

CADTH Drug Reimbursement Review Patient Input Template

Name of the Drug and Indication	TBC (tirzepatide), product #SR0751-000 Diabetes mellitus, type 2
Name of the Patient Group	Diabetes Canada
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1. About Your Patient Group

Diabetes Canada (www.diabetes.ca) is a national health charity representing the millions of Canadians who are affected by diabetes. Diabetes Canada leads the fight against diabetes by helping people live healthy lives, preventing the onset and consequences of diabetes, and discovering a cure. It has a heritage of excellence and leadership, and its co-founder, Dr. Charles Best, along with Dr. Frederick Banting, is credited with the co-discovery of insulin. Diabetes Canada is supported in its efforts by a community-based network of volunteers, employees, health-care professionals, researchers, and partners. By providing education and services, advocating on behalf of people living with diabetes, supporting research and translating it into practical applications, Diabetes Canada is delivering on its mission. Diabetes Canada will continue to change the world for those affected by diabetes through healthier communities, exceptional care, and high-impact research.

2. Information Gathering

This submission contains patient input from an online survey conducted July 19th to August 7th, 2022. The survey was open to people across Canada and consisted of a self-administered questionnaire. The survey was directed at people living with type 2 diabetes and caregivers of people living with type 2 diabetes. The survey inquired about respondents' lived experience with diabetes and diabetes medications, and expectations for new drug therapies in Canada. Further, the survey posed several questions specifically about the drug under review, tirzepatide. Awareness about the survey was generated through Diabetes Canada's social media channels (Twitter and Facebook), and via a health-care providers' online forum (Diabetes Canada's Professional Section).

The survey had 20 respondents; 18 identified as living with type 2 diabetes while two identified as a caregiver to someone living with type 2 diabetes. The majority of respondents were in the 45 to 54 year age range (40%), followed by the 65 to 74 year range (25%), and the 55 to 64 year range (20%). The remaining 15% were in the 25 to 44 year range. Sixty-five percent of respondents have

lived with type 2 diabetes for up to 10 years, 25% have lived with diabetes for 11 to 20 years, and the final 10% have lived with diabetes for more than 20 years. Eleven (55%) of the respondents identified as female, eight (40%) identified as male, and one (5%) identified as non-binary. Ninety percent of the respondents identified as White Caucasian, while five percent identified as South Asian, and five percent declined to answer the question.

Respondents live in eight of the 10 provinces (BC, AB, MB, SK, ON, NL, NB, PE), with the most responses from Ontario (35%) and Alberta (20%). No surveys were completed by people living in the three territories, Quebec, or Nova Scotia.

3. Disease Experience

Tirzepatide is a dual glucose-dependent insulinotropic polypeptide and glucagon-like peptide-1 (GLP-1) receptor agonist that is indicated for the treatment of type 2 diabetes. Reimbursement is being requested specifically for adults living with type 2 diabetes, consistent with a subset of the target Health Canada indication, for the once-weekly treatment of adult patients with type 2 diabetes mellitus to improve glycemic management, in combination with metformin when diet and exercise plus maximal tolerated dose of metformin do not achieve optimal glycemic management.

Diabetes is a disease characterized by elevated levels of glucose in the blood. Common symptoms of diabetes include extreme fatigue, unusual thirst, frequent urination, and weight gain or loss. Diabetes necessitates considerable daily self-management. Treatment regimens differ between individuals, but most include eating in a balanced manner, engaging in regular physical activity, taking medications (oral and/or injectable) as prescribed, monitoring blood glucose, and managing stress.

About 90 to 95 percent of those diagnosed with diabetes live with type 2 diabetes. Type 2 diabetes occurs when the pancreas does not produce enough insulin, or the body does not effectively use the insulin that is produced. Among other things, treatment may include exogenous insulin, in addition to other therapies, like oral and/or other injectable medications. Typically, type 1 diabetes presents in children and adolescents, while type 2 develops in adulthood, though either type of diabetes can be diagnosed at any age. Those of advancing age, with a genetic predisposition, who are part of a high-risk population (African, Arab, Asian, Hispanic, Indigenous or South Asian descent, low socioeconomic position), and/or who are living with comorbid conditions, including obesity, are at increased risk of developing type 2 diabetes.

