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Cost Effectiveness and Resource Allocation

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Cost-effectiveness of fenofibrate for preventing diabetic complications in Australia

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Abstract

Background This study investigated the cost-effectiveness of using fenofibrate to treat type 2 diabetes in Australia. The financial burden of type 2 diabetes mellitus is estimated to surpass AUD10 billion, mainly due to the cost of diabetic complications from diabetic neuropathy. Clinical evidence from the Fenofibrate Intervention and Event Lowering in Diabetes (FIELD) study demonstrated that fenofibrate can reduce the risk of amputation and other diabetes-related complications.

Methods This study used a calibrated UKPDS model with an Australian diabetes cohort to simulate complications and deaths over a 20-year time horizon. The effectiveness of fenofibrate was assessed using the FIELD study. Total cost was calculated over the 20-year time horizon. Input data was obtained from the Australian Refined-Disease Related Groups and the Australian Pharmaceutical Benefits Scheme.

Results The model estimated that fenofibrate is associated with lower complication costs, which save over AUD 4.6 million per 1,000 patients. The most significant savings were observed in amputations. The incremental cost-effectiveness ratio for fenofibrate treatment was estimated to be AUD 739/LY gained and AUD 1189/QALY gained.

Conclusion The use of fenofibrate in Type 2 diabetes patients is estimated to result in cost savings in an Australian setting due to fewer diabetes complications.

Keywords Fenofibrate, Diabetic complications, Cost-effectiveness analysis, Australia

Background

Diabetes is a chronic metabolic disorder characterised by elevated blood glucose levels (hyperglycaemia). It is associated with significant morbidity, mortality, healthcare costs and reduced health-related quality of life. Type 2 diabetes mellitus accounts for about 85% of all diabetes cases and is linked to a combination of genetic and lifestyle factors such as poor diet, physical inactivity and being overweight or obese [1]. Poor glycaemic control over time is also strongly associated with a wide range of major and minor vascular complications [2, 3]. In Australia, it is estimated that more than one million people have type 2 diabetes, and the condition is associated with more than 9,000 deaths each year. From an economic perspective, the total annual cost of diabetes in Australians over 30 years was estimated to be $4.4 billion in direct costs and $6.2 billion in government subsidies in 2005. In addition, the indirect impact of diabetes on productivity is well recognised [4–6].

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Type 2 diabetes is a leading cause of amputation in developed countries [7]. These amputations not only have a significant impact on physical function but also adversely affect patients' mental health [8]. The financial burden on healthcare systems is significant, with a UK study highlighting annual costs of over £60 million for inpatient and post-amputation care [9]. In Australia, amputation is one of the highest burden of diabetes-related complications [10]. Therefore, there is an urgent need for new interventions to prevent diabetes-related amputations in Australia.

The Fenofibrate Intervention and Event Lowering in Diabetes (FIELD) randomised clinical trial followed up 9795 patients aged 50–75 years with type 2 diabetes for five years and reported that fenofibrate reduced the risk of first amputation by 36% (Fenofibrate=45 vs. Non-fenofibrate=70 events; Hazard Ratio [HR]=0.64; 95% CI=0.44–0.94; p=0.02) [11].

This study aims to assess the cost-effectiveness of using fenofibrate in patients with type 2 diabetes.

Research Design and methods

This section outlines our methodology for assessing the effectiveness of fenofibrate, alone or in combination with a statin, in reducing the risk of first amputation. Our approach is based on cost-effectiveness analysis, a comprehensive economic evaluation technique that compares the costs and outcomes of different health programmes or treatments.

Our cost-effectiveness model has two main components. The first part is a prediction of diabetes outcomes using risk equations from the UKPDS model based on data constructed from an Australian cohort. This prediction is then refined using data on clinical treatment effects observed in the FIELD clinical trial.

The second part of the model is dedicated to evaluating costs, quality of life, and sensitivity analysis. This evaluation is based on the outcome predictions of the UKPDS model. It incorporated assessments of QALYs, longevity, and current market prices to provide an understanding of the economic and quality of life implications of the treatment options under consideration.

