Australian Government
Department of Health and Aged Care

Diabetes in Australia

Submission from the Department of Health and Aged Care
to the Standing Committee for Health, Aged Care and Sport

August 2023

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Executive summary

The Australian Government has an important role in maintaining access to affordable, high-quality medicines, devices, and services to support people with diabetes in diagnosis, self-management, and treatment. It provides support to people with diabetes through the National Diabetes Services Scheme (NDSS), the Pharmaceutical Benefits Scheme (PBS), the Insulin Pump Program (IPP), Medicare, and other funding.

The Government's national policy, the Australian National Diabetes Strategy, 2021-2030 and its associated implementation plan, guide Australia's response to reducing the impact of diabetes in the community. All levels of government share responsibility for health services in Australia and have a responsibility to ensure that systems work together to produce the best options for people, regardless of their geographic location.

The Government recognises the critical role preventive health plays in keeping people well for longer. Diabetes often occurs alongside (and shares risk factors with) other chronic conditions, including heart disease and chronic kidney disease (1). Through improving the health of the population to prevent or delay people getting type 2 diabetes or by optimising how the health system supports people who have diabetes to prevent or delay the onset of complications, much of the impact of diabetes can be reduced. The health care system is subject to ongoing national reform, aimed at improving health outcomes for all Australians.

Overcoming the many barriers to improving diabetes prevention, detection, management, and care requires a multi-sectoral response led by governments and implemented at the community level. The goals of the Australian National Diabetes Strategy, 2021-2030 guide existing and future policy decisions. The goals reflect:

- The importance of person-centred care and reducing health inequities
- The need for collaboration and cooperation and to coordinate care across settings
- The need for measurement of progress.

The Government acknowledges chronic conditions, including diabetes, have a significant impact on Australia's health and productivity. Diabetes research is a pathway that can identify better, more durable, and more effective treatment and management strategies that can be translated to clinical practice to prevent diabetes and its complications. New and emerging evidence is important to inform Government of the broader health issues and barriers experienced by people living with diabetes.

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Introduction

The Department of Health and Aged Care (department) welcomes the opportunity to make a submission to the Standing Committee for Health, Aged Care and Sport Inquiry into Diabetes in Australia.

The impact of diabetes in Australia is high (2):

- More than 1.3 million (1 in 20) Australians were living with diabetes in 2021.
- Diabetes was more common among older Australians with almost 1 in 5 aged 80-84 years living with diabetes.
- Males were 1.3 times as likely to be living with diabetes compared with females.
- 7.9% of First Nations people were living with diabetes in 2018-19.

The department's submission is structured to address the Terms of Reference (ToR):

1. The cause of diabetes (type 1, type 2 and gestational) in Australia, including risk factors such as genetics, family history, age, physical inactivity, other medical conditions, and medications used.
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.
5. The effectiveness of current Australian Government policies and programs to prevent, diagnose and manage diabetes.

Attachment A provides a list of Government investments in relevant programs and initiatives to support people living with diabetes in Australia, including Government funded programs for diabetes in First Nations communities.

ToR 1 The causes of diabetes (type 1, type 2 and gestational) in Australia, including risk factors such as genetics, family history, age, physical inactivity, other medical conditions, and medications used

The Australian National Diabetes Strategy, 2021-2030 (the Strategy) is the national policy document on diabetes. The Strategy identifies that diabetes has a significant, and often preventable, impact on the health and wellbeing of the Australian population. There are a significant number of diabetes-related complications, many of which are preventable. They include heart disease; stroke; eye disease, including retinopathy; kidney disease; peripheral vascular disease; nerve damage; foot problems; gum disease; and mental health impacts including treatment-related distress, anxiety, and depression.

Health risk factors are attributes, characteristics or exposures that increase the likelihood of a person developing a disease or health disorder. These can be non-modifiable, such as age, sex, and genetics; or potentially modifiable, such as being overweight or obese, physical inactivity, tobacco

use, and poor nutrition and dietary patterns for which effective social and individual behavioural interventions are available.

Diabetes in pregnancy places women and children at significant risk during and after the pregnancy. Foetal and infant death (3) and congenital malformations are 4 times more likely among women who have diabetes prior to pregnancy (4). It is important that steps are taken to mitigate this risk before pregnancy (i.e., through pre-conception care for women and men), during pregnancy and following delivery. Equity of access to appropriate diabetes care in pregnancy is critical, particularly for women in rural and remote communities.

The impact of poor health is experienced unevenly in Australian communities, with many contributing factors sitting outside the health system. Generally, people in lower socioeconomic groups are at greater risk of poor health, including developing type 2 diabetes. Social, environmental, structural, economic, cultural, biomedical, commercial, and digital determinants of health contribute to health inequity and inequality experienced in Australia. There are also many groups in society who have disproportionate health needs. They include First Nations people, those living in rural and remote areas, people with disability, older Australians, those from culturally and linguistically diverse backgrounds (such as Māori, Pacific, South Asian, South-East Asian, Middle Eastern, North African, and Latino peoples), and those affected by mental illness.

In the past, type 2 diabetes was typically diagnosed after 50 years of age, but diagnosis in younger adults, adolescents and even children is increasingly common (5).

The onset of diabetes occurs earlier among First Nations people compared with non-Indigenous Australians, which leads to a greater burden of illness associated with the complications of diabetes, including kidney damage, loss of vision, peripheral nerve damage and peripheral vascular diseases (6, 7). Among First Nations children the incidence of type 2 diabetes is increasing which has been associated with the increases in obesity (8).

The following risk factors are experienced by all Australians but are experienced disproportionately by First Nations people:

- Socio-economic disadvantage: First Nations peoples in Australia experience higher levels of poverty, unemployment, and homelessness, which can impact access to healthy food, healthcare, and other resources that are important for diabetes prevention and management.
- Limited availability of healthy food options: many First Nations communities are in regional and remote areas where healthy food options are limited.
- Limited access to healthcare: many First Nations communities in Australia are in regional and remote areas, which can make it difficult to access healthcare services and resources; this brings greater risk of diabetes complications. First Nations people face unique cultural, linguistic, and socioeconomic barriers to accessing healthcare services. Furthermore, healthcare providers do not always have the cultural competence needed to provide effective care. This indicates the unmet need for appropriate and adequately resourced diabetes prevention and management through primary health care in these locations.

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ToR 2 New evidence-based advances in the prevention, diagnosis, and management of diabetes, in Australia and internationally

2.1 Australian National Diabetes Strategy 2021-2030

The Government has refreshed the previous Australian National Diabetes Strategy 2016–2020 (Strategy), to ensure it remains current and adaptive to the changes in the health environment that have occurred since its release. The Strategy was updated to include the latest evidence to approaches to reducing the impact of diabetes in the community.

The Strategy highlights basic/discovery science is a pathway that can identify better, more durable, and more effective treatments and management strategies that can be translated to clinical practice to prevent diabetes and its complications. The Strategy includes priority actions around emerging areas of research on type 2 diabetes remission and the impact of COVID-19.

2.2 Type 2 diabetes 'remission'

New research has shown it is possible for some people with type 2 diabetes to reduce their average glucose level to an HbA1c (a measure of average blood glucose levels over time) of under 6.5% (48mmol/mol) and sustain that level for at least three months without the need for glucose lowering medication. This is referred to as type 2 diabetes 'remission'.

Improvement of glucose levels into the normal range may occur in some people with diabetes, either spontaneously, or after dietary or medical intervention. More research is needed to understand remission of type 2 diabetes, the different means of going into remission and maintaining it, the long-term impact of remission on complications, and remission in different population groups including children and young people with type 2 diabetes, First Nations peoples and people from culturally and linguistically diverse backgrounds. The refreshed Strategy includes a priority action on considering offering more intensive dietary interventions to people with type 2 diabetes aiming for remission.

2.3 Diabetes and COVID-19

The Australian Institute of Health and Welfare (AIHW) notes there is growing evidence indicating a link between COVID-19, hyperglycaemia, and new onset diabetes (2,9,10). There seems to be clearer signal emerging in terms of an association between COVID-19 infection and development of type 2 diabetes, but the relationship between COVID-19 infection and development of type 1 diabetes is less clear (11). A recent systematic review and meta-analysis found a 1.8-fold increased risk of developing diabetes in the post-acute phase of COVID-19 compared with the general population (12).

More research and data are required to better understand the association between COVID-19 and new onset diabetes in Australia. Building on earlier investments on COVID-19 research, in April 2023 Minister Butler announced $50 million from the Medical Research Future Fund (MRFF) for the Post-Acute Sequelae of COVID-19 (PASC) Research Plan. PASC is commonly known as long COVID.

An Expert Advisory Panel has been established to develop an investment strategy for the $50 million funding, including to:

- further assess the current and future impacts of PASC in Australia

- design and evaluate clinical pathways and models of care that address inequities in access and outcomes
- find new therapeutic approaches to preventing PASC and/or improving health outcomes for individuals with PASC (13).

2.4 Diabetes research

Australia has multiple diabetes research funding streams focussed on strengthening evidence-based practice for diabetes prevention, its management, and complications. The Government provides direct support for health and medical research through the complementary National Health and Medical Research Council (NHMRC), MRFF and the Australian Research Council (ARC).

Since 2013, the NHMRC has provided $513.8 million in funding for diabetes research. Details of NHMRC funded research is being provided through a separate submission to the inquiry.

The MRFF Preventive and Public Health Research initiative will provide $596.5 million over 10 years from 2022-23 to fund targeted research into new ways to address risk factors for chronic and complex diseases in Australia.

From its inception in 2015 to 30 June 2023, the Medical Research Future Fund has invested $104.19 million in 19 grants with a focus on diabetes research. Of these grants, 9 grants with a total investment of $20.80 million focus on research on Indigenous health and disease, and specifically aim to benefit First Nations people.

The MRFF Indigenous Health Research Fund is providing $160 million over 11 years from 2018-19 to improve the health of First Nations people. The Implementation Plan for the Fund incudes a focus on chronic conditions such as diabetes.

The ARC has invested over $14 million over 2021-23 in diabetes and/or obesity research.

Examples of MRFF and ARC research are provided in **Attachments B.1** and **B.2,** respectively**.**

2.5 Prevention of type 2 diabetes

Lifestyle modification is the first line approach and the cornerstone for prevention of type 2 diabetes in individuals at high risk and those with signs of impaired glucose tolerance (IGT). A comprehensive lifestyle modification programme will include behaviour modification, dietary therapy, physical activity, and smoking cessation, with a goal for weight loss and return to normal glycemia. There is evidence to suggest that changes in lifestyle could slow the progression of IGT to overt diabetes.

2.6 Early detection and screening of type 2 diabetes

Randomised clinical trials have not demonstrated significant health outcomes from screening for type 2 diabetes mellitus.

The American Diabetes Association (ADA) recommends testing for type 2 diabetes or prediabetes in adults with body mass index (BMI) ≥25 kg/m^2 who have one or more additional risk factors for diabetes, as well as in persons with gestational diabetes mellitus or human immunodeficiency virus (HIV). In all other adults, the ADA recommends testing from the age of 35 years. People with prediabetes (A1C ≥5.7 percent [39 mmol/mol], impaired glucose tolerance, or impaired fasting glucose) are recommended to be tested for diabetes annually.

If the screening test is positive, diabetes is recommended to be confirmed according to ADA criteria. If the screening test is negative, repeat testing every three years is considered reasonable (14).

2.7 Diabetes management

The Government recognises best-practice, high-quality diabetes care is achieved when health care professionals work seamlessly and in partnership across emergency, acute care, primary health, allied health, community, and specialist care services with direct consumer (the person with diabetes), carer and family involvement.

Primary and tertiary care

Best practice guidelines recommend a structured multidisciplinary care approach to diabetes management (15). Allied health professionals central to the management of diabetes include dietitians, podiatrists, exercise physiologists, physiotherapists, pharmacists, optometrists, psychologists, and social workers.

Under the Medicare Benefits Schedule, patients can access up to five individual sessions in a calendar year with an allied health professional to manage their chronic condition (including diabetes), and up to eight group therapy sessions with a dietitian or exercise physiologist to manage their diabetes. For many patients who might require support from the full range of allied health professionals, or have more complex needs, they may exceed these annual session limits before optimal management of their diabetes is reached.

The Government announced $6.1 billion of investments in the 2023-24 Budget to lay the foundations for a stronger Medicare. This Budget delivers critical funding to meet the urgent healthcare needs of today, while starting reforms to build a stronger Medicare for future generations and responding to the recommendations of the Strengthening Medicare Taskforce. The Taskforce Report, published in February 2022, outlines a vision for Australia's primary care system, including a stronger focus on multidisciplinary team-based care. Coordinated multidisciplinary team-based care will support better health outcomes for Australians with diabetes.

The high levels of diabetes among First Nations people reflect a broad range of historical, social, and cultural factors. This presents specific challenges in the management and prevention of diabetes including in providing access to effective care services that are tailored to community needs and that are culturally appropriate (16). Culturally safe and competent health care is particularly important for First Nations people managing a complex chronic disease such as diabetes. This highlights the major role of Aboriginal Community Controlled Health Services in delivering culturally safe health care to First Nations people including community level health promotion, diabetes prevention, risk assessment and ongoing diabetes management.

Technological advancement and access

The Strategy identifies access to new technologies as an important component of diabetes management. Several continuous glucose monitoring (CGM) systems are approved by the Therapeutic Goods Administration (TGA) for supply in Australia. They are intended for managing diabetes in patients where self-monitoring of blood glucose is indicated. This includes patients with type 1 diabetes, as well as those with type 2 diabetes who take insulin. Despite international marketing trends targeting all type 2 diabetes patients, the indicated patient population of CGM currently does not include patients with type 2 diabetes who are treated with diet alone or those

who take medications that do not usually cause hypoglycaemia (low blood glucose), except in circumstances where hyperglycaemia or hypoglycaemia episodes occur, or during changes to therapy.

CGM systems work by measuring glucose levels in the interstitial fluid, which can potentially lag behind glucose levels in blood. The TGA assesses CGM accuracy to ensure it is acceptable for its intended use, which includes manual prandial dosing of insulin, usually by insulin pen or pump. Some CGM systems have been assessed for use with controller software and appropriate insulin pumps in a hybrid closed loop configuration. These automated insulin delivery (AID) devices (also known as artificial pancreas or closed-loop systems) are currently supported by clinical evidence of improved glycaemic control in the context of acceptably low risk of hypoglycaemia in patients with type 1 diabetes only.

The TGA also assesses and approves for supply in Australia, apps intended for use by patients to calculate insulin dosage. Different approaches of calculation may result in variable effectiveness in glycaemic control and risks of hypoglycaemia. In addition to these aspects, human factors are also considered to ensure appropriate useability by the intended patient population. Several "digital therapeutic" apps have been approved for supply in Australia that aid remote monitoring of diabetes patients by their healthcare professionals. These apps support health professionals to review, analyse and evaluate data transmitted from devices such as CGMs and insulin pumps, to identify trends to support effective diabetes management, including informing lifestyle modifications such as diet improvement. Further, there are several emerging devices that use smart watches as a platform for 'non-invasive' testing, or that can measure interstitial fluid (fluid found in the spaces around cells) using microneedles in the base of the watch. Such technology may not be truly continuous monitoring, is unproven (not approved for use in Australia) and will be subject to regulatory oversight by the TGA.

There is a need to balance timely access to technological advances in diabetes management with regulation to ensure the intended use matches available evidence. The TGA aims to achieve this balance by applying an appropriate extent of assessment that is proportionate to the level of risk. This aligns with the TGA's role to safeguard and enhance the health of the Australian community through the effective and timely regulation of therapeutic goods.

Precision medicine in diabetes

Recently, scientific advances in the field of diabetes have led to better characterisation and understanding of the pathophysiology of diabetes.

Personalised approach to the management of diabetes involves optimising the diagnosis, prediction, prevention, and treatment of diabetes. This is achieved by integrating multi-dimensional scientific and clinical data and applying to individual patient profiles by accounting for the individual's health status. This approach has the potential to delineate the treatment algorithm and predict treatment outcomes. This is an area having active research and evolving evidence (17,18,19).

