

INVESTMENT OPPORTUNITY: SECONDARY PREVENTION AND MANAGEMENT



PURPOSE OF THIS DOCUMENT

Our Western Sydney Diabetes initiative aims to beat type 2 diabetes in the region. The pillars of this initiative are:

- **Building an Alliance and Testing the Strategy:** We have built an alliance of more than 70 partners across government, business and the community to better understand the problem, engage with decision makers to develop and implement solutions that will tackle the epidemic of diabetes in our region.
- **Primary Prevention:** Securing investment for primary prevention programs and initiatives to reduce the development of type 2 diabetes in the community and limit the progression of people at 'high risk' or with pre-diabetes to a formal diagnosis of type 2 diabetes.
- **Secondary Prevention and Management:** Securing investment for secondary prevention and management programs and initiatives to slow or stop the development of diabetes complications.
- **Data for Decision Making:** We are building a surveillance and monitoring system that will leverage data and intelligence to continuously evaluate the problems and impacts.
- **Mobilising Public Support:** Our community awareness campaign will inform the community on the risks of diabetes and engage them to do something about it.

This document sets out our 'Secondary Prevention and Management' pillar. Details of the other pillars are set out in respective supplementary documents.

Secondary prevention and management aims to slow or stop the development of type 2 diabetes complications. This document sets out our secondary prevention and management strategy including:

- The benefits and evidence for secondary prevention and management
- An overview of the suite of initiatives that make up our secondary prevention and management program
- An economic case which demonstrates the significant financial and non-financial benefits of our program
- The case for expanding and investing in our secondary prevention and management program.



Western Sydney
Diabetes

TAKING THE HEAT OUT OF OUR DIABETES HOTSPOT

BUILDING AN ALLIANCE AND TESTING THE STRATEGY

➔ **INVESTMENT OPPORTUNITY:**
PRIMARY PREVENTION

➔ **INVESTMENT OPPORTUNITY:**
SECONDARY PREVENTION AND MANAGEMENT

➔ **DATA FOR DECISION MAKING:**
BUILDING A SURVEILLANCE SYSTEM
TO MONITOR AND EVALUATE

➔ **MOBILISING PUBLIC SUPPORT:**
BUILDING DIABETES AWARENESS AND
ENGAGEMENT

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The Benefits of Secondary Prevention

Our Western Sydney Diabetes (WSD) initiative secondary prevention and management program aims to slow the progression of type 2 diabetes. That is, to slow or stop the health deterioration that can escalate from pre-diabetes to uncomplicated diabetes to diabetes with devastating co-morbidities.

The diagram below includes the following interventions which span across the community and hospital.

The case for investment in secondary prevention and management programs is robust and supported by a wealth of evidence, set out later in this document. There are many international and local health economic studies available that demonstrate that secondary prevention strategies are beneficial to both the patient in terms of increasing life expectancy and quality of life, and the economy in terms of reducing the financial cost and burden to government and society.

The evidence shows that secondary prevention programs, for example programs that improve diabetes management, implement integrated care type interventions, or reduce a patient's HbA1c blood levels, slow the progression of type 2 diabetes. This has multiple social and health benefits for the patient, and improved quality of life from reduced diabetes and diabetes related complications such as heart disease and stroke, eye conditions, foot problems, and chronic kidney disease.

In addition, programs are shown to be either cost-saving or cost-effective. The average annual cost of a patient with type 2 diabetes in western Sydney (healthcare and other costs) is

\$16,124, but as complications arise this increases to \$22,156 for those with macrovascular complications.

With better management of diabetes and a reduction in diabetes related complications, there will be substantial savings across a range of health areas, including heart disease and stroke, eye conditions, foot problems, and chronic kidney disease.

In addition, hospitalisations and Emergency Department (ED) presentations from diabetes related complications will decrease, freeing up existing resources and capacity that could be released into cash savings or redeployed to meet current unmet need. There are also benefits that arise from improved health and job prospects for patients and their carers, including improved productivity, reduced absenteeism and a reduction in welfare dependency.