Table 1 Patient characteristics

	Mean
Age	61
Female, %	45.9
BMI	33.6
Duration of diabetes	12.4
Smoker, %	14.7
HbA1c, %	8.4
Systolic blood pressure, mmHg	132
HDL, mmol/L	1.3
LDL, mmol/L	3
Haemoglobin, g/dl	14.4
Heart rate, beats/min	78.6
White blood cell count	7
Estimated glomerular filtration rate, ml/min/1.73m2	74.2
History of atrial fibrillation, %	5.4
History of peripheral vascular disease, %	8.4
History of renal failure, %	4.5
Blindness, %	1.9
Albuminuria (micro or macro), %	26.7
History of Ulcer, %	6.3
History of amputation, %	2.3
History of IHD, %	3.2
History of MI, %	9.5
History of stroke, %	15.1
History of CHF, %	14.3

Data

This study used baseline patient characteristics from the Australian National Diabetes Audit Annual Report 2022 (ANDA 2022), as well as the FIELD study [11–13], to represent Australian patients with diabetes and the clinical trial context for fenofibrate. Australian National Diabetes Audit (2022) Annual Report is the fifteenth iteration of diabetes data reporting under the aegis of the National Association of Diabetes Centres. This comprehensive document offers insights into the clinical profiles, quality of life, and overall well-being of individuals diagnosed with either type 1 or type 2 diabetes. The audit's scope includes data gathered from May through July 2022, spanning 64 diabetes centres and encompassing a participant pool of 4,641 diabetic patients across all Australian states. It delineates the patient population's demographic, clinical, and outcome-related characteristics, with separate analyses for type 1 and type 2 diabetes. Additionally, it details the history of complications over the preceding 12 months and earlier, facilitating a comparative analysis with data from previous collections [12]. These patient characteristics and history of complications for Type 2 diabetes patients (Table 1) were used in simulating the baseline cohort in our study. In the absence of data on the ANDA 2022 report, the heart rate, white blood cell, Haemoglobin, history of atrial fibrillation, history of ischaemic heart disease (IHD), and history of congestive heart failure (CHF) were derived from previous studies which reported Australian population with type 2 diabetes [14]. The proportion of Albuminuria (micro or macro) was obtained from the FIELD study cohort [11].

Our baseline data reveals that the average age of patients in the sample is around 61 years, with females constituting approximately 46% of the cohort. The average duration of diabetes among these patients is about 12 years, and 2.3% have a history of amputation. We then compare the two modelled outcomes: those receiving

standard treatment and those receiving fenofibrate added to their standard treatment.

Health outcomes

This study used the UKPDS-OM2 model, a discrete-time probabilistic computer simulation based on parametric proportional hazard risk equations derived from 20 years of clinical trial data from 5,102 patients recruited in the UK between 1977 and 1991 [15]. This study calibrated the UKPDS-OM2 model with Australian data, making it relevant and applicable to the Australian context. The Australian Pharmaceutical Benefits Advisory Committee (PBAC) has also endorsed and considered this model, further validating its use and relevance in this study.

The UKPDS-OM2 model incorporated various patient details such as demographics, clinical risk factors and medical history. It predicts the probabilities of events for death and a range of complications, including myocardial infarction (MI), stroke, ischaemic heart disease (IHD), congestive heart failure (CHF), amputation, blindness, renal failure, and ulcers. In each annual cycle of the model, the probability of death or complications is predicted for each patient based on specific risk equations. These predicted probabilities are then compared to a randomly generated number from a uniform distribution between zero and one to determine whether an event occurs for the patient. The probability of death is calculated based on the occurrence and type of complications in the current annual cycle. If a patient is predicted to die in the model, the total number of events experienced and years lived are calculated, and the patient will be removed from the simulation. Conversely, if the patient survives the cycle, their age, duration of diabetes, clinical risk factor values and event history are updated and carried forward to the next cycle. The clinical risk factors in the model can either be updated with existing patient data or projected over time using risk factor time path Eqs. [15, 16].

