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**2021** Category watch:  
The impact of  
new drugs.

A closer look at diabetes,  
migraine and multiple sclerosis.



Drug therapy options for Canadians diagnosed with diabetes, migraine or multiple sclerosis have expanded over the past few years. Many of the new options represent significant advances in treatment, particularly for those who struggle to manage their condition or who could not use previous therapies.

What impact have the new entries had so far on private drug plans?

Without exception, the breakthrough drugs are transforming their respective markets. Patients who meet the treatment criteria appear to be steadily adding or switching to one of the new therapies, based on an analysis of claims data pulled from TELUS Health's database of more than 12 million privately insured individuals. Average eligible costs per claim and claimant are also steadily rising, reflecting the new drugs' higher price points.

““ These breakthrough drugs promise a return on investment derived from greater productivity, fewer sick days, reduced drug costs in other areas, as patients reduce or stop other medications, and lower disability,” said Mark Jackson, Consultant Pharmacist.

“At the same time, measures to optimize adherence and monitor utilization across all drug classes are more important than ever to manage overall costs.” ”

## New drugs shift utilization patterns in diabetes.



Diabetes treatments ranked second in the top 10 drug categories by eligible costs in 2019, reported the [2020 TELUS Health Drug Data Trends & National Benchmark](#) report. The diabetes category has held that rank for well over five years, and current trends indicate it will continue to do so for the foreseeable future.

Two main factors drive the steady growth of the diabetes category: increased utilization overall and increased prescribing of new, higher-cost treatments.

From 2016 to 2020, the average annual rate of growth in the number of claims for drugs and supplies used for type 1 and type 2 diabetes was 7.5%. The number of claimants increased by an annual average of 5.1% over that five-year period. Total eligible costs for these claims climbed 12.9% annually on average, to reach \$770.5 million (compared to \$476.1 million in 2016).

The estimated prevalence of diabetes in Canada is 9.3%, or 3.5 million Canadians.<sup>1</sup> Approximately 90% of cases are type 2 diabetes, and most pharmaceutical development in the past decade has targeted this patient population. The focus has been on second lines of therapy for those patients not able to manage their diabetes despite taking medication and efforts to make lifestyle changes. Research in Canada and globally consistently shows that less than half of patients with type 2 diabetes are able to maintain blood sugar levels at recommended targets.<sup>2</sup>

Stepping back, the first line of therapy for type 2 diabetes is metformin, as recommended by clinical practice guidelines. The drug class has long been fully genericized, and the average annual eligible cost per claimant is \$121.

TELUS Health claims data reveals that 56.5% of all diabetes claimants use metformin. That share has slowly declined since 2016, when it was 61.8%, which likely reflects the growing utilization of the new second lines of therapy among claimants with type 2 diabetes (who may be taking a second-line therapy in addition to metformin).

<sup>1</sup> Houlden RL. 2018 Clinical Practice Guidelines. Introduction: Diabetes Canada Clinical Practice Guidelines Expert Committee. *Can J Diabetes*. 2018;42:S1-S5.

<sup>2</sup> Khunti K, Ceriello A, Cos X, et al. Achievement of guideline targets for blood pressure, lipid, and glycaemic control in type 2 diabetes: A meta-analysis. *Diabetes Res Clin Pract*. 2018;Mar 137:137-48.




Three main classes of second-line therapies for type 2 diabetes have seen steady uptake since their launches in the past decade: DPP-4s (the acronym for dipeptidyl peptidase-4 inhibitors), SGLT2s (sodium-glucose cotransporter-2 inhibitors) and GLP-1 RAs (glucagon-like peptide-1 receptor agonists). By the end of 2020, 60.5% of all diabetes claimants were using one of these second lines of therapy, up from 39.4% in 2016 (keeping in mind that, while only those with type 2 diabetes would be prescribed these medications, the data cannot differentiate between claimants with type 1 or type 2 diabetes). Chart 4 breaks down their respective rates of utilization.

These three classes of second-line therapies accounted for 49.3% of all eligible costs in the diabetes category in 2020, compared to 37.9% in 2016. In contrast, metformin held a 5.2% share of eligible costs in 2020, down from 7.2% in 2016.

The combined average eligible cost per claim for these three second-line therapies is \$213, compared to \$23 per claim for metformin. The combined average annual eligible cost per claimant is \$1,312, compared to \$121 annually per claimant for metformin.

Prescriptions for these second-line therapies will likely continue to climb, given recent updates to clinical practice guidelines in Canada (in 2020) and the U.S. that speak to their use for patients at high risk of cardiovascular or chronic kidney disease—including for patients with blood sugar levels that are at target.

Special attention should perhaps be paid to GLP-1 RAs, which until recently had required administration by injection. 2020 saw the launch of Rybelsus, the first oral GLP-1 RA. While DPP-4s and SGLT2s currently overshadow GLP1-RAs in terms of both claims and claimants, the new oral GLP-1 RA may shift utilization patterns. This is significant because the average eligible cost per claim for a GLP-1 RA, at \$333, is double that of a claim for a DPP-4 (\$159) or an SGLT2 (\$148). Similarly, the average annual eligible cost per GLP-1 RA claimant is \$1,885, compared to \$939 for a DPP-4 claimant and \$844 for an SGLT2 claimant. As a result, if prescriptions do grow for GLP-1 RAs, overall eligible costs will increase at a faster pace.



In fact, GLP-1 RAs' share of total eligible costs already rivals that of the other two classes—coming in at 15.7% by the end of 2020, compared to 17.3% for DPP-4s and 16.3% for SGLT2s—despite a much lower share of claimants (see Chart 3 for details).

