National Heart Foundation of Australia:

Submission to the House of Representatives Standing Committee on Health, Aged Care and Sport inquiry into diabetes

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Summary

1. Diabetes and its complications including kidney disease and obesity, are established risk factors for cardiovascular disease (CVD).
2. CVD is the leading cause of death and disability in people with type 2 diabetes in Australia. But developing CVD – or dying from it – is not inevitable for people with type 2 diabetes.
3. New Australian evidence-based guidance and a risk calculator are now available for assessing CVD risk in people with diabetes. Further investment is needed to boost implementation of the new Australian CVD risk guideline and calculator in primary care.
4. The Heart Foundation recommends introducing ongoing targeted screening for both diabetes (including gestational diabetes) and CVD. This will address overlapping risk factors, and may lead to a more cost-effective approach to chronic disease prevention and management.
5. New treatments for diabetes and obesity are available, and have been shown to improve CVD outcomes. We now have more effective ways to manage CVD risk in people living with diabetes and/or obesity than ever before. The Heart Foundation is well placed to monitor the evidence and provide recommendations on practical implementation.
6. The Heart Foundation recommends continued investment in primary care – in particular for First Nations people with diabetes, CVD and obesity – to decrease avoidable hospitalisations, deaths and disability, and rectify identified inequities in health care in these communities.
7. The Heart Foundation has identified a clear need for policies that address both the social determinants of health and the social support needed for people living with co-morbidities and/or disabilities related to diabetes.
8. The Australian Government should work with the health sector and the Heart Foundation to ensure the health system is adequately prepared and equipped to deal with the ongoing increase in the burden of COVID-19 infection-related diabetes and CVD.
9. The built environment can impact opportunities to be physically active. The Heart Foundation recommends an increased investment into policy and practice to ensure more accessible, connected active transport and healthy built environments for all people living in Australia.

About the Heart Foundation

For more than 60 years the Heart Foundation has led the battle to save lives and improve the heart health of all people living in Australia. Through the generosity of our donors the Heart Foundation makes a difference in the fight against heart disease by:

- funding high-impact research, supporting emerging and leading heart health researchers
- working to improve heart disease prevention, detection, care, and support
- advocating to governments and industry for increased funding and resources for heart health
- building community awareness about living a heart-healthy lifestyle through public health awareness campaigns, accessible information, and resources
- supporting health professionals in their work to prevent, diagnose, treat, and manage heart disease.

Introduction

Diabetes is an independent risk factor for cardiovascular disease (heart, stroke, and blood vessel diseases; CVD).

The burden of CVD in people with diabetes is significant with two in three adults with type 2 diabetes reporting that they also have CVD.[1]

Despite improvements in therapies that lower blood glucose or address other CVD risk factors, people with diabetes are at least twice as likely to develop CVD and its manifestations and complications including coronary artery disease, stroke, atrial fibrillation, heart failure, and peripheral arterial disease (PAD).[1]

The risk of developing heart disease is even higher in people with longstanding diabetes, microvascular complications, and suboptimal glycaemic control, and also in women, people who develop diabetes before age 40, and First Nations people.[1]

CVD is the leading cause of death and disability in people with type 2 diabetes in Australia.[1,2] But developing CVD or dying from it is not inevitable for people with type 2 diabetes.

New evidence-based guidance for assessing CVD risk in people with diabetes is available. Together with new treatments for diabetes and obesity that have been shown to protect against CVD, we now have more effective ways to manage CVD risk in people living with diabetes and/or obesity than ever before.[1,3]

These recent developments could have important implications for people living with CVD, diabetes and/or obesity, and the potential to reduce the burden and costs associated with ongoing care and comorbidities to both individuals and the Australian health system.

Note: *The term First Nations people will be used to describe both the Aboriginal and Torres Strait Islander peoples of Australia.

The terms of reference specifically addressed in this submission are:

2. New evidence-based advances in the prevention, diagnosis, and management of diabetes, in Australia and internationally.
3. The broader impacts of diabetes on Australia's health system and economy.
4. Any interrelated health issues between diabetes and obesity in Australia, including the relationship between type 2 and gestational diabetes and obesity, the causes of obesity and the evidence-base in the prevention, diagnosis, and management of obesity.