We adjusted the rates of fatal and non-fatal cardiovascular events and mortality from other causes. This adjustment ensures that the standardised mortality ratios (SMRs) for our modelled patient population relative to the general Australian population are consistent with the SMRs observed between the Australian population of patients with type 2 diabetes and the general Australian population during 2004–2010. These comparative SMRs are derived from a study of a large cohort of Australians with type 2 diabetes.

Our model was designed to accommodate any specified integer time horizon, effectively allowing evaluators to set a lifetime duration for the individuals in the study. For the base case of our analysis, we chose a time horizon of 20 years. This period balances the disease's lifelong nature and the baseline population's expected life expectancy, typically between 15 and 30 years.

In our study, we refer to the FIELD trial to assess the effect of fenofibrate intervention on diabetes complications and risks [11, 13]. However, it is important to note that the FIELD clinical trial data is not directly incorporated into the UKPDS risk equations. To address this gap, we incorporated the results of the FIELD clinical trial into our use of the UKPDS models. This integration includes the treatment effect of fenofibrate on low-density lipoprotein (LDL) and high-density lipoprotein (HDL) levels in the treatment group microsimulation. The data also suggest that fenofibrate is associated with a 36% reduction in the risk of diabetes-related amputation, 10% reduction in total stroke, 24% reduction in myocardial infarction, 11% reduction in cardiovascular diseases [11, 13]. These clinical parameters from FIELD have been incorporated into our microsimulation model. They are embedded in each cycle of our predictive probabilities, improving the accuracy and relevance of our model's predictions in the context of the fenofibrate intervention.

In addition to our previous steps, we have performed calibration for other diabetes-related complications in the first year and for the event history of patients, referencing data from the Australian Diabetes Audit Annual Report (2022). This calibration ensures that our model accurately reflects the current diabetes complications and treatments in Australia.

Following this calibration, we simulated the cohort of 10,000 patients using the UKPDS model in two distinct scenarios: one representing patients under standard diabetes treatment without fenofibrate and the other depicting those receiving standard treatment with the addition of fenofibrate. This dual-model approach allows us to compare the outcomes of these two treatment strategies over extended periods.

We generated predictions for these patient groups over 15, 20, and 25 years. This long-term projection is crucial for understanding the potential impacts and benefits of incorporating Fenofibrate into standard diabetes treatment regimens, especially in reducing the risk of complications and improving patient outcomes over several decades.

A standard discount rate of 3% was used.

Cost-effectiveness Analysis

In this study, we assessed the intervention's cost-effectiveness by exploring the improvements in health outcomes and costs compared to the comparator. The primary measure of interest in this cost-effectiveness analysis is the incremental cost-effectiveness ratio (ICER), which quantifies the additional cost per unit of health outcome benefit gained from the intervention, focusing on the

comparative analysis between two or more treatment options [1].

The ICER was calculated by determining the difference in total cost between the intervention and the comparator and then dividing this difference by the difference in effect [1], which in Australia is the quality adjusted life years (QALYs) gained by the intervention compared to the comparator in this study:

$$ICER = \frac{Total\ Cost_{intervention} - Total\ Cost_{comparator}}{QALY_{intervention} - QALY_{comparator}}$$

The equation calculates the additional cost required to obtain a unit of health benefit, providing a clear and quantifiable measure of the intervention's cost-effectiveness.

To measure QALYs lived, we multiply the years of life spent in a particular health state by the utility value assigned to that state [17]. For example, if a health state is assigned a utility value of 0.8, then a year spent in that state is equivalent to 0.8 QALYs [17].

The ICER is also reported by life years (LYs) gained, as recommended by the PBAC guidelines. Input values were varied (±10%) to perform a sensitivity analysis.

Cost input

Costs associated with the management of the first or subsequent incidences of the various health outcomes considered in the model were estimated primarily using information from the National Hospital Cost Data Collection (NHCDC 2020-21) under the assumption that all such events would require hospitalisation. Estimated national acute public sector total costs per separation for relevant Australian Refined Diagnostic Related Group (AR-DRG) items have been selected (Table 2) and inflated to 2023 dollars using a factor based on the increase in the health component of the Consumer Price Index (CPI) since 2021.

All patients were assumed to receive anti-diabetic combination therapy consisting of metformin modified release 1500 mg/day+gliclazide modified release 30 mg/day. The price of all medication, including fenofibrate, was obtained from the Australian Pharmaceutical Benefits Scheme (PBS).