“The diabetes category will continue to evolve substantially in the next few years, as even greater attention is paid to the large number of people with type 2 diabetes who are having difficulty managing their disease,” said Jackson. “All treatment options must be on the table, since drugs work differently in different people. However, plans need to encourage the use of the most cost-effective therapies wherever appropriate to ensure the sustainability of the plan.”

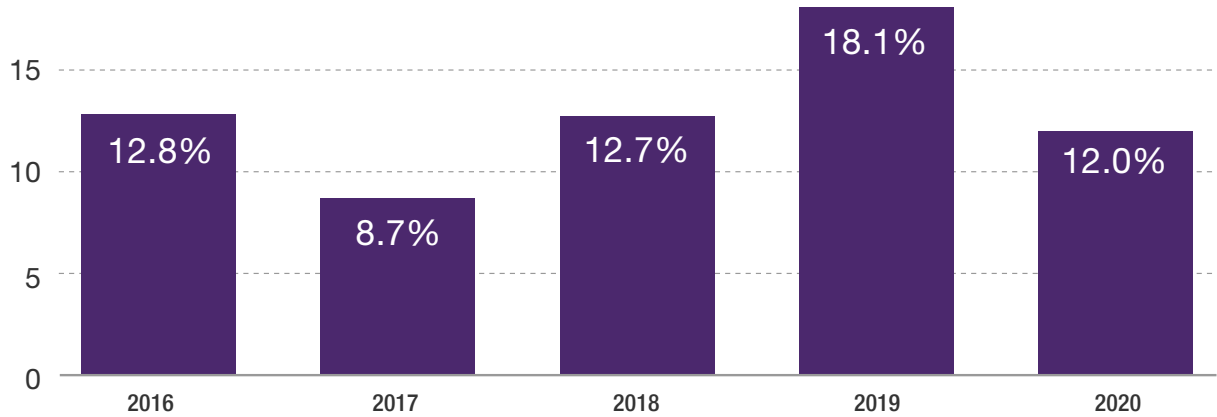
## Monitoring part of the diabetes picture.

Accurate monitoring of blood sugar levels is critical for successful diabetes management. New continuous glucose monitoring (CGM) systems and flash glucose monitoring systems, recommended for patients with type 1 or type 2 diabetes who use insulin as part of treatment and who may be having difficulty reaching target blood sugar levels, use a wearable sensor to automatically and continuously measure blood sugar levels. It removes the need for finger pricks and test strips, required by traditional glucose monitors.

Freestyle Libre is one example of a flash glucose monitoring system, and TELUS Health claims data shows a rapid level of uptake since its launch in 2016. Triple- and double-digit growth rates have resulted in more than 56,000 claimants and total eligible costs of \$90.3 million by the end of 2020. The average annual eligible cost per claimant was \$1,611.



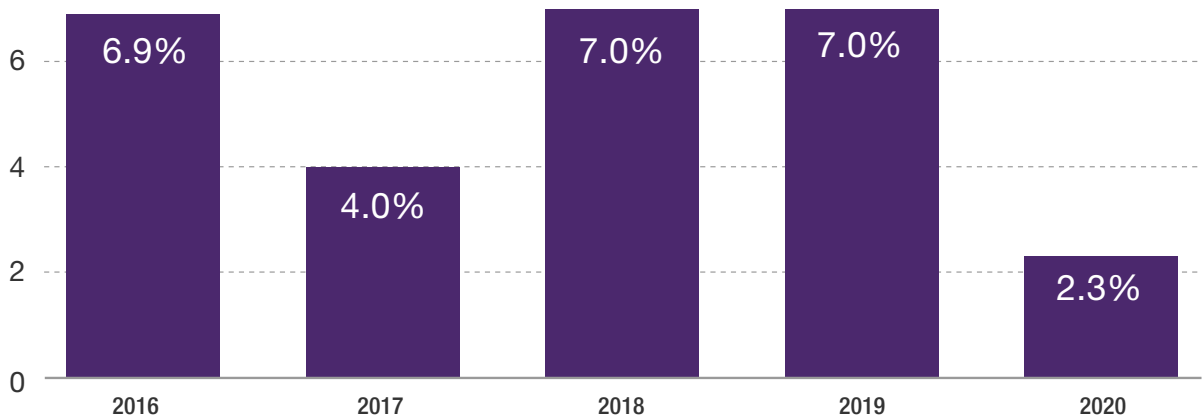
CHART 1 | Diabetes: Change in total eligible costs, 2016-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



