry Perkins Institute of Medical Research here in WA. Further research is needed to better understand how diabetes treatments could be tailored based on the genetic profile of the individual in the future.

As discussed previously, one of the largest costs associated with type 2 diabetes is the cardiovascular complications. If medications used in diabetes are proven to not only assist with blood glucose level management but also improve cardiovascular outcomes, those taking medications may be at significant advantage to reduce longer term outcomes and a message of medication avoidance may be counter-productive.

3.2 Dietary restriction:

Dietary change is one of seven self-care behaviours accepted internationally that are required for positive outcomes in type 2 diabetes. While dietary intervention can have a significant impact on the progression of type 2 diabetes, to consider this without a whole person approach under-estimates the clinical complexity of the disease and the complexity of the person from a psychosocial and cultural perspective.

While it is tempting to try and find the ‘best’ diet to prevent or manage type 2 diabetes, in reality any change in eating patterns that results in weight loss is an important goal but one that will be different for each individual. As discussed, prevention studies have confirmed people with pre-diabetes who lose weight (5-10% body weight) can improve their blood glucose levels and delay progression to diabetes. For those diagnosed with diabetes for under 6 years, weight loss of around 10% body weight resulted in blood glucose levels returning to a non-diabetes range. More recently, the DiRECT study in the UK found that with a mean weight loss of 10kg helped 157 people to achieve a ‘non-diabetic range’ and reduce need for diabetes medications. Again, the intensity of the intervention required to achieve this outcome needs to be realistic in the context of the current health system budget. It important to note that in every study there are people who could not sustain the dietary invention despite intensive support and all dietary intervention studies largely ignore the cultural and psychosocial factors that impact on an individual’s ability to maintain eating patterns beyond the study.

As a result, Diabetes WA does not promote or encourage a “one size fits all” approach or a “diabetes diet” to dietary intervention, however acknowledges weight loss in those overweight or obese is critical to prevent a progression of pre-diabetes to diabetes or a worsening of type 2 diabetes. Nutrition interventions must be individualised and give consumers a wide range of evidence-based options and encourage informed choice.

Weight and a person’s food intake are sensitive issues for many people and most individuals with obesity will have attempted multiple weight loss attempts and may have underlying genetic and metabolic conditions that make this more difficult for them than others. Poor body image, low self-esteem, psychological problems, previous sexual abuse and disordered eating can impact the effectiveness of food intake changes. The impact of widely used medications in the treatment of depression and anxiety that cause weight gain cannot be ignored as part of the overall picture. Social determinants of health such as food security, employment, financial stress and education all impact on an individual’s ability to engage

with healthy behaviours that may help them to lose weight. As a result, providing a one size fits all diet plan to follow is not enough for most people, psychological support and education that consider behaviour change complexities and a whole person approach are paramount but often lacking in treatment approaches.

At a simplistic level, weight loss requires an energy deficit therefore a reduction in energy intake through smaller portion sizes and limiting of less nutritious, energy-dense foods should be the first step. A variety of diet strategies are effective for weight loss with no one macronutrient composition superior over the longer term (ADA, 2018; Johnston, 2014). A meta-analysis of various dietary approaches suggests value in promoting Mediterranean, lower carbohydrate, lower glycaemic index or higher protein diets to improve glycaemic control. Sustainable weight loss is likely to depend more on adherence and macronutrient quality than a particular diet. Below are some eating plans known to assist weight loss and improvements in blood glucose levels

3.2.1 Low carb eating

A low carb eating pattern restricts intakes of carbohydrates, mainly from processed and packaged food as well as breads, cereals, potatoes, fruit and sugar. As a result people eat a greater proportion of protein and fat. The recent Diabetes Australia position statement (2018) on low carb eating for diabetes summarised the current evidence regarding low carbohydrate eating for diabetes. Low carbohydrate was defined as less than 130g per day or less than 26% of total daily energy intake.

For those with type 2 diabetes lower carb eating is safe and useful in lowering blood glucose levels and weight loss in the short term (6 and 12 months). After 12 months there is no additional benefit of lower carb eating over moderate carb intakes for weight loss and diabetes. Lower carb diets did have a greater reduction in risk factors for heart disease (triglycerides, HDL and blood pressure) for up to 2 years. It is important to include mostly healthy unsaturated fats/oils found in avocado, olive oil and nuts to protect against heart disease and to avoid extreme restriction of carbohydrate.