Quality of life

A number of studies were identified in the literature to inform health-related quality of life. Beaudet et al. (2014) reported a comprehensive systematic review of health-related quality of life (HRQoL) for diabetes modelling. The input for this current study estimates for each outcome and health state are largely based on this study (Table 3).

Table 2 Cost inputs

	Cost	Source
Health outcomes		
Severe Visual Loss	$4,815	AR-DRG: C61A, C61B
Lower Extremity Amputation	$47,847	AR-DRG: F11A, F11B, F13A, F13B
End Stage Renal Disease	$10,376	AR-DRG: L60A, L60B, L60C
Ischemic Heart Disease	$3,468	AR-DRG: F66A, F66B
Heart Failure	$10,389	AR-DRG: F62A, F62B, F62C
First/subsequent MI	$8,467	AR-DRG: F41A, F41B, F60A, F60B
First/subsequent stroke	$12,380	AR-DRG: B70A, B70B, B70C, B70D
Medication (yearly cost)		
Fenofibrate	$203.00	PBS item 13587D
Metformin MR	$79.90	PBS item 9435 N
Gliclazide MR	$40.00	PBS item 8535 F
Other		
Complication free diabetes	$2,815	Lee et al. 2018

Table 3 Health-related quality of life

Parameter	Value	Source
Total baseline for the cohort	0.8352	Bagust et al. 2005
Severe Visual Loss	-0.057	Beaudet et al. 2014
Active Ulcer	-0.17	Beaudet et al. 2014
Lower Extremity Amputation Event	-0.28	Beaudet et al. 2014
History of Lower Extremity Amputation	-0.272	Beaudet et al. 2014
End Stage Renal Disease	-0.175	Beaudet et al. 2014
Ischaemic Heart Disease	-0.09	Beaudet et al. 2014
Heart Failure	-0.108	Beaudet et al. 2014
MI event	-0.055	Beaudet et al. 2014
History of subsequent MI	-0.028	Beaudet et al. 2014
First Stroke Event	-0.164	Beaudet et al. 2014
History of First Stroke	-0.115	Alva et al. 2014
Subsequent Stroke Event	-0.164	Beaudet et al. 2014
History of Subsequent Stroke	-0.164	Alva et al. 2014

Results

Our analysis compared the diabetes complications between patients treated with fenofibrate and those not treated with fenofibrate, using the UKPDS model as our analytical tool. The results of this comparison are presented in Fig. 1, which shows the incidence of diabetes complications per 1,000 patients.

Figure 1 shows that the incidence of diabetes-related complications is lower in patients treated with fenofibrate, regardless of the type of complication. In particular, the most significant differences in complication rates between those taking fenofibrate and those not taking fenofibrate were observed for myocardial infarction, ischaemic heart disease and amputation. This suggested a potentially significant impact of fenofibrate treatment in reducing the risk of these specific diabetes-related health problems.

