



Canada's Drug Agency
L'Agence des médicaments du Canada

CDA-AMC REIMBURSEMENT REVIEW

Patient and Clinician Group Input

teprotumumab (TBC)
(Amgen Canada Inc.)

Indication: Teprotumumab is indicated in adults for the treatment of moderate to severe Thyroid Eye Disease (TED).

November 4, 2024

This document compiles the input submitted by patient groups and clinician groups for the file under review. The information is used by CDA-AMC in all phases of the review, including the appraisal of evidence and interpretation of the results. The input submitted for each review is also included in the briefing materials that are sent to expert committee members prior to committee meetings. **If your group has submitted input that is not reflected within this document, please contact Formulary-Support@cda-amc.ca.**

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Patient Input Template for CADTH Reimbursement Reviews

Name of Drug: teprotumumab (Tepezza)

Indication: Thyroid Eye Disease

Name of Patient Group: Thyroid Foundation of Canada

Author of Submission: Laz Bouros

1. About Your Patient Group

The Thyroid Foundation of Canada (TFC)/La Fondation Canadienne de la Thyroïde, a non-profit registered volunteer organization and charity, was founded in 1980 by Diana Meltzer Abramsky, a thyroid patient from Kingston, Ontario, with the assistance of endocrinologist, Dr. Jack Wall. She created the very first thyroid foundation for patients in the world. Before 1980 there was no lay organization in the world of its type. TFC has been used as a model to form thyroid foundations in other countries around the world.

Our mission is to awaken public interest in, and awareness of, thyroid disease; lend moral support to thyroid patients and their families; and assist in fund raising for thyroid disease research.

2. Information Gathering

The primary information contained in this submission was gathered by the Thyroid Foundation of Canada through one online survey and three telephone interviews with patients on Tepezza living in the USA. Supplemental content was incorporated from an article entitled “How patients experience thyroid eye disease” ([Frontiers in Endocrinology, 08 November 2023](#)), which was informed by a 62-question survey conducted by the Graves’ Disease completed by 443 respondents (25 of whom were from Canada).

Responses to the online survey were collected between September 6 and September 26, 2024. The telephone interviews were conducted between September 27 and September 30, 2024. All data were anonymized when aggregated for analysis to ensure patient confidentiality.

A total of 42 patients and caregivers responded to the online survey. Most (n=37) were patients, and the balance (n=5) were caregivers. The majority of the patient respondents were from Canada (almost 95%), with the remainder from the USA and UK. Of the patient respondents from Canada, the majority (over 58%) were from Ontario, followed by Alberta (almost 14%), Quebec (over 8%), British Columbia (almost 6%), Manitoba, Nova Scotia, Prince Edward Island and the Northwest Territories.

All of the caregiver respondents were from Canada – two from Ontario, one from Quebec, one from Alberta and one from British Columbia.

Approximately 30% of the patient respondents were between 55 and 64 years of age, 22% were between 45 and 54 years of age, 22% were between 65 and 74 years of age and 16% were between 35 and 44 years of age. Only 5% were between 25 and 34 years of age, with the same (5%) for those between 75 and 84 years of age. There were no patient respondents under 35 or older than 84 years of age.

Two of the caregiver respondents were between 35 and 44 years of age. The other three were between 45 and 54, 55 and 64 and 65 and 74 years of age.

3. Disease Experience

Thyroid eye disease (TED), also known as thyroid-associated ophthalmopathy, and Graves’ orbitopathy (GO)/ophthalmopathy, is a debilitating, inflammatory autoimmune disease that is disfiguring and potentially sight-threatening. TED is a relatively rare disease with a calculated prevalence between 90 and 250/100,000. It occurs in 25%–40% of patients with Graves’ disease (GD) as a consequence of loss of immune tolerance to the thyroid-stimulating hormone and insulin-like growth factor 1 (IGF-I) receptors.

Despite the majority of patients with GD presenting at some point in their disease journey with hyperthyroidism, approximately 10% of patients with TED are found to have normal thyroid hormone levels or to manifest autoimmune (primary) hypothyroidism.

TED is a lifelong condition that typically presents with an active or acute phase of inflammation lasting two to five years, during which time physical signs and symptoms change/progress, potentially resulting in vision changes. Ocular manifestations stabilize during the subsequent inactive, non-progressive phase. TED can be classified as mild, moderate-to-severe, or sight-threatening. Manifestations of TED can include eyelid retraction, ocular dryness/grittiness, eyelid redness, pain with eye movement, pressure sensation behind the eyes, and excessive tearing. Proptosis, diplopia, and vision dysfunction can develop, becoming chronic and persisting for years.

Patients with TED can experience significant disease burden, frequently the consequence of suboptimal medical management or treatment. TED is associated with excess co-morbidity and mortality, as well as early retirement and loss of productivity. Decreased quality of life (QoL) results from physical manifestations and their negative impact on mental health. The wide-ranging emotional toll of TED frequently includes anxiety and depression, both of which can persist in chronic disease. Patients are also often faced with incorrect diagnoses, resulting in delays in treatment.

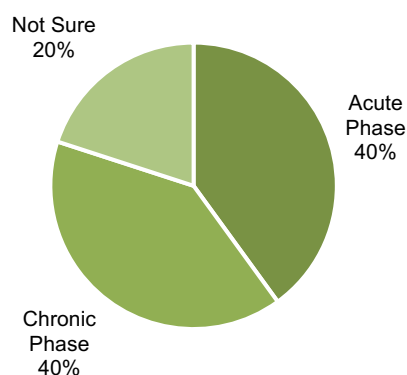
Diagnosis:

Of the patient respondents, almost 60% were diagnosed between 40 and 64 years of age. Three of the caregiver respondents cited diagnoses in that same age range. Over 24% of patient respondents were diagnosed between 18 and 39 years of age, with the balance having been diagnosed over the age of 64 or not recalling when they were diagnosed.

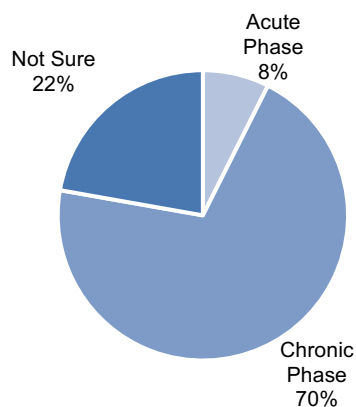
Over 32% of patient respondents have been living with TED for less than three years, with another 38% having lived with the disease for between four to 10 years. Two of the caregiver respondents have been living with TED for less than three years, with the remaining three having lived with the disease for between four to 10 years.

The following two graphs show the patient and caregiver responses to the current stage of their TED. For patients, over half are in the chronic phase, characterized by persistent structural and appearance changes, which may become permanent, as well as long-term symptoms. Two of the caregiver respondents were in the same phase. Another four respondents (two patients, two caregivers) were in the acute phase, which involves progressive inflammation and orbital tissue expansion that rapidly progresses to maximal disease severity. Over 16% of patient respondents were not sure of the stage of their TED.