3.2.2 Very Low Calorie Diet (VLCD)

For some individuals a more intensive approach may be required if previous weight loss attempts have been unsuccessful. Very low calorie diets (VLCD) are a meal replacement option to achieve initial weight loss before continuing with a weight maintenance diet. Recent work by Diabetes UK has highlighted VLCD as one successful option for weight loss and resulting improvement in blood glucose levels.

3.2.3 Mediterranean diet

The Mediterranean diet is based on the dietary pattern of the olive growing areas of the Mediterranean in the late 50s and early 60s. There is no one Mediterranean diet, as there are regional variations. However the key features of the Mediterranean diet are:

- Eating mostly vegetables, legumes, whole grains, fruits, and nuts

- High consumption of olive oil – this is the main fat in the diet
- Moderate amounts of fish and poultry, limited intake of red meat and dairy foods
- Red wine in moderation with accompanying meals

A recent large review of diets for people with type 2 diabetes showed that the Mediterranean diet can provide small but significant improvements in HbA1c in people with type 2 diabetes. It has also been demonstrated to be effective for achieving weight loss, and improvements in cardiovascular risk markers in people with type 2 diabetes. The Mediterranean diet is a safe long-term dietary intervention for people with diabetes. It is widely reported to be highly palatable and well-tolerated.

3.2.4 Bariatric and Pharmacological Interventions

Pharmacotherapy may be considered if VLCD were not successful in achieving desired weight loss. Bariatric surgery remains a viable option for individuals who have not responded to VLCD and/or pharmacotherapy. Bariatric surgery can result in >10% weight loss maintained at 5 years or more. Bariatric surgery must be delivered within a multidisciplinary team, with medical nutrition therapy and access to clinical psychology provided both pre, post and longer term. This multidisciplinary approach is often lacking in services providing this option.

Each of the diets described above improved blood glucose levels in the setting of weight loss, no diet is necessarily better than another but must be determined at an individual level: the diet which can be maintained by the individual is the most important.

For people with diabetes considering a change or restriction in their pattern of eating they should seek advice from their GP before commencing as they may need to reduce or change their diabetes medications to reduce their risk of hypoglycaemia. An Accredited Practising Dietitian is recommended to ensure the diet is nutritionally sound and the person is well supported and empowered for successful behaviour change.

The Let's Prevent and DESMOND programs do not promote a one size fits all approach to dietary intervention. Key evidence-based nutrition messages are explored and participants are given the confidence, problem solving and planning skills to make an informed choice on the dietary intervention that suits them.

Recommendations:

9. Continued support for DESMOND and Let's Prevent programs and other evidence-based programs that address the behavioural aspects of eating and the adaptation of these programs for high risk communities.
10. Funding of behavioural-based structured education programs targeted specifically at; women post-gestational diabetes or bariatric patients

4. Regulatory Measures to Encourage Healthy Eating

The 2011-2012 Australian Health Survey revealed that Australians consume 35% of their energy from discretionary foods (those high in saturated fat, salt, sugar or alcohol) at the expense of foods that can be classified with the five core food groups (ABS). This includes foods such as cakes, biscuits, sweetened soft drinks, pastries, confectionary and convenience foods. Alarming, one third of the food intake of Australian children aged 2 – 3 years cannot be classified into a core food group and increasing to 41% in the 14 – 18 years old group. This suggests that regardless of the dietary intervention, any regulatory change that results in a shift back to traditional food groups will have a significant impact on diabetes risk. There is a potential role for parental interventions however Diabetes WA recommends that this be done with the same underlying behavioural approach as DESMOND and Let's Prevent.

In rural and remote areas of Western Australia the access to fresh, nutritious food at affordable prices is an important determinant beyond knowledge or motivation to eat well. The prevalence of food insecurity the Australia is estimated at ~ 5% with higher rates in Indigenous, CALD and socially isolated people.

Food labelling has the potential to educate and guide the community to better food choices for their health. The new star rating system is one labelling system in place and proposals to improve labelling of added sugars are also under consideration. The NDSS currently provides a platform for those diagnosed with diabetes to better understand food labelling in the very popular Shop Smart program.

Recommendations:

11. Support for public health interventions that aim to address food insecurity as a determinant of healthy eating.
12. Support for current initiatives that help consumers to understand food labelling, including an e-version of Shop Smart to increase its reach

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