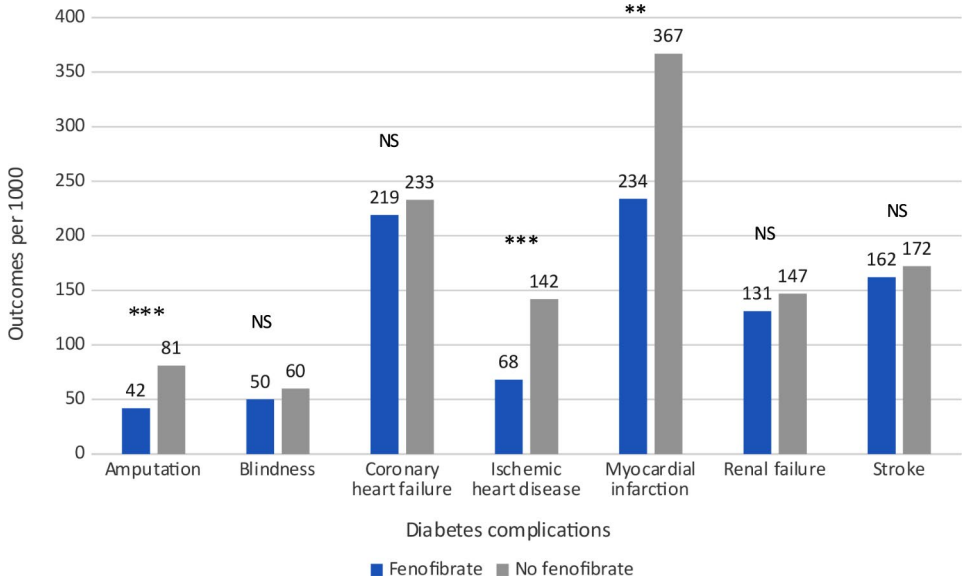

Fig. 1 Diabetes complications per 1000.***: p-value < 0.001, NS: not significant

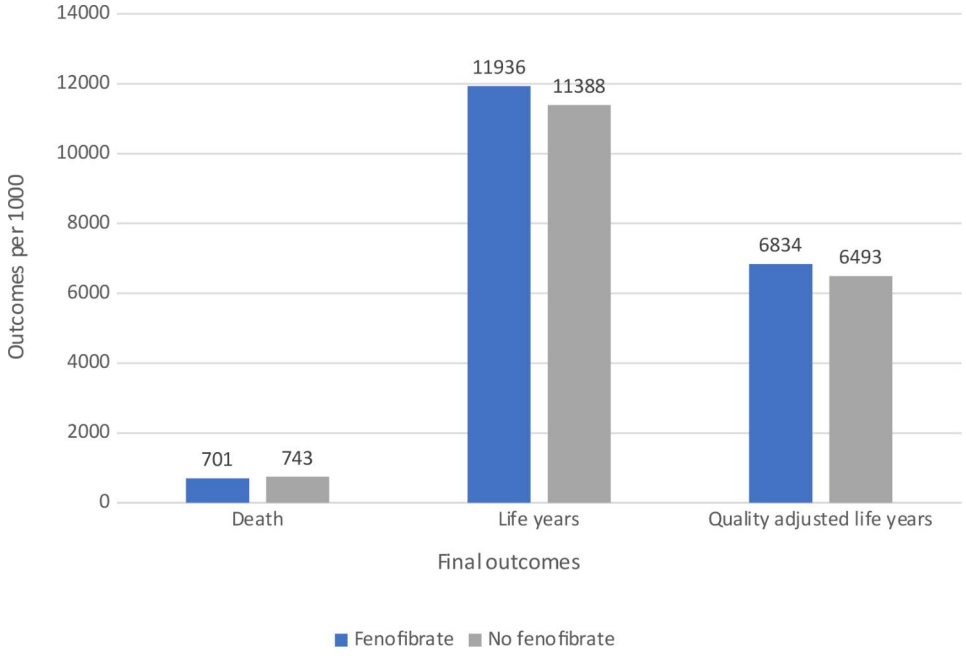

Fig. 2 Final outcomes (per 1000 patients)

Similarly, as shown in Fig. 2, fenofibrate per 1000 patients is associated with an increase of 548 additional LYs and an improvement of 341 QALYs.

Our model estimated that fenofibrate is associated with fewer diabetes-related complications and deaths.

The results for costs associated with diabetes complications and other costs, whether fenofibrate is used, are shown in Table 4. Panel A of the table shows that fenofibrate is associated with lower complication costs, amounting to a saving of over AU$ 4.6 million per 1,000 people, with the most significant savings observed concerning amputations. Meanwhile, Panel B shows that the total costs associated with treatment with fenofibrate are higher than the non-fenofibrate treatment scenario by approximately AU$ 5 million per 1,000 people.

The results indicated that both LY and QALY were higher for patients treated with fenofibrate than those not.

Finally, compared to no fenofibrate, the ICER for fenofibrate treatment was estimated to be AU$ 739/LY gained and AU$ 1189/QALY gained.