Caregiver: Current Stage of TED



Patient: Current Stage of TED



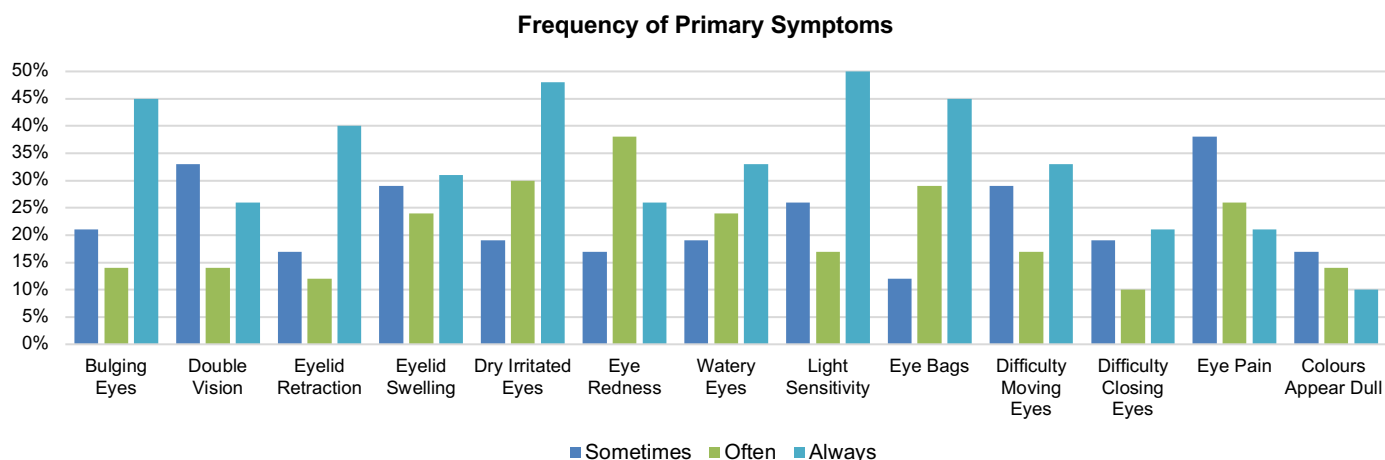
Some notable quotes regarding diagnosis from the *Frontiers in Endocrinology* article survey include:

- *“It was hard getting a diagnosis. I visited 2 local doctors who just prescribed eye drops that did nothing. It wasn’t until I went to a major teaching hospital in a large city that I received a correct diagnosis.”*
- *“I saw 5 different doctors. My first eye doctor told me my complaints were mental – all in my head. This was 3 months prior to finding a provider that listened and understood.”*

- *“It also took many months and many doctor visits to get an accurate diagnosis, which is demoralizing and terribly frustrating.”*

Symptoms:

In responding to the survey, patients with TED indicated that they experienced a wide range of symptoms. The following graph depicts the primary symptoms cited by the respondents, along with how often they were experienced.



Many of the patient respondents noted the following symptoms as “always” occurring – dry, irritated eyes; light sensitivity; bulging eyes (proptosis); and bags under the eyes. Double vision and eyelid retraction were most often cited as “always” occurring by the caregivers.

Other notable symptoms reported by the patients included partial blindness/reduced vision, crossed eyes, headaches and anxiety.

- *“I try to keep life as normal as possible but some days the eye pain is too much and I need to lay down with ice packs on my eyes for hours.”*
- *“I’m in my early 40s, I had to stop working for a little more than 2 years now because my double vision and headaches are so severe.”*

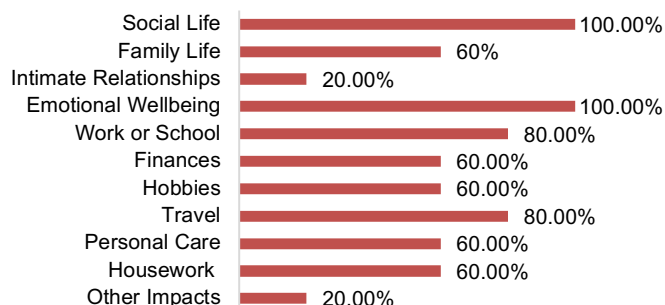
In the *Frontiers in Endocrinology* article survey, the respondents reported dry/gritty eye, light sensitivity, bulging eyes, and pressure or pain behind the eye as the most burdensome ocular symptoms in the two months prior to when the survey was conducted. Direct quotes included:

- *“At [60+] years old and having TED for 40 years, I am still uncomfortable with the bulging eyes, uneven eyelids after surgery, sensitivity to light, redness, and general discomfort.”*
- *“Eyes do not look straight ahead, comfortable eye position for me after TED is much lower than neutral so to lift my eye up hurts, driving more than 15 minutes is difficult and then this creates tremendous neck pain and... migraines.”*
- *“When I felt increased pressure at work and home, my symptoms got worse.”*

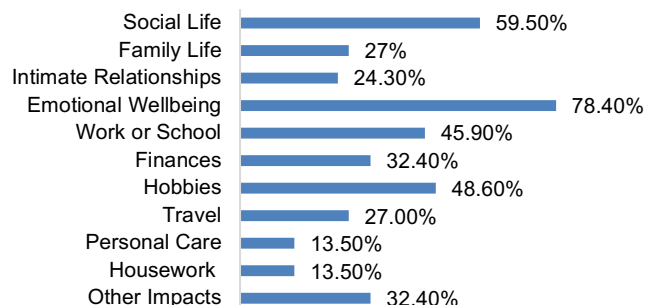
Disease Impact:

When patients were asked how having TED negatively affects their daily life/quality of life, they mentioned most frequently emotional/psychological well-being, social life, work or school life, ability to pursue hobbies, financial situation, family life and ability to travel. When caregivers were asked the same question, their responses aligned with the most noted impacts cited by the patients, along with the addition of two others – personal care and homework/meal prep. The following two graphs illustrate these findings more fully.