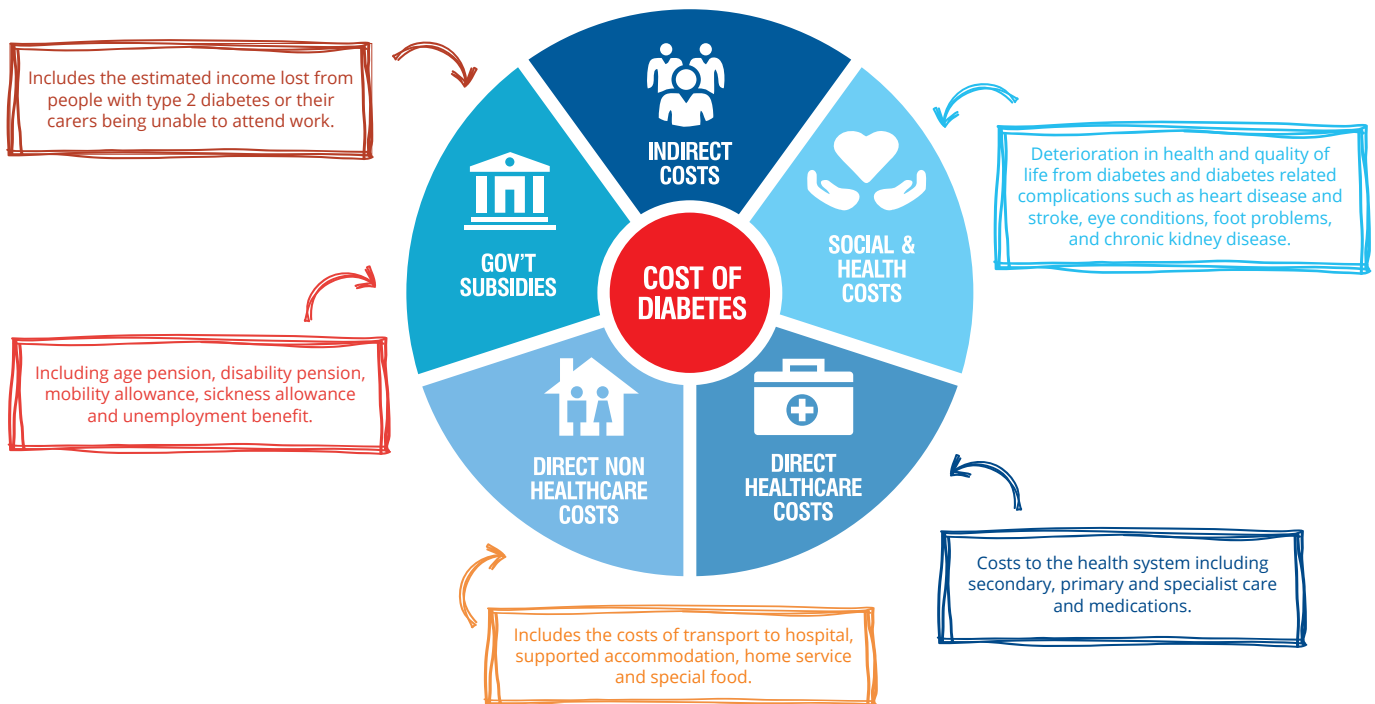
Prevention and Management are Good Economics

Secondary prevention and management is supported by a robust economic case which demonstrates the significant financial and non-financial net benefits that can be achieved from our program. With an investment of **\$98.7 million** over eight years, we can provide a net financial benefit of **\$138.8 million**.

The Benefits of Reducing Diabetes

The burden of type 2 diabetes comes at a cost for our communities. There are the personal costs of deterioration in health and quality of life, as well as financial costs to the economy.





It is estimated that the average annual financial cost of a patient with type 2 diabetes in western Sydney (healthcare and other costs) is **\$16,124**, or **\$13,766** for those with no complications and increasing to **\$22,156** for those with macrovascular complications.¹

Evidence shows that there are a number of financial and non-financial benefits to patients, government and the economy that will arise from the success of a secondary prevention program. These benefits are included in the above diagram.

Modelling the Initiatives

For the purposes of assessing the benefits of the program, we developed an economic model over an eight year period from 2018 to 2025.

Target Cohort

Our model assumed that over eight years we enrolled approximately **35,000** participants (or 5,000 each year for seven years) into one or more of the program interventions (see above diagram).

We assumed that each participant will be supported on the program for two years, and after the two years the participants will be followed up annually by their GP with an annual cycle of care, including an annual case conference between the Hospital and GP and an annual HbA1C test.