Table 4 Projected costs per 1000 patients

	Fenofibrate	No fenofibrate	Difference
Panel A: Costs of diabetes complications			
Amputations	AU $2.45 M	AU $4.83 M	AU -$2,37 M
Blindness	AU $0.28 M	AU $0.34 M	AU -$0.06 M
Coronary Heart failure	AU $2.81 M	AU $3.00 M	AU -$0.19 M
Ischemic heart disease	AU $0.27 M	AU $0.59 M	AU -$0.32 M
Myocardial infarction	AU $2.43 M	AU $3.81 M	AU -$1.38 M
Renal failure	AU $1.60 M	AU $1.82 M	AU -$0.22 M
Stroke	AU $2.50 M	AU $2.62 M	AU -$0.12 M
CABG	AU $0.69 M	AU $ 0.66 M	AU $0.03 M
Total complications costs	AU $13.05 M	AU $17.67 M	AU -$4.63 M
Panel B			
Other costs			
Death costs	AU $17.96 M	AU $19.00 M	AU -$1.05 M
Diabetes drug costs	AU $1.81 M	AU $1.71 M	AU $0.10 M
Diabetes treatment costs	AU $40.85 M	AU $ 37.92 M	AU $2.93 M
Fenofibrate costs	AU $3.06 M	AU $0	AU $3.06 M
Total costs	AU $63.67 M	AU $58.64 M	AU $5.03 M

Sensitivity analysis

The sensitivity analysis outcomes (Fig. 3) show that the ICER remained relatively low with varying sensitivities (ICER < $2,500). The top three main drivers of cost-effectiveness were (1) The number of amputation events predicted in the fenofibrate group, which was altered by the reduction in the number of amputation events due to fenofibrate treatment (±10%). (2) The cost of fenofibrate (±10%); and (3) the cost of treating amputations (±10%). On the other hand, the top six sensitivity analyses yielded negative ICERs, indicating that fenofibrate could be dominant in some cases, i.e. fenofibrate results in positive health gain and possible health savings to the healthcare system.

Discussion

The International Diabetes Federation estimated that 537 million people were living with diabetes in 2021 [18]. This figure is estimated to rise to 643 million by 2030. The prevention of diabetes-related amputation is a pressing concern that requires global attention [19]. 5-year survival rates for people with amputations are similar to people with colon cancer, which highlights the need for addressing this issue aggressively [20]. The FIELD study demonstrated in a prespecified analysis that fenofibrate reduced the risk of first amputation by 36% in a diabetes population [11]. This result indicates that fenofibrate could play an important role in preventing amputations for people suffering from diabetes [21].

In this study, we focused on type 2 diabetes, a leading cause of amputation [7], and used the UKPDS model, a detailed patient-level microsimulation model. We assessed the cost-effectiveness of using fenofibrate, either in combination with a statin or alone, compared with treatments using a statin alone or no statin. Our results showed that fenofibrate plays a significant role in reducing the risk of diabetes-related complications. In addition, our analysis suggested that fenofibrate has an additional cost of AU$0.4 million over 20 years but results in an additional 548 LY and 341 QALY gained per 1000 patients. Furthermore, fenofibrate was estimated as a cost-effective treatment option at an ICER threshold of AU$ 2,500.