Nanotechnology and diabetes

Nanotechnology is utilised in the application of drugs or diagnostic molecules which generally improves their ability to target specific cells or tissues (20). Novel nanotechnology-based glucose measurement and insulin delivery techniques are increasingly being used in the field of diabetes

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(21). Nanotechnology in diabetes research has contributed to the improvement of the overall treatment outcome in diabetes.

Gene therapy and diabetes

Research involving gene therapy for diabetes majorly centres around type 1 diabetes. However, over the last decade, findings from studies in this area has identified many genes that are related to the incidence of type 2 diabetes and contributed to the better understanding of the genetic architecture of type-2 diabetes (22). These findings suggest a potential genetic susceptibility for type 2 diabetes. (22, 23).

Medicines recently approved by TGA for the treatment of type 2 diabetes

Tirzepatide was registered on 23 December 2022 for the treatment of type-2 diabetes (24). Tirzepatide is an injectable medicine administered under the skin once a week. It targets the receptors of hormones with pivotal role in the metabolism of glucose. The dosage regimen of once a week has the potential to improve treatment compliance.

Chronic Wound Consumables Scheme

In the 2023-24 Budget the Government announced $47.8 million over 5 years to improve the management of wounds for patients in the community by providing education and training for healthcare professionals and by fully subsidising wound consumable products to older people with both diabetes and chronic wounds.

Patients with diabetes and chronic wounds will benefit from this additional funding to improve access to more affordable, high-quality wound care.

ToR 3 The broader impacts of diabetes on Australia's health system and economy

3.1 Australian Institute of Health and Welfare monitoring of diabetes

The department funds the AIHW to monitor and report on diabetes in the Australian population under the 2021–22 to 2024–25 AIHW Monitoring Chronic Conditions in Australia and Managing the National Diabetes Register contract. While the AIHW does not report specifically on the productivity impacts of diabetes, AIHW's *Diabetes: Australian facts* report (2) does include the latest available data on the impact of diabetes in relation to disease burden, hospitalisations, emergency department presentations, medication use, disease expenditure, and deaths. A summary of key findings is presented below with further detail given at **Attachment C.**

In 2021, more than 1.3 million (1 in 20) Australians were living with diabetes. Diabetes was more common among older Australians with almost 1 in 5 aged 80–84 years living with diabetes.
In 2018-19, 7.9% of First Nations people were living with diabetes (2).

In 2021, males were 1.3 times as likely to be living with diabetes compared with females (prevalence). The incidence of diabetes was 1.4 times as common among males as females overall, after controlling for age, in 2021.

The prevalence of type 1 diabetes in 2021 was similar among males and females. After adjusting for differences in the age structure of the populations, type 1 diabetes incidence rates were 1.3 times as high among males as females.

In 2021, males were 1.3 times as likely to be living with type 2 diabetes as females (prevalence). Males were 1.4 times as likely to be newly diagnosed with type 2 diabetes as females (2).

In terms of disease burden, in 2022, type 1 diabetes was responsible for around 19,000 disability-adjusted life years (DALY) in Australia. In 2022, type 2 diabetes was the 12th highest disease-specific cause of DALY at 3.9 per 1,000 population. In 2018, the three leading risk factors contributing to type 2 diabetes total burden were being overweight and obese, diet and physical inactivity (2).

In 2019-20, an estimated $3.1 billion of expenditure in the Australian health system was attributed to diabetes, representing 2.2% of total disease expenditure. Over this period, an estimated $323.7 million was attributed to type 1 diabetes with 47% ($152.1 million) spent on hospital services. An estimated $2.0 billion of expenditure in the Australian health system was attributed to type 2 diabetes, with hospital services accounting for 42% ($838.5 million). An estimated $63.6 million of health system expenditure was attributed to gestational diabetes with hospital services accounting for 84% ($53.4 million) (2).

3.2 Health Outcomes Modelling and Evaluation project

The department has established a Health Outcomes Modelling and Evaluation (HOME) project, which aims to project and understand patient life course outcomes using microsimulation modelling based on large, national, linked administrative data assets, with the ultimate objective of enabling identification of potential intervention points to delay or divert entry into residential aged care. The latest version of the HOME model (version 1.0) includes admitted patient care and emergency department presentations for diabetes related ICD-10-AM diagnoses. Individuals in the simulation are assigned a probability of having a diabetes related interaction with the hospital sector, which then flows on to altered life course outcomes in the Aged Care sector.

ToR 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

4.1 Australian National Diabetes Strategy 2021-2030 – interrelated health issues between diabetes and obesity

The Strategy identifies people considered at high risk of developing type 2 diabetes are those with prediabetes, a family history of diabetes, a high-risk ethnic background, gestational diabetes, overweight/obesity, or insufficient physical activity (25). The strongest evidence of effective prevention is in these groups.

Diabetes and obesity are interconnected, and there is a well-established relationship between the two conditions. Being overweight or obese can increase the likelihood of a person developing type 2 diabetes, in addition obesity is often a comorbidity of diabetes (26). Further, children of women who have experienced gestational diabetes are at an increased risk of developing obesity and subsequently type 2 diabetes (25).

It is important to note that while obesity is a significant risk factor for type 2 diabetes, not all individuals living with obesity develop diabetes, and diabetes can occur in individuals who are not

obese. Genetics, ethnicity, age, and other factors also influence an individual's susceptibility to both diabetes and obesity (2).

Interrelated health issues between diabetes and obesity among First Nations people

First Nations adults experience a disproportionately high rate of overweight and obesity compared with non-Indigenous Australians. Contributing factors to obesity include food insecurity, urbanisation, overcrowded housing, and a lack of adequate access to health services. In 2018, among first nations people (6):

- Over one-third of type 2 diabetes total burden was attributable to overweight and obesity (37% in males and 35% in females).
- Around 19% of type 2 diabetes total burden was attributable to dietary risk factors for both males and females.
- Physical inactivity attributed a larger proportion of total burden for type 2 diabetes in females than males (14.8% and 12.8%, respectively).

Food insecurity (lack of access to affordable and nutritious food) is a major contributing factor to obesity. First Nations Australians experience food insecurity for many reasons, including low income, high food prices and limited availability of healthy foods where they live. Factors contributing to high food prices, particularly in remote areas, include freight charges and lack of competition. The combination of lower incomes with higher food prices means the proportion of income spent on food increases, making a healthier diet difficult to access for some First Nations Australians.

The 2023 *Commonwealth Closing the Gap Implementation Plan*, released 13 February 2023, recognises remote food security as a national priority. As a priority action, the National Indigenous Australians Agency is working in partnership with First Nations Health Peaks and relevant State and Territory Governments to develop a National Strategy for Food Security in Remote First Nations Communities. This Strategy aims to provide a coordinated approach to improving access to essential groceries across remote First Nations communities. Public consultation on the Strategy is expected begin later this year.

4.2 Obesity in Australia

Australia has one of the highest rates of overweight and obesity in the world – an estimated 67% of Australians aged 18 years and older, and 25% of children and adolescents aged 2 to 17 years, were overweight or obese in 2017-18 (26). In 2018, being overweight and obese was the 2nd leading risk factor (after tobacco use) contributing to disease burden (27). Obesity is impacting Australia's health, wellbeing and productivity, and places significant pressure on our health system (28).

The root causes of being overweight and obese are complex and deeply embedded in the way we live. Many factors can contribute to excess weight gain including eating patterns, physical activity levels, and sleep routines. The wider determinants of health, genetics, and the use of certain medications also play a role.

The wider determinants of health include the social, environmental, structural, economic, cultural, biomedical, commercial, and digital environments in which we live, work, play and age. These factors are largely outside of the control of both the health system and individuals, yet play the largest role in determining our health and wellbeing especially for priority populations (29, 30,31).

No single action will be enough to prevent obesity, instead, a systems-based approach that tackles the environmental influences and empowers individuals will be critical. It requires action at all levels of government and with non-government partners, focussing on population-level interventions and the environmental factors which are contributing to the issue.

There is an opportunity to learn from past and ongoing preventive health success stories to address complex health issues such as obesity. Australia has made significant progress in reducing smoking prevalence over many years, through a multifaceted and multilayered approach to tobacco reform that has resulted in a significant decline in smoking prevalence over the past 20 years. Consistent with this approach, long-term, sustainable funding is needed to support a universal, whole-of-population approach to preventive health challenges such as obesity, complemented by targeted initiatives, which will reduce inequities and result in more effective prevention action.

Obesity prevention, diagnosis, and management

The prevention of obesity is guided by two complementary strategies, the National Preventive Health Strategy 2021-2030 (NPHS) and the National Obesity Strategy 2022-2032.

The NPHS outlines the long-term, whole of government approach to prevention that addresses the wider determinants of health, reduces health inequities, and decreases the overall burden of disease. It has a focus on addressing the risk factors that can cause chronic conditions, such as diabetes and obesity, and promotes early detection of these conditions to prevent avoidable long-term complications.

An implementation and evaluation plan are being developed to support the NPHS. The plan will provide a detailed approach to achieving the targets and policy achievements in the NPHS by 2030. It is anticipated the plan will be completed by late 2023.

The National Obesity Strategy 2022-2032, developed by all Australian governments and released in March 2022, is a 10-year framework to prevent, reduce and treat overweight and obesity in Australia.

The National Obesity Strategy provides guidance to enable systemic changes to better support all Australians to maintain a healthy weight, prevent further weight gain and reduce weight in people already living with being overweight or obese, develop prevention strategies to improve the environments and conditions around us, support and empower people to live healthier lives, better embed prevention, early intervention and treatment into our health care system and have more positive discussions about healthy weight across society.

Further details on initiatives as they relate to the National Obesity Strategy are given at **Attachment A.1**.

Clinical guidelines for the management of overweight and obesity

The *Clinical Practice Guidelines for the Management of Overweight and Obesity for Adults, Adolescents and Children in Australia* provide guidance concerning the management of overweight and obesity. The Clinical Practice Guidelines provide the evidence base for health care professionals and policymakers to improve the diagnosis, treatment, and management of overweight and obesity

in Australia. Aligned with the National Obesity Strategy, a review of the Clinical Practice Guidelines is currently underway. It is expected updated Clinical Practice Guidelines will be available in mid-2024.

Early detection and management of diabetes and obesity in primary care

AUSDRISK tool and health assessment

The Australian Diabetes Risk Assessment (AUSDRISK) tool was developed by the Baker IDI Heart and Diabetes Institute in 2010, on behalf of the Australian, state and territory Governments as part of the COAG Initiative to reduce the risk type 2 diabetes. The AUSDRISK tool is a short list of questions to help both health professionals and individuals to assess the risk of a person developing type 2 diabetes over the next 5 years.

A medical practitioner may select MBS item 701 (brief), 703 (standard), 705 (long), or 707 (prolonged) to undertake a type 2 diabetes risk evaluation depending on the length of the consultation as determined by the complexity of the patient's presentation.

Chronic disease management

Patients with diabetes and/or obesity can access existing MBS items for the treatment of their condition, including time tiered GP general attendance items. This includes from 1 November 2023 new consultations of 60 minutes or more (to be known as level E) to support improved access and service affordability for patients with chronic conditions and complex needs. If clinically necessary, GPs can also refer patients to relevant specialists for treatment.

Patients with diabetes and/or obesity may also be eligible for MBS Chronic Disease Management (CDM) items. To be eligible for CDM items a patient must have at least one medical condition that has been present (or is likely to be present) for at least six months or is terminal. There is no list of eligible conditions. Whether a patient meets the eligibility requirement of having a chronic condition is a clinical judgement for their GP.

The CDM items enable GPs to plan and coordinate the health care of patients with chronic medical conditions. GPs may refer patients to MBS subsidised allied health services under a GP Management Plan and Team Care Arrangement. GPs can refer patients for up to five MBS rebated allied health services per calendar year. In addition, patients with a GP Management Plan and/or Team Care Arrangement can also access up to five services with a practice nurse or Aboriginal and Torres Strait Islander Health Practitioner that are provided on behalf of a medical practitioner each calendar year. GPs can also refer patients with type 2 diabetes for up to eight MBS rebated group therapy sessions.

Medications registered for use in treatment of type 2 diabetes being used for obesity treatment

Some medications registered for use in treatment of type 2 diabetes are being used for obesity treatment. For instance, in Australia, Ozempic (semaglutide) is registered for use in the treatment of type 2 diabetes. However, since early 2022, it has been prescribed 'off-label' in high volumes as a weight-loss treatment, resulting in global shortages. Other examples include liraglutide and dulaglutide.

Off-label prescribing is not illegal and the decision to prescribe a medicine for a condition other than the registered indication is made by the prescriber in consultation with their patient.

The TGA has been working with health professional organisations throughout the shortage to encourage prescribers to limit prescribing of Ozempic to the approved indications while supply is

limited; however, the TGA does not regulate clinical practice and is unable to prevent doctors from using their clinical judgement to prescribe Ozempic for other health conditions. Information about the management of the Ozempic shortage, including information about current prescribing recommendations for health professionals, is available on the TGA website (32). Details of PBAC considerations for medication use and prescribing can be found at **Attachment D**.

Bariatric surgery for the treatment of obesity

For people living with obesity, evidence-based treatment such as very low-calorie diets, linked with hunger suppression medication, and bariatric surgery are of benefit to a significant number of people. Bariatric surgery is currently the most efficacious long-term treatment for adults with obesity (33), noting over 90% of all bariatric surgery is currently performed in the private hospital system.

Through the National Health Reform Agreement (NHRA), the Government provides a funding contribution to assist states and territories with the costs of operating their public hospital systems, which includes funding for the delivery of public hospital services, hospital administration, and teaching, training, and research. Bariatric surgery for obesity is delivered through the public hospital system and funded through the NHRA, although relatively few such procedures take place as public hospital services with the majority instead being delivered through private hospitals.

To access bariatric procedures for weight loss in the private hospital system, private health insurance product tiers include 'Weight Loss Surgery' as a clinical category which is required to be covered under Gold tiered private health insurance policies. Health insurers have flexibility to provide coverage for additional clinical categories above the minimum requirements in the Basic, Bronze, or Silver tiers. What is, and is not, covered in these tiers is based on minimum standard clinical categories. The decision to provide coverage for additional clinical categories in these tiers is a commercial decision for health funds. The coverage requirements for private health insurance product tiers were developed in close consultation with health insurers and healthcare providers. The requirements were formulated to provide a progression of service coverage across products as well as premium affordability.

ToR 5 The effectiveness of current Australian Government policies and programs to prevent, diagnose and manage diabetes.

There are a range of Government programs and initiatives to provide support to Australians living with diabetes. This includes providing policy frameworks to guide priorities, development of programs, including those focused on priority groups, evaluations embedded in program design for continuous review, and refinement.

5.1 The Australian National Diabetes Strategy 2021-2030

The Strategy is an opportunity to consider current approaches to diabetes services and care; consider the role of governments and the diabetes sector; ensure current efforts and investments align with identified needs; maximise the efficient use of health care resources; and articulate a vision for preventing, detecting, and managing diabetes. The Strategy identifies 7 high level goals aimed to strengthen, integrate, and coordinate all sectors to improve health outcomes and reduce the social and economic impact of diabetes in Australia.

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Review of the Australian National Diabetes Strategy 2016-2020 Implementation Plan

Diabetes in Australia: focus on the future is an implementation plan (Plan) developed for the Australian National Diabetes Strategy 2016-2020 and was released on 19 December 2017. The actions outlined in the Plan were agreed by all jurisdictions as activities that could be developed, expanded, or modified to produce targeted, tangible improvements in the prevention, early detection, management, and care of all forms of diabetes. The Plan identified 55 indicators to measure progress against the goals of the Strategy. AIHW has reported on these indicators in 2018 and 2020.

The department committed to review the accompanying Implementation Plan and to develop an updated Implementation Plan to align with the new Strategy. On 14 June 2023, Allen and Clarke Consulting Pty Ltd were engaged to undertake this review. It is anticipated to be finalised by early 2024 and will inform the development of a refreshed Implementation Plan.