Caregivers: Negative Impact to Quality of Life



Patients: Negative Impact to Quality of Life



Patients and caregivers in the chronic phase of the disease were asked whether they continue to experience any impact on their daily life/quality. Various people said:

- *“My left eye is worse than my right eye, but both eyes water a lot. My left lower eyelid has retracted from my eye and droops. I have bags above and below my eyes. I have constant irritation and cannot go outside in the sun without sunglasses.”*
- *“The changes to my eyes are minimal compared to others with this disease, but it still affects my self-esteem. I still struggle with double vision at times. If my vision is off, I worry my work will suffer. Most of the time I have to wear sunglasses.”*
- *“It’s embarrassing to go out when everyone stares. I feel like a freak!”*
- *“TED has required significant time away from home and work. The medications and surgeries have taken away the remaining years to be able to become pregnant, a very big loss.”*
- *“Vision problems have increased my feelings of depression and hopelessness. Both the endocrinologist and family doctor don’t believe this to be a serious condition. Far better education about TED is required.”*
- *“The most affected part of my life is knowing that just south of the border there is a drug that can help my chronic TED but I have no access to it. There is no healthcare for TED in Canada.”*

The patient respondents were asked how TED has affected their daily life/quality of life and the daily lives of their caregivers and loved ones. The feedback included:

- *“Fortunately, in the early stages of my double vision, it was during the pandemic and so I was working at home. I didn’t have prism eyeglasses at the time. As I worked at home, I was able to continue to work - which involved constant reading of paper products and the computer, by wearing a patch or by closing one eye. When I did get prism glasses, as my prism needs were changing so quickly, I opted to purchase separate reading glasses and distance glasses so it would be less costly over time. I was getting new glasses several times in a year. Fortunately, I was not required to attend meetings in person as that would have involved switching glasses between distance and reading glasses on a constant basis or closing one eye or wearing a patch. Working at home during the pandemic allowed me to continue working without difficulty. As my work life involved constant reading on the computer or papers, I decided to save my eyes for work. I stopped reading the daily newspaper when I developed TED and to this day, read only the newspaper headlines. I belong to two book clubs but have read only one book since I developed double vision. I now listen to audio books. I would like to take up knitting again but will only do that a little due to the dry eyes. My ophthalmologist and eye surgeon have noted that I have erosions on both my eyes. It has been determined that my eyes stay open when I sleep and I have been told that this is a result of TED. I now tape my eyes shut at night. I am claustrophobic and taping my eyes shut is anxiety producing, so I need to listen to an audio book to take my mind off it, so I can fall asleep.”*
- *“I barely go out. It’s too embarrassing to even go just shopping and I refuse to socialize.”*

- *“Overtime, I have lost interest in doing much of anything. I do not travel and I certainly do not allow my photos to be taken without sunglasses.”*
- *“My eyes are not comfortable. They hurt. Occasionally I take a Tylenol at night due to the discomfort. Prior to my eye muscle surgery, which has left my eyes looking more or less in the same direction, I was self-conscious about the proptosis of my eyes, and also the misalignment of one of my eyes, which looked inwards instead of straight ahead. I felt that I was being stared at by strangers when out in public. Eye surgery has corrected the misalignment. I still feel self-conscious about the way my eyes look, but much less so than I did.”*
- *“It was awful, stressful, uncomfortable and difficult to look at myself in the mirror.”*
- *“I’ve had to stop working since I couldn’t look at a computer screen anymore. My eyes are in constant, piercing pain. My eye muscles are stretched thin and my optic nerve is stretched. I constantly live in fear of losing my vision. My eyes are always red and dry. I’ve seen five ophthalmologists and none have not offered anything. We need Tepezza badly in Canada!”*

The five caregiver respondents were asked how TED has affected their daily life/quality of life and the daily lives of the loved ones they in their care. The comments included:

- *“The hopelessness and depression restricts our quality of life. We don’t go out, staying withdrawn from social situations. Activities are limited to walking alone short distances with the dog. [My loved one] can’t recognize faces at certain distances, so often ignores people around her. Movies, sporting events, driving, etc. are materially reduced. I am absolutely gobsmacked at how bad this disease has become, and yet endocrinologist visits are every six weeks and family physician visits every four months. Neither doctor seems to address the key issues other than to say “well, it takes time”. Two years into treatment, we seem to be getting worse while the blood work suggests the patient continues to bounce between hyper/hypothyrotic.”*

Turning to the *Frontiers in Endocrinology* article survey, three questions were posited relating directly to psychosocial quality of life issues experienced during the two months prior to taking the survey: 1) negative feelings and emotions; 2) self-perceived declines in well-being; and 3) self-perceived limitations in activities due to TED.

Individuals with TED frequently experience significant emotional burdens. Of the 394 respondents who answered the quality-of-life questions, approximately one-half (179, 45%) of respondents reported feeling depressed and/or anxious, and 174 (44%) expressed concerns about their appearance. Seventy-three (19%) reported avoiding public situations. One hundred and ninety-two (49%) respondents reported a decline in confidence and/or in feelings of well-being. Seventy-eight of 394 (20%) experienced a decline in achieving goals.

Activities most frequently self-reported as limited during the previous 2 months included reading (45%), driving (28%), socializing (23%), and working at employment (16%).

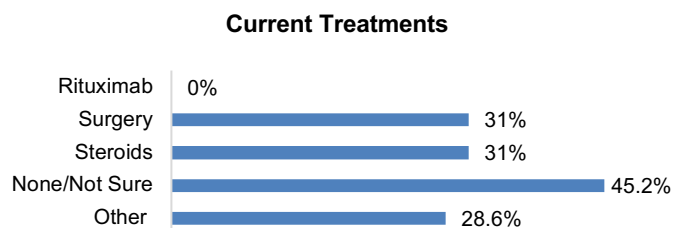
The following are direct quotes describing life with TED from the *Frontiers in Endocrinology* article survey:

- *“This is a very difficult disease that causes tremendous damage to one’s health, ability to be independent, and psychologic well-being. As is the case with other autoimmune diseases, it is unpredictable, triggers other, significant health problems, and is always with you.”*
- *“...My confidence has taken a huge knock because of my eyes that are bulging and teary and nose that’s runny.”*
- *“The doctors that I saw, while all highly qualified, almost uniformly discounted the psychological effects of TED. Several bluntly told me that my appearance should be of no concern since sight functionality had been restored after surgery. I was taken aback by this level of callous disregard for patient experience and concerns.”*
- *“My wife and I were dining out at a local restaurant and a young boy (8 or 9) having dinner with his family looked at me, turned to his dad and said... ‘look, dad, that man has scary eyes.’ My wife and I paid our bill and that [family’s] bill as well and left. I [have] never been out to eat in a restaurant since. This was about 5 years ago.”*

4. Experiences With Currently Available Treatments

Both patients and caregivers were asked about their experience with a number of current treatments for the management of TED. The graph below illustrates the lack of options utilized by the respondents – 31% have had surgery, 31% have been on/are on steroids, and over 45% have had none/not sure of any treatments they have had. Additional treatments noted to address some of the symptoms of TED were eyedrops and acupuncture.

None of the 42 respondents had taken rituximab.