Investment Costs

We calculated the investment required to run the program each year at the desired scale, including:

- **Consortium Costs:** costs directly related to the Consortium delivering the interventions, for example, Western Sydney Local Health District staff specialists and nurse educators, podiatrists and additional clinical and administrative staff
- **Enabler Costs:** costs associated with the program enablers, including program and change management, analytics, evaluation and monitoring

We have not included investment costs for financing any external funding.

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Benefits and Evidence

A strong evidence base supports our case that our interventions can have a positive impact on slowing the progression of type 2 diabetes, improving patient outcomes and reducing hospitalisations.

There is a wealth of systematic reviews and examples of “good practice” that demonstrate significant reductions in hospital and social-economic costs through implementation of integrated-care type interventions. The evidence has been drawn from both local and international literature sources, with a preference for peer reviewed literature sources where available. The emphasis of the literature scan has been to review interventions which are similar to those proposed for implementation in western Sydney and to understand the impact that they have had on

the prevalence of diabetes for the study populations. A summary of key evidence is provided in the table below.

We have then modelled the application of the evidence on the western Sydney target population.

Cost/Benefit Analysis

An investment of **\$98.7 million** into the program over eight years results in a net financial benefit of **\$138.8 million**.

Social and Health Benefits and Other

- A reduction of 0.75% in individual patient HbA1c levels for program participants with diabetes
- Improved health, with a decrease in the number of associated complications such as heart disease, stroke, kidney disease, vision loss and depression

Program Area	Evidence
Evidence to support that a reduction in HbA1c (from screening and active management) directly reduces the risk of health complications and the number of hospital admissions and lifestyle coaching reduces weight	<ul style="list-style-type: none"> • Nearly half of all Australians with diabetes have poor diabetes control with HbA1c blood levels greater than 7%, putting them at higher risk of diabetic complications. Higher HbA1c increases hospitalisation and mortality complications; a 1% reduction in HbA1c levels has been linked to a 21% reduction in diabetes related deaths, a 14% reduction in myocardial infarctions, a 37% reduction in microvascular complications and a 43% reduction in amputations or deaths.² • A HbA1c of 9.0% or higher is associated with a 13% increase in the relative hazard of all-cause hospitalisation and a 33% increase in the relative hazard of heart failure hospitalisation when compared to lower HbA1c values.³ • A US coaching service with 16 weekly coaching sessions followed by eight monthly visits aimed at stimulating weight loss of 5% of body weight and increasing physical activity to 150 minutes per week showed that 17.48% of the target population completed at least 17 sessions with an average weight loss of 5.31kg.⁴
Evidence to support that improved diabetes management can reduce complications and hospitalisations	<ul style="list-style-type: none"> • Effective treatment of type 2 diabetes from close monitoring and control of blood glucose levels, blood pressure and lipids can greatly reduce diabetes complications such as heart attack (by more than 50%), stroke (by 44%) and serious deterioration of vision (by up to 33%).⁵ • Effective disease management from a diabetic foot prevention program can reduce amputations and associated hospitalizations by 47.4%, from 12.89 to 6.18 per 1000 diabetics per year.⁶
Evidence to support that specialised diabetes management can reduce complications and hospitalisations	<ul style="list-style-type: none"> • Intensive treatment can prevent the development and progression of long term complications of diabetes such as retinopathy by 50% and macrovascular disease by 41% over five years compared to conventional therapy groups.⁷ • Intensive treatment and diabetes management reduces the risk of any cardiovascular disease event by 42% and the risk of nonfatal myocardial infarction, stroke, or death from cardiovascular disease by 57%.⁸ • Intensive treatment for patients with diabetes can prevent the development and slow the progression of diabetic kidney disease by 50%.⁹ • Nurse case management under the direction of a family physician and endocrinologist and ongoing patient care through primary care physicians can reduce hospitalisations by 45%.¹⁰ • Diabetes management programs with specialised care plans can reduce hospital admissions by 18%.¹¹

- Longer life expectancy, it is estimated that diabetes accounts for 5% of lost disability adjusted life years¹²
- Improved quality of life, with people being able to return to work and leisure activities

Released Capacity Net Benefit

- **13,600 fewer hospital admissions** and **21,100 fewer ED presentations** over eight years; freeing up existing resource and capacity that can be released into cash savings or redeployed to meet unmet need, with a net benefit of **\$45.6 million**¹³

Avoided Cost Net Benefit

- **22 fewer beds** will be required each year, resulting in the future avoidance of capital or infrastructure costs of **\$4.6 million** over the eight year period

Productivity Enhancement Net Benefit

- Broader benefits to the economy from patients and their carers being able to return to work, being more productive at work and reduced absenteeism has a net benefit **\$88.6 million** over eight years



It is evident from our analysis that secondary prevention strategies to slow the progression of diabetes are cost-saving.