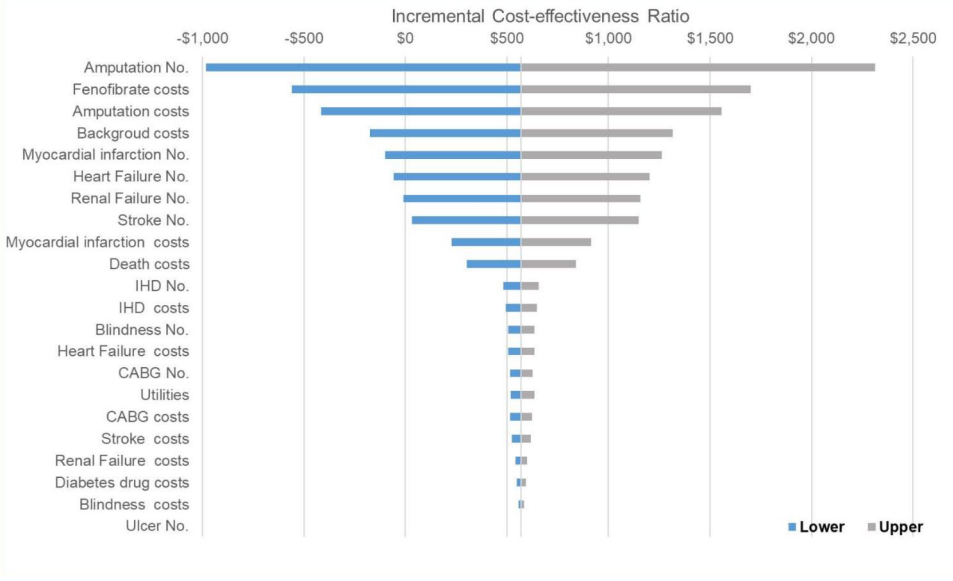

Fig. 3 Sensitivity analysis

A recent systematic review identified cost-effectiveness studies comparing monotherapy of fenofibrate to fenofibrate in combination with fluvastatin [22]. The study reported fewer cardiovascular events for the combination therapy. However, this study is not relevant in the Australian context as fluvastatin accounts for 0.1% of the dispensed statins in Australia [23].

There are several limitations concerning this study. First, the UKPDS model has previously been shown to be overestimating when used to predict outcomes for diabetic patients in an Australian setting [24]. While calibrating the model using general Australian population rates could minimise the overestimation. Another limitation of the study is the lack of validation of the estimated number of health outcomes. Unfortunately, no dataset was identified whereby the results from the model could be validated.

However, this does not detract from the overall implications of these findings. The results could have a significant impact on the management of type 2 diabetes, particularly in terms of reducing the burden of its complications and improving patient outcomes through a cost-effective treatment strategy involving fenofibrate.

Conclusion

Fenofibrate was estimated to be a cost-effective option for preventing diabetic complications such as amputations, blindness, congestive heart failure, ischemic heart disease, myocardial infarction, renal failure and stroke in Australia. It suggests important public health implications given these medication's widespread use.

Abbreviations

ANDA	Australian National Diabetes Audit Annual Report
AR-DRG	Australian Refined-Disease Related Groups
AUD	Australian dollar
CABG	Coronary artery bypass grafting
CHF	Congestive heart failure
CPI	Consumer Price Index
FIELD	Fenofibrate Intervention and Event Lowering in Diabetes
HDL	High-density lipoprotein
ICER	Incremental cost-effectiveness ratio
IHD	Ischaemic heart disease
LDL	Low-density lipoprotein
LY	Lived years
MI	Myocardial infarction
NHCDC	National Hospital Cost Data Collection
PBAC	Australian Pharmaceutical Benefits Advisory Committee
PBS	Pharmaceutical Benefits Scheme
QALY	Quality adjusted life year
SMRs	Standardised mortality ratios
T2DM	Type 2 diabetes mellitus
UKPDS	The United Kingdom Prospective Diabetes Study

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Author contributions

HK and JL drafted the manuscript, conducted the data simulation and analysis, and summarised the outcomes. VR and KK reviewed and edited the manuscript and provided feedback on the analysis and outcomes. All authors read and approved the final manuscript.

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Data availability

The outcome data is provided within the manuscript. The intermediate datasets used and analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Not applicable, this study does not involve human or animal participants.

Consent for publication

Not applicable, this study does not contain personal data.

Competing interests

Hansoo Kim and Juntao Lyu are researchers employed at Griffith University's Centre for Applied Health Economics when carried out this research, which was funded by Abbott Products Operations AG.Vikrama Raja and Kyoo Kim are employees of Abbott Products Operations AG, Switzerland. Vikrama Raja and Kyoo Kim are employees of Abbott Products Operations AG, Switzerland.