Surgery:

While over 71% of both patients and caregivers reported not having had surgery, of the ones who had, most were done to correct double-vision and /or to adjust the eyelid. Many also reported long wait times for surgery and/or having to take time off work/school. Of the respondents who had had surgery, they were asked how the intervention as a treatment for TED had helped them and if they experienced any problems or complications afterwards. Some of the responses were:

- *“Surgery saved my vision and made me more comfortable. It corrected my double vision and adjusted the position of my eyelids so that I almost look like myself again.”*
- *“It corrected my double vision and reduced, but did not eliminate, the bulging.”*
- *“Vision loss was becoming serious. Decompression surgery helped reduce pressure on the optic nerve and reverse the damage. This did result in increased double vision. Strabismus [correcting double-vision] surgery has successfully corrected that. Eyelid surgery has helped with dry eyes. I’m still awaiting needed cataract surgery as a result of the prednisone.”*
- *“Decompression surgery to my left eye caused the inflammation to get worse, which took at least a year to settle down! I would not do that surgery again!!”*
- *“[One complication was] a lower eyelid retraction that required a graft in the lower eyelid.”*

Steroids:

Over 33% of the patient respondents and almost 10% of the caregiver respondents reported experience with steroids – leaving the majority as having never tried this treatment.

None of the respondents said that the steroids had been “very effective” at controlling their TED symptoms. In fact, almost half said that steroids were “not effective”. Only a slight majority of respondents answered that steroids had been “somewhat effective”.

Some of the stated **benefits** of steroids included:

- *“They eventually stopped the acute phase [of TED]. They reduced the impact of the swelling.”*
- *“Steroids kept my TED stable, but I still needed surgery.”*
- *“They provided some relief, but did not stop the progression of the disease.”*

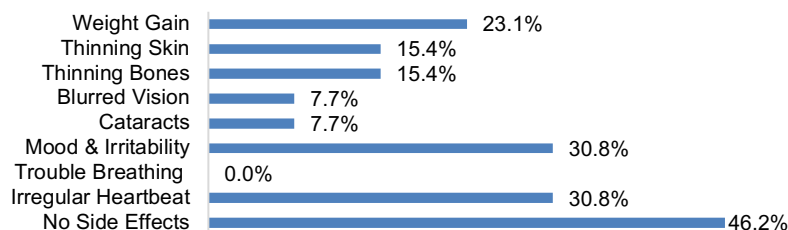
- “I was on steroids only for a few months when my TED was first diagnosed. There was no noticeable benefit, from my perspective.”

Respondents were asked what **disadvantages** they had experienced while using steroids and how those disadvantages impacted their daily life/quality of life. Some notable comments were:

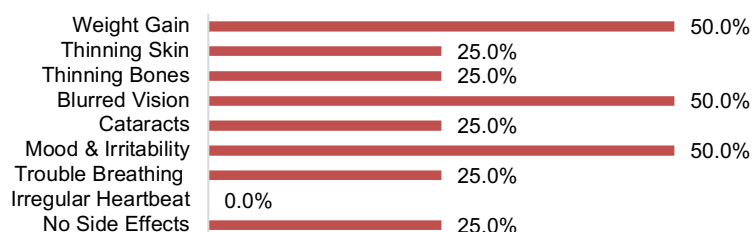
- “I had weight gain I was never able to lose.”
- “There were a lot of side effects (elevated glucose levels and I had a hard time sleeping for close to six months).”
- “I experienced fatigue, weight gain and moon face. I also developed cataracts. The fatigue meant that I spent more time napping, meaning I was not engaging in hobbies or spending time with friends or family. The weight gain and moon face mean that I'm less comfortable in my body, making me less confident overall and less comfortable in social situations, especially with new people. The cataracts are another issue that I need to deal with and surgery I need to have. Given my young age, the doctors recommend I get a lens that is not covered by the public system, meaning I'll need to spend money to ensure a longer term, higher quality of life. Until my cataracts are dealt with, driving at night is harder, which makes me less mobile and social, particularly in winter. The whole experience with TED and taking steroids prevented me from trying to have kids for three years. I'm not sure I'll have the chance to be a parent.”
- “Steroids didn't improve my symptoms.”

The two graphs below highlight the **side effects** experienced while using steroids as reported by both the patient and caregiver respondents. Weight gain, mood changes/irritability, blurred vision and fast/slow/pounding/irregular heartbeat or pulse were common, although several patients reported “none of the above”. Additional side effects noted were insomnia, fatigue, and moon face.

Patient: Side Effects



Caregiver: Side Effects



Only four of the 17 respondents said that they had **difficulty** taking steroids. Those difficulties included weight gain and managing pill intake.

There was roughly an even split between how people are **accessing/paying** for steroids; between public (government) insurance and private insurance. Only three people reported paying some or all of the cost out-of-pocket.

A few additional comments about being on steroids were:

- “They are absolutely horrible when taken more than 1-2 months.”

- *“I barely slept.”*
- *“Not an effective treatment.”*
- *“Again, it was just another treatment that worked for short period of time while using. It did help after surgeries to keep the inflammation down.”*

5. Improved Outcomes

Almost three quarters of the patients and caregivers took the time to share their thoughts on what improvements they would like to see in a new treatment that addresses the signs and symptoms of TED that are not achieved by currently available treatments.

- *“I’d like to have a treatment that would return my eyes to their former state.”*
- *“I would like to see treatments approved earlier. I was told to just watch the progression of my disease with no intervention!”*
- *“Less swelling, less eye pain, less redness and no sensitivity to light.”*
- *“Train more doctors to recognize TED and provide early treatments.”*
- *“Get Tepezza in Canada! Nothing else works! Steroids only mask the inflammation and is a stop gap for the pain. It doesn’t address the root cause of the antibodies attacking the fat behind our eyes!”*
- *“No weight gain would be great.”*
- *“It would be nice to see something that doesn’t just treat the symptoms, but treats the problem! Something that would restore the eyes to somewhat normal without those invasive surgeries and treatments.”*
- *“When I was first diagnosed with TED, I did some research online about treatments and was disappointed that the medication newly available in the USA was not available in Canada - and that there were no drug trials in which I could participate. I would like to see Tepezza available in Canada.”*
- *“Treatment of the disease itself instead of multiple surgeries to get something not perfect at the end.”*

6. Experience With Drug Under Review

None of the online survey respondents reported having had experience with Tepezza, however, interviews were conducted with three patients based in the US, all of whom have TED and were treated with Tepezza. Their stories are included below, including their experience with the drug under review (Tepezza).

Interview with Patient 1 (P1):

Experience with TED

P1 started experiencing symptoms of TED just before the start of the COVID-19 pandemic, including burning and redness in her eyes and some swelling. Her optometrist said to try eye drops, which she did for about for 10 days, but they didn’t work; in fact, her symptoms kept getting worse. She became sensitive to light, experienced more swelling and redness, and felt like she had sandpaper in her eyes.

Next, P1 went to an ophthalmologist who started her on steroid eye drops, but she couldn’t tolerate them. “It burned so bad, like, so bad, I could not take the steroid eye drops. I tried it for a couple of days, but it was horrific.”