Diabetes: impacts on Australia's health system

The increasing prevalence, burden, and cost of diabetes

According to a report from The Baker Heart and Diabetes Institute, in Australia the total annual cost of diabetes, including medical care and government subsidies, exceeds $10 billion.[1]

CVD accounts for most of the financial costs related to diabetes, and also a large proportion of the health impacts, reduced life expectancy, and increased risk of death in people with type-2 diabetes.[1]

The presence of diabetes complications at least triples the costs for every person with diabetes.[1]

Coronary heart disease, stroke and peripheral arterial disease typically appear many years earlier in people with type 2 diabetes, compared with people who do not have it.

First Nations people have higher rates of diabetes, and a 3-fold higher risk of developing peripheral arterial disease and its complications at a younger age, with poorer clinical outcomes. They also have a higher rate of loss of life due to peripheral arterial disease compared with other Australians (adjusted for age, diabetes duration, and smoking status).[4]

Diabetes and peripheral arterial disease together often lead to complications such as foot ulcers, infection, and gangrene, that can lead to lower limb amputation.[5]

Type 2 diabetes is responsible for 98% of all non-traumatic lower-limb amputations, leading to a significant physical, economic and psychosocial burden, particularly in First Nations people.[6] Among people with diabetes aged 25-49 years, First Nations people are 27 times more likely to have a minor amputation (toe or foot) and 38 times more likely to have a major amputation (above the knee) compared to other Australians.[6]

Higher rates of complications and amputation, are also seen in people of low socioeconomic status and those living in rural areas.[5] This suggests barriers to appropriate, effective, and timely care exists for people living in these communities.[5]

A basic principle of equity is that health expenditure should reflect the relative needs for health services with proportionately higher health expenditure for populations with higher levels of need.[7]

The National Aboriginal Community Controlled Health Organisation (NACCHO), in partnership with Equity Economics, undertook an analysis of the gap in health expenditure for Aboriginal and Torres Strait Islander people. They found there is a large and persistent gap in expenditure on health care for First Nations people, given the additional prevalence of CVD, diabetes and gestational diabetes in this population.[8]

The AIHW reports that for every $1 invested in primary care in remote First Nations communities saves $3.95–$11.75 in hospital costs, in addition to benefits for individuals, and that high levels of primary care utilisation are associated with decreases in avoidable hospitalisations, deaths, and years of life lost.[8]

According to a recent report produced by Diabetes Australia:[9]

- more than 3 million Australians will be living with diabetes by 2050 – about 1 in every 12 Australians
- more than 2 million Australians are at risk of developing diabetes-related complications in the next 20 years
- the annual cost of diabetes could be as high as $45 billion by 2050
- more than 42,000 Australians aged 39 and younger are currently living with type 2 diabetes – an increase of 37% over the past decade
- more than 1,155 children and young people are living with type 2 diabetes – an unprecedented increase of 14% over the past 10 years.

The Australian healthcare system cannot afford for this to happen.

Summary points and recommendations

1. Further investment in primary care – in particular for First Nations people with diabetes, CVD and obesity – will decrease avoidable hospitalisations, deaths and disability, and is essential to rectify identified inequities in health care in these communities. This continued investment will not only save money but more importantly – save lives.
2. There is a clear need for policies that address both the social determinants of health and the social support that is needed for people living with co-morbidities and/or disabilities related to diabetes.

COVID-19 infection increases the risk of diabetes and CVD

Since the start of the COVID-19 pandemic, multiple studies including assessments of large databases of health outcome data have found that COVID-19 infection is associated with multi-organ damage. This includes – but is not limited to – the heart, pancreas and kidneys, and as a result, people who survive infection are more likely to develop a cardiovascular condition, and/or diabetes, and/or kidney disease compared with people who have not had COVID-19.[10,11,12]

The long-term repercussions of the COVID-19 pandemic are likely to affect the nation's health with an ongoing related increased burden on health services due to increasing rates of both diabetes and/or CVD in people who have survived COVID-19 infection.

Cardiovascular disease burden associated with COVID-19 has been found to be associated with lower socioeconomic status.[13] Economic productivity and life expectancy are also negatively impacted by COVID infection and long COVID.[14]

COVID-19 and long COVID have already affected the long-term health of millions of people globally, and this number is set to increase.