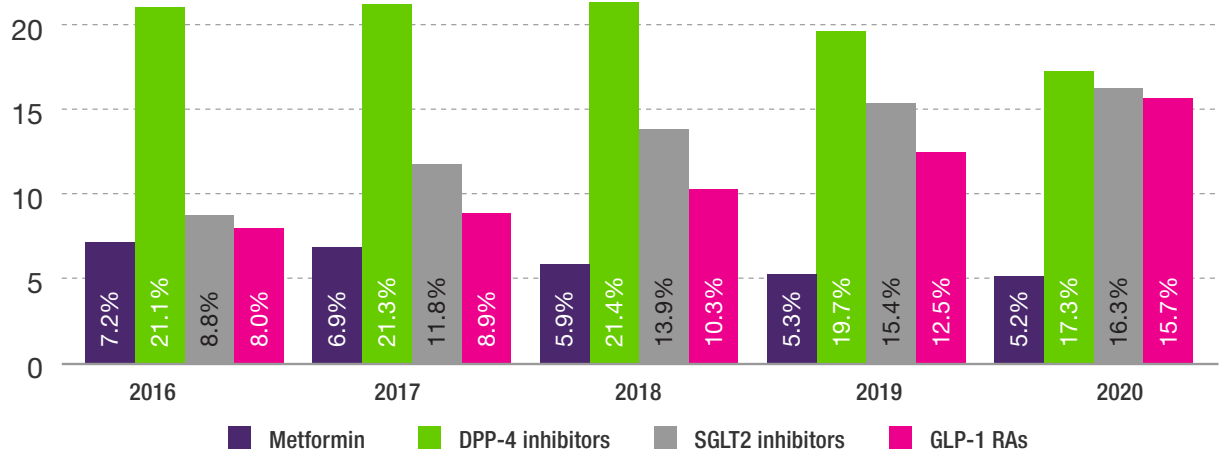
CHART 2 | Diabetes: Change in total claimants, 2016-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



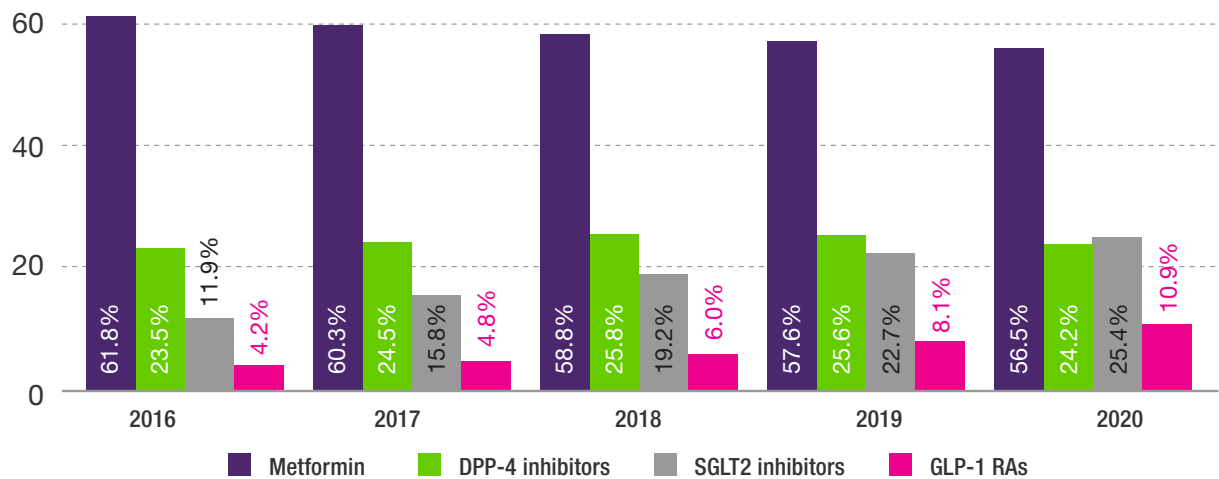
CHART 3 | Diabetes: Share of total eligible costs by drug class, 2016-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



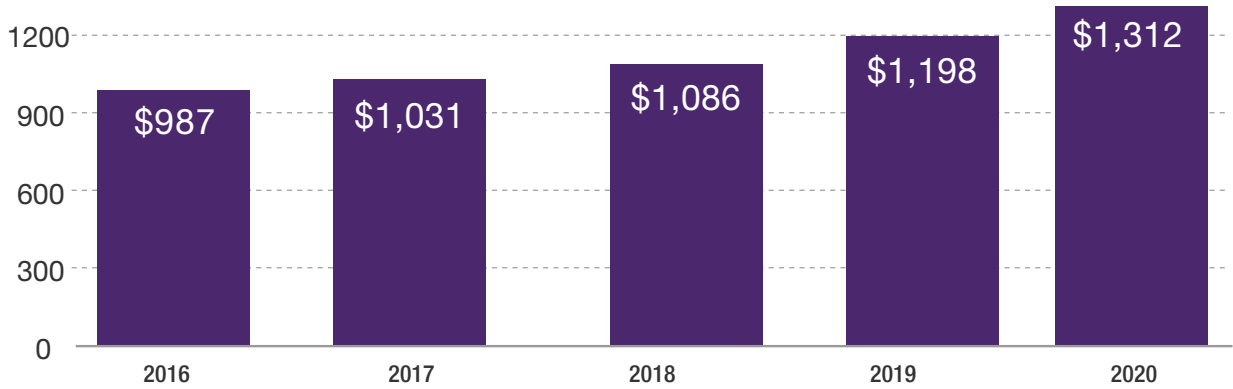
CHART 4 | Diabetes: Share of total claimants by drug class, 2016-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