5.2 Strengthening Medicare

The Strengthening Medicare Taskforce report (34) recommended significant reforms to strengthen Medicare and rebuild general practice. The report recommended the reform of primary care funding, including that general practice be supported in the management of complex chronic conditions (chronic disease management items) through blended funding models, integrating incentive payments with fee-for-service, and funding quality bundles of care for people who need it most.

The Review of General Practice Incentives (the Review) was announced in the 2023-24 Budget with funding of $1.3 million. It is an intensive review to redesign current general practice incentive programs to better support quality patient-centred primary care from multidisciplinary teams in accredited general practices and nurse practitioner-led practices, with redesigned blended models linked to better care and outcomes for patient populations registered under MyMedicare. The Government will consider the review recommendations in the 2024-25 Budget.

In line with recommendations from the Medicare Benefits Schedule (MBS) Review Taskforce, the department is currently undertaking a review of all health assessment services under the MBS to help inform their effectiveness and any future improvements. As a first step in this review, the Institute for Evidence Based Healthcare at Bond University has been engaged to undertake a systematic (literature) review of evidence on the efficacy and effectiveness of health assessments within primary care.

The department intends to engage with stakeholders on the outcomes of the systematic review and on additional MBS data insights on the use of health assessment services. Government consideration on future amendments to the items will be informed by the outcomes of the above process.

5.3 Workforce Incentive Program

The Workforce Incentives Program measure increases people's access to multidisciplinary care at general practices by providing a funding boost to the Workforce Incentive Program - Practice Stream (WIP-PS). This will make it more affordable for practices to employ or contract a range of health professionals. The measure will also ensure these health professionals are supported to work their full scope of practice and contribute meaningfully to team-based care. Increased payments for the

WIP- PS will commence in August 2023. This measure is led by the department and payments administered through Services Australia.

The 2023-24 Budget provided an additional $445.1 million over 5 years under the WIP-PS to help improve the quality and accessibility of multidisciplinary primary care; improve financial sustainability of multidisciplinary general practice, supporting more accountability and facilitate new models of care that are responsive to community needs. This is on top of the financial incentives of more than $400 million per year that are already available through the WIP-Practice Stream.

5.4 National Nursing Workforce Strategy

The Commonwealth, partnering with Victoria and in collaboration all jurisdictions, is developing Australia's first National Nursing Workforce Strategy. The Strategy will provide a national-level strategic approach to nursing policy, seeking to ensure that the nursing workforce is equipped, enabled, and supported to deliver care and services that meet the current and future needs of the Australian population.

5.5 Australian Government support for people living with diabetes

The Government provides considerable support to people with diabetes through subsidy of essential medicines, like insulin, under the PBS and diabetes-related products through the NDSS including CGM and IPP.

Pharmaceutical Benefits Scheme (PBS)

In 2021-22, PBS expenditure on medicines for diabetes was $804 million and expenditure on products for diabetes supplied through the NDSS was over $196 million.

Pharmaceutical Benefits Advisory Committee (PBAC)

The PBS is the main mechanism through which the Government subsidises the cost of medicines for the treatment of Australian patients.

There are a range of medicines currently listed on the PBS that may be used in the management of diabetes (**Attachment D.1**). Some of these medicines are subsidised only where a patient meets certain eligibility criteria, while others are unrestricted benefits which do not have eligibility criteria and may be prescribed by a prescriber within their scope of practice at their discretion.

Further information, including the details of the eligibility criteria, is available on the PBS website at www.pbs.gov.au by searching for the relevant drug names.

The current PBS listings for each medicine represent the evidence that has been considered by the PBAC to date.

National Diabetes Services Scheme

The NDSS provides subsidised products, and support services, to people with diabetes. The scheme has been administered by Diabetes Australia since 1987. The current agreement expires on 30 June 2024. The Government has a funding agreement with Diabetes Australia (DA) for administering the NDSS totalling $140,490,000 (GST exclusive) over three years ending on 30 June 2024.

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Table 1: Total approved funding for the NDSS administration, products, and services, CGM products and IPP administration and products ($m), 2022-23 to 2025-26

Program	2022-23 (m)	2023-24 (m)	2024-25 (m)	2025-26 (m)	Total (m)
NDSS	$232.050	$232.050	$232.050	$232.050	**$928.200**
CGM	$157.976	$166.251	$174.746	$183.270	**$682.243**
Subtotal (NDSS, CGM)	*$390.026*	*$398.301*	*$406.796*	*$415.320*	*$1,610.443*
IPP	$1.772	$1.772	$1.772	$1.772	**$7.088**
Total (NDSS, CGM, IPP)	**$391.798**	**$400.073**	**$408.568**	**$417.092**	**$1,617.531**

Diabetes Australia manages registration and engagement, including maintaining the NDSS website and the National Helpline, ongoing engagement with NDSS registrants, and the production and delivery of scheme materials. It also organises and delivers training and education for people impacted by diabetes and health professionals (including topics such as healthy eating, managing blood glucose levels, managing stress and anxiety relating to diabetes, etc.).

In addition, Diabetes Australia:

- registers and monitors NDSS Access Points (including more than 5,700 community pharmacies) in relation to the supply of subsidised NDSS products to NDSS registrants;
- ensures NDSS products are supplied in an efficient manner to registrants including people living in rural and remote areas;
- supports the program evaluation arrangements for the scheme; and
- maintains the IT systems that support the operation of the scheme (NDSS Central, NDSS Connect – for product ordering, and the Health Professional Portal – for completion of e-forms by health professionals).

Subsidised products provided by the NDSS to its registrants include syringes and needles, blood glucose test strips, urine ketone test strips, CGM sensors and transmitters, and insulin pump consumables.

Diabetes Australia conducts continuing evaluation of the NDSS through annual satisfaction surveys of registrants to gather data about the Scheme's effectiveness. Recent results from the surveys indicate that more than 90% of registrants are satisfied with the NDSS and the timely delivery of products to them.

The AIHW reports many Indigenous Australians with diabetes have not registered with the NDSS. Where Indigenous Australians live in remote and very remote locations, NDSS Access Points may be limited, but patients may be obtaining diabetes-related products or services through other targeted Indigenous-specific programs (6). Efforts to encourage Indigenous Australians with diabetes to register will yield benefits for patients and improve the coverage and quality of the data.

Continuous Glucose Monitoring products

In 2017, the NDSS began providing subsidised CGM products to a portion of registrants with type 1 diabetes. Since then, eligibility criteria have expanded to provide some or full subsidy of these products to all registrants with type 1 diabetes – which equates to more than 130,000 Australians.

As of 2 July 2023, over 83,000 Australians had accessed CGM products through the NDSS. In addition, more than 80% of NDSS registrants had accessed other products through the Scheme to assist with the management of their condition.

The Juvenile Diabetes Research Foundation (JDRF) Australia (through the Australasian Diabetes Data Network) conducts research on behalf of the department on the effectiveness of the use of CGM in the self-management of type 1 diabetes. This data indicates funding of CGM for people with type 1 diabetes in Australia has led to sustained improvements in HbA1c (the amount of blood sugar (glucose) attached to a person's haemoglobin) and a reduction in diabetic ketoacidosis (DKA) episodes with continued use.

Since implementing this expansion, the department has continued to monitor the operation of the NDSS. This will inform government consideration of any further expansion of the scheme to Australians with other forms of diabetes.

Review of CGM products

The department has commenced a Health Technology Assessment (HTA) review of CGM products to determine their clinical effectiveness and cost effectiveness.

The Medical Services Advisory Committee (MSAC) considered a report by an independent evaluator in 2021 and requested further analysis be undertaken.

In recognition of the changed policy environment for the supply of CGM products under the NDSS – resulting from the expanded eligibility criteria – the CGM review is on hold to allow further real-world data collection to occur in relation to take-up rates and product usage. The CGM Review will resume once the expanded eligibility cohort has reached a steady-state; potentially in late 2023 or in 2024.

Insulin Pump Program

The IPP provides fully subsidised insulin pumps for financially disadvantaged families who have children (aged 21 years and under) with type 1 diabetes but do not have access to other means of reimbursement, such as private health insurance. The program aims to provide 315 insulin pumps per year to eligible people. Since the program commenced in 2008, the IPP has provided 2,560 insulin pumps to eligible recipients.

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List of Attachments

[1] Note 1 - The data provided is for the intended use only (as described in the request) and should not be re-used for any other purpose.
Note 2 - Only projects funded between 2021 and 2023 were looked at.
Note 3 - A keyword extraction method was used for this analysis, the keywords looked at were: 'Diabetes', 'Obesity', 'Diabetes Research', 'Obesity Research'.

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Attachment A: Additional information on Australian Government initiatives for diabetes

Australian National Diabetes Strategy 2021-2030

The Australian National Diabetes Strategy (2021-2030) released on 14 November 2021, provides an update to the previous Australian National Diabetes Strategy 2016–2020. All Health Ministers endorsed the Strategy. The Strategy prioritises Australia's response to diabetes and identifies approaches to reducing the impact of diabetes in the community.

The Strategy's vision is to strengthen all sectors in developing, implementing, and evaluating an integrated and coordinated approach to improve health outcomes by reducing the social and economic impact of diabetes in Australia. To achieve this, the Strategy outlines 7 high-level goals with areas for action and measures of progress. The goals span prevention, awareness, early detection, and management of diabetes; specific populations impacted; and the research agenda.

Goal 1: Prevent people developing type 2 diabetes

The Strategy recommends a community and workplace-based approach for the general population and those at high risk of developing diabetes. People considered at high risk of developing type 2 diabetes are those with prediabetes, a family history of diabetes, a high-risk ethnic background, gestational diabetes, overweight/obesity, or insufficient physical activity (35). It is the aim of the Strategy to minimise the risk of developing type 2 diabetes through education of modifiable risk behaviours and prevention programs.

Goal 2: Promote awareness and earlier detection of type 1 and type 2 diabetes

Increasing diabetes awareness in the community and early detection programs in targeted settings leading to timely diagnosis are critical to avoid preventable morbidity and deaths. The Strategy seeks to identify and implement approaches for opportunistic screening across health care settings and increase awareness, education, and recognition of diabetes in all communities, including adults, parents, teachers, and carers.

Goal 3: Reduce the burden of diabetes and its complications and improve quality of life

Best-practice, high-quality diabetes care is achieved when health care professionals work seamlessly and in partnership across primary health, allied health, community, and specialist care services with direct consumer (the person with diabetes), carer and family involvement. The Strategy intends to support Australians living with diabetes by developing nationally agreed clinical guidelines, local care pathways and complications prevention programs.

Goal 3 seeks to empower consumers by expanding consumer engagement and self-management of diabetes, improving access to affordable medication and devices, improve workforce and capacity, harness information and communication technologies and provide high quality health care including hospital and mental health care.

Goal 4: Reduce the impact of pre-existing and gestational diabetes in pregnancy

Diabetes in pregnancy places women and children at significant risk during and after the pregnancy. The provision of ongoing support and care during and after pregnancy is essential to help prevent or delay the development of future type 2 diabetes. Goal 4 of the Strategy is to provide pregnancy and post-pregnancy programs, including education and support regarding current and future risk and risk

mitigation, for all women prevent the development of gestational diabetes mellitus and development of type 2 diabetes.

Goal 5: Reduce the impact of diabetes among Aboriginal and Torres Strait Islander peoples

Australia's First Nations communities have one of the highest rates of type 2 diabetes and its complications both nationally and globally. To prevent diabetes and improve diabetes management, it is essential to ensure the communities have access to, and can benefit from, diabetes support, education, and services (e.g., Aboriginal and Torres Strait Islander Community Controlled Health Services). The Strategy seeks to promote access to models of care and upskilling health professionals that provide necessary specialist support through regional networks of care, optimising telehealth services and linked facilities for treatment of serious complications of diabetes.

Goal 6: Reduce the impact of diabetes among other priority groups

Communities who have a higher prevalence of diabetes or more difficulty accessing health services warrant focused attention. Examples are culturally and linguistically diverse communities, older Australians, rural and remote communities, and people with mental health disorders. These priority groups may require different policy or health system approaches to prevent and manage diabetic conditions.

Goal 7: Strengthen prevention and care through research, evidence, and data

Basic/discovery science is a pathway that can identify better, more durable, and effective treatments and management strategies that can be translated to clinical practice to prevent diabetes and its complications. Research efforts need to be focused on strengthening evidence-based practice for the prevention of diabetes and its complications, implementation research, identifying a cure for diabetes, informing health policy decisions, and potentially offering more timely access to newer and improved medications and technology.

Australian National Diabetes Strategy 2016-2020 Implementation Plan

Diabetes in Australia: focus on the future is an implementation plan (Plan) developed for the Diabetes Strategy and was released on 19 December 2017. The actions outlined in the Plan were agreed by all jurisdictions as activities that could be developed, expanded, or modified to produce targeted, tangible improvements in the prevention, early detection, management, and care of all forms of diabetes. The department committed to review the accompanying Implementation Plan and to develop an updated Implementation Plan to align with the new Strategy.

Prevention

A list of prevention activities as they relate to the National Obesity Strategy is provided at **Attachment A.1.**

National Health Reform Agreement

The NHRA recognises that state and territory governments are the system managers of their public hospital systems, responsible for system wide planning and performance, and for the day-to-day management of their public hospitals. As system managers, states and territories determine the availability, types, and range of public hospital services, the locations from where they are delivered in their jurisdiction, and the model of care through which these services should be delivered under. As such, the Government does not have the power to directly intervene in these decisions, including

resource or workforce allocation, and determining the appropriate service and treatment for patients with diabetes (and the location of service delivery).

The Government does work closely with the states and territories to monitor public hospital activity, demand, and performance. The Government remains committed to contributing to the cost of treatment and care for, as well as management of diabetes (type 1, type 2, and gestational) provided by states and territories in public hospitals under the NHRA. The Government's annual funding contribution for public hospital services in Australia under the NHRA has grown from $13.3 billion in 2012-13 to $24.1 billion in 2021-22, an increase of 81%. Between 2022-23 and 2026-27, the Government's annual NHRA funding contribution is estimated to grow from $25.6 billion in 2022-23 to $34.3 billion in 2026-27, an increase of 34%.

Mental health support for Australians living with diabetes

Attending to behavioural and mental health factors at diagnosis and as the illness progresses is crucial to preventing complications, maximising outcomes, and minimising the costs of diabetes care. GPs and allied health professionals can facilitate mental health assessment and monitoring as a component of holistic, ongoing patient care. Mental health professionals can provide support and education, including about adverse effects of medication.

There are a range of services available for people seeking support for co-occurring mental health problems. These include:

- Medicare rebated mental health services under the Better Access to Psychiatrists, Psychologists and General Practitioners through the Medicare Benefits Schedule (Better Access) initiative which aims to improve outcomes for people with a clinically diagnosed mental disorder through evidence-based treatment.
- Primary Health Networks (PHNs) commissioned suicide prevention and stepped care mental health services. Individuals can contact their local PHN. Details are on the department's website.
- From 1 July 2022, all Australians can now access the Head to Health National Phone Service - 1800 595 212. The free service provides an easily accessible entry point for advice, assessment, and referral into and between mental health services.
- Head to Health Adult Mental Health Centres, one in each state and territory, with a commitment from jurisdictions to co-fund further centres and satellites, provide an entry point for adults to access mental health services and support in communities.
- Young people aged 12-25 can access the national network of headspace services for free or low-cost holistic mental health support.
- Australians seeking information on mental health can also access the Head to Health website, which provides a gateway to digital mental health information.

Government funded programs for diabetes in First Nations communities

The National Aboriginal and Torres Strait Islander Health Plan 2021-2031 (the Health Plan), released in December 2021, is the overarching policy framework to drive progress against the Closing the Gap health targets and priority reforms. Implementation of the Health Plan aims to drive structural reform towards models of care that are prevention and early intervention focused, with greater integration of care systems and pathways across primary, secondary, and tertiary care. It also emphasises the need for mainstream services to address racism and provide culturally safe and

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responsive care and be accountable to First Nations people and communities. The Health Plan emphasises that action to address chronic diseases including diabetes, remain key priorities.