Addressing the challenges posed by ongoing COVID-19 infections and associated long COVID, and the related implications for the health system and the economy of an increasing number of people living with diabetes and CVD, requires urgent and coordinated long-term policy, and public health and prevention strategies.

Summary points and recommendations

1. The Australian Government should work with the health sector and the Heart Foundation to ensure the health system is adequately prepared and equipped to deal for the ongoing increase in the burden of COVID-19 infection-related diabetes and CVD.
2. Policies and funding that will sustain long COVID research and enable people with long COVID and CVD and/or diabetes to receive adequate care and support are required.
3. The government should ensure that equitable, culturally appropriate care is available, and informed by the person's health history, including COVID-19 induced conditions.
4. Primary care providers should have access to appropriate medical education to ensure ongoing awareness that long COVID is a long-term illness that impacts multiple organs and systems, and requires appropriate risk assessment and ongoing care.

Evidence-based advances in diabetes care

New Australian cardiovascular disease risk calculator

The Heart Foundation's updated Australian guideline for assessing and managing cardiovascular disease risk, and its accompanying new CVD risk calculator were launched by the Health Minister, the Hon. Mark Butler, MP on 20 July 2023.

The Australian CVD risk calculator is based on the PREDICT-1 equation, developed from a large New Zealand population cohort study, which has been modified and recalibrated for the Australian population and health setting.

The calculator now includes optional risk factors not included in the previous Framingham-based-equation and allows for earlier and improved CVD risk estimation in people with type 2 diabetes.

The diabetes-specific risk equation in the new calculator enables a more accurate CVD risk estimation, that can quickly and easily be carried out in primary and tertiary care settings. The calculator factors in glycated haemoglobin results (HbA1c), time since diabetes diagnosis (measured in years), urinary albumin-to-creatinine ratio (uACR), estimated

glomerular filtration rate (eGFR), body mass index (BMI) and insulin use in the previous 6 months.

The evidence-based guideline includes the recommendations that:

- People with diabetes without known CVD, should have their CVD risk assessed from age 35 to 79 years.
- First Nations people without known CVD should be assessed for individual CVD risk factors from age 18 to 29 years, and using the CVD risk calculator from 30 to 79 years.
- First Nations people with known CVD risk should be assessed as part of an annual health check (or opportunistically), or at least every 2 years.

People living with diabetes can access a set of MBS-subsidised standard regular tests as part of the Diabetes Annual Cycle of Care (including HbA1c, blood pressure and cholesterol levels, and kidneys checks). The aim of the Annual Cycle of Care is to support people to manage their diabetes, stay healthy, and to identify and treat any complications early. Some of these tests are also performed to assess CVD risk. The new risk assessment guideline recommendations should therefore inform the frequency of relevant tests in the annual cycle of care, and take into account individual circumstances.

New ESC guideline for managing CVD and diabetes

The newly released 2023 European Society of Cardiology (ESC) *Guidelines for the management of cardiovascular disease in patients with diabetes*, recommends that all people with known CVD should be screened for diabetes (using highly reproducible fasting glucose and/or HbA1c tests; Class I A recommendation).[15]

Due to the major negative impact of the combination of these two conditions on health outcomes, healthcare system utilisation, and cost both to the economy and the individual, the ESC guideline states that it is “mandatory” for the healthcare professional to screen people with known CVD for the presence of diabetes.[15]

Summary points and recommendations

1. More effective screening is now available to estimate CVD risk in Australians living with diabetes using the new Australian CVD risk guideline and risk calculator.
2. Screening for both diabetes and CVD addresses many overlapping risk factors and when combined may lead to a more cost-effective approach to chronic disease prevention and management.
3. Widespread implementation of the new Australian CVD Risk Calculator in GP software, and broader use of the guideline recommendations in primary and tertiary care settings, will help identify Australians with diabetes who are at risk of developing CVD to ensure timely treatment, and clinically and culturally appropriate ongoing management. Further investment is needed to boost implementation of the new Australian CVD risk guideline and calculator in primary care.
4. The Diabetes Annual Cycle of Care must be updated to reflect the new CVD risk assessment recommendations for people with diabetes, and promote the use of the new Australian CVD Risk Calculator.
5. Conversely, as many people with known CVD have undiagnosed type 2 diabetes, models of care that support ongoing targeted diabetes screening initiatives in people with CVD, both in primary care and after discharge from tertiary care related to a cardiovascular event, are needed.