In the spring she was referred to a neuro ophthalmologist who diagnosed her with Graves’ Disease and TED, as her symptoms continued to get worse. Nevertheless, P1 was determined to keep working (at a computer all day), even though it was very difficult because she often had double vision. “I had such bad light sensitivity that I had all the lights out at home, and I would take my cell phone and use the light from my cellphone to navigate around the house, and I wore sunglasses and a hat inside. The pain was horrific, like I’d never experienced. I couldn’t even lay flat for over a year. I slept in an almost upright position because if I reclined any further down, the swelling would get worse. I couldn’t take a shower and let water hit my face because of the pressure. It was horrific

and there's really nothing you can do. My eyes wouldn't close when I slept so I tried taping my eyes shut, but I couldn't stand the pressure. I got a silk eye mask, but I couldn't even take that pressure either and slept with my eyes open for about a year."

The swelling caused P1's entire face to change shape and in her words, she looked "horrific" and kept her eyes hidden with sunglasses. "At one point I asked the neuro ophthalmologist if they could remove my right eye. I couldn't take it anymore. The pain was that terrible. I was never getting any rest and was in constant pain...and nobody could do anything for me. My fear was I was going to go blind. I really felt like that's what was happening, and I thought, I can't believe I'm going to lose my eyesight. I had to fight not to get depressed."

Experience with Tepezza

Then in the fall, P1 was prescribed Tepezza. While her response to the treatment wasn't instantaneous, she could tell pretty quickly from only half a dose that she was starting to get better. She found the side effects manageable – the drug made her tired and she slept a lot – and she was able to organize her schedule so that she would work in the morning, and then take the afternoon off after her infusion to rest. Given her fear of needles, P1 found the infusions very hard at first but pushed through primarily because the people at the infusion centre were very supportive. Of the first infusion she said "It was very cold. I could feel it going in my veins and up my arm and across my chest and down my other arm."

"I'm proud to tell you my last treatment was over three years ago and I have not had any trouble and haven't needed to be retreated." P1 feels and looks almost back to normal with no more pain, pressure, disfiguration of her face or vision issues. Her eyes are still dry, and she still has some tearing especially at night because her eyes still don't shut completely, but she says they always will be like that, and that good eye hygiene is very important - as well as diet.

"On my chalkboard I have the word HOPE written vertically which stands for 'Have Only Positive Expectations'. Try to take a negative and make it where it's not quite that negative, so you don't succumb to the mental health piece of this disease, because it's just as important as the treatment of the disease. I cannot tell you how grateful I am [for Tepezza], and I hope there are many pharmaceutical companies out there that continue to do research, because it's so important for all of us to have a treatment."

P1 knows there are people who have had a multitude of very excruciating, painful surgeries that were not always successful, and so she believes that governments should pay for Tepezza for everyone who can benefit from it. "If I didn't have the treatment, I would have become an invalid, and the government would have had to pay for the me for the rest of my life when they could have just helped with a drug that I could have taken and been done."

Interview with Patient 2 (P2):

Experience with TED

P2 first noticed symptoms of TED in 2016 shortly after being treated with radioactive iodine therapy (RAI) for hyperthyroidism due to Graves' Disease. She later learned that studies have shown that RAI can trigger TED. "After I took the radioactive iodine treatment, I noticed my eyes started looking really strange in the mirror and I just didn't look like myself. I knew something was off. My eyes were kind of bulging out and I looked like I had a staring look on my face - it was really triggering to not recognise yourself in the mirror."

She then went to a neuro ophthalmologist who did a CT scan and diagnosed her with thyroid eye disease. "At that time, there were not really very many options at all to treat thyroid eye disease, and so I had to suffer through this for years." At diagnosis, P2's symptoms included red, itchy, watery eyes and light sensitivity, with some pain, swelling and pressure. "I remember going to work every single day and my eyes would be watering as soon as I arrived and then it would get even worse because of the bright fluorescent lights. I was just so embarrassed, and I didn't really want to interact. I avoided socializing and really lived a very isolated life. It was pretty devastating."

The first couple of years with TED were the most painful for P2. Some of her symptoms did lessen over time or stabilize, like the itchiness and wateriness, but the appearance part didn't seem to go away. She tried different things to ease her symptoms like eye drops and radiation therapy (which she said didn't work at all), even speaking to a surgeon about restoring her appearance. However, she was told she would have to wait until she was out of the active stage of the disease.

Experience with Tepezza

It was only by chance that P2 found out about Tepezza. "I honestly had an incredible experience taking the medication. I would not change it for the world. It was such a pivotal point in my life." She hoped that the treatment would help her eyes come back further in

their sockets and also get rid of the fluid underneath, and she believes that Tepezza has been a “game-changer” for her because it got rid of the fluid and the swelling. “I did experience quite a few side effects that really didn’t bother me at all – the ones that are very commonly known, like muscle spasms, brittle nails, a little bit of hair loss and a little bit of ringing in the ears that went away, but no hearing loss. I am grateful that this solution [Tepezza] exists and that there’s hope to get our lives back. Like any drug, it’s not going to be the solution for everyone, but it will help so many people. When people see me today, they would never even be able to tell that I had thyroid eye disease.”

Interview with Patient 3 (P3):

Experience with TED

P3 was diagnosed with Graves’ Disease and treated for that condition, and then about two years later, was diagnosed with thyroid eye disease. At the time, she wasn’t experiencing any noticeable physical changes or symptoms that are very common with TED. The only reason that she received a diagnosis was because her parents noticed a change in the shape of her eyes.

For the next six to seven years, P3’s TED was pretty stable with no notable symptoms, other than dry eyes, which she treated with eyedrops. She saw an oculoplastic surgeon about once a year who measured her eyes for any changes. Then about 10 months after having an inflamed cyst removed from under her left eyebrow, her left eye started to protrude and change shape and that’s when the symptoms of thyroid eye disease started to manifest.

“I had double vision, usually when I looked very far left or very far right, and I had very bad tunnel vision when I was driving, especially at night because all the lights were very bothersome.” The pain and the pressure, more often than not in the mornings after waking up, felt like there was like a “block of cement sitting on the side of my face” and became psychologically very difficult for her to manage. “I would wake up and have to spend 30 minutes to peel myself out of bed, massage my face and put something cooling and then some heat on, before I could actually open my eyes comfortably and be able to get ready for the day.” For the dryness and itchiness in her eyes, P3 frequently used eye drops and eye serums at night. She also found acupuncture and craniosacral therapy relieved the pressure and helped her through the emotions of the disease.

“Psychologically is probably where the disease hits the most. It really does destroy self-esteem, takes a big hit at your confidence, and definitely spills into the way that you show up in the world. I didn’t want to meet new people. I didn’t want to date. I didn’t want to go to parties. I didn’t want to hang out with my friends. I didn’t want to hang out with family.” P3 was able to push through at her job where she is at her computer all day and was able to function, but emotionally it was very challenging.

She found following a low inflammatory diet was really helpful, as well as getting enough sleep. “Sleep was uncomfortable, but it was definitely crucial that I was getting enough, and it was pretty daunting because I had to sleep upright for about a year, using a wedge pillow, because the pressure was really bad.”

At her first appointment with a new oculoplastic surgeon, P3 was ready to discuss having surgery, because that was the only option she knew about at the time. But then she was told about Tepezza, which was just about to be approved in the US. “All those symptoms – I wanted them gone!”