Below lists several programs and initiatives funded by the department to prevent, diagnose, and manage diabetes in First Nations communities. Note the below programs have not been evaluated, so we are unable to comment on effectiveness.

Prevention/diagnosis

- Through the Aboriginal and Torres Strait Islander Health Check (Medicare Item 715), First Nations patients can have their risk of developing diabetes over the next five years assessed using the Australian type 2 diabetes risk assessment tool.
- Patients identified as high risk can be referred to a lifestyle modification program and other appropriate prevention strategies and interventions can be recommended.

Prevention

- The Indigenous Australians' Health Programme (IAHP) invested over $6.5 million in 2022-23, increasing to over $8.6 million in 2023-24 in preventative health initiatives ranging across physical activity, nutrition, and health promotion. All preventative health initiatives funded through the IAHP are focused on reducing the prevalence of preventable health issues, including diabetes, in First Nations Australians.

Management

- The Indigenous Australians' Health Programme (IAHP) funds activities to address the burden of diabetes on First Nations people, including:
    - Diabetic Foot Complication Project, and
    - Youth Models of Care.
- The IAHP also funds chronic disease care programs which can be accessed by First Nations people with diabetes, including:
    - Integrated Team Care Program (more detail below)
    - Medical Outreach Indigenous Chronic Disease Program (MOICDP)

Diabetic Foot Complication Project

- The South Australian Health and Medical Research Institute (SAHMRI) seeks to reduce diabetes foot-related complications and amputations for First Nations people through:
    - diabetes awareness raising activities
    - increased access to multi-disciplinary care and service integration
    - development and delivery of community resources and community-driven initiatives and
    - ongoing workforce training and upskilling.
- The Government is providing $9 million from 2022-23 to 2024-25 to SAHMRI for this project.

Youth Models of Care

- Menzies School of Health Research is developing, piloting, implementing, and evaluating culturally appropriate diabetes management programs for young people who live in the Northern Territory, Central Australia, the Kimberley, and Far North Queensland.
- The program was originally funded for $3.9 million from 2019-20 to 2021-22 and has been extended to 31 December 2023 to allow for completion of all activities.

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Integrated Team Care program (ITC)

- The ITC supports First Nations people with complex chronic diseases, including diabetes to better manage their conditions by providing patients with access to care coordination, multidisciplinary care, and support for self-management.
- Through the IAHP, the department is providing $221.1 million over three years (2021-22 to 2023-24) for the ITC program.

Medical Outreach Indigenous Chronic Disease Program (MOICDP)

- MOICDP helps to improve access to health services for First Nations people living with chronic disease, including diabetes.
- Access is increased by removing the disincentives incurred by health professionals providing outreach (e.g., funding their travel, meals, and accommodation).
- Multidisciplinary clinical services are provided by a range of health professionals such as medical specialists, GPs, nurses and allied health professionals for best practice chronic disease management and follow-up.
- The program is funded for $77.3 million from 2021-22 to 2023-24.

Quality Assurance for Aboriginal and Torres Strait Islander Medical Services (QAAMS)

- QAAMS aims to support culturally appropriate and clinically effective management of diabetes in First Nations communities.
- QAAMS enables participating Aboriginal Medical Services and Aboriginal Community Controlled Health Services to provide accurate diabetes-related pathology testing on site, through point of care testing (PoCT). PoCT results are available in six minutes versus 42 hours which is the average period for remote areas, enabling patients to receive their results, comprehensive advice, and treatment plans in a single visit to the health service.
- The QAAMS Pathology Program has been continuously funded by the department since 1999.
- It is currently funded through a grant agreement with Flinders University.
- The current grant agreement is in place until 30 June 2025 and provides total funding of $4.8 million ($1.2 million per year from 2021-22 – 2024-25).

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Attachment A.1: Australian Government initiatives to address the prevention, management, and treatment of overweight and obesity

Initiative/Program	Description	Alignment with National Obesity Strategy 2022-2032
Review and update of the 2013 Clinical Practice Guidelines for the management of overweight and obesity in Australia.	Review of the *2013 Clinical Practice Guidelines for the management of overweight and obesity in Australia.* Due for completion in mid-2024.	Strategy 3.2
Supporting initiatives to prevent obesity through Priority 2 of the Food Regulation System	The Australia and New Zealand joint food regulation system is made up of the laws, policies, standards, and processes that we use to make sure our food is safe to eat. Priority 2 of the Food Regulation System is "Supporting public health objectives by promoting healthy food choices, maintaining and enhancing the nutritional qualities of food and responding to specific public health issues." Work under this system is progressed through shared responsibilities across the Australian, New Zealand and Australian state and territory governments. Current activities include: • commercial foods for infants and young children (in early development); • nutrition labelling about added sugars; • menu board labelling; and • alcohol labelling - energy, carbohydrate, and sugars.	Strategies 1.4 and 1.5
Healthy Food Partnership	A non-regulatory, collaborative initiative between the Government, food industry, and public health groups. The aim of the Partnership is to achieve healthy eating for Australians through working with food companies to make positive changes in their products, such as food reformulation, offering more appropriate serving sizes, and improving commercial foods for infants and young children. The initiative is comprised of: • Partnership Reformulation Program • Industry Guide to Voluntary Serving Size Reduction • Voluntary Industry Guide to Improving Packaging, Labelling, Serving Size and Flavour Profile of Commercial Foods for Infants and Young Children	Strategies 1.1, 1.2, 1.4 and 2.3
Health Star Rating (HSR) system	A front of food pack labelling system which helps Australians compare the nutritional value of similar packaged products. Products are given a health star rating based on their nutritional profile, considering 4 aspects of food associated with risk factors for chronic diseases. These are energy, saturated fat, sodium, and total sugars, along with certain 'positive' aspects of a food such as dietary fibre, protein and fruit, vegetable, nut, and legume content. The HSR system is an initiative of Food Ministers.	Strategy 1.5
Limiting marketing of unhealthy foods to children	A feasibility study to explore the current landscape of marketing and advertising to children and consider options for implementing restrictions in Australia. The aim of the feasibility study is to provide a better understanding of the regulatory and non-regulatory options available to limit unhealthy food marketing to children, and the relevant costs and benefits of these options. The department will provide recommendations to Government on potential options to restrict unhealthy food marketing to children to Government based on the study findings.	Strategy 1.6

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Initiative/Program	Description	Alignment with National Obesity Strategy 2022-2032
Review of the 2013 Australian Dietary Guidelines	The Australian Dietary Guidelines provide up-to-date advice about the amount and kinds of foods that we need to eat for maintaining a healthy body weight, meeting nutrient requirements, and reducing the risk of diet-related chronic conditions with recommendations based on scientific evidence. The National Health and Medical Research Council is undertaking a review of the 2013 Australian Dietary Guidelines to ensure the Guidelines are based on current evidence.	Strategies 1.5 and 2.1
National Nutrition Policy Framework	Development of a multisectoral, whole-of-government National Nutrition Policy Framework to identify, prioritise, drive, and monitor healthy eating in Australia. The department is in the early scoping stages and will work closely across government agencies, with state and territory governments, non-government organisations and other stakeholders as this work progresses.	Strategy 1.1
Early childhood nutrition grants	Funding to the University of Queensland to develop resources to educate parents, health professionals and early childhood educators on feeding infants and young children, launching late July 2023.	Strategy 2.3
Early childhood nutrition grants	Funding to Karitane to provide parenting and professional development workshops across Australia to support improved early childhood nutrition through the Connecting the Dots program.	Strategy 2.3
Social Prescribing in the Australian Context - A national feasibility study	To enhance the connection between primary health care and local, community-based services to address the risk factors for poor health and wellbeing.	Strategies 3.1 and 3.2
Medicare Benefits Schedule	Patients with obesity, or who are overweight can access existing Medicare Benefits Schedule (MBS) items for the treatment of their condition, including time tiered GP general attendance items. If clinically necessary, GPs can also refer patients to relevant specialists for treatment. Patients with obesity, or who are overweight may be eligible for MBS Chronic Disease Management (CDM) items. The CDM items enable GPs to plan and coordinate the health care of patients with chronic or terminal medical conditions.	Strategy 3.1
Healthy Heart Initiative	To enable the Heart Foundation to build on and expand their successful walking initiatives to increase the physical activity and participation of at-risk groups.	Strategy 1.8
RACGP Healthy Habits Program	The Healthy Habits Project was established to develop education and training material for GPs to support Australians to achieve a healthy lifestyle though increased physical activity, better nutrition, and sleep.	Strategies 2.1, 3.1 and 3.5
Update Pregnancy Care Guidelines and develop new Postnatal Care Guidelines	Update of the Pregnancy Care Guidelines to reflect current evidence and best practice in maternity care, transform the guidelines into Living Guidelines and support the Living Guidelines until 30 June 2023 and develop new Postnatal Care Guidelines.	Strategies 3.4 and 3.5
Healthy Pregnancy resources	Resources provide infant and maternal health information to ensure Australian children get the best possible start in life. The resources aim to support those who are pregnant and their partners to manage their weight, improve their diet and increase physical activity before and during pregnancy.	Strategy 2.3

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Initiative/Program	Description	Alignment with National Obesity Strategy 2022-2032
Physical Activity and Sedentary Behaviour Guidelines and 24-Hour Movement Guidelines	Australia's Physical Activity and Sedentary Behaviour Guidelines and 24-Hour Movement Guidelines, which are available for all life-stages, provide guidance on what duration and intensity of physical activity, and what sedentary behaviour, is appropriate for each age group to benefit their overall health and wellbeing.	Strategy 2.1
RecLink Australia	RecLink Australia provides a sport and recreation program that aims to break down the barriers of isolation and inactivity in disadvantaged Australians, promoting fitness, fun and social skills.	Strategies 1.8 and 1.9
The Big Issue	The Big Issue delivers positive social, physical, and mental health outcomes to Australians experiencing homelessness, marginalisation, and disadvantage through participation in the Big Issue Community Street Soccer Program.	Strategies 1.8 and 1.9
National Walk Safely to School Day and Diabetes Australia - Walk to Work Day	Funding to support activities that address the rising burden of chronic disease and improve public health through organisation of a National Walk Safely to School Day and a Diabetes Australia Walk to Work Day.	Strategy 2.3
Sporting Initiatives	• FIBA Women's Basketball World Cup 2022 initiatives to increase basketball participation amongst First Nations and multi-cultural communities across Australia and to develop a National Multicultural Program. • FIFA Women's World Cup 2023 Legacy Initiatives. • ICC T20 Men's Work Cup 2022 Legacy Initiatives. • National Sporting Organisations and National Sporting Organisations for People with a Disability - Participation Grants to deliver national sport participation programs targeted at populations physically inactive or individuals who have 'dropped out' of sport. • Sporting Schools Program - the Government's flagship sport and physical activity program for children. • Sport4All First Nations Program Expansion - a nation-wide program which includes a focus on First Nations people living with a disability. • AFL in the Northern Territory - support community participation in football training and competitions across the Northern Territory, and the delivery of activities (focusing on Indigenous school aged girls) through the Michael Long Learning and Leadership Centre. • Local Sporting Champions and Local Para Champions Programs to continue providing financial assistance to junior competitors, coaches, and officials to attend state, national and international sporting competitions.	Strategies 1.7, 1.8, 1.9, 1.10, 2.3, 2.4, 2.5 and 2.6
Co-designing First Language resources to promote metabolic health of Aboriginal and Torres Strait Islander women	This Activity will produce eight short, animated videos to promote metabolic health of Aboriginal and Torres Strait Islander women. Each will be narrated in simple English and five Indigenous First Languages, targeting women across the Northern Territory and Far North Queensland.	Strategy 1.7
Eating Disorders: Body Bright Program	Promote healthy attitudes and behaviours towards the body, eating and physical activity in children, so they can thrive at school and in life. It helps address modifiable risk and protective factors associated with body dissatisfaction and disordered eating through the six Body Bright themes.	Strategies 1.10 and 2.3
Eating Disorders Credentialing System (ANZAED)	The system formally recognises clinician qualifications and experience needed to meet minimum standards for delivery of safe and effective eating disorders treatment. The Credential helps people with an eating disorder to easily connect with professionals with the right expertise to support treatment and recovery.	Strategy 3.5

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Initiative/Program	Description	Alignment with National Obesity Strategy 2022-2032
Embrace Body Image program and campaign	The Embrace Kids Australia program is a multi-pronged educational approach to build and maintain positive body image amongst Australian children, young people, and their families. The program will be delivered in early childcare and preschool settings, primary and high schools, sporting clubs and through community events to spread the positive body image message far and wide.	Strategies 1.10, 2.2, 2.3 and 2.4
EON Foundation Thriving Communities Program	The Thriving Communities Program is an intensive and long-term grassroots gardening, cooking and nutrition-based program aimed at establishing edible gardens in remote Aboriginal communities and schools as well as providing the education, training, and skills for local people to maintain them. To date, the program has been delivered in 39 remote communities in NT and WA under a grant agreement with the Department of Health and Aged Care.	Strategy 1.5

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Attachment B.1: Medical Research Future Fund projects on diabetes

MRFF Initiative	Grant Opportunity	Organisation	Project Title	Project Summary	Chief Investigator A/Project Lead	CI Team	Total Value
Emerging Priorities and Consumer Driven Research	2019 Accelerated Research - Juvenile Diabetes Research Foundation	JDRF Australia	Australian Type 1 Diabetes Clinical Research Network (CRN)	The principal goal of the CRN is to positively impact the lives of people with type 1 diabetes through the support and translation of research. The three focus areas for the CRN are: 1. Trials: Increase the volume and impact of type 1 diabetes clinical research in Australia. 2. Translation: Support the translation and progress of early-stage science. 3. Talent: Nurture current and future research leaders in type 1 diabetes.	Not applicable	Not available	$25,000,000
Clinician Researchers	2018 Next Generation Clinical Researchers	University of Western Australia	Community-based studies of diabetes and infectious diseases	Diabetes and tropical/infectious diseases are globally important and increasingly encountered in Australia. The studies covered by this Fellowship application aim to continue to improve the clinical management of these diseases through epidemiological and intervention studies in key patient groups conducted by multidisciplinary research teams that I have developed and/or lead.	Professor Timothy Davis	Not applicable	$585,270
Preventive and Public Health Research	2019 Preventive and Public Health Research	Menzies School of Health Research	A life course approach to reduce intergenerational diabetes risk in remote Northern Australia through improved systems of care and consumer engagement	Our established partnership of researchers, health services and policy makers across Australia aims to improve diabetes-related health outcomes in Aboriginal and Torres Strait Islander communities, starting as early as possible in life. This proposal aims to improve management of diabetes in pregnancy and post-partum follow-up of women, to reduce future risk of chronic conditions of obesity, diabetes and heart disease in Aboriginal and Torres Strait Islander mothers and their children.	Professor Louise Maple-Brown	Professor Louise Maple-Brown, Doctor Christine Connors, Doctor Leisa McCarthy, Professor Jeremy Oats, Ms Sumaria Corpus, Doctor Anna-Gerardina McLean, Professor Harold McIntyre, Doctor Karla Canuto, Doctor Renae Kirkham, Professor Jonathan Shaw	$2,923,325
Preventive and Public Health Research	2019 Preventive and Public Health Research	The University of Adelaide	Time-Restricted EATing to reduce the risk of developing type 2 diabetes (TREAT)	Two million Australians are at risk of developing type 2 diabetes mellitus. This may be partly due to modern human lifestyles which are linked with eating for a prolonged period each day. Preliminary data by the CIs show that time restricted eating (TRE, 8-10 h/day for up to 8 wks.) improves glucose tolerance by 36% in people with obesity. This study will now test whether TRE is effective to improve glycaemic control and can be sustainable in humans longer term.	Associate Professor Leonie Heilbronn	Associate Professor Leonie Heilbronn, Professor John Hawley, Doctor Amy Hutchison, Doctor Brooke Devlin, Doctor Evelyn Parr	$1,012,420