Newer diabetes medicines also reduce CVD risk

Multiple clinical trials assessing the effect of newer classes of diabetes medicines on CVD – and kidney disease – have provided strong evidence for the beneficial effect of these medicines on health outcomes.

They have also provided a foundation for the evolution of diabetes management and the prioritisation of therapeutic strategies for people with type 2 diabetes, with particular emphasis on the protective effects of medicines on the heart and kidneys in high-risk patient groups.[1,3]

These medicines include glucagonlike peptide 1 (GLP-1) analogues (exenatide and liraglutide, lixisenatide, semaglutide), and sodium-glucose linked transporter 2 (SGLT2) inhibitors (empagliflozin and dapagliflozin). These are all available and listed on the Pharmaceutical Benefits Schedule (PBS) for treating diabetes in Australia.

The *Australian Evidence-Based Clinical Guidelines for Diabetes* (2021) developed by the Living Evidence for Diabetes Consortium, recommends:[16]

- adding an SGLT-2 inhibitor to other glucose lowering medication(s) in adults with type 2 diabetes who also have cardiovascular disease, multiple cardiovascular risk factors and/or kidney disease
- adding a GLP-1 receptor agonist to other glucose lowering medication(s) in adults with type 2 diabetes who have cardiovascular disease, multiple cardiovascular risk factors and/or kidney disease.

Note: The Heart Foundation has no vested interest in these clinical trials or medicines, or the manufacturers of these or any other medicines. We are simply highlighting the evidence supporting the use of these newer medicines in people with diabetes and CVD.

Summary points and recommendations

1. A history of CVD and/or kidney disease should guide choice of diabetes medicines.
2. The impact on cardiovascular risk in people with diabetes is now an important consideration when selecting appropriate diabetes treatment options.
3. Evidence is rapidly evolving on the link between the newer diabetes medicines and CVD outcomes. The Heart Foundation is well placed to monitor the evidence and provide recommendations on practical implementation.
4. Education and support tools are urgently needed to upskill health professionals on this rapidly evolving clinical area. In particular, prescribing the newer diabetes medicines to improve cardiovascular outcomes in people with – and without – diabetes.

Interrelated health issues: diabetes, gestational diabetes, obesity, and heart disease

Gestational diabetes increases the risk of CVD

Women who have experienced gestational diabetes have a sevenfold higher risk of developing type 2 diabetes after pregnancy than women who have not experienced gestational diabetes.[17]

In addition, First Nations women experience higher rates of gestational diabetes compared with other women, with the prevalence of pre-gestational diabetes among the highest in the world.[18]

However, uptake of annual follow-up screening for type 2 diabetes is lower than for other screening programs for women, such as breast screening, Pap smears or bowel screening.[19]

One explanation for this may be that women who have had gestational diabetes do not consider themselves to be at high risk for developing type 2 diabetes.[19]

In 2019–20, almost $64 million of health system expenditure was attributed to gestational diabetes, of which $53 million was spent on hospital services.[8] It is clear that there are potentially huge cost savings associated with interventions aimed at preventing, managing and reducing the prevalence of gestational diabetes in Australia.

Summary points and recommendations

1. An increased focus on educating women about gestational diabetes, and the increased risk of developing diabetes and/or CVD after pregnancy, is needed in primary care settings.
2. It is also imperative that the importance of having ongoing post-pregnancy screening for diabetes is communicated in a culturally appropriate way to all women who have had gestational diabetes. This is to ensure that it is diagnosed and managed as early as possible to prevent the associated health conditions like CVD, and the complications of diabetes.
3. Due to the associated increased risk of developing CVD related to gestational diabetes, a thorough pregnancy history, and risk factor screening and assessments in all women with a history of gestational diabetes is essential, to ensure early prevention or treatment.

New obesity medicine reduces CVD risk

People living with obesity have an increased risk of developing CVD.