Experience with Tepezza

She started Tepezza in the middle of the pandemic and found the infusions very easy and quick, and afterwards was able to go about her day without any downtime. “I didn’t have any side effects that limited me day-to-day, other than feeling a little bit tired after the infusions and a little bit of ear ringing, which didn’t last more than maybe 5 to 10 seconds once or twice a week - so it was very, very minor.” Another possible side effect was the temporary loss of menstruation while she was receiving treatment, but it returned about a month after her last infusion.

“After the first two to three infusions, I noticed all of the pressure was starting to go away. My eye sensitivity and light sensitivity was becoming a lot better. Even going outside when it was overcast, I didn’t have to wear sunglasses anymore. And I didn’t have as much dryness and didn’t have to rely on eye drops throughout the day as often. When I look at my before and after pictures or even my photos after each of my eight infusions, I think it was after infusion five or six that you could physically see the difference in the bulging of my eye. It went from having that big open stare and significant space above and below my pupil, to being completely shrunken down.”

P3 continues to use eye drops and eye serum at night to keep her eyes lubricated. “I’m very grateful. This is not something that is handicapping me anymore. The sensitivity and the pain and pressure are completely gone, and I haven’t had any resurgence of any of that, which is great.”

After her seventh or eighth infusion, P3 felt well enough that she was ready to start dating again. “Thyroid eye disease is very debilitating, even just to live with a rare disease, because it impacts your emotional health, your mental health and it spills into the way that you show up in the world, the way you perform at work and the way you show up for your family, for your loved ones. And so, it really does have this big domino effect – even financial restraints are a huge part of that, too.”

P3 believes that there should be government funding for Tepezza in Canada. She didn’t know why that couldn’t be considered, because not everybody has their own insurance or their own income to pay for these medications. She said that if there can be any government support to help people pay for Tepezza, that would have the opposite domino effect and improve upon all the different pillars of their health.

Frontiers in Endocrinology Survey

The following are some narrative commentsⁱⁱ from the *Frontiers in Endocrinology* survey from patients who have used Tepezza:

- *“I’m grateful I was able to take Tepezza a few months after being diagnosed.”*
- *“Because of Tepezza I am stable right now. Eye pressure was down after Tepezza but after almost two years pressure is back to high normal in each eye.”*
- *“Tepezza helped with bulging and redness and pressure, but I feel the above symptoms slowly returning...”*
- *“I’ve used Tepezza with limited success for eye bulging and redness, however I would consider a second course of treatment.”*
- *“I had one round of Tepezza and it helped. I think I could benefit from additional treatment.”*
- *“My doctor thinks a second round of Tepezza will improve my reactivated symptoms.”*
- *“I did Tepezza and it worked well, but my eyes still bulge, and I do not look the same as I did before TED. I still get swelling and have some double vision.”*

7. Companion Diagnostic Test

N/A

8. Anything Else?

TED Education

The need for TED education seems to be a high priority judging from the results in this survey not only for the general public but for physicians as well. Many patients indicated that it took a long time before they were properly diagnosed. This caused considerable anxiety and suffering until some form of treatment was started. TFC provided an educational webinar on TED for its members as well as the to the general public in April 2022, which was recorded and available for patient viewing. We plan to have another education webinar in 2025 using a panel of TED patients who will describe their journey with the disease. A guest endocrinologist will provide commentary. We plan to invite the medical community as well.

Treatment

With the exception of TED surgery, the current treatment could benefit from some improvement. Steroids do not seem to provide much help. Lack of awareness of mental health for TED patients could be improved within the medical community. Mental health support should be integrated into all types of treatment for TED and communicated to the medical community.

Appendix: Patient Group Conflict of Interest Declaration

To maintain the objectivity and credibility of the CADTH 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.

The Thyroid Foundation of Canada (TFC) completed the submission independently with external support from a health care consulting service provider.

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.

As noted above, TFC completed the submission independently with external support from a health care consulting service provider.

3. List any companies or organizations that have provided your group with financial payment over the past 2 years AND who may have direct or indirect interest in the drug under review.

Table 1: Financial Disclosures

Check appropriate dollar range with an X. Add additional rows if necessary.

Company	\$0 to 5,000	\$5,001 to 10,000	\$10,001 to 50,000	In Excess of \$50,000
N/A				

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: Laz Bouros

Position: President

Patient Group: Thyroid Foundation of Canada

Date: November 1, 2024

References:

ⁱ Smith TJ, Hegedüs L, Lesser I, Perros P, Dorris K, Kinrade M, Troy-Ott P, Wuerth L and Nori M (2023) How patients experience thyroid eye disease. *Front. Endocrinol.* 14:1283374. <https://doi.org/10.3389/fendo.2023.1283374>

ⁱⁱ <https://qdatf.org/resources/tes-survey-2022-2023/>

CADTH Reimbursement Review Clinician Group Input Template

Clinician Group Input

CADTH Project Number: SR0853-000

Generic Drug Name (Brand Name): Teprotumumab (Tepezza)

Indication: Thyroid eye disease (TED)

Name of Clinician Group: Canadian Society of Oculoplastic Surgeons (CSOPS)

Author of Submission: Dr. Audrey Chan

1. About Your Clinician Group

The Canadian Society of Oculoplastic Surgery (CSOPS) represents a group of ophthalmic surgeons who have additional training and experience in the highly specialized fields of eyelids, orbit, nasolacrimal system and facial aesthetics. The purpose of CSOPS is to advance education, research, and the quality of clinical practice in these areas of expertise (<https://www.csops.com/>).

2. Information Gathering

Information was gathered from the literature, product monograph, and consultations by the author of the submission with colleagues. Editorial support was provided by a medical writer (Cynthia N. Lank Editorial Services, Halifax, Nova Scotia).

3. Current Treatments and Treatment Goals

Thyroid eye disease (TED, or thyroid orbitopathy or Grave's orbitopathy) is an autoimmune disease in which autoantibodies (TSHRAb or TSI) directed to receptor cells (TSHR) of the orbital and periorbital tissues induce an immune cascade, inflammation, fat expansion and irreversible fibrosis. TED affects the eyelids, conjunctiva, extra-ocular muscles, fat, optic nerve, and connective tissue within the orbit. Women (usually middle-aged) are four to five times more frequently affected than males, but males are often more severely affected. TED may appear before or after a diagnosis of hyperthyroidism, and may also occur in persons with hypo- or euthyroidism. The eyes of a patient with TED become red, irritated and watery, and the patient may complain of blurred vision. The eyelids may swell, the eyes may bulge forward (proptosis) and there may be aching behind the eye. The eyelids may retract upward giving the patient a characteristic "stare", and dryness of the eye is a consequence. When the disease involves the extra-ocular muscles, double vision and incapacities in daily life will occur. When the inflammatory process progresses, proptosis usually increases with more exposure of the anterior surface of the eye. The exposed cornea becomes irritated and may ulcerate. With the expansion of the orbital tissues and particularly the extra-ocular muscles, pressure on the optic nerve may lead to decreased colour vision, visual field loss and global vision loss that can be permanent.