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MRFF Initiative	Grant Opportunity	Organisation	Project Title	Project Summary	Chief Investigator A/Project Lead	CI Team	Total Value
Preventive and Public Health Research	2020 Targeted Translation Research Accelerator	MTPConnect	MTPConnect Diabetes and Cardiovascular Accelerator initiative	The MTPConnect Diabetes and Cardiovascular Accelerator (Accelerator) will provide a three-pillar program to improve the management and treatment of diabetes and cardiovascular disease (D&CVD). The Accelerator will: 1) establish research centres for diabetes and cardiovascular disease; 2) establish a contestable funding program to support D&CVD research projects; and 3) promote the effective clinical and commercial translation of novel therapeutics and devices for D&CVD. The Accelerator, guided by an expert Board appointed by the Minister for Health, will work in partnership with leading D&CVD groups to improve the health and wellbeing of local, national, and international communities through research, education, and clinical practice.	Not applicable	Not available	$47,000,000
Primary Health Care Research	2019 Primary Health Care Research	The University of Adelaide	Translation of culturally informed diabetes training for Aboriginal Health Practitioners on Aboriginal patient outcomes: a cluster randomised trial of effectiveness	Diabetes effects many Indigenous Australians who as a result, experience preventable illnesses and death. Well managed diabetes can prevent or delay poor or fatal outcomes. The current certificate III and IV health worker and practitioner curriculum allocates less than one day to diabetes. This project will assess if a co-designed culturally informed diabetes training program for Aboriginal Health Practitioners improves diabetes patient health outcomes.	Doctor Odette Pearson	Doctor Odette Pearson, Doctor David Jesudason, Professor Alex Brown, Professor Paul Zimmet, Doctor Saravana Kumar, Doctor Gloria Mejia Delgado, Professor Gary Wittert, Associate Professor Sara Jones	$1,299,036
Rapid Applied Research Translation	2020 Rapid Applied Research Translation	St Vincent's Institute of Medical Research	Pathway to use of immunotherapy in clinical practice for type 1 diabetes	Type 1 diabetes (T1D) is a common autoimmune disease with onset usually in childhood or young adulthood that has been treated with insulin for over 99 years. Insulin is not a cure and T1D treatment remains burdensome. The recent development of numerous drugs that affect the immune system means that the treatment of T1D is poised to be transformed. However, many barriers remain before immunotherapy becomes part of routine clinical care. We will form a multi-disciplinary panel to address challenges such as better biomarkers, education and change within the workforce, and meeting the requirements of the TGA. We will provide centralised expert advice on immunotherapy for patients and clinicians across MACH-based hospitals.	Professor Thomas Kay	Professor Thomas Kay, Doctor Bala Krishnamurthy, Professor Bob Anderson, Associate Professor Elif Ekinci, Professor Fergus Cameron, Professor Helen Thomas, Associate Professor John Wentworth, Professor Len Harrison, Doctor Michelle So, Professor Peter Colman, Professor Philip Clarke, Professor Richard MacIsaac, Associate Professor Shane Hamblin, Associate Professor Spiros Fourlanos, Associate Professor Stuart Mannering	$2,676,000

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MRFF Initiative	Grant Opportunity	Organisation	Project Title	Project Summary	Chief Investigator A/Project Lead	CI Team	Total Value
Rapid Applied Research Translation	2020 Rapid Applied Research Translation	Central Australian Aboriginal Congress Aboriginal Corporation	Aboriginal prosperity through community driven translational research	An Aboriginal-led integrated program of culturally responsive research and knowledge translation is delivering better health and social outcomes to Aboriginal people of Central Australia and Barkly regions, through three streams of activity: 1) Translating Culture through Research: Two-way learning that integrates Aboriginal and western knowledge systems to improve health services and outcomes. 2) Health Services and Workforce Capacity: Research to establish culturally responsive and evidence based models of service delivery, enhanced workforce capacity and evaluation. 3) Chronic Diseases: Translational research interventions throughout the life cycle to prevent and manage diabetes and heart failure.	Doctor Leisa McCarthy	Doctor Leisa McCarthy, Mr Chris Perry, Ms Danielle Dyall, Doctor Deb Russell, Ms Donna Ah Chee, Ms Erin Lew Fatt, Ms Heather Burton, Ms Irene Nangala, Mr Jeff Hulcombe, Doctor Jocelyn Davies, Doctor John Boffa, Professor John Condon, Professor John Humphreys, Professor John Wakerman, Professor Jonathan Shaw, Ms Karrina Demasi, Associate Professor Kylie Dingwall, Doctor Liz Moore, Ms Lorna Murakami-Gold, Professor Louise Maple-Brown, Ms Louise Martin, Doctor Michelle Fitts, Ms Monica Robinson Nangala, Doctor Richard Johnson, Professor Robyn Aitken, Ms Sarah Brown, Professor Shez Cairney, Ms Sonia Hines, Professor Steve Guthridge, Doctor Supriya Mathew, Professor Tom Marwick, Professor Tricia Nagel, Ms Walbira Murray, Doctor Yuejen Zhao	$9,760,245
Emerging Priorities and Consumer Driven Research	2021 Improving the Health and Wellbeing of Aboriginal and Torres Strait Islander Mothers and Babies	University of Western Australia (Kimberley Aboriginal Medical Services Limited)	Optimisation of screening and management of hyperglycaemia in pregnancy	High blood glucose in pregnancy increases babies' risk of being born premature, by caesarean, larger/smaller than optimum, with low blood glucose levels, and difficulty breathing. This project will implement, evaluate, and refine alternative screening for detecting high blood glucose in pregnancy at regional, state, and national levels. We will use three-way learning between Aboriginal community members, health providers and researchers to co-design and trial self-management strategies for high blood glucose in pregnancy. This project will empower Aboriginal women and their families to make positive lifestyle choices aimed at improving birth outcomes and health for subsequent pregnancies and prevent or delay progression to chronic disease.	Mr Wayne Beddall	Mr Wayne Beddall, Ms Glenys Gillespie, Ms Kylie Hopkins, Ms Kathryn Johnstone, Mr John Joseph, Ms Conchita Boyder, Mr Ian Pratt, Professor David Atikinson, Ms Emma Carlin, Doctor Andrew Kirke, Doctor Emma Griffiths	$3,236,071

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MRFF Initiative	Grant Opportunity	Organisation	Project Title	Project Summary	Chief Investigator A/Project Lead	CI Team	Total Value
Indigenous Health Research Fund	2021 Indigenous Health Research	Flinders University	Knowledge interface co-design of a diabetes and metabolic syndrome intervention with and for Aboriginal and Torres Strait Islander peoples living on Ngarrindjeri country	Diabetes is a national health priority in Australia, and Aboriginal people are significantly impacted by higher diagnosis, hospitalisation, and death. The Coorong Diabetes Collaborative will change these terrible health impacts through a newly developed program to reverse diabetes. We will do this with local Aboriginal people, health professionals, doctors, experts on ketogenic eating and on ways to measure this. Aboriginal people will trial the program for evaluation and upscale in Australia.	Doctor Courtney Ryder	Doctor Courtney Ryder, Mr Darryl Cameron, Joseph Wang, Doctor Shahid Ullah, Caitlin Kerrigan, Associate Professor Billingsley Kaambwa, Doctor Brooke Spaeth, Sharon Perkins, Stephen Stranks, Professor Paul Worley, Doctor Annabelle Wilson	$756,623
Indigenous Health Research Fund	2021 Indigenous Health Research	The University of Queensland	Type 2 diabetes prevalence and management in patients attending an Aboriginal and Torres Strait Islander Health Service in Southeast Queensland over a twelve-year period: factors Associated with good management and low risk of hospitalisation	Statistics show that by 55 years of age, at least one in three Indigenous Australians will have diabetes. Diabetes can cause serious heart and kidney problems for which people need to go to hospital, but there are ways to reduce the risk of having such problems. We aim to learn if The Inala Indigenous Health Service can do better for people with diabetes. We also would like to know if the number of people developing diabetes is increasing, and if more resources are needed to prevent diabetes.	Associate Professor Federica Barzi	Associate Professor Federica Barzi, Doctor Prabha Lakhan, Mr Stephen Harfield, Professor Noel Hayman, Professor James Ward, Associate Professor Geoffrey Spurling, Professor Anthony Russell	$392,285
Genomics Health Futures Mission	2021 Genomics Health Futures Mission	Australian National University	Establishing epigenetic biomarkers in Indigenous Australians for precision health	Indigenous Australians have historically been severely disadvantaged when it comes to gaining equitable access to high quality healthcare, including with respect to the emerging field of Precision or "Personalised" medicine. Using a large cohort of Indigenous Australians, we aim to establish epigenetic profiles that can be used to develop accurate biomarkers that can target early prevention and management of diabetes and its complications.	Professor Alex Brown	Professor Alex Brown, Doctor James Breen, Professor Assam El-Osta, Associate Professor Natasha Howard, Doctor Scott Maxwell, Doctor Ishant Khurana, Doctor Boris Guennewig, Professor Ryan Lister, Doctor Sam Buckberry	$991,506
Primary Health Care Research	2021 Primary Health Care Research	Bond University Limited	Wearables Integrated Technology to support healthy behaviours in people with Type 2 Diabetes (Wear-IT)	Exercise and dietary behaviours are vital to controlling type 2 diabetes and preventing complications from this disease. This study will combine information from wearable technologies, including physical activity trackers, with health information from the patient's medical record to help people with type-2 diabetes to set goals and monitor progress on physical activity, blood sugar and blood pressure control. Participants will be supported to achieve goals by their GP and Practice Nurse.	Professor Nicholas Zwar	Professor Nicholas Zwar, Professor Robert Sanson-Fisher, Professor Katharine Wallis, Doctor Breanne Hobden, Professor Christopher Doran, Gideon Meyerowitz-Katz, Doctor Kean-Seng Lim, Doctor Kristy Fakes, Professor Glenden Maberly, Professor Elizabeth Halcomb, Doctor Christopher Oldmeadow	$1,093,405

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MRFF Initiative	Grant Opportunity	Organisation	Project Title	Project Summary	Chief Investigator A/Project Lead	CI Team	Total Value
Preventive and Public Health Research	2022 Effective Treatments and Therapies	University of Wollongong	PANDA Trial: Physical Activity in Nature for Cardiometabolic Diseases in People Aged 45y+	Contact with nature might be key to promoting regular physical activity in people with heart disease and diabetes. Our national survey indicates 72% of physically inactive Australians aged 45y+ with cardiometabolic diseases would accept a nature prescription yet there are none on offer. We aim to co-design and test a nature prescription intervention that enables this target group to spend more time in nature and thereby reap the rewards of sustained physical activity for cardiometabolic health.	Professor Thomas Astell-Burt	Professor Thomas Astell-Burt, Doctor Katarzyna Olcon, Professor Lennert Veerman, Professor Lorna Moxham, Professor Elizabeth Halcomb, Professor Evangelos Pappas, Professor Marijka Batterham, Doctor Sonali Gnanenthiran, Professor Glenden Maberly, Associate Professor Stewart Vella, Associate Professor Rowena Ivers, Doctor Monique Francois, Professor Julie Redfern, Associate Professor Xiaoqi Feng	$1,491,204
Primary Health Care Research	2021 Primary Health Care Digital Innovations	Queensland University of Technology	3D digital solutions for diabetes related foot ulcer offloading treatment	Annually, approximately 50,000 Australians are impacted by diabetes-related foot ulcers (DFU) with the impact of DFUs dramatically increasing in regional/indigenous communities costing ~ $1.6B. We will develop and deploy low-cost dynamic foot scanning technologies to enable the 3D scanning and 3D printing of low-cost, patient-specific, personalised DFU offloading insoles to improve DFU treatment outcomes and provide equitable access to regional communities.	Professor Maria Woodruff	Professor Maria Woodruff, Associate Professor Peter Lazzarini, Professor Jonathan Golledge, Doctor Sean Powell, David Holmes, Mr Alexander Terrill, Doctor Edmund Pickering, Doctor Kerrie Evans	$810,102
Clinical Trials Activity	2022 International Clinical Trial Collaborations (Round 22.1)	Western Sydney University	Title Closed-loop Insulin delivery by glucose Responsive Computer algorithms In Type 1 diabetes pregnancies (CIRCUIT)	Many (>50%) newborns of pregnant women with type 1 diabetes (T1D) are harmed by abnormal glucose exposure in the womb. With Canadian researchers, we will randomly assign women to use a new automated insulin delivery approach or standard insulin delivery and test whether blood glucose is improved, birth complications reduced, and diabetes self-care demands lessened. Findings could result in more effective and easier ways for women with T1D to have healthier pregnancies and children.	Professor David Simmons	Professor David Simmons, Doctor Sarah Price, Associate Professor Glynis Ross, Doctor Wadad Tannous, Doctor Arianne Sweeting, Professor Dharmintra Pasupathy, Professor Christopher Nolan, Doctor Melinda Morrison, Mrs Simone Marschner, Professor Ngai Cheung Renza Scibilia, Professor Denice Feig, Mrs Romina Zappulla, Professor Lois Donovan	$763,386
Cardiovascular Health Mission	2022 Cardiovascular Health	Deakin University	Early detection of insulin-resistance with a mixed meal challenge - The REFINE study	Insulin resistance is a precursor to type 2 diabetes, heart disease and stroke. We have developed a new more sensitive test for doctors to use to screen people with insulin resistance. Detecting people in the community with insulin resistance can help doctors inform patient care to prevent people from developing these chronic diseases.	Associate Professor Michelle Keske	Associate Professor Michelle Keske, Professor Thomas Marwick, Professor Jo Salmon, Professor Itamar Levinger, Doctor Gavin Abbott, Doctor Lewan Parker, Professor Glenn Wadley	$1,498,740

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Attachment B.2: Australian Research Council's[2] projects on diabetes and/or obesity

Project Code	Scheme Name	Organisation	Project title	Project summary	Chief investigator A/Project lead	CI team	Total value
DE210100303	Discovery Early Career Researcher Award	Macquarie University	Inheritance and the Emergence of Individuals: From concepts to practice	This project aims to solve a fundamental problem in biology, namely, how entities at one level biological organisation (e.g., single cells) transition or evolve into entities at a higher level (e.g., multicellular organisms). Although several attempts to solve this problem have been made, they are unsatisfactory because they neglect the role of inheritance during the transitions. The project will employ philosophical analysis, formal models, and ultimately experiments with bacteria to understand the role of inheritance during these evolutionary transitions. In doing so, the project will demonstrate that conceptual research by philosophers of biology can make an impactful contribution in biology and answer fundamental questions in this field.	Pierrick Bourrat	Pierrick Bourrat	$441,200
DE210101791	Discovery Early Career Researcher Award	The University of Western Australia	Influence of the food environment near schools on children's food intake	Bridging the disciplines of nutrition, public health, geography and urban planning, this unique and innovative project strives to be the first in Australia to: (i) longitudinally map, measure and monitor the food environment near schools; and (ii) comprehensively investigate how the proximity of healthy and unhealthy food outlets near schools impacts on children's eating behaviours. The findings will be used to develop a set of policy and practice recommendations for key stakeholders (e.g., school staff, students, parents, community members, retailers, planners, and government) to help create equitable and health-promoting food environments near schools.	Gina Trapp (nee Wood)	Gina Trapp (nee Wood)	$401,567
DE220100403	Discovery Early Career Researcher Award	Flinders University	Defining how gut bacteria regulate metabolism: a role for gut serotonin	This project aims to understand how serotonin-producing cells in the gut interact with gut bacteria (the microbiome), using a combination of cells in culture and live germ-free and genetically modified mice. This project expects to generate new knowledge regarding cellular interactions that underlie important physiological pathways, such as the control of blood glucose and fat storage. The intended outcomes of this project are to identify how gut bacteria communicate with serotonin-producing cells to regulate metabolism, and whether diet acts via a gut microbiome-serotonin axis to impact physiology. The expected benefit of this project will be to provide a new understanding of highly complex physiological systems that regulate our health.	Alyce Martin	Alyce Martin	$468,582
DE220100829	Discovery Early Career Researcher Award	The University of Sydney	Stop it: Learning response inhibition	Behavioural inhibition is an essential part of daily life. However, some behaviours are hard to inhibit, such as refraining from eating junk foods. This project aims to determine how learning from past experiences and individual differences account for our capacity to inhibit actions. The project combines novel behavioural paradigms with an associative learning framework, cutting-edge neurophysiological techniques, and advanced statistical analyses. Expected outcomes include new knowledge of the psychological, cognitive, and neural mechanisms involved when behaviours are successfully inhibited. This project should provide benefits to understanding why inhibiting actions is prone to failure in addiction and psychological disorders.	Dominic Tran	Dominic Tran	$447,038
DE230101231	Discovery Early Career Researcher Award	The University of Western Australia	The effect of nutrition on male life history traits in humans	This project will provide answers to fundamental questions in evolutionary biology while identifying diet compositions that will benefit human health and well-being. Using a longitudinal public-health database, the Raine Study, and a theoretical framework from the field of Nutritional Ecology, the project will provide new knowledge on how nutrition affects key life-history traits in	Yong Zhi Foo	Yong Zhi Foo	$390,295

[2] Note 1 - The data provided is for the intended use only (as described in the request) and should not be re-used for any other purpose.
Note 2 - Only projects funded between 2021 and 2023 were looked at.
Note 3 - A keyword extraction method was used for this analysis, the keywords looked at were: 'Diabetes', 'Obesity', 'Diabetes Research', 'Obesity Research'.