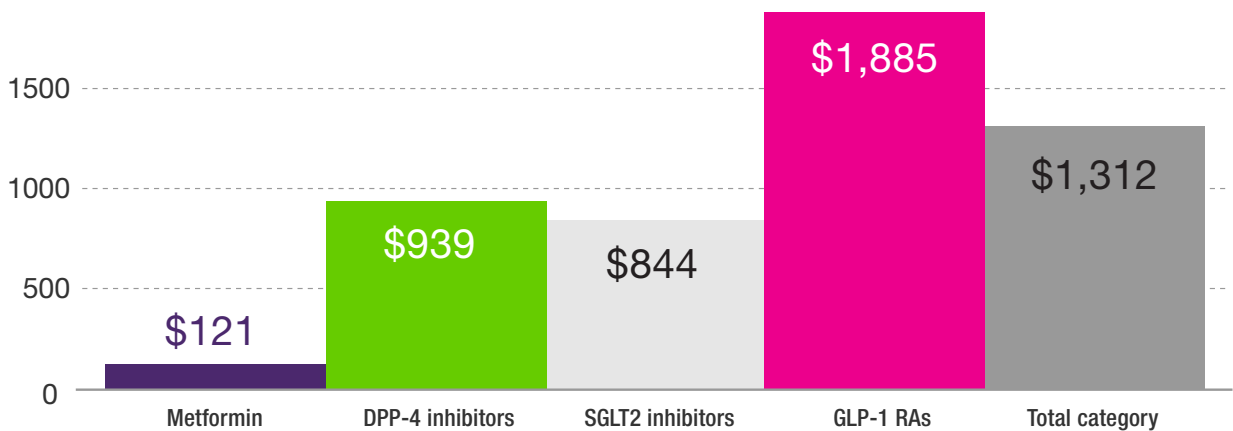
CHART 5 | Diabetes: Average eligible cost per claimant per year, 2016-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



CHART 6 | Diabetes: Average eligible cost per claimant in 2020, by drug class and for the total category.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).





## CGRPs for migraine strengthen position.

The first-ever drug for the prevention of migraine headaches, Aimovig, became available in Canada in 2018. Emgality, Ajovy and Vyepti have since joined Aimovig, and all four drugs belong to the new class of calcitonin gene-related peptide inhibitors (CGRP inhibitors). As biologic drugs, they are injected monthly or quarterly; patients can self-inject using an auto-injector or prefilled syringe.

Based on almost three years of claims data, CGRP inhibitors have clearly made an impact. By the end of 2020, CGRPs came to account for 23.6% of eligible costs in the migraine category (or \$15.8 million out of the total of \$67.0 million)—while accounting for just 3.8% of claims and 2.2% of claimants.

Put another way, after three years of moderate or little growth in total eligible costs before the launch of CGRP inhibitors, costs climbed by 19.8% in 2019 and by 16.0% in 2020. That translates into \$67.0 million in eligible costs by the end of 2020 for TELUS Health's book of business, compared to \$47.8 million five years earlier, in 2016.

In 2020, the number of claims for CGRP inhibitors grew by 141% and the number of claimants by 77.6%. Plan members taking a CGRP made an average of 6.4 claims for the drug in 2020, compared to an average of 3.8 claims per claimant for the total category of migraine drugs.

The average eligible cost per CGRP inhibitor claim in 2020 was \$757 in 2020, compared to \$121 per claim for the total category. The average annual eligible cost per CGRP inhibitor claimant was \$4,874, compared to \$463 per claimant for the total category.

“Uptake of CGRP inhibitors is proceeding as expected,” observed Jackson, who added that it will likely be some time before the uptake levels off given the potential patient population. “About a quarter of all migraine sufferers may meet the treatment criteria for CGRP inhibitors. They are indicated for the people who are the hardest hit: those who suffer from episodic or chronic migraines and who experience multiple headaches per month. Most have also not experienced relief with other preventive therapies.”

The estimated prevalence of migraine, based on 2011 research, is 8.3% in Canada.<sup>3</sup> That translates into about 3.1 million Canadians based on today’s population. The estimated patient population for CGRP inhibitors, therefore, is about 775,000 (25% of 3.1 million).

People with episodic migraines can experience four or more migraine days per month; those with chronic migraines experience 15 or more migraine days per month. A person can also cycle between episodic and chronic migraines. “The impact of episodic or chronic migraines on productivity and absence from work cannot be overstated. Depression is also a common comorbidity,” emphasized Jackson. “Successful treatment could be like a new lease on life for this patient population.”

Jackson added that it’s too soon to say whether the higher costs of these new preventive therapies will be partially offset by reductions in the use of other medications used for acute migraine.

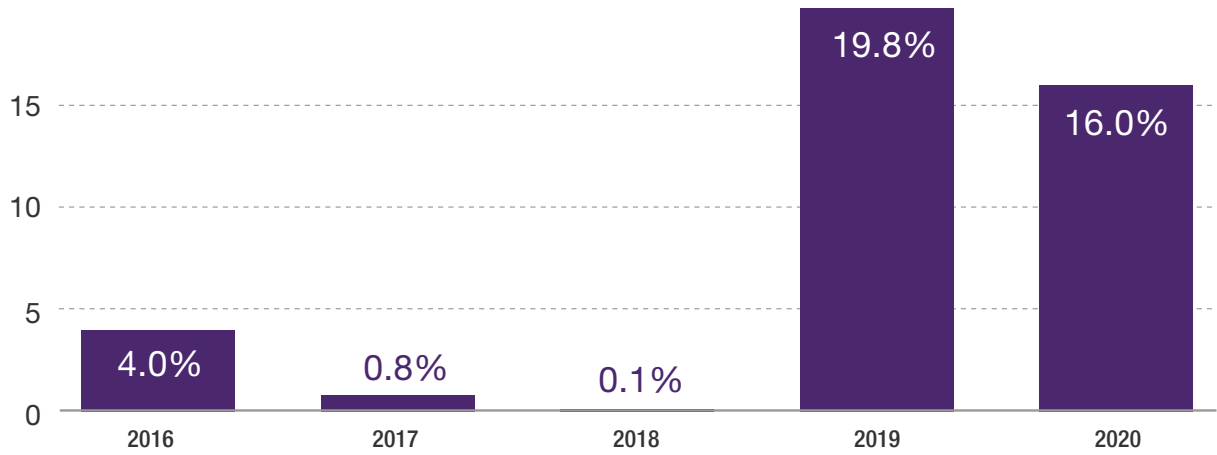
In fact, it’s interesting to note that, setting aside the impact of CGRP inhibitors, the migraine category in general has grown. From 2016 to 2020, the average annual growth rate in the number of claims was 5.6%. Even after removing claims for CGRP inhibitors, the average annual growth rate remained moderately strong, at 4.5%. The number of claimants for all migraine drugs climbed annually by an average of 5.6% over the five-year period.