Semaglutide, one of the new diabetes medicines mentioned earlier (brand name Ozempic), has also been studied for its effects as a weight control medicine in people who are overweight or living with obesity (brand name Wegovy).[20]

A large clinical trial (SELECT) involving more than 17,600 people aged 45 and older with CVD, and either overweight or obesity (BMI ≥27 kg/m^2) but not diabetes, was conducted over 5 years in more than 41 countries at 800 sites by the manufacturer (Novo Nordisk).

The researchers found that a once weekly injection with semaglutide reduced the risk of heart attack, stroke or death due to cardiovascular disease by 20% compared with a placebo injection.[20] The study also looked at other health outcomes related to other CVD risk factors such as cholesterol level, high blood pressure, glucose metabolism, body weight and kidney function.[20]

Overall the results suggest that this medicine may also have other health benefits, not just in reducing weight.[20] If confirmed, these findings could have important implications for the prescribing options for managing CVD risk in people living with obesity.

Note: The Heart Foundation has no vested interest in this trial, this medicine, or the manufacturer of this or any other medicine. We are simply highlighting the existence of this new medicine and the results of this trial to raise awareness of future treatment options, which, pending full examination of the data, may potentially become available for prescribing in Australia.

Summary points and recommendations

1. Semaglutide is currently PBS-listed in Australia for treating diabetes under the tradename Ozempic, but is not listed for weight loss.
2. Semaglutide and other new weight control medicines may also have significant cardiovascular benefits, and could play an important part in improving cardiovascular outcomes in people living with obesity and CVD.
3. The evidence on weight loss and cardiovascular disease outcomes is rapidly emerging. The Heart Foundation is well placed to monitor the evidence and provide practical recommendations for implementation.

Physical activity is key to managing diabetes and obesity

Physical activity is a key component in preventing and managing type 2 diabetes.

Regular physical activity has been shown to help reduce the risk of diabetes and CVD by 35-40%.[21] Structured physical activity and exercise has been shown to have a positive association with some clinical indicators of type 2 diabetes.[22] Regular moderate to vigorous physical activity has also been shown to help improve CVD risk factors including blood pressure, and dyslipidaemia, and reduce morbidity and mortality, independent of weight.[22,23,24]

However, while exercise has been established as being beneficial in managing CVD and type 2 diabetes, Australian data shows that 85% of the general population are not meeting the national physical activity guidelines.[25]

The Heart Foundation's *Blueprint for an Active Australia* outlines key action areas to facilitate and enhance physical activity participation in Australia.[26] It recommends that multiple measures be taken to support people to lead an active lifestyle. This includes providing relevant training and support for health professionals, enhanced access to physical activity and sporting programs, mass media campaigns, equitable access to active transport, and the design of healthy urban environments.

The design of the urban environment (including streets and public spaces) can play an important part in enabling the local community to be more physically active, and help to reduce sedentary behaviours associated with motor vehicle dominant environments.

Evidence suggests that walkable neighbourhoods, with greater access to green open spaces and tree canopy, enable people to walk more for both exercise and transport, and are associated with a reduced incidence of heart attack and type 2 diabetes.[27,28] Conversely, people living in less walkable neighbourhoods may be 20%-50% more likely to develop type 2 diabetes.[27]

Healthy Active by Design is the Heart Foundation's flagship program designed to support built environment professionals to rethink the way they design roads, and built and natural environments, to facilitate healthy, active communities, and advocate for healthier cities. Creating more walkable neighbourhoods with higher-density, mixed-use zoning, can help to increase active travel, reduce car dependence and air pollution, and contribute to minimising the risk of CVD and other chronic diseases.[26]

The Heart Foundation is committed to supporting Australians to be more active through regular physical activity and active transportation. The national walking initiative (*Heart Foundation Walking*) is a population-based program that enables people to walk their way to improved physical, mental and social wellbeing, and to meet the national physical activity guidelines of 150 to 300 minutes of moderate intensity physical activity per week.[29]

Summary points and recommendations

1. Physical Activity is a key determinant in reducing the risk of, and mortality due to, type 2 diabetes and CVD. Physical activity should be prescribed for people with diabetes, in conjunction with healthy eating and reduced calorie intake.
2. The environment in which people live can impact their opportunities to be physically active. The Heart Foundation recommends an increased investment into policy and practice to ensure that there are more accessible, connected active transport and healthy built environments, for all people living in Australia.

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