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Project Code	Scheme Name	Organisation	Project title	Project summary	Chief investigator A/Project lead	CI team	Total value
				humans including immune function, reproductive health, physical appearance, and healthy ageing. A systematic literature review on how diet impacts these life-history traits in animals generally, and an experimental study of the effect of diet on health and reproduction in the house mouse (a lab analog species for humans) will complement the Raine Study findings.			
DP210100255	Discovery Projects	The University of New South Wales	The mathematics of stochastic transport and signalling in cells	The project aims to develop new stochastic mathematical models of the dynamics of protein transport and cell signalling. The mathematics will link macro scale biological observations to micro scale molecular movements to characterise the relative role that different components and processes play. Expected outcomes are robust mathematical analyses of the transient dynamics of closed, finite capacity queueing networks and biological insight into the major control mechanisms in cellular insulin signalling. The project should provide significant benefits via the delivery of new mathematical tools and analysis for stochastic networks, impacting our understanding of metabolic transport, and providing interdisciplinary research training.	Adelle Coster	Adelle Coster	$435,000
DP210100285	Discovery Projects	The University of Newcastle	Understanding the impact of nature imagery on healthy food choices	This project aims to use an interdisciplinary approach to further the understanding of factors influencing food choice in digital environments. There has been a gradual shift in consumer food choice environments from in-person to digital settings, including smartphone apps and online websites. This project expects to generate new knowledge on how background images used in digital interfaces could be exploited to promote healthy food choice. This can provide important benefits to the Australian society by informing guidelines and policies for the design of digital food choice environments (e.g., online grocery shops, food delivery apps, school canteen ordering systems) and digital marketing and retail strategies.	Tamara Bucher	Tamara Bucher, Marc Adam, Clare Collins	$353,227
DP210102225	Discovery Projects	La Trobe University	Determining how the soluble dietary fibre beta-glucan is made in cereals	This Project aims to define the molecular mechanisms that control the processes involved in the biosynthesis and regulation of mixed linkage glucan, a major soluble dietary fibre in the cell walls of cereal grains. Plant cell walls determine the quality of most plant-based products used in modern human societies, yet the regulatory mechanisms responsible for their modulation are not well understood. Key distinguishing features of the Project will be the international, integrative, and multidisciplinary approach towards addressing this major challenge in plant biology and the potential of the fundamental scientific discoveries to benefit end-users in the food, feed, and beverage industries.	Monika Doblin	Monika Doblin, Tony Bacic	$491,691
DP210102576	Discovery Projects	The University of New South Wales	The role of phospholipids in the biogenesis of lipid droplets	The general aim is to elucidate the fundamental molecular mechanisms that govern the biogenesis/formation of the lipid droplets. Lipid droplets store sterol esters and/or triacylglycerols, two major storage lipids that play key roles in cellular and whole-body lipid metabolism. Lipid droplets are also the core components of plant oil and biodiesel. Little is known about how lipid droplets are generated. The proposed work will examine the synthesis of certain lipid intermediates such as phosphatidic acid, and their impact on the biogenesis of lipid droplets from the endoplasmic reticulum. Such fundamental new knowledge on how cells store neutral lipids will provide new strategies for enhancing plant oil and biodiesel production.	Hongyuan Yang	Hongyuan Yang	$541,000
DP210102791	Discovery Projects	Deakin University	Food and beverage price promotions: An untapped policy target	We aim to generate evidence on the influence of price promotions on foods and beverages considered to be of concern for human and planetary health. We further aim to identify if, and how, policies can be designed to reduce these types of price promotions and understand the feasibility and acceptability of doing so, from a range of perspectives. The significance of this project is substantial - unhealthy diets are the leading cause of disease and death and unhealthy	Kathryn Backholer	Kathryn Backholer, Adrian Cameron,	$355,000

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Project Code	Scheme Name	Organisation	Project title	Project summary	Chief investigator A/Project lead	CI team	Total value
				foods account for >30% of the food-related environmental footprint. By understanding if, and how, this novel policy target can be designed to improve population food choices, this project will ultimately deliver benefits for human and planetary through improved dietary choices.		Gary Sacks, Anna Peeters	
DP210102924	Discovery Projects	Monash University	Individualised predictions of circadian timing, sleep, and performance	The body's 24-hour clock regulates when we feel sleepy or alert. In shift workers, disrupted sleep and rhythms leads to fatigue and costly, often deadly, workplace accidents. Existing methods for measuring body clock timing are costly, impractical for operational settings, and do not work in real time. Using a shift-worker population, this project will develop models that accurately predict body timing, sleep/wake patterns, and performance for an individual, requiring only a simple activity/light sensor and an assessment of the body clock's sensitivity to light. The new model would revolutionise fatigue management and make safer work environments for millions of shift workers.	Andrew Phillips	Andrew Phillips, Sean Cain, Sally Ferguson, Matthew Thomas	$552,254
DP210103779	Discovery Projects	The University of Adelaide	Unravelling cell wall polysaccharide biosynthesis in pathogenic zygomycetes	This project aims to define mechanisms that control cell wall composition and stability in Rhizopus oryzae, a zygomycete fungus responsible for life-threatening human infections. The biochemical properties and function of vital enzymes involved in a newly discovered cell wall polysaccharide biosynthetic pathway will be determined using innovative approaches at the interface of biochemistry, microbiology, cell biology and structural biology. Expected outcomes include new knowledge on the enzymes that synthesise major fucose-based carbohydrates, to guide the future development of novel strategies for antifungal therapies. The data will also be applicable to animal protection from related zygomycete pathogens.	Vincent Bulone	Vincent Bulone	$503,315
DP210103929	Discovery Projects	The University of New South Wales	How satiation control reward value and cue-induced appetitive behaviours	This proposal aims to identify mechanisms that control environment-driven food-seeking behaviours. It seeks to do so by using modern virally-mediated and basic behavioural as well as histological techniques in a transgenic rat to characterise novel hindbrain circuits that control these feeding behaviours. This is significant as environment-driven overeating is problematic, yet underlying mechanisms are unclear. This project expects to provide new knowledge on when, where, and how hindbrain neurons control environment-driven food-seeking behaviours. This should provide benefits to the advancement of knowledge on the neural mechanisms of food-seeking and provide a basic science platform for future research on the study of feeding behaviours.	Zhi Yi Ong	Zhi Yi Ong	$437,997
DP220101107	Discovery Projects	Monash University	Weight stigma in the preconception, pregnancy, and postpartum periods	The overall aim of this project is to develop guidance for the translation of weight stigma evidence into preconception, pregnancy, and postpartum obesity-related policy. It focuses on the socio-ecological factors that perpetuate weight stigma in women across the reproductive life phase, that is, in women planning a pregnancy, in women who are pregnant and in mothers who have given birth within a 24-month period.	Briony Hill	Briony Hill, Helen Skouteris, Matthew Fuller-Tyszkiewicz, Jacqueline Boyle, Lucie Rychetnik	$406,013
DP220101412	Discovery Projects	The University of Sydney	Extinction and response inhibition	Humans and other animals readily learn to perform an action if it is “reinforced” by a reward and will extinguish the action if it stops being reinforced. Popular models of learning describe extinction as the automatic outcome of a prediction-error correction process that gradually weakens, and eventually eliminates, the response-reward association. But there is much evidence that	Justin Harris	Justin Harris, Evan Livesey	$445,378

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Project Code	Scheme Name	Organisation	Project title	Project summary	Chief investigator A/Project lead	CI team	Total value
				conditioned responses are not eliminated and can be quickly restored. Other evidence suggests that extinction might involve more specific inhibitory processes that suppress the response without eliminating the original learning. The current project investigates the role of response inhibition in the extinction of learned responses in humans.			
DP220101689	Discovery Projects	The University of Melbourne	Characterization of the dark metabolome of eukaryotic cells	The project aims to investigate the full metabolic potential of a group of eukaryotic organisms using advanced analytical and computational techniques. It will identify novel metabolites and enzyme activities that are currently not predicted from genome annotations. Expected outcomes of the project include the delineation of new metabolic processes that are common to all eukaryotes, the characterization of new enzymes families, and the generation of comprehensive metabolic databases. An improved understanding of cellular metabolism will provide direct benefits in biotechnology, food production, environmental monitoring and the diagnosis and treatment of human metabolic and infectious diseases.	Malcolm McConville	Malcolm McConville	$789,650
DP220103462	Discovery Projects	The University of New South Wales	Impacts of diet on the brain, body, and microbiome	Dietary habits determine cognitive function, metabolism, and the composition of the gut microbiome. This project seeks to clarify the role of the gut microbiome in diet-induced changes to cognition. It aims to do so through longitudinal studies of cognitive function in which dietary patterns are systematically varied, and intervention studies where cognition is tested after experimentally manipulating the gut microbiome. Expected outcomes include new interdisciplinary knowledge spanning psychology, neuroscience, nutrition, and metabolism. This project is timely given the enormous shifts in Australian dietary choices. The knowledge to be gained should provide benefits to individual and public health, agriculture, and food systems.	Michael Kendig	Michael Kendig, Margaret Morris	$387,000
DP220103550	Discovery Projects	RMIT University	Unravelling the mechanisms of sodium-selectivity in biological ion channels	The aim of this project is to determine the origins of protein-mediated sodium ion transport across cell membranes. The project expects to reveal the mechanisms of selective ion conduction in different sodium-selective ion channels using advanced computer simulations, in concert with non-canonical mutation experiments that target the roles of protein chemistry. The expected outcome is improved understanding of how proteins discriminate between ion species, challenging theories that have stood for decades. The results should provide benefits in the form of basic understanding relevant to ion transport phenomena in biology and novel materials, with atomic-level views of nervous system function to guide future directions in drug development.	Toby Allen	Toby Allen	$364,813
DP220103700	Discovery Projects	Australian Catholic University	Metabolite regulation of mitochondrial fission	This project aims to understand how the function and health of mitochondria – the energy producing structures in cells - are controlled by fat molecules. The project expects to integrate cutting edge techniques and instrumentation to generate new knowledge of how fat molecules interact with, and influence, enzymes that control how cells maintain their mitochondria in response to nutrient state. An anticipated goal is to define a fingerprint for enzymes regulated by fat molecules that will be of great interest to researchers across many branches of life sciences. Expected outcomes and benefits will be deeper understanding of fat molecules as nutrient signalling metabolites, and how they influence cell metabolism, growth, and development.	Jonathan Oakhill	Jonathan Oakhill, Isabelle Rouiller, Bruce Kemp	$554,000
DP230101463	Discovery Projects	The University of New South Wales	How the brain learns and uses inhibitory predictions.	Humans and other animals readily learn about cues and actions that predict the absence of important events. Yet, how, and where such inhibitory predictions are processed in the mammalian brain remains unclear. This project aims to demonstrate that inhibitory predictions are generally encoded and retrieved in the medial prefrontal cortex, without any detailed information about the absent events. It combines a unique behavioural approach with the latest tools for	Vincent Laurent	Vincent Laurent, Nura Lingawi	$562,000

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Project Code	Scheme Name	Organisation	Project title	Project summary	Chief investigator A/Project lead	CI team	Total value
				manipulation of brain activity in behaving rodents. The project expects to generate new insights into how the mammalian brain extracts inhibitory predictions from the environment to guide our behaviours and decisions in the most optimal way.			
DP230102151	Discovery Projects	The University of Adelaide	To what extent does Australian food policy consider its health impact	This research will examine how public policies relating to food can be made healthier. The diet of Australians currently contributes to high rates of disease including diabetes, heart disease and the underlying issue of obesity. It will examine Australian agriculture and food processing, manufacturing, and marketing and the environmental impacts of these sectors. The research will analyse policy documents and interview key people involved in each sector to determine their views on the ways in which our food supply affects our health. It will result in policy recommendations advising how the Australian food sector can be made more supportive of health and equity. Policy makers will be engaged with our findings through a Food Policy Summit.	Frances Baum	Frances Baum, Dora Marinova	$602,000
DP230102606	Discovery Projects	La Trobe University	Trust in Pacific Healthcare: Transforming research, policy, and practice	Medical trust is vital to building positive healthcare engagement and improving health outcomes yet is poorly understood in non-Western contexts. Focusing on crises of trust related to type 2 diabetes and COVID-19 interventions in the Pacific, this collaborative project aims to examine the social and cultural dynamics of medical (mis)trust in Vanuatu, Fiji, and Samoa. Providing the first cross-cultural study of medical trust, an international team of researchers will generate interdisciplinary scholarly outputs, policy resources and a documentary film. Findings will assist healthcare professionals and communities strengthen trust relationships and ultimately achieve improved health engagement and delivery in the Pacific and beyond.	John Taylor	John Taylor, Tarryn Phillips	$299,226
FT220100405	ARC Future Fellowships	La Trobe University	Developing serial crystallography for room temperature structure & dynamics	This project aims to uncover the molecular structural dynamics of a bacterial enzyme responsible for protein folding in bacteria. This project expects to generate new knowledge to guide the development of a new type of antibacterial to circumvent antibiotic resistance. Expected outcomes of this project include new experimental, computational and simulation tools for dynamic X-ray crystallography including new capabilities at the Australian Synchrotron for very small microcrystals of any biomolecule. This would provide a powerful new tool for the Australian structural biology community that should accelerate fundamental discoveries, including facilitating high-resolution structure determination of membrane proteins and drug development.	Nadia Zatsepin	Nadia Zatsepin	$890,748
FT220100474	ARC Future Fellowships	The University of New South Wales	Uncovering a novel memory process mediating stimulus-based decisions	The project aims to describe how environmental stimuli influence choice between actions. The goal is to demonstrate that this influence recruits a novel form of memory characterised by a durable change in the expression of an opioid receptor. It will combine sophisticated behavioural tasks with modern genetic tools in rodents to identify the molecular, cellular, and neural interactions underlying the acquisition, maintenance, and retrieval of this memory. The project expects to provide new insights into the brain machinery promoting motivated behaviours and adaptive decision-making, and to extend knowledge about the physiological underpinnings of our memories.	Vincent Laurent	Vincent Laurent	$920,868
FT220100711	ARC Future Fellowships	The University of New South Wales	Gut-brain control of cue-induced feeding behaviours	This proposal aims to determine how food cues (e.g., advertisements) trigger our desire to eat. Using modern virally-mediated strategies, behavioural and histological techniques in a transgenic rat, this proposal seeks to characterise novel gut-brain circuits that mediate cue-induced feeding behaviours. This is significant as food cues can cause overeating, which is problematic in the current obesogenic society, yet the mechanisms are unclear. This project expects to provide new knowledge on how the gut communicates with multiple brain regions to control cue-induced	Zhi Yi Ong	Zhi Yi Ong	$811,144

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Project Code	Scheme Name	Organisation	Project title	Project summary	Chief investigator A/Project lead	CI team	Total value
				eating. This work should benefit the advancement of knowledge and establish a framework for future research on gut-brain mechanisms in cue-induced feeding.			
FT230100423	ARC Future Fellowships	Australian Catholic University	Uncovering a novel energy-sensing mechanism in the brain	This project aims to investigate a novel regulator of energy homeostasis in the brain, a protein kinase called SIK3. Energy homeostasis is essential for life as it ensures an adequate supply of fuel to cells of the body. This project intends to generate new knowledge about molecular switches to regulate energy homeostasis by using innovative gene technologies and transgenic animal models. The expected outcomes include generating fundamental insights into how SIK3 in the hypothalamic neurons regulates energy homeostasis. Benefits include improving population health and wellbeing, informing the development of new bio-medical technologies, and expanding the capabilities of Australia's next generation of researchers.	Kim Loh	Kim Loh	$770,338
LP210301337	Linkage Projects	The University of Adelaide	Situating care: Addressing obesity in disadvantaged communities	The project aims to drive an urgently needed shift from top-down interventions that focus on obesity as an individual problem of diets and exercise, to collective solutions of care generated by families for families, empowering social change at a local, community level. In collaboration with Australia's leading designers of social innovation, this anthropology project expects to generate new knowledge about care and food practices in disadvantaged communities, and to construct new digital, policy, and program frameworks for broader adaptation. The advances are likely to have a strong bearing on how obesity interventions, and more equitable health policy and practice, evolve in Australia and internationally.	Megan Warin	Megan Warin, JaneMaree Maher, Tanya Zivkovic	$408,906

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Attachment C: Statistics on impact of diabetes in Australia

Registrants on the National Diabetes Services Scheme

As of 31 March 2023, the NDSS provided support to more than 1.5 million Australians (36). This includes:

- approximately 138,000 people with type 1 diabetes;
- 1.3 million with type 2 diabetes;
- 12,000 people with other types of diabetes;
- 45,000 women with gestational diabetes; and
- 184,000 women registered on the National Gestational Diabetes Register.