It can be quite serious and problematic for people with diabetes when blood glucose levels are not at target. Low blood sugar can precipitate an acute crisis, such as confusion, coma, and/or seizure that, in addition to being dangerous, may also contribute to a motor vehicle, school/workplace or other type of accident, causing harm. High blood glucose can cause weakness, nausea, vomiting, abdominal pain, and other symptoms. Over time, glucose levels above target can irreversibly damage blood vessels and nerves, resulting in issues like blindness, heart disease, kidney dysfunction, foot ulcers, and non-traumatic lower limb amputations. One of the goals of diabetes management is to keep glucose levels within a target range to minimize symptoms and decrease the risk of complications and consequences.

Most survey respondents indicated that living with type 2 diabetes is preoccupying, inconvenient, and burdensome. Management is constant, with the condition requiring a great deal of foresight and planning. The majority of respondents spoke of the challenges of managing their blood glucose

in relation to their diet and food choices, and the constant pressure of diabetes management. Survey respondents shared the ways in which type 2 diabetes impacts their daily life and overall quality of life. They provided the following insights:

“What I eat is a constant, never-ending concern hanging over me.”

“Always worried about spiking.”

“I hate having to check my blood sugar and watch what I eat. I feel like it makes me stand out from others. If I don’t do these things though, I don’t feel well.”

“Constant need to count carbohydrate content of food eaten, scan sensor to determine glucose level, change sensor every 2 weeks, change insulin pump infusion set and site every 3 days, respond to alarms on continuous glucose monitor.”

“Knowing the potential dangers of diabetes, almost everything I eat or do is tempered by the question of how it might effect my glucose levels, and the short and long term results. There is no escaping this constant pressure.”

“Change in diet for entire family. Recognize huge barriers to access the new molecules such as GLP1-RA's and SGLT2s for the average Canadian due to cost and insurer limitations in dosage coverage. Weight management in diabetes is one of the most common issues and Rx are now available to help manage weight but remain unattainable for most Canadians. What a huge savings to healthcare if we could not only achieve weight loss, but diabetes remission or diabetes management without insulin and at the same time offer cardiac, renal protection long term... It would represent such a significant savings to Canadian healthcare budget in the long term.”

When asked specific questions about medical history, respondents (n=17) disclosed the following (in addition to type 2 diabetes):

- 82% have weight management issues (n=14)
- 47% have mental health concerns (n=8)
- 35% have foot problems (n=6)
- 35% have arthritis (n=6)
- 29% have high blood pressure (n=5)
- 29% have eye problems (n=5)
- 29% have gastrointestinal issues (n=5)
- 24% have abnormal cholesterol levels (n=4)
- 24% have a heart condition or heart disease (n=4)
- 12% have nerve damage (n=2)
- 6% have kidney issues or kidney disease (n=1)
- 6% have low iron (n=1)

4. Experiences With Currently Available Treatments

Respondents were asked how often they (or the person they care for) experience hyperglycemia (high blood sugar) and hypoglycemia (low blood sugar). Percentages and totals are presented in the table below. Of note for this submission is that 31% of respondents report high blood sugar more than once a day.

	Not at all	Less than 1/month	2-4 times/month	More than 1/week	More than 1/day	In the past, but not now	Don't know
Hyperglycemia (n=16)	6% (n=1)	6% (n=1)	12% (n=2)	31% (n=5)	6% (n=1)	6% (n=1)	31% (n=5)
Hypoglycemia (n=17)	29% (n=5)	18% (n=3)	18% (n=3)	6% (n=1)	0% (n=0)	0% (n=0)	29% (n=5)

With respect to antihyperglycemic treatment, all respondents (n=16) to this question reported taking medication for their diabetes. Those being taken at the time of survey completion included insulin (glargine U300/other long-acting, short-acting, and rapid-acting), GLP-1 receptor agonists and GLP-1 receptor agonists/metformin combination, DPP-4 inhibitor/metformin combination, SGLT2 inhibitors and SGLT2 inhibitors/metformin combination, TZD/metformin combination, sulfonylureas, and metformin. Additionally, respondents reported experience with insulin glargine, short-acting insulin, rapid-acting insulin, DPP-4 inhibitors, DPP-4 inhibitors/metformin combination, TZD/metformin combination, sulfonylureas, metformin, and meglitinide.

Twelve respondents also indicated utilizing non-medication interventions to manage their diabetes:

- 93% reported healthy eating (n=11)
- 58% reported engaging in physical activity (n=7)
- 17% reported taking herbal remedies or over-the-counter supplements (n=2)
- 17% reported that they have considered or done bariatric surgery (n=2)

Of the 16 people who answered this question, 50% (n=8) said they were “very satisfied” or “satisfied” with their medication. Another 12% of people (n=2) expressed being “dissatisfied” or “very dissatisfied” with their medication, while 38% (n=6) were “neither satisfied nor dissatisfied”.