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References

1. Gray AM et al. Applied Methods of Cost-effectiveness Analysis in Health Care. Handbooks in Health Economic Evaluation Series, ed. A.M. Gray and A. Briggs. 2011, New York: Oxford University Press.
2. Stratton IM, et al. Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study. BMJ. 2000;321(7258):405–12.
3. Davis WA, Knuiman MW, Davis TM. An Australian cardiovascular risk equation for type 2 diabetes: the Fremantle Diabetes Study. Intern Med J. 2010;40(4):286–92.
4. Lee CM, et al. The cost of diabetes in adults in Australia. Diabetes Res Clin Pract. 2013;99(3):385–90.
5. Schofield D et al. The costs of diabetes among Australians aged 45–64 years from 2015 to 2030: projections of lost productive life years (PLYs), lost personal income, lost taxation revenue, extra welfare payments and lost gross domestic product from Health&WealthMOD 2030. BMJ Open, 2017. 7(1): p. e013158.
6. Magliano DJ, et al. The Productivity Burden of Diabetes at a Population Level. Diabetes Care. 2018;41(5):979–84.
7. Bild DE, et al. Lower-extremity amputation in people with diabetes. Epidemiology and prevention. Diabetes Care. 1989;12(1):24–31.
8. Nazri MY, et al. Quality of life of diabetes amputees following major and minor lower limb amputations. Med J Malaysia. 2019;74(1):25–9.
9. Graz H, et al. Diabetes-related amputations create considerable public health burden in the UK. Diabetes Res Clin Pract. 2018;135:158–65.
10. Lazzarini PA, et al. Diabetes foot disease: the Cinderella of Australian diabetes management? J Foot Ankle Res. 2012;5(1):24.
11. Rajamani K, et al. Effect of fenofibrate on amputation events in people with type 2 diabetes mellitus (FIELD study): a prespecified analysis of a randomised controlled trial. Lancet. 2009;373(9677):1780–8.
12. Audit AND. Australian National Diabetes Audit Annual Report 2022. 2023, Monash University, School of Public Health and Preventive Medicine. p. 88.
13. Investigators FS. Effects of long-term fenofibrate therapy on cardiovascular events in 9795 people with type 2 diabetes mellitus (the FIELD study): randomised controlled trial. Lancet. 2005;366(9500):1849–61.
14. Harding JL, et al. Mortality trends among people with type 1 and type 2 diabetes in Australia: 1997–2010. Diabetes Care. 2014;37(9):2579–86.
15. Hayes AJ, et al. UKPDS outcomes model 2: a new version of a model to simulate lifetime health outcomes of patients with type 2 diabetes mellitus using

data from the 30 year United Kingdom prospective diabetes study: UKPDS 82. Diabetologia. 2013;56:p1925–1933.
16. Leal J, et al. Estimating risk factor progression equations for the UKPDS outcomes Model 2 (UKPDS 90). Diabet Med. 2021;38(10):e14656.
17. Glick HA et al. Economic Evaluation in Clinical Trials. Second edition ed. Handbooks in Health Economic Evaluation Series, ed. A.M. Gray and A. Briggs. 2015, New York: Oxford University Press.
18. IDF. World Diabetes Atlas 10 Edition. 2023 21-Feb-2024]; https://diabetesatlas.org/
19. Sibbald RG, Ayello EA. The reduction of Diabetic Foot amputations starts with preventing Foot Ulcers. Adv Skin Wound Care. 2018;31(9):389.
20. Armstrong DG, Wrobel J, Robbins JM. Guest Editorial: are diabetes-related wounds and amputations worse than cancer? Int Wound J. 2007;4(4):286–7.
21. Malik RA, Tesfaye S, Ziegler D. Medical strategies to reduce amputation in patients with type 2 diabetes. Diabet Med. 2013;30(8):893–900.
22. Abushanab D, et al. A systematic review of cost-effectiveness of non-statin lipid-lowering drugs for primary and Secondary Prevention of Cardiovascular Disease in patients with type 2 diabetes Mellitus. Curr Probl Cardiol. 2023;48(8):101211.
23. Lee L, Kim H. Exploring the evolution of Statin pricing in Australia: observations of Price Disclosure effects on Pharmaceutical benefits Scheme Expenditure. Value Health Reg Issues. 2023;40:27–34.
24. Davis WA, Colagiuri S, Davis TM. Comparison of the Framingham and United Kingdom prospective diabetes study cardiovascular risk equations in Australian patients with type 2 diabetes from the Fremantle Diabetes Study. Med J Aust. 2009;190(4):180–4.

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