“The numbers suggest that in recent years more people are being diagnosed with migraines or severe headaches. This is a call to action for the industry, given the potentially high impact on productivity, said Jackson.”

<sup>3</sup> Ramage-Morin PL, Gilmore H. Prevalence of migraine in the Canadian household population. Health Rep. 2014 Jun;25(6):10.6. <https://pubmed.ncbi.nlm.nih.gov/24941316/> (accessed February 2020).



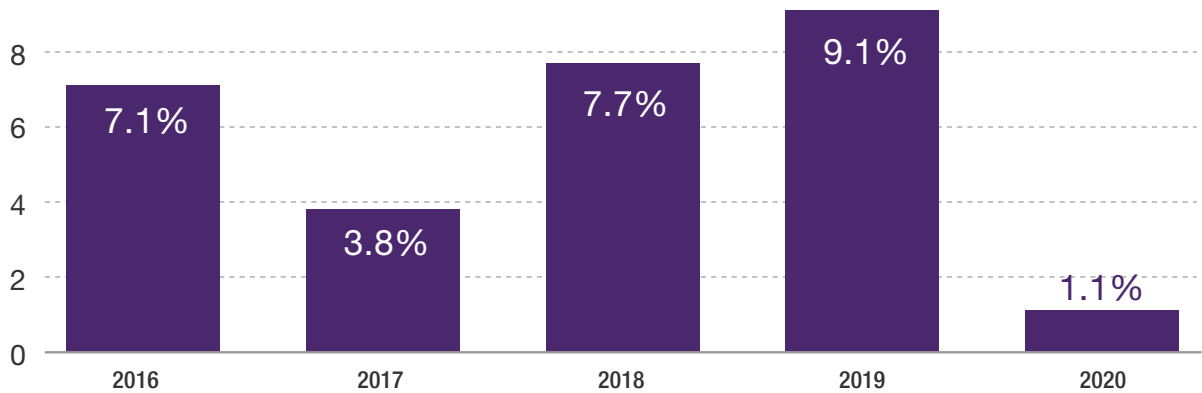
CHART 7 | Migraine: Change in total eligible costs, 2016-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



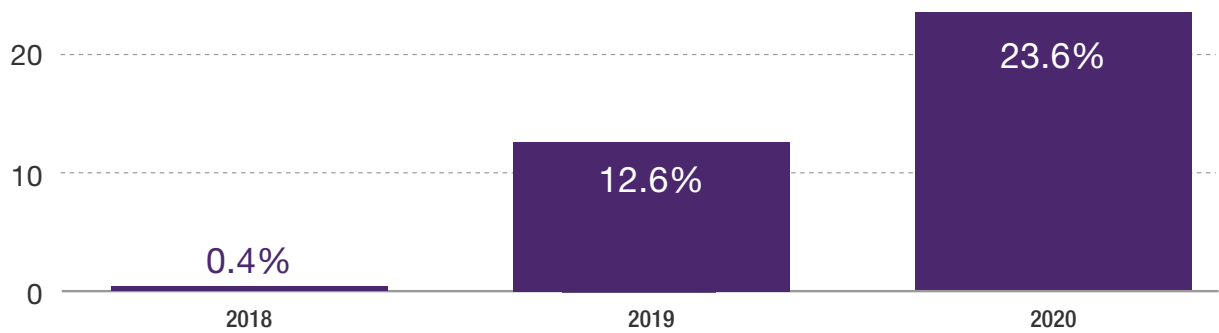
CHART 8 | Migraine: Change in total claimants, 2016-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



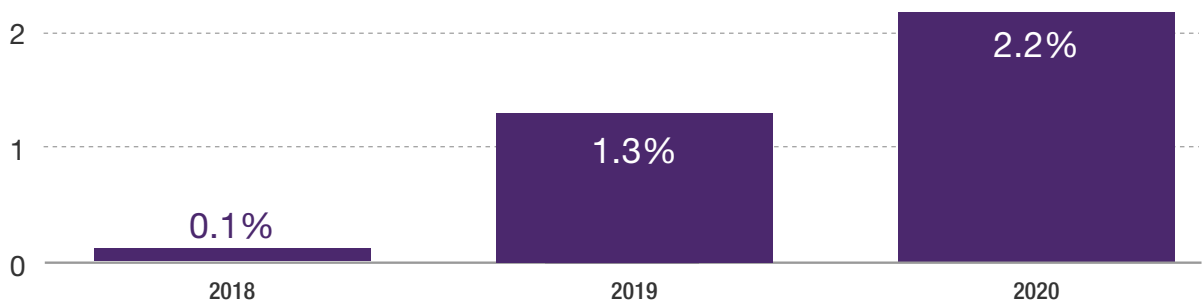
CHART 9 | Migraine: CGRP inhibitors' share of total eligible costs, 2018-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