Over 50% of respondents commented that their current medications were “much better” or “better” than previous treatments at meeting target fasting blood glucose levels, after meal targets, and maintaining or losing weight. Between 40 and 47% of respondents reported that their current medications were “much better” or “better” at avoiding high and low blood sugar, and meeting target hemoglobin A1c levels. At least one third of respondents (33% or more) said their current medications were neither better nor worse when it came to meeting target blood sugar levels upon waking, avoiding high and low blood sugar, meeting target hemoglobin A1c levels, maintaining or losing weight, and incidence of thirst and/or dehydration. One third of respondents (33%) also indicated that their current medications were “worse” or “much worse” when it came to gastrointestinal side effects (diarrhea, nausea, vomiting, abdominal pain).

The table below represents how current medications being used by respondents (n=16) impact medication objectives and potential side effects.

	Better/much better than before	Same as before	Worse/Much worse than before
Meeting target fasting blood sugar levels	53% (n=8)	13% (n=2)	7% (n=1)

Meeting target blood sugar levels upon waking	37% (n=6)	37% (n=6)	6% (n=1)
Meeting target blood sugar levels after meals	53% (n=8)	27% (n=4)	7% (n=1)
Avoiding hypoglycemia (low blood sugar)	40% (n=6)	40% (n=6)	13% (n=2)
Avoiding hyperglycemia (high blood sugar)	40% (n=6)	40% (n=6)	
Meeting target hemoglobin A1c levels	47% (n=7)	33% (n=5)	7% (n=1)
Maintaining or losing weight	53% (n=8)	33% (n=5)	7% (n=1)
Gastrointestinal side effects (diarrhea, nausea, vomiting, abdominal pain)	13% (n=2)	27% (n=4)	33% (n=5)
Thirst and/or dehydration	20% (n=3)	40% (n=6)	27% (n=4)
Yeast infections	7% (n=1)	27% (n=4)	
Urinary tract infections		20% (n=3)	
Lung or upper respiratory infections		20% (n=3)	
Bone fractures		7% (n=1)	7% (n=1)
Organ damage (pancreas, liver, kidney, heart)		7% (n=1)	7% (n=1)

Reported side effects of the medications included gastrointestinal issues (nausea, constipation, diarrhea), weight gain, and kidney pain.

When asked what they liked about their diabetes medications, respondents indicated that their medications were easy to use, had no side effects, and helped lower their A1C. Factors that respondents disliked about their medication included quantity and/or timing of dosing different medications (e.g., too many pills/needles; some are taken daily while others are taken weekly), fluctuations to blood glucose levels, that they need the medication at all, and weight gain.

People shared the following comments about what they like and dislike about their diabetes medications:

“Better than having to take insulin shots.”

“Helping me lose weight as I am overweight”

“not helping me lose weight and I am having high blood counts daily”

“too many pills”

“One medication needs to be taken twice a day, the other is a weekly injectable. The timing can be inconvenient at times.”

“not much I was happier with one other medication, but Alberta Health Blue Cross does not cover it so I am on this and had to double my dose.”

The majority of respondents (79%) said they don’t experience any issues or barriers to accessing their medications. The other three respondents indicated different restrictions—with one each reporting the pharmacy is sometimes out of stock, lack of public coverage, or their health-care provider is “stalling on the prescription of new molecules.”

When asked if they have any trouble using their diabetes medications, only one of the 13 respondents indicated a problem. In their case, they reported, “I have severe panic attacks and shake when trying to put the needle in me.”

5. Improved Outcomes

Respondents shared how important the following considerations are in choosing medications for diabetes management:

- Avoid high blood sugar at any time (100%, n=8)
- Reduce the risk of heart problems (100%, n=8)
- Blood sugar kept at satisfactory level upon waking, during the day, after fasting, or after meals (88%, n=7)
- Avoid low blood sugar during the day or overnight (88%, n=7)
- Avoid yeast infections or urinary tract infections (88%, n=7)
- Avoid fluid retention (88%, n=7)
- Avoid weight gain/reduce weight gain (75%, n=6)
- Reduce high blood pressure (75%, n=6)

Two respondents also highlighted the affordability of prescription medications and the financial burden it places on them as a consideration in choosing treatments. An additional respondent indicated the desire for one pill rather than multiple pills.