TED is a disease that is still not well understood. It has a continuum of presentations, ranging from mild to moderate to severe. TED is classified as *active* when it presents with inflammatory signs and symptoms, or *inactive* when no inflammatory signs are present. However, each case is unique, as some dysthyroid optic neuropathy (severe TED) can also be present without any signs of inflammation.

In the context of a patient who presents with signs and symptoms of TED, the thyroid function is the first organ to be tested. The first phase of treatment for TED involves treating the active disease (see above) in order to preserve sight. Initially, patients may only require artificial tears, lubricating ointment, and occasionally taping closed the eyelids at night, for comfort. If the inflammation is excessive, high-dose steroids (IV or oral) are prescribed for six to 12 weeks and then discontinued. Orbital irradiation is considered an adjunct treatment for moderate to severe disease. Alternative steroid-sparing immunomodulators may be trialled if the disease continues to be resistant to treatments. If at any time during this active phase sight becomes endangered, urgent surgery to expand the orbit cavity (orbital decompression) is performed. Once the active phase is controlled, patients are assessed for residual disfigurement and offered reconstructive procedures. However, even in patients whose disease has become stable and chronic, quality of life is severely impacted by the long-term effects on vision, appearance, psychosocial impairment, and economic status. An ideal treatment would avoid disease onset, delay disease progression, reduce signs and symptoms, preserve intact vision, and avoid negative impacts on quality of life.

Currently, there are no North American or European clinical practice guidelines that include teprotumumab, as it was not widely available at the time of guideline development.

4. Treatment Gaps (unmet needs)

4.1. Considering the treatment goals in Section 3, please describe goals (needs) that are not being met by currently available treatments.

Currently, there are no treatments that prevent or reverse the course of the disease. The current mainstay of treatment for active TED is high-dose steroids. There are unfortunately many side effects of high-dose steroids (liver failure, diabetes, hypertension, insomnia, psychosis, etc.). A subset of patients will incompletely respond to steroids or be unable to continue treatment due to intolerance. Despite current treatments that target symptoms, many patients have persistent vision problems and significant facial disfiguration, both of which negatively impact employment and quality of life. No treatment apart from teprotumumab has been shown to reduce proptosis.

5. Place in Therapy

5.1. How would the drug under review fit into the current treatment paradigm?

The overexpression of the insulin-like growth factor 1 receptor (IGF-1R) in both the active and chronic disease phases appears to be a key pathophysiologic mechanism for disease. Teprotumumab, a fully human monoclonal immunoglobulin, specifically binds and blocks signal transduction of the IGF-1R and IGF-1R/TSHR complex on orbital fibroblasts. It is the first approved treatment that can reverse proptosis.

Teprotumumab was recently approved by the FDA for the treatment of TED in the US. In previous Phase 2 and Phase 3 randomized, double-masked clinical trials (NCT01868997 and NCT03298867), teprotumumab was more effective than placebo in reducing proptosis, diplopia and inflammation in patients with active TED (patients with ocular symptoms who presented within 9 months of baseline assessment with a clinical activity score (CAS) of ≥ 4). (Smith TJ, et al. *Teprotumumab for thyroid-associated ophthalmopathy*. *N. Engl. J. Med.* 2017;376:1748–61. Douglas RS, et al. *Teprotumumab for the treatment of active thyroid eye disease*. *N. Engl. J. Med.* 2020;382:341–52.)

In a retrospective review of 31 consecutive patients with chronic stable TED (>2 years) who had received ≥ 3 infusions of teprotumumab, patients had measurements of proptosis, and calculation of the CAS and diplopia scores pre- and post-therapy. Five-point strabismus scores were also calculated. Patients who had imaging within four months before therapy and six weeks post-therapy underwent orbital 3D volumetric analysis. Teprotumumab significantly reduced proptosis, inflammation, diplopia, strabismus and orbital soft tissue volume in patients with chronic TED. (Ugradar S, et al. *Teprotumumab for the treatment of chronic thyroid eye disease*. *Eye (Lond)*. 2022 Aug;36(8):1553-1559.)

While current treatments are available to treat the symptoms of TED, many patients experience chronic and significant vision and quality-of-life impairments, as well as disfigurement. Teprotumumab is the first approved treatment targeting the underlying pathophysiologic mechanism of TED, with the potential to spare patients more invasive surgical treatment. In the US, many practitioners are using it as first-line treatment, even bypassing steroids as the first line, particularly in cases where patients have diplopia, as the above study demonstrated that teprotumumab specifically improves diplopia. If teprotumumab becomes available and funded in Canada, it will change how TED is managed and will likely become either first-line (in specific cases) or second-line (after IV steroids) medical treatment for active TED patients. However, depending on cost, steroid treatment may remain the first-line medical treatment. Newly developed clinical practice guidelines will likely include teprotumumab in their treatment algorithm.

5.2. Which patients would be best suited for treatment with the drug under review? Which patients would be least suitable for treatment with the drug under review?

Active TED patients are most likely to respond to teprotumumab. However, as we currently have no medical treatment at all for chronic TED patients, teprotumumab may fill this niche – studies are pending. Patients in most need of intervention are those who inadequately respond to steroids or are unable to tolerate steroid treatment and those with proptosis and/or diplopia. These patients would be identified by clinical judgement, with no need for companion diagnostic tests, and no risk of misdiagnosis.

The drug has been approved in the US for the treatment of TED regardless of disease activity or duration. According to the Phase 2 and 3 randomized controlled trials, a full recommended course of treatment is eight IV infusions (given in the arm), with one infusion delivered every three weeks.

In the US, its practical use varies by health insurance providers, but is typically approved for euthyroid adults with active, moderate to severe TED with no immediate sight-threatening disease or imminent surgery/radiation. It must be requested by an endocrinologist or ophthalmologist and is typically approved for

an initial eight-week course. Some policies include chronic disease as an inclusion criterion, while others make no mention of or use chronicity as an exclusion criterion. Furthermore, some policies require prior high-dose steroid use to show failure/intolerance/inadequate response, while others make no reference to glucocorticoid/steroid use. As new evidence is published about teprotumumab's use in chronic TED, these policies will likely evolve.

5.3 What outcomes are used to determine whether a patient is responding to treatment in clinical practice? How often should treatment response be assessed?

Presently, a clinically meaningful response would be assessed using trial outcome metrics (which align with clinical practice outcomes), namely a proptosis reduction of ≥ 2 mm at week 24 (secondary endpoint, Phase 4 study) of treatment. (Douglas RS, et al. A randomized, quadruple-masked, placebo-controlled, multicenter trial to evaluate the efficacy and safety of teprotumumab in patients with chronic (inactive/low CAS) Thyroid Eye Disease. Presented at: ENDO 2023; June 15-18, 2023; Chicago, IL. Poster SAT-459.) In the clinical setting, ophthalmologists would be assessing patients for a decrease in inflammation seen on clinical exam, stability or improvement of diplopia, proptosis, lid retraction, lid swelling, visual acuity, and redness. Improved comfort for the patient is seen almost immediately with decreased inflammation.