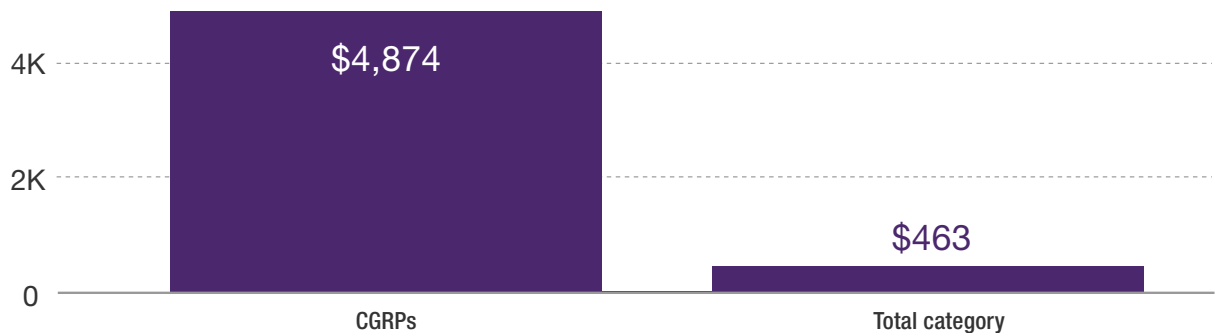
CHART 10 | Migraine: CGRP inhibitors' share of total claimants, 2018-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



CHART 11 | Migraine: Average eligible cost per claimant in 2020, for CGRP inhibitors and the total category.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



## Important new options for multiple sclerosis.

The most recent national data from the Canadian Chronic Disease Surveillance System, from 2014 and 2015, indicates that more than 77,000 Canadians today live with multiple sclerosis (MS).<sup>4</sup> Despite the small patient population, drugs to treat MS ranked eighth on the list of top 10 drug categories by eligible costs in 2019, according to the [2020 TELUS Health Drug Data Trends & National Benchmark](#) report.

The growth rate for eligible costs for MS treatments first accelerated in 2016, by 11.6%, due to much higher utilization of one of the category's 16 drugs, Aubagio. The rate jumped again in 2018 and 2019, by 9.1% and 12.7%, respectively, in response to the launches of Ocrevus in 2017 and Mavenclad in 2018. In 2020, the growth rate appeared to have stabilized, at just 1.3%; however, the launch of Mayzent in 2020 and Zeposia and Kesimpta this year may push it up again.

The number of claimants also spiked in 2016, 2018 and 2019. "This could reflect patients who had been unable to take older therapies due to contraindications or adverse events," noted Jackson.

Data for claims and claimants further illustrate the strong uptake of Ocrevus and Mavenclad so far. In 2018, the two drugs accounted for 2.0% of claims and 4.6% of claimants; by the end of 2020, they accounted for 8.2% of claims and 17.0% of claimants.

Their share of total eligible costs, meanwhile, reached 25.8% in 2020, up from 16.7% in 2019. Ocrevus alone is now the top drug by eligible costs, accounting for 19.1% of the total category.

<sup>4</sup> Multiple Sclerosis in Canada (infographic). Canadian Chronic Disease Surveillance System. 2018 March. <https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/diseases-conditions/multiple-sclerosis-infographic/multiple-sclerosis-infographic.pdf> (Accessed February 2020).

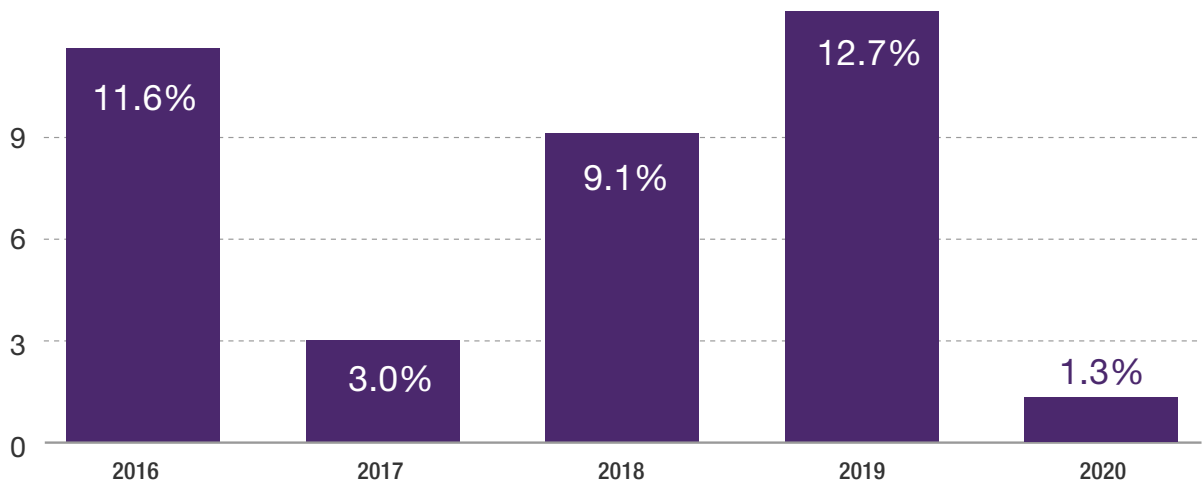
For all three of the new drugs (including Mayzent), the combined average eligible cost per claim was \$7,993 by the end of 2020, more than three times the average of \$2,546 per claim for the category overall. The average eligible cost per claimant using one of the new drugs for the year was \$28,761, compared to \$19,093 for the category overall, ranging from \$25,834 for Ocrevus to \$44,777 for Mavenclad.