Respondents were asked what improvements they’d like to see in a new treatment that is not achieved in currently available treatments for type 2 diabetes. Here is their input:

“give me my life to better outcomes”

“Less pills”

“To maintain my levels at a healthy dose”

“Immediate (once taking full dose) control of blood glucose levels, and reductions in the numerous long term complications of diabetes.”

A handful of respondents also provided detail on how their daily life and overall quality of life would be different if a new treatment provided their desired improvements:

“I would be able to exercise.”

“game changer”

“If it helped then I would be excited”

“Drastic as I am without quality of life right now”

“Reduction in the level of concern about the potential long term problems. Effectively, reducing the constant weight of being diabetic. That alone would brighten up every day of my life.”

6. Experience With Drug Under Review

Of those who responded to the question (n=12), only one person reported currently taking tirzepatide, along with other medications. The medication was obtained through private insurance. The respondent did not see any improvements to medication goals or possible side effects, but they did report that avoiding high and low blood glucose levels was “about the same” as with other diabetes medications. Further, they reported the following components to be “worse” or “much worse”: meeting target fasting blood sugar levels (overall, upon waking, and after meals), maintaining or losing weight, gastrointestinal side effects (diarrhea, nausea, vomiting, abdominal pain), thirst and/or dehydration, and yeast infections. When asked how tirzepatide has impacted their life, this respondent replied, “nothing is better, blood sugar is worse.”

7. Companion Diagnostic Test

TBC (tirzepatide) does not have a companion diagnostic, therefore this question is not applicable to our submission.

8. Anything Else?

Diabetes is a disease that requires intensive self-management. Diabetes Canada’s 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada highlight the importance of personalized care when it comes to treatment. Survey responses reinforce the message that different people require different modalities to help effectively manage their diseases. Their unique clinical profile, preferences and tolerance of therapy should direct prescribers to the most appropriate choice and combination of treatments for disease management. Health care providers must be supported in prescribing evidence-based therapies and, through public and private drug plans, patients should have access to a range of treatments that will allow them to optimize their health outcomes. For those paying out-of-pocket, costs should not be so high as to prohibit medication procurement.

While current therapies have generally led to improvement for many people, people living with diabetes and their caregivers hope for additional affordable agents that they can access in a timely manner and with good result to help them lead a normal life. Tirzepatide may help improve glucose management, thereby reducing the risk of diabetes-related complications, improving lives, and saving millions in direct health-care costs. For this reason, tirzepatide should be an option for people living with type 2 diabetes.

Below are some final thoughts from respondents on diabetes:

“nothing works as it did before.”

“I have been losing weight on current medication”

“Anything to make this easier is wonderful. I have to test my blood at least 7 times a day and eat foods I don’t care for to keep my levels steady. Any advancements are terrific.”

“Medical decisions should not be left in the hands of unqualified and unknowledgeable politicians.”

“Healthcare providers must move forward with excellence in care and follow new best practice guidelines as they emerge. The research is clear.”

Appendix: Patient Group Conflict of Interest Declaration

To maintain the objectivity and credibility of the CADTH drug reimbursement review process, all participants in the drug review processes must disclose any real, potential, or perceived conflicts of interest. This Patient Group Conflict of Interest Declaration is required for participation. Declarations made do not negate or preclude the use of the patient group input. CADTH may contact your group with further questions, as needed.

1. Did you receive help from outside your patient group to complete this submission? If yes, please detail the help and who provided it.

There was no assistance from outside Diabetes Canada to complete this submission.

2. Did you receive help from outside your patient group to collect or analyze data used in this submission? If yes, please detail the help and who provided it.

There was no assistance from outside Diabetes Canada to collect or analyze data used in this submission.

3. List any companies or organizations that have provided your group with financial payment over the past two years AND who may have direct or indirect interest in the drug under review.

Company	Check Appropriate Dollar Range			
	\$0 to 5,000	\$5,001 to 10,000	\$10,001 to 50,000	In Excess of \$50,000
AstraZeneca				x
Bayer			x	
Janssen				x
Eli Lilly			x	
Novo Nordisk				x
Paladin			x	
Sanofi				x
Takeda			x	

I hereby certify that I have the authority to disclose all relevant information with respect to any matter involving this patient group with a company, organization, or entity that may place this patient group in a real, potential, or perceived conflict of interest situation.

Name: Amanda Sterczyk
 Position: Manager, Policy
 Patient Group: Diabetes Canada
 Date: August 12th, 2022