Burden of diabetes in Australia

Burden of disease is a measure of the years of healthy life lost from living with or dying from disease and injury. The measure used is the 'disability-adjusted life year' (DALY). This combines health loss from living with illness and injury (non-fatal burden, or YLD) and dying prematurely (fatal burden, or YLL) to estimate total health loss (total burden, or DALY).

Burden of disease estimates seek to capture both the quantity and health-related quality of life, and to reflect the magnitude, severity and impact of disease and injury within a population. Burden of disease does not quantify the social or financial consequences of disease and injury.

In 2022, type 1 diabetes was responsible for around 19,000 DALY in Australia – equating to 0.7 DALY per 1,000 population. The proportion of fatal and non-fatal burden was similar with 49% (9,400 YLL) attributed to fatal burden and 51% (9,600 YLD) attributed to non-fatal burden.

Type 2 diabetes was the 12th highest disease-specific cause of DALY at 3.9 per 1,000 population. Sixty-one percent (76,400 YLD) of burden attributed to type 2 diabetes was non-fatal, with the remaining 39% (49,100 YLL) of the total burden being fatal (2).

Disease expenditure

Of the $3.1 billion health system expenditure attributed to diabetes in 2019–20, an estimated:

- $323.7 million was attributed to type 1 diabetes.
- $2.0 billion was attributed to type 2 diabetes.
- $63.6 million was attributed to gestational diabetes.
- $767.1 million was attributed to 'other/unknown' diabetes.
- Due to the high number of 'other/unknown' diabetes, caution should be used when interpreting data by diabetes type.
- Medications dispensed through the Pharmaceutical Benefits Scheme (PBS) was the single highest area of spending with just over a quarter of total diabetes expenditure ($827.7 million).
- 39% ($1.2 billion) of total health system expenditure attributed to diabetes was for hospital services. This included expenditure on public hospital admitted patients ($758.0 million), public hospital outpatients ($374.2 million), private hospital services ($86.4 million), and public hospital emergency departments ($20.4 million) (2).

Diabetes hospitalisations

There were almost 1.3 million hospitalisations associated with diabetes in 2020–21. This represents 11% of all hospitalisations in Australia.

Of the almost 1.3 million hospitalisations associated with diabetes in 2020–21, 4.7% were recorded as the principal diagnosis (the diagnosis largely responsible for hospitalisation) and around 95% were recorded as an additional diagnosis (a coexisting condition with the principal diagnosis or a condition arising during hospitalisation that affects patient management), according to the National Hospital Morbidity Database (NHMD).

In 2020–21, there were around:

- 59,400 hospitalisations with diabetes as the principal diagnosis. Over two-thirds were due to type 2 diabetes (69%) followed by type 1 diabetes (26%), gestational diabetes (4.2%) and diabetes 'other or unspecified' (1.8%).
- 1.2 million hospitalisations with diabetes as an additional diagnosis. Most were due to type 2 diabetes (89%) followed by gestational diabetes (5.5%), type 1 diabetes (4.2%) and diabetes 'other or unspecified' (1.1%) (2).

Type 2 diabetes procedures

There were around 4,500 weight loss procedures and 6,100 lower limb amputations undertaken for people living with type 2 diabetes in 2020–21 (2).

Diabetes complications

In 2020–21, there were over 560,000 hospitalisations with acute or chronic diabetes complications associated with the hospitalisation for people living with type 2 diabetes (51% of all type 2 diabetes hospitalisations). Kidney complications were the most reported complication in both males and females living with type 2 diabetes (2).

Emergency department presentations

In 2020–21 there were 19,100 ED presentations with a principal diagnosis of diabetes (type 1 diabetes, type 2 diabetes, or other diabetes). After adjusting for age, the overall rate of presentation for males was 1.3 times as high as the female rate. The rate of diabetes-related ED presentations for females was highest in the 15–19 age group and for males it was highest in the 80–84 age group. Between the ages of 5 and 24, females had a higher rate of presentation but in all other age groups, the rate for males was higher (2).

Diabetes medicine use

In 2020–21, over 16.5 million prescriptions were dispensed for diabetes medicines through the Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS), representing 5.3% of total prescriptions.

In 2021, 31,700 people began using insulin to treat their diabetes. Around 15,600 people living with type 2 diabetes-initiated insulin therapy (1,700 per 100,000 population).

The incidence of insulin therapy in people living with type 2 diabetes was highest for both males and females aged 10–39 and was 1.6 times as high for females compared with males, overall (2).

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Attachment D: PBAC considerations on medications for diabetes and/or obesity

Pharmaceutical Benefits Advisory Committee (PBAC)

The Pharmaceutical Benefits Advisory Committee (PBAC) is an independent expert body comprising doctors, health professionals, health economists and consumer representatives. Its primary role is to advise the Minister for Health and Aged Care about medicines and medicinal preparations that should be funded on the PBS.

Under legislation, the Government cannot list a new medicine on the PBS unless the PBAC makes a recommendation in favour of its listing. Similarly, the Government relies on the advice of the PBAC when considering changes to the circumstances under which existing PBS medicines are listed.

When considering a medicine proposed for PBS listing, the PBAC is legally required to take into account the comparative effectiveness (how well it works) and cost effectiveness (value for money) of the medicine compared with other available therapies.

The PBAC's consideration is generally initiated by the pharmaceutical company responsible for supply of the medicine in Australia as the pharmaceutical company usually holds the scientific data and other information necessary to inform the PBAC's consideration.

Under the law, there is no provision for the subsidised supply of a PBS-listed item outside the terms of its listing (or specific restrictions). In addition, no exceptions are permitted to be made for individual patients, even in particular cases where the medicine might be beneficial or recommended on clinical grounds.

All aspects of patient care, including recommendations about appropriate treatments and assessing patient eligibility against PBS criteria, are the responsibility of the treating doctor. Patients are encouraged to discuss with their doctor what treatments might be suitable for them, including whether there are any suitable treatments that are listed on the PBS.

PBAC consideration of proposed changes to Pharmaceutical Benefits Scheme (PBS) restrictions for type 2 diabetes mellitus (T2DM) medicines

At the request of the PBAC, the department has undertaken several recent projects examining the utilisation and comparative cost effectiveness of medications subsidised through the PBS for the management of T2DM. These projects were initiated following a stakeholder request for broader subsidised access to two classes of T2DM medicines: glucagon-like peptide-1 receptor agonists (GLP-1 RAs) and sodium-glucose cotransporter 2 (SGLT2) inhibitors. The stakeholder requested that the PBS listings for these medicines be expanded to include use in dual therapy for T2DM patients with cardiovascular disease (CVD) or high cardiovascular (CV) risk and HbA1c (glycated haemoglobin) ≥ 6.5%.

Cost-effectiveness reviews of SGLT2 inhibitors and GLP-1 RAs

In March 2022, the PBAC considered a report on the cost-effectiveness of SGLT2 inhibitors compared to sulfonylureas for use in dual therapy with metformin for the management of T2DM. The PBAC recommended expanded PBS access to SGLT2 inhibitors (empagliflozin and dapagliflozin) for T2DM patients with CVD/high CV risk, without the requirement to have a specific unmet glycaemic (HbA1c) target. The recommendation was contingent upon a financial cap for the T2DM indication and has not progressed. Other processes need to be completed before changes to a medicine listing can be

implemented. This includes pricing negotiations with the manufacturer, finalisation of the conditions for listing, availability checks, and consideration by Government. The department works to finalise arrangements with the pharmaceutical company and proceed to a PBS listing as quickly as possible once the necessary documentation has been submitted by the pharmaceutical company.

In July 2022, the PBAC considered a report on the cost-effectiveness of GLP-1 RAs compared to sulfonylureas for use in dual therapy with metformin for the management of T2DM. The PBAC did not recommend broadening the PBS restrictions for GLP-1 RAs due to the uncertain and potentially high estimates of cost-effectiveness. The PBAC considered the clinical outcomes to be uncertain due to the paucity of trial data, resulting in low confidence in the results of the cost utility analysis. Further, the PBAC expressed concern over the rapid growth in PBS-subsidised use of GLP-1 RAs and recommended a review of the utilisation of T2DM medicines.

Utilisation analysis of T2DM medicines and PBAC recommendations

In November 2022 and March 2023, the PBAC considered a Drug Utilisation Sub-Committee (DUSC) analysis of the utilisation of medicines for the treatment of T2DM. The analysis found that around 60% of GLP-1 RA use was likely to be outside of the PBS restrictions. The PBAC recommended changing the restriction type for GLP-1 RAs so that initiations require a telephone or online authority, and that use of these medicines be restricted to patients who are contraindicated, intolerant or inadequately responsive to lower-cost SGLT2 inhibitors. The PBAC noted that both SGLT2 inhibitors and GLP-1 RAs were PBS-listed based on a series of non-inferiority comparisons originating from insulin and that due to a price reduction to SGLT2 inhibitors in 2015, SGLT2 inhibitors were now more cost-effective than GLP-1 RAs.

The PBAC also noted some use of dipeptidyl peptidase-4 (DPP4) inhibitors and SGLT2 inhibitors outside of the PBS restriction and recommended a price reduction of 15% for medicines from these classes listed on the PBS F1 formulary, to restore cost-effective use. The PBAC recommended that if the 15% price reduction to SGLT2 inhibitors was implemented, then the outstanding March 2022 PBAC recommendation to expand the restrictions of dapagliflozin and empagliflozin to include dual therapy with metformin in patients with CVD/high CV risk without a glycaemic requirement, could be implemented without further price reductions or a financial cap.

The PBAC recommended several changes to the PBS restrictions for T2DM medicines to reduce complexity and clarify the intent of the restrictions. For DPP4 inhibitors, SGLT2 inhibitors and GLP-1 RAs, the PBAC recommended removal of the requirement for contraindication or intolerance to metformin for patients to use these medicines in dual therapy with insulin, and that the restrictions include a criterion to explicitly exclude their use in combination with classes of medicines that are not PBS-subsidised. Noting that the price of pioglitazone had declined significantly, the PBAC recommended that the authority type for pioglitazone listings could be changed to a Restricted Benefit, providing an additional monotherapy treatment option for patients contraindicated or intolerant to first-line monotherapies. The PBAC recommended that the PBS restrictions for T2DM medicines be simplified in consultation with clinical and consumer organisations prior to implementation.

The department consulted diabetes clinical and consumer organisations between 8-26 May 2023. The PBAC considered the outcomes of this consultation at its 5-7 July 2023 meeting. Meeting outcomes were published on the PBS website on 18 August 2023.

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Attachment D1: PBS medicines for diabetes

PBS number	MPP preferred term	First listing date	Program code	Benefit type	Maximum quantity	Number of repeats
8189B	acarbose 100 mg tablet, 90	1/11/1997	GE	37227 / Unrestricted	1	5
8188Y	acarbose 50 mg tablet, 90	1/11/1997	GE	37546 / Unrestricted	1	5
10035E	alogliptin 12.5 mg + metformin hydrochloride 1 g tablet, 56	1/02/2014	GE	36964 / Streamlined	1	5
10033C	alogliptin 12.5 mg + metformin hydrochloride 500 mg tablet, 56	1/02/2014	GE	34839 / Streamlined	1	5
10032B	alogliptin 12.5 mg + metformin hydrochloride 850 mg tablet, 56	1/02/2014	GE	35083 / Streamlined	1	5
2933J	alogliptin 12.5 mg tablet, 28	1/12/2013	GE	36960 / Streamlined	1	5
2986E	alogliptin 25 mg tablet, 28	1/12/2013	GE	36899 / Streamlined	1	5
2944Y	alogliptin 6.25 mg tablet, 28	1/12/2013	GE	36284 / Streamlined	1	5
10515K	dapagliflozin 10 mg + metformin hydrochloride 1 g modified release tablet, 28	1/10/2015	GE	43076 / Streamlined	1	5
11313K	dapagliflozin 10 mg + metformin hydrochloride 1 g modified release tablet, 28	1/04/2018	GE	43050 / Streamlined	1	5
10516L	dapagliflozin 10 mg + metformin hydrochloride 500 mg modified release tablet, 28	1/10/2015	GE	43180 / Streamlined	1	5
11270E	dapagliflozin 10 mg + metformin hydrochloride 500 mg modified release tablet, 28	1/04/2018	GE	43050 / Streamlined	1	5
10011X	dapagliflozin 10 mg tablet, 28	1/12/2013	GE	43088 / Streamlined	1	5
11291G	dapagliflozin 10 mg tablet, 28	1/04/2018	GE	43087 / Streamlined	1	5
12823X	dapagliflozin 10 mg tablet, 28	1/01/2022	GE	54633 / Streamlined	1	5
13106T	dapagliflozin 10 mg tablet, 28	1/09/2022	GE	55694 / Streamlined	1	5
10510E	dapagliflozin 5 mg + metformin hydrochloride 1 g modified release tablet, 56	1/10/2015	GE	43135 / Streamlined	1	5
11300R	dapagliflozin 5 mg + metformin hydrochloride 1 g modified release tablet, 56	1/04/2018	GE	43050 / Streamlined	1	5