Some cost relief may be on the way. In 2020, generic drug options became available for the first time in this category, for Gilenya. The average eligible cost per claim for Gilenya, including its generic equivalents, decreased by 46.5% in 2020 to \$1,524 (compared to \$2,853 in 2019). Similarly, the average annual eligible cost per claimant decreased by 41.2% to \$13,988 (from \$23,791). The cost savings may be somewhat muted, however, given that the drug's share of claimants was 10.2% by the end of 2020 and is on a slow decline, versus 17% and climbing for Ocrevus, Mavenclad and Mayzent.

Two additional MS drugs, Tecfidera and Aubagio, are expected to soon be genericized and this may have a larger impact in terms of cost savings. Together they represented 33.0% of total eligible costs in 2020, as well as 38.3% of claims and 36.0% of claimants.



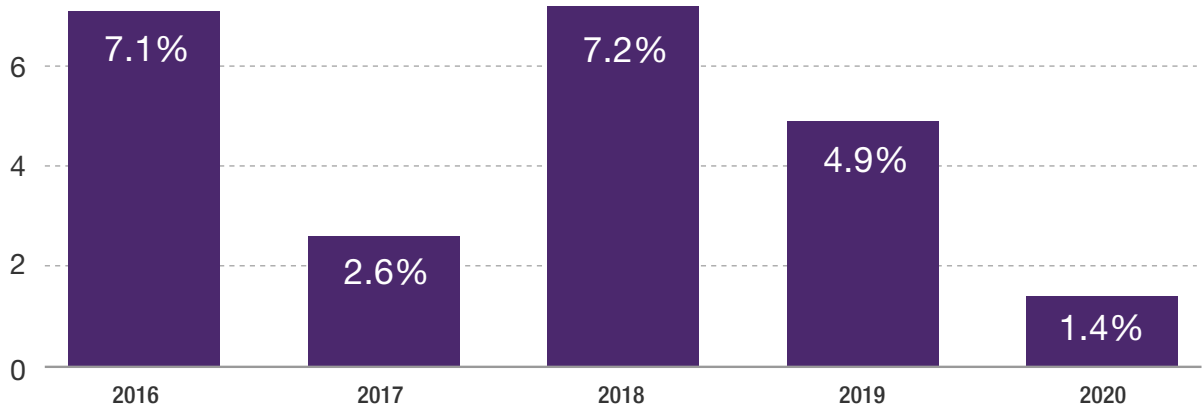
**CHART 12 | Multiple sclerosis: Change in total eligible costs, 2016-2020.**



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



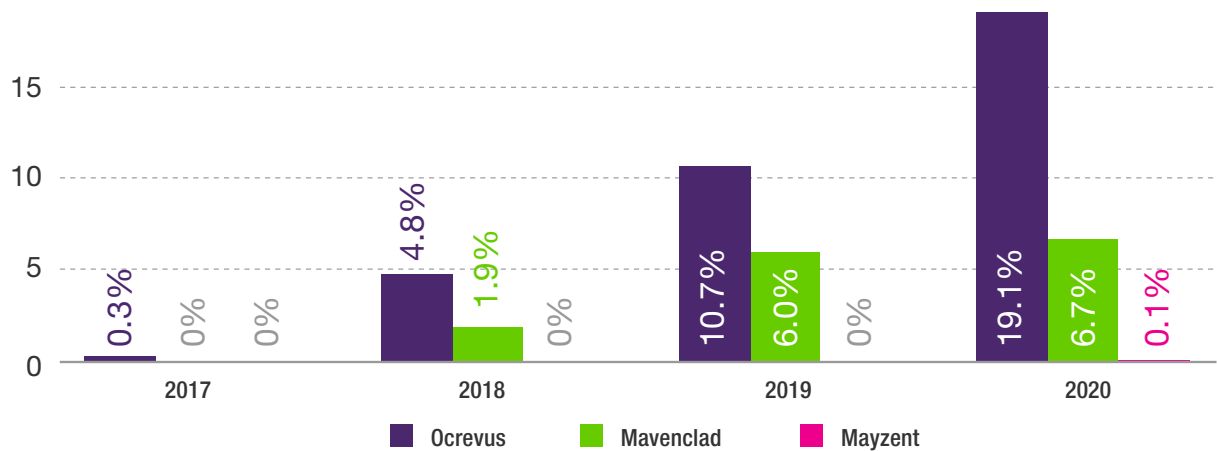
CHART 13 | Multiple sclerosis: Change in total claimants, 2016-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



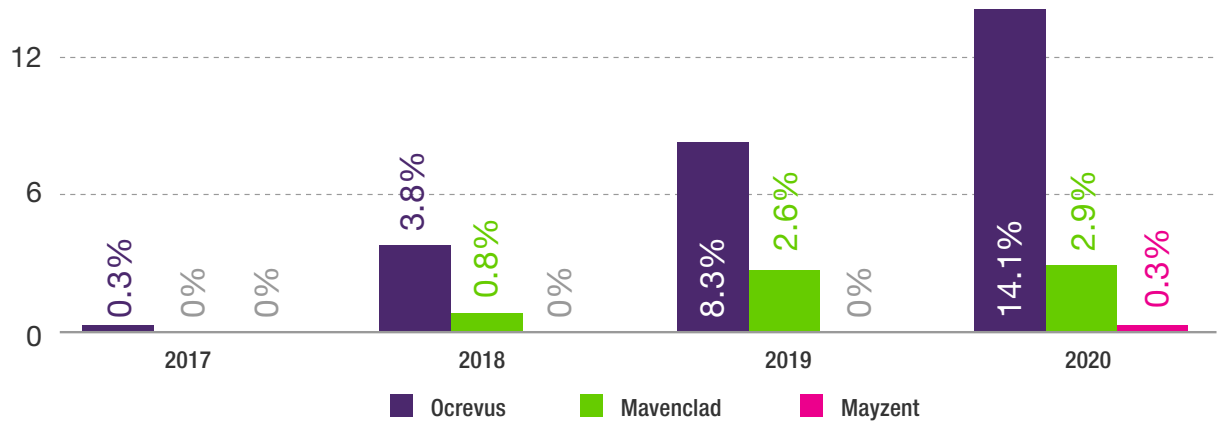
CHART 14 | Multiple sclerosis: Share of total eligible costs by new drug, 2017-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