The Case for Expansion

Our secondary prevention and management program initiatives are already underway in the district and are set out in detail in our Western Sydney Diabetes initiative *'Building an alliance and testing the strategy'* document. Significant achievements have already been made to date with a number of these initiatives.

We are seeking to increase the scale of these existing and proven programs to target a significantly larger portion of the population and increase the health benefits to patients and the financial benefits to the system.

We plan to build on the genuine partnership already developed through the Western Sydney Diabetes initiative collaboration between Western Sydney Local Health District (WSLHD), Western Sydney Primary Health Network (WSPHN) and private partners including PwC, Diabetes NSW, University of Sydney and University of Wollongong, bringing together public and private delivery to achieve greater effectiveness.

The program aims to target the 25,900 (3%) of people in western Sydney with diabetes and high comorbidities, the 103,200 (12%) of people with diabetes and low comorbidities and the 301,000 (35%) of people who have pre-diabetes or are at 'high risk' of developing diabetes.

Cost/Benefit Summary (2016 prices)	Financial Benefit to 2025
Investment	
Consortium costs	(\$54.3m)
Enabler costs	(\$44.4m)
Total Investment costs	(\$98.7m)
Net benefits	
Social and health benefits and other	-
Released capacity net benefit	\$45.6m
Avoided cost net benefit	\$4.6m
Productivity enhancement net benefit: Patient productivity	\$20.2m
Productivity enhancement net benefit: Reduced absenteeism ¹⁴	\$62.8m
Productivity enhancement net benefit: Carer productivity	\$5.6m
Total net benefit	\$138.8m

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Funding and Resource Requirement

In order to help a significantly larger portion of the population, we require additional funding, resources and technology. Most initiatives have existing resources that we can employ and leverage, however, this capacity is limited and we will require significantly more resource than is currently available to achieve the expansion and scaling up required.

The largest proportion of funding will be used to create capacity so that we can undertake more screening in the district to identify those at risk, and so that more people in western Sydney benefit from a more proactive and integrated care package to help them self-manage their condition, achieve a greater quality of life and ultimately have a better health outcome than is currently predicted.

Funding is required to develop a digital app, which will empower patients to track, self-manage and improve their health. The app will allow us to reach and target a much broader section of the population in the most need,

especially populations that are poorly educated with poor health literacy and lower socio-economic backgrounds.

GP involvement and decision making support is central to our initiative to enrol participants into the program. We currently have approximately 160 western Sydney GPs engaged to support the program, our aim is to increase this to more than 350 GPs. GP practices are being targeted in three ways: those that have already enrolled as part of the Western Sydney Integrated Care Program; large practices that have a bigger proportion of the population; and those that are in the most disadvantaged areas of western Sydney. This represents a scaling up of our current GP engagement.

Western
Sydney GPs
engaged **160**

>360 Western
Sydney GPs
planned

Implementing the Program

Identifying our Participants

We aim to increase the identification of western Sydney residents with diabetes or pre-diabetes through a screening program in hospital, where patients who present at an ED or are admitted to a ward and have a blood test will be screened for HbA1c, and in general practice, where patients identified by the GP clinical audit tool will be screened with a HbA1c test. In addition, GP, hospital and pharmacy records will be reviewed to identify patients at high risk or with diabetes and they will be invited in for a HbA1c test.

When a patient is diagnosed with diabetes or pre-diabetes, we will select the most appropriate intervention and offer participation in the program.

Our Goal

In order to achieve the broader benchmarks of Western Sydney Diabetes initiative, our goal and target outcomes for the secondary prevention and management program are as follows:

Diabetes in Community

1. Increase in the number of people who are detected as having diabetes or pre-diabetes via screening in hospital and general practice in order to offer them a lifestyle modification program.
2. A 0.75% reduction in individual participant HbA1c levels.
3. An increase in the number of patients using patient self-management apps and number of completed cycle of care (eye and foot checks).