5.4 What factors should be considered when deciding to discontinue treatment with the drug under review?

Infusion reactions can occur during or up to 24 hours after infusion. Severe infusion reactions may necessitate discontinuation of treatment. According to the product monograph, the most common side effects are muscle cramps or spasms, nausea, hair loss, diarrhea, fatigue, hyperglycemia, hearing problems, taste changes, headache, dry skin, weight loss, nail problems, and changes in menstruation.

Prescribing physicians must consider the warnings and precautions outlined in the product monograph.

5.5 What settings are appropriate for treatment with [drug under review]? Is a specialist required to diagnose, treat, and monitor patients who might receive [drug under review]?

The drug is administered as an IV infusion in the outpatient setting by a qualified healthcare professional. Depending on the region, an ophthalmologist (typically an oculoplastic surgeon), endocrinologist, internal medicine physician, or immunologist can prescribe the drug. Patients should be followed by an ophthalmologist for treatment and response.

6. Additional Information

7. Conflict of Interest Declarations

To maintain the objectivity and credibility of the CADTH drug review programs, all participants in the drug review processes must disclose any real, potential, or perceived conflicts of interest. This conflict of interest declaration is required for participation. Declarations made do not negate or preclude the use of the clinician group input. CADTH may contact your group with further questions, as needed. Please see the [Procedures for CADTH Drug Reimbursement Reviews](#) (section 6.3) for further details.

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

A medical writer (Cynthia N. Lank from Halifax, Nova Scotia) reviewed the first draft of this submission and revisions from the reviewing physicians. All revisions were reviewed and approved by the lead author of the submission.

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

N/A

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. **Please note that this is required for each clinician who contributed to the input — please add more tables as needed (copy and paste). It is preferred for all declarations to be included in a single document.**

Declaration for Clinician 1

Name: Ahsen Hussain

Position: Associate Professor of Ophthalmology, Dalhousie University

Date: 12-10-2024

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

Table 1: Conflict of Interest

Declaration for Clinician 1

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
Amgen	X			

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 2

Name: Ryan Eidsness

Position: Associate professor University of Saskatchewan

Date: 12-10-2024

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

Table 2: Conflict of Interest Declaration for Clinician 2

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 3

Name: David Plemel

Position: Assistant Professor in the Department of Ophthalmology and Visual Sciences Western University

Date: 13-10-2024

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

Table 3: Conflict of Interest Declaration for Clinician 3

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 4

Name: Carson Schell

Position: Assistant Clinical Professor of Ophthalmology, University of Saskatchewan

Date: 13-10-2024

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

Table 4: Conflict of Interest Declaration for Clinician 4

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 5

Name: Audrey Chan

Position: Assistant Professor, University of Alberta Department of Ophthalmology

Date: 10-10-2024

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

Table 5: Conflict of Interest Declaration for Clinician 5

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
Amgen	X			

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 6

Name: Dr David Jordan

Position: Professor of ophthalmology, University of Ottawa

Date: 14-10-2024

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

Table 6: Conflict of Interest Declaration for Clinician 6

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 7

Name: Dr. Christian El-Hadad

Position: Assistant Professor of ophthalmology and visual sciences, McGill University

Date: 15-10-2024

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

Table 7: Conflict of Interest Declaration for Clinician 7

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
Amgen	X			

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 8

Name: Jaime F. Badilla Garcia

Position: Assistant Clinical Professor, Department of Ophthalmology and Visual Sciences, University of Alberta

Date: 19-10-2024

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

Table 8: Conflict of Interest Declaration for Clinician 8

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company

Declaration for Clinician 9

Name: Georges Nassrallah

Position: Assistant Professor of Ophthalmology, University of Toronto

Date: 23-10-2024

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

Table 9: Conflict of Interest Declaration for Clinician 9

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 10

Name: N Georges Hanna

Position: Private Practice and off-site Dalhousie affiliations Saint John NB

Date: 23-10-2024

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

Table 10: Conflict of Interest Declaration for Clinician 10

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 11

Name: Kelsey Roelofs

Position: Assistant Professor of Ophthalmology, University of Alberta

Date: 23-10-2024

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

Table 11: Conflict of Interest Declaration for Clinician 11

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
Amgen	X			

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 12

Name: Erika Massicotte

Position: Assistant Professor of Ophthalmology, University of Montreal

Date: 23-10-2024

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

Table 12: Conflict of Interest Declaration for Clinician 12

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
Amgen	X			

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 13

Name: Evan Kalin-Hajdu

Position: Associate professor of Ophthalmology

Date: 23-10-2024

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

Table 13: Conflict of Interest Declaration for Clinician 13

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
Amgen	X			

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 14

Name: Andrew Ting

Position: University of Alberta

Date: 23-10-2024

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

Table 14: Conflict of Interest Declaration for Clinician 14

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 15

Name: Patrick Daigle
 Position: Assistant professor of Ophthalmology, University of Montreal
 Date: 23-10-2024

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

Table 15: Conflict of Interest Declaration for Clinician 15

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
Amgen	X			

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 16

Name: Sarah Simpson
 Position: Assistant Professor of Ophthalmology, Queen's University
 Date: 23-10-2024

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

Table 16: Conflict of Interest Declaration for Clinician 16

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 17

Name: Isabelle Hardy
 Position: associate professor of ophthalmology, University of Montreal
 Date: 24-10-2024

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

Table 17: Conflict of Interest Declaration for Clinician 17

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
Amgen	X			
Roche	X			

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 18

Name: Marie-Pier Matton

Position: Clinical instructor of Ophthalmology, University of Montreal

Date: 24-10-2024

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

Table 18: Conflict of Interest Declaration for Clinician 18

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 19

Name: Navdeep Nijhawan

Position: Associate Professor, University of Toronto

Date: 25-10-2024

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

Table 19: Conflict of Interest Declaration for Clinician 19

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
N/A				

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 20

Name: Bryan Arthurs

Position: Clinical Professor of Ophthalmology

Date: 26-10-2024

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

Table 20: Conflict of Interest Declaration for Clinician 20

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000
Amgen	X			

* Place an X in the appropriate dollar range cells for each company.

Declaration for Clinician 21

Name: Annie Moreau

Position: Associate Professor of Ophthalmology, Université Laval

Date: 26-10-2024

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

Table 21: Conflict of Interest Declaration for Clinician 21

Company	Check appropriate dollar range*			
	\$0 to \$5,000	\$5,001 to \$10,000	\$10,001 to \$50,000	In excess of \$50,000

N/A				
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* Place an X in the appropriate dollar range cells for each company.