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PBS number	MPP preferred term	First listing date	Program code	Benefit type	Maximum quantity	Number of repeats
11364D	dulaglutide 1.5 mg/0.5 mL injection, 4 x 0.5 mL pen devices	1/06/2018	GE	49665 / Streamlined	1	5
11269D	empagliflozin 10 mg + linagliptin 5 mg tablet, 30	1/04/2018	GE	43220 / Streamlined	1	5
11310G	empagliflozin 10 mg + linagliptin 5 mg tablet, 30	1/04/2018	GE	43101 / Streamlined	1	5
10206E	empagliflozin 10 mg tablet, 30	1/01/2015	GE	43088 / Streamlined	1	5
11314L	empagliflozin 10 mg tablet, 30	1/04/2018	GE	43087 / Streamlined	1	5
12918X	empagliflozin 10 mg tablet, 30	1/04/2022	GE	54633 / Streamlined	1	5
10640B	empagliflozin 12.5 mg + metformin hydrochloride 1 g tablet, 60	1/03/2016	GE	56697 / Streamlined	1	5
10677Y	empagliflozin 12.5 mg + metformin hydrochloride 1 g tablet, 60	1/03/2016	GE	56461 / Streamlined	1	5
10633P	empagliflozin 12.5 mg + metformin hydrochloride 500 mg tablet, 60	1/03/2016	GE	56461 / Streamlined	1	5
10639Y	empagliflozin 12.5 mg + metformin hydrochloride 500 mg tablet, 60	1/03/2016	GE	56463 / Streamlined	1	5
11298P	empagliflozin 25 mg + linagliptin 5 mg tablet, 30	1/04/2018	GE	43222 / Streamlined	1	5
11303X	empagliflozin 25 mg + linagliptin 5 mg tablet, 30	1/04/2018	GE	43198 / Streamlined	1	5
10202Y	empagliflozin 25 mg tablet, 30	1/01/2015	GE	43088 / Streamlined	1	5
11281R	empagliflozin 25 mg tablet, 30	1/04/2018	GE	43087 / Streamlined	1	5
10627H	empagliflozin 5 mg + metformin hydrochloride 1 g tablet, 60	1/03/2016	GE	56461 / Streamlined	1	5
10649L	empagliflozin 5 mg + metformin hydrochloride 1 g tablet, 60	1/03/2016	GE	56678 / Streamlined	1	5
10626G	empagliflozin 5 mg + metformin hydrochloride 500 mg tablet, 60	1/03/2016	GE	56461 / Streamlined	1	5
10650M	empagliflozin 5 mg + metformin hydrochloride 500 mg tablet, 60	1/03/2016	GE	56153 / Streamlined	1	5

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PBS number	MPP preferred term	First listing date	Program code	Benefit type	Maximum quantity	Number of repeats
11578J	ertugliflozin 15 mg + sitagliptin 100 mg tablet, 28	1/12/2018	GE	43229 / Streamlined	1	5
11583P	ertugliflozin 15 mg + sitagliptin 100 mg tablet, 28	1/12/2018	GE	43077 / Streamlined	1	5
11570Y	ertugliflozin 15 mg tablet, 28	1/12/2018	GE	44514 / Streamlined	1	5
11571B	ertugliflozin 15 mg tablet, 28	1/12/2018	GE	44428 / Streamlined	1	5
11561L	ertugliflozin 5 mg + sitagliptin 100 mg tablet, 28	1/12/2018	GE	43077 / Streamlined	1	5
11579K	ertugliflozin 5 mg + sitagliptin 100 mg tablet, 28	1/12/2018	GE	43229 / Streamlined	1	5
11577H	ertugliflozin 5 mg tablet, 28	1/12/2018	GE	44514 / Streamlined	1	5
11585R	ertugliflozin 5 mg tablet, 28	1/12/2018	GE	44428 / Streamlined	1	5
2939Q	glibenclamide 5 mg tablet, 100	1/04/1970	GE	36227 / Unrestricted	1	5
8535F	gliclazide 30 mg modified release tablet, 100	1/11/2001	GE	36873 / Unrestricted	1	5
9302N	gliclazide 60 mg modified release tablet, 60	1/03/2010	GE	37962 / Unrestricted	1	5
2449X	gliclazide 80 mg tablet, 100	1/12/1981	GE	34971 / Unrestricted	1	5
8450R	glimepiride 1 mg tablet, 30	1/11/2000	GE	35248 / Unrestricted	1	5
8451T	glimepiride 2 mg tablet, 30	1/11/2000	GE	36152 / Unrestricted	1	5
8533D	glimepiride 3 mg tablet, 30	1/11/2001	GE	38042 / Unrestricted	1	5
8452W	glimepiride 4 mg tablet, 30	1/11/2000	GE	37158 / Unrestricted	1	5
2440K	glipizide 5 mg tablet, 100	1/04/1988	GE	34347 / Unrestricted	1	5
11705C	insulin aspart 100 units/mL fast acting injection, 1 x 10 mL vial	1/06/2019	GE	34992 / Unrestricted	5	2

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PBS number	MPP preferred term	First listing date	Program code	Benefit type	Maximum quantity	Number of repeats
11706D	insulin aspart 100 units/mL fast acting injection, 5 x 3 mL pen devices	1/06/2019	GE	37061 / Unrestricted	5	1
8571D	insulin aspart 100 units/mL injection, 1 x 10 mL vial	1/05/2002	GE	34992 / Unrestricted	5	2
8435Y	insulin aspart 100 units/mL injection, 5 x 3 mL cartridges	1/08/2000	GE	37061 / Unrestricted	5	1
12254Y	insulin aspart 100 units/mL injection, 5 x 3 mL pen devices	1/02/2021	GE	37061 / Unrestricted	5	1
8609D	insulin aspart 30 units/mL + insulin aspart protamine 70 units/mL injection, 5 x 3 mL cartridges	1/08/2002	GE	34805 / Unrestricted	5	1
12238D	insulin aspart 30 units/mL + insulin aspart protamine 70 units/mL injection, 5 x 3 mL pen devices	1/02/2021	GE	34805 / Unrestricted	5	1
11426J	insulin degludec 70 units/mL + insulin aspart 30 units/mL injection, 5 x 3 mL cartridges	1/08/2018	GE	43817 / Unrestricted	5	1
11417X	insulin degludec 70 units/mL + insulin aspart 30 units/mL injection, 5 x 3 mL pen devices	1/08/2018	GE	43757 / Unrestricted	5	1
9040T	insulin detemir 100 units/mL injection, 5 x 3 mL cartridges	1/10/2006	GE	35777 / Restricted	5	1
12236B	insulin detemir 100 units/mL injection, 5 x 3 mL pen devices	1/02/2021	GE	35777 / Restricted	5	1
9039R	insulin glargine 100 units/mL injection, 5 x 3 mL cartridges	1/10/2006	GE	38166 / Unrestricted	5	1
11815W	insulin glargine 100 units/mL injection, 5 x 3 mL pen devices	1/10/2019	GE	46491 / Unrestricted	5	1
11308E	insulin glargine 300 units/mL injection, 3 x 1.5 mL pen devices	1/04/2018	GE	42069 / Unrestricted	5	1
11302W	insulin glargine 300 units/mL injection, 5 x 1.5 mL pen devices	1/04/2018	GE	42089 / Unrestricted	5	1
9224L	insulin glulisine 100 units/mL injection, 1 x 10 mL vial	1/11/2008	GE	35947 / Unrestricted	5	2
1921D	insulin glulisine 100 units/mL injection, 5 x 3 mL cartridges	1/07/2007	GE	36130 / Unrestricted	5	1
12268Q	insulin glulisine 100 units/mL injection, 5 x 3 mL pen devices	1/02/2021	GE	36130 / Unrestricted	5	1
1533Q	insulin isophane human 100 units/mL injection, 1 x 10 mL vial	1/08/1986	GE	37878 / Unrestricted	5	2

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1761Q	insulin isophane human 100 units/mL injection, 5 x 3 mL cartridges	1/04/1994	GE	36928 / Unrestricted	5	1
12262J	insulin isophane human 100 units/mL injection, 5 x 3 mL pen devices	1/02/2021	GE	36928 / Unrestricted	5	1
8084L	insulin lispro 100 units/mL injection, 1 x 10 mL vial	1/11/1996	GE	37554 / Unrestricted	5	2
8212F	insulin lispro 100 units/mL injection, 5 x 3 mL cartridges	1/02/1998	GE	35249 / Unrestricted	5	1
12237C	insulin lispro 100 units/mL injection, 5 x 3 mL pen devices	1/02/2021	GE	35249 / Unrestricted	5	1
11645X	insulin lispro 200 units/mL injection, 5 x 3 mL pen devices	1/03/2019	GE	44865 / Unrestricted	5	1
8390N	insulin lispro 25 units/mL + insulin lispro protamine 75 units/mL injection, 5 x 3 mL cartridges	1/05/2000	GE	36654 / Unrestricted	5	1
12234X	insulin lispro 25 units/mL + insulin lispro protamine 75 units/mL injection, 5 x 3 mL pen devices	1/02/2021	GE	36654 / Unrestricted	5	1
8874C	insulin lispro 50 units/mL + insulin lispro protamine 50 units/mL injection, 5 x 3 mL cartridges	1/01/2006	GE	37097 / Unrestricted	5	1
12261H	insulin lispro 50 units/mL + insulin lispro protamine 50 units/mL injection, 5 x 3 mL pen devices	1/02/2021	GE	37097 / Unrestricted	5	1
1531N	insulin neutral human 100 units/mL injection, 1 x 10 mL vial	1/08/1986	GE	34593 / Unrestricted	5	2
1762R	insulin neutral human 100 units/mL injection, 5 x 3 mL cartridges	1/04/1994	GE	38307 / Unrestricted	5	1
1426C	insulin neutral human 30 units/mL + insulin isophane human 70 units/mL injection, 10 mL vial	1/11/1986	GE	37643 / Unrestricted	5	2
1763T	insulin neutral human 30 units/mL + insulin isophane human 70 units/mL injection, 5 x 3 mL cartridges	1/04/1994	GE	34652 / Unrestricted	5	1
12255B	insulin neutral human 30 units/mL + insulin isophane human 70 units/mL injection, 5 x 3 mL pen devices	1/02/2021	GE	34652 / Unrestricted	5	1
2062M	insulin neutral human 50 units/mL + insulin isophane human 50 units/mL injection, 5 x 3 mL cartridges	1/08/1994	GE	37212 / Unrestricted	5	1
10044P	linagliptin 2.5 mg + metformin hydrochloride 1 g tablet, 60	1/03/2014	GE	56804 / Streamlined	1	5
11282T	linagliptin 2.5 mg + metformin hydrochloride 1 g tablet, 60	1/04/2018	GE	43133 / Streamlined	1	5

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10038H	linagliptin 2.5 mg + metformin hydrochloride 500 mg tablet, 60	1/03/2014	GE	56804 / Streamlined	1	5
11274J	linagliptin 2.5 mg + metformin hydrochloride 500 mg tablet, 60	1/04/2018	GE	43133 / Streamlined	1	5
10045Q	linagliptin 2.5 mg + metformin hydrochloride 850 mg tablet, 60	1/03/2014	GE	56804 / Streamlined	1	5
11294K	linagliptin 2.5 mg + metformin hydrochloride 850 mg tablet, 60	1/04/2018	GE	43133 / Streamlined	1	5
3387G	linagliptin 5 mg tablet, 30	1/03/2012	GE	56104 / Streamlined	1	5
11280Q	linagliptin 5 mg tablet, 30	1/04/2018	GE	43042 / Streamlined	1	5
3439B	metformin hydrochloride 1 g modified release tablet, 60	1/08/2010	GE	35021 / Unrestricted	1	5
8607B	metformin hydrochloride 1 g tablet, 90	1/08/2002	GE	36157 / Unrestricted	1	5
9435N	metformin hydrochloride 500 mg modified release tablet, 120	1/07/2009	GE	35918 / Unrestricted	1	5
2430X	metformin hydrochloride 500 mg tablet, 100	1/11/1964	GE	35473 / Unrestricted	1	5
1801T	metformin hydrochloride 850 mg tablet, 60	1/04/1994	GE	35230 / Unrestricted	1	5
8694N	pioglitazone 15 mg tablet, 28	1/11/2003	GE	34798 / Streamlined	1	5
8695P	pioglitazone 30 mg tablet, 28	1/11/2003	GE	37457 / Streamlined	1	5
8696Q	pioglitazone 45 mg tablet, 28	1/11/2003	GE	35916 / Streamlined	1	5
10048W	saxagliptin 2.5 mg + metformin hydrochloride 1 g modified release tablet, 56	1/03/2014	GE	43048 / Streamlined	1	5
11285Y	saxagliptin 2.5 mg + metformin hydrochloride 1 g modified release tablet, 56	1/04/2018	GE	43133 / Streamlined	1	5
10128C	saxagliptin 2.5 mg tablet, 28	1/08/2014	GE	43156 / Streamlined	1	5
11292H	saxagliptin 2.5 mg tablet, 28	1/04/2018	GE	43042 / Streamlined	1	5

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11286B	saxagliptin 5 mg + dapagliflozin 10 mg tablet, 28	1/04/2018	GE	43077 / Streamlined	1	5
11305B	saxagliptin 5 mg + dapagliflozin 10 mg tablet, 28	1/04/2018	GE	43229 / Streamlined	1	5
10051B	saxagliptin 5 mg + metformin hydrochloride 1 g modified release tablet, 28	1/03/2014	GE	43049 / Streamlined	1	5
11299Q	saxagliptin 5 mg + metformin hydrochloride 1 g modified release tablet, 28	1/04/2018	GE	43133 / Streamlined	1	5
10055F	saxagliptin 5 mg + metformin hydrochloride 500 mg modified release tablet, 28	1/03/2014	GE	43113 / Streamlined	1	5
11312J	saxagliptin 5 mg + metformin hydrochloride 500 mg modified release tablet, 28	1/04/2018	GE	43133 / Streamlined	1	5
8983T	saxagliptin 5 mg tablet, 28	1/06/2011	GE	43179 / Streamlined	1	5
11311H	saxagliptin 5 mg tablet, 28	1/04/2018	GE	43042 / Streamlined	1	5
12080T	semaglutide 1.34 mg/mL injection, 1 x 1.5 mL pen device	1/07/2020	GE	53997 / Streamlined	1	5
12075M	semaglutide 1.34 mg/mL injection, 1 x 3 mL pen device	1/07/2020	GE	53997 / Streamlined	1	5
10089B	sitagliptin 100 mg + metformin hydrochloride 1 g modified release tablet, 28	1/05/2014	GE	44491 / Streamlined	1	5
11566R	sitagliptin 100 mg + metformin hydrochloride 1 g modified release tablet, 28	1/12/2018	GE	44484 / Streamlined	1	5
9182G	sitagliptin 100 mg tablet, 28	1/08/2008	GE	56104 / Streamlined	1	5
11576G	sitagliptin 100 mg tablet, 28	1/12/2018	GE	43042 / Streamlined	1	5
9180E	sitagliptin 25 mg tablet, 28	1/08/2008	GE	56104 / Streamlined	1	5
11572C	sitagliptin 25 mg tablet, 28	1/12/2018	GE	44564 / Streamlined	1	5
10090C	sitagliptin 50 mg + metformin hydrochloride 1 g modified release tablet, 56	1/05/2014	GE	44491 / Streamlined	1	5
11580L	sitagliptin 50 mg + metformin hydrochloride 1 g modified release tablet, 56	1/12/2018	GE	44484 / Streamlined	1	5

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9451K	sitagliptin 50 mg + metformin hydrochloride 1 g tablet, 56	1/08/2009	GE	44491 / Streamlined	1	5
11574E	sitagliptin 50 mg + metformin hydrochloride 1 g tablet, 56	1/12/2018	GE	44484 / Streamlined	1	5
9449H	sitagliptin 50 mg + metformin hydrochloride 500 mg tablet, 56	1/08/2009	GE	44491 / Streamlined	1	5
11586T	sitagliptin 50 mg + metformin hydrochloride 500 mg tablet, 56	1/12/2018	GE	44484 / Streamlined	1	5
9450J	sitagliptin 50 mg + metformin hydrochloride 850 mg tablet, 56	1/08/2009	GE	44491 / Streamlined	1	5
11582N	sitagliptin 50 mg + metformin hydrochloride 850 mg tablet, 56	1/12/2018	GE	44484 / Streamlined	1	5
9181F	sitagliptin 50 mg tablet, 28	1/08/2008	GE	56104 / Streamlined	1	5
11573D	sitagliptin 50 mg tablet, 28	1/12/2018	GE	44517 / Streamlined	1	5
5476F	vildagliptin 50 mg + metformin hydrochloride 1 g tablet, 60	1/04/2011	GE	56575 / Streamlined	1	5
5474D	vildagliptin 50 mg + metformin hydrochloride 500 mg tablet, 60	1/04/2011	GE	56575 / Streamlined	1	5
5475E	vildagliptin 50 mg + metformin hydrochloride 850 mg tablet, 60	1/04/2011	GE	56575 / Streamlined	1	5
3415R	vildagliptin 50 mg tablet, 60	1/08/2010	GE	56105 / Streamlined	1	5