Diabetes in Hospital

4. A reduction in the number of hospitalisations and ED presentations for program participants.
5. A reduction in secondary amputations, heart attacks, heart failure, stroke, renal dialysis, feet ulcers, treated retinopathy and blindness.

We recognise that a portion of the participants with diabetes will still need to continue to be treated in hospital. However, there is a large contingent who could benefit from significantly shorter hospital stays, and further a portion who can avoid being admitted to the hospital system all together.

Achieving this is not expected to be easy, it will require considerable innovation and collaboration which is the purpose of bringing together of the capabilities within our Consortium.

Our Partners

Implementation responsibility for the Western Sydney Diabetes secondary prevention and management program is to be undertaken by a Consortium of public and private providers, as follows:

- **Western Sydney Local Health District** will provide clinical leadership and expertise and delivery capability for a number of the initiatives including specialist consultation and integrated care capability. WSLHD will also provide the professional support network to build capacity in general practice and community allied health and assist in the development of the self-management app
- **Western Sydney Primary Health Network** will provide clinical leadership and expertise and delivery capability for a number of the interventions in primary care. This will include development of the GP network to deliver the primary care services including enhanced management of diabetes, practice nursing and allied health professionals such as optometrists and community podiatrists. They will also lead the LinkedEHR aspects of the program
- **Diabetes NSW** will provide lifestyle information, education, advice and support including a free infoLine, information days, workshops and access to resource materials. Diabetes NSW's membership provides the Program with access to the largest network of people living with diabetes, their carers and supporters in Australia
- **PricewaterhouseCoopers** will provide best practice health analytics and program/ change management support to drive the scale and pace of the program. PwC will also coordinate the efforts of the Consortium during implementation
- **University of Wollongong's** Faculty of Social Sciences will provide an evaluation team and method for determining performance, tracking the participant cohort and providing evidence of achieving outcomes

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Breakdown of Financial Costs/Benefits by State, Commonwealth and Other

Breakdown of Net Benefits

Benefit Summary (2016 prices)	Benefit Gain to State	Benefit Gain to Commonwealth	Benefit Gain to Patients/Carer/Employers	Total Benefit to 2025
Net benefits				
Social and health and other benefits	-	-	-	-
Released capacity net benefit	\$29.64m	\$15.96m	-	\$45.6m
Avoided cost net benefit	\$4.6m	-	-	\$4.6m
Productivity enhancement net benefit: Patient productivity	-	-*	\$20.2m	\$20.2m
Productivity enhancement net benefit: Reduced absenteeism	-	-*	\$62.8m	\$62.8m
Productivity enhancement net benefit: Carer productivity	-	-*	\$5.6m	\$5.6m
Total net benefit	\$34.24m	\$15.96m	\$88.6m	\$138.8m

* Some benefit is anticipated to the Commonwealth from increased tax revenue from increased working hours and fewer compensation claims, however this has not been included in the calculation.



References

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- ⁹ DCCT and EDIC: *The diabetes control and complications trial and follow-up study.* U.S. Department of health and human services national institutes of health. Publication no. 08-3874 May '08.
- ¹⁰ *Nurse case management to improve glycemic control in diabetic patients in a health maintenance organization: a randomized, controlled trial* Aubert et al. Ann Intern Med 129 (8), 605-612. 1998 Oct 15.
- ¹¹ Clinical and economic impact of implementing a comprehensive diabetes management program in managed care. Rubin RJ1, Dietrich KA, Hawk ad
- ¹² AIHW, Begg S, Vos T, et al. *The burden of disease and injury in Australia 2003.* PHE 82. Canberra: AIHW; 2007.
- ¹³ An estimated annual reduction in hospital admissions and ED presentations for each of the eight years. Lower limb amputations: reduced by 48%; retinopathy: reduced by 25%; renal related activity: reduced by 18%; stroke: reduced by 18%; myocardial infarction: reduced by 10%; all other hospital admissions associated with patients with diabetes 37%; reduction in ED presentations of 23%.
- ¹⁴ Calculated based off findings in Deloitte Access Economics, April 2015, *The economic impact of diabetic macular oedema in Australia*, Bayer Australia Ltd.



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