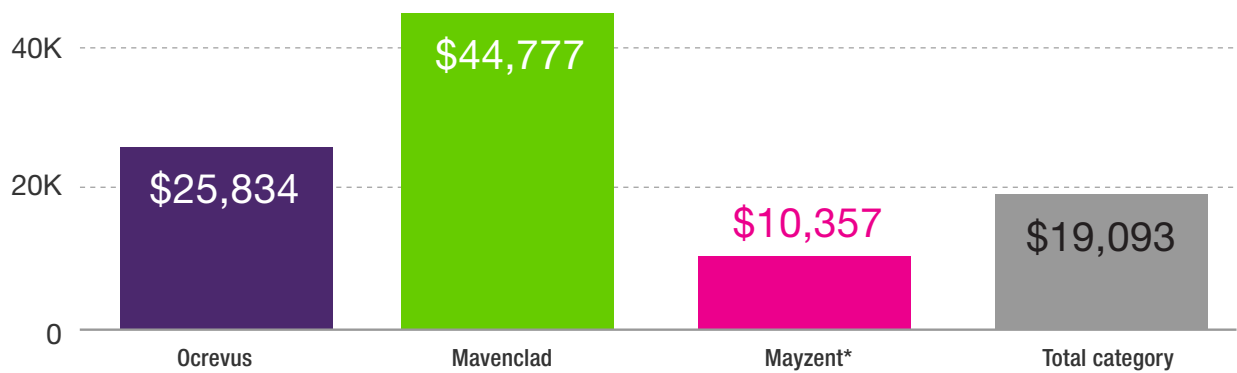
CHART 15 | Multiple sclerosis: Share of total claimants by new drug, 2017-2020.



Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



CHART 16 | Multiple sclerosis: Average eligible cost per claimant in 2020, for new drugs and the total category.



\*Based on six months of claims data following the launch of Mayzent in 2020.

Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).





## Summary

While the categories of diabetes, migraine and multiple sclerosis may differ significantly in terms of market size and average costs for treatment, all three demonstrate the transformative impact of new drugs in recent years.

Across the board, the higher price points of the new therapies result in growth rates for costs that outpace gains in volume. Shifts in utilization have also begun to emerge, as patients add or switch to the new therapies—keeping in mind that all of the new therapies represent major advances in treatment, either as replacements or add-ons for regimens that are not sufficiently effective, or as new therapies altogether.

In the diabetes category, where total costs rank second out of all categories covered by private drug plans, less than half of patients are able to meet targets for blood sugar levels. The new drugs target those patients, specifically those with type 2 diabetes, and therefore may offer improvements in health outcomes that can directly benefit workplace productivity and costs in other areas. Their average annual eligible cost per claimant, however, is seven to 15 times higher than the traditional first line of therapy.

While the category for migraine drugs is about one-tenth the size of the diabetes category, the relative impact of the new drugs is no less significant. The new biologic drugs, known as CGRPs, are the only ones capable of preventing migraines among those who are hardest hit by the condition, who experience at least four days of migraine headache a month. The cost of CGRPs is approximately 13 times the cost of other medications used to treat migraines after onset (usually with little or no effect for those hardest hit).

The drug category for multiple sclerosis ranks eighth in terms of costs, for a relatively small patient population of 77,000 Canadians. Before uptake of the latest treatment options began to accelerate in 2018, the average annual eligible cost per claimant was approximately \$17,000. The average annual eligible cost for the new therapies—which may significantly improve the quality of life of patients—range from \$25,000 to \$44,000.

In summary, the three categories tell a similar story in terms of impact on both health outcomes and costs. “The challenge is not to allow concerns over costs to overshadow the value of improved outcomes,” said Jackson. “Having said that, the concerns over cost are valid. Drug plan tools must continue to evolve to help target utilization to those most likely to benefit.”



**CHART 17** | Summary for diabetes, migraine and multiple sclerosis categories in 2020.

Category	Average eligible cost per claimant	Share of eligible costs	Share of claimants
<b>Diabetes total category</b>	<b>\$1,312</b>		
Metformin	\$121	5.2%	56.5%
DPP-4 inhibitors	\$939	17.3%	24.2%
SGLT2 inhibitors	\$844	16.3%	25.4%
GLP-1 RAs	\$1,885	15.7%	10.9%
<b>Migraine total category</b>	<b>\$463</b>		
CGRP inhibitors (Aimovig, Emgality, Ajovy)	\$4,874	23.6%	2.2%
<b>Multiple sclerosis total category</b>	<b>\$19,093</b>		
New drugs (Ocrevus, Mavenclad, Mayzent)	\$28,761	25.9%	17.3%

Source: TELUS Health database for private drug plans (data pulled on January 4, 2021).



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