EXPRESS SCRIPTS®

EXPRESS SCRIPTS CANADA
PRESCRIPTION DRUG TREND REPORT

TRENDS IN CANADIAN PRIVATE DRUG SPEND

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EXECUTIVE SUMMARY

Overall, a slow but steady increase in private drug plan spending continued in 2017. Controlling costs is critical because of swiftly increasing levels of specialty medication spending and new challenges in the pharmacy landscape.

Specialty medication costs have more than doubled **from 15% of total spending in 2008 to 31% in 2017.** Developing challenges, such as the introduction of extremely high-cost gene-based therapies expected in the near future, are also being watched closely. These and other high-cost therapies will continue to be the primary driver of benefit spending as they dominate the development pipeline. In addition, existing drugs are being approved for the treatment of an expanding number of conditions. Not surprisingly, benefit professionals reported an industry tipping point in 2017, with some plan sponsors instituting hard spending caps in a move towards a defined contribution approach.

Considering this evolving landscape, our 2017 Drug Trend Report findings are optimistic. Express Scripts Canada research – including clinical analysis of the prescription claims for millions of Canadians – provides evidence of the effectiveness of an evidence-based response to persistent cost challenges. The data shows that comprehensively managed plans can leverage and manage benefit investment, even in this rapidly shifting pharmacy landscape, through proven approaches that optimize drug costs along with member health.

Balancing patient care and benefit affordability is top-of-mind for plan sponsors. By drilling down on claim and claimant distribution, it becomes clear that providing targeted support to members with high-cost chronic conditions is the key to bending the curve on spending. **These members – only 20% of claimants – drive almost 80% of plan costs** with an average annual drug spending that is 15 times that of other claimants. They have an average of 7.8 chronic conditions, 3.3 physicians and 8.9 medications – understandably, they struggle with the complexity of their treatments.

By understanding the needs of these members and concentrating efforts on providing them with timely support to manage their condition and drug therapy, it is possible to have a powerful impact on the majority of costs while supporting better health outcomes at the same time.

This level of treatment complexity ultimately leads to gaps in adherence for plan members with the most complex health conditions – an average of 49.5% of these members were deemed nonadherent to one or more of their medications. These gaps in adherence expose members to a higher risk of increased disability and the need for additional drug therapies that could be avoided if medications were taken as prescribed.

SPECIALTY AND TRADITIONAL DRUG CLAIMANTS NEED HELP

While plan sponsors worry about high-cost specialty drugs, traditional medications continue to be a significant cost driver. In fact, our research shows that 18 out of the top 20% of claimants take only traditional medications. The other 2% use one or more high-cost specialty medications, plus an average of 8.5 traditional medications. The 18% using only traditional drugs account for 49% of overall plan spending.

In other words, our research indicates that both types of claimants within the top 20% face a high degree of treatment complexity and need support. Focusing efforts only on patients who take specialty medications means missing 90% of the opportunity for positive impact.

> THE DATA SHOWS THAT COMPREHENSIVELY MANAGED PLANS CAN LEVERAGE AND MANAGE BENEFIT INVESTMENT, EVEN IN THIS RAPIDLY SHIFTING PHARMACY LANDSCAPE, THROUGH PROVEN APPROACHES THAT OPTIMIZE DRUG COSTS ALONG WITH MEMBER HEALTH.

COMPREHENSIVELY MANAGED PLANS

Providing targeted, timely support to help these members make decisions that optimize cost and care is essential. These goals can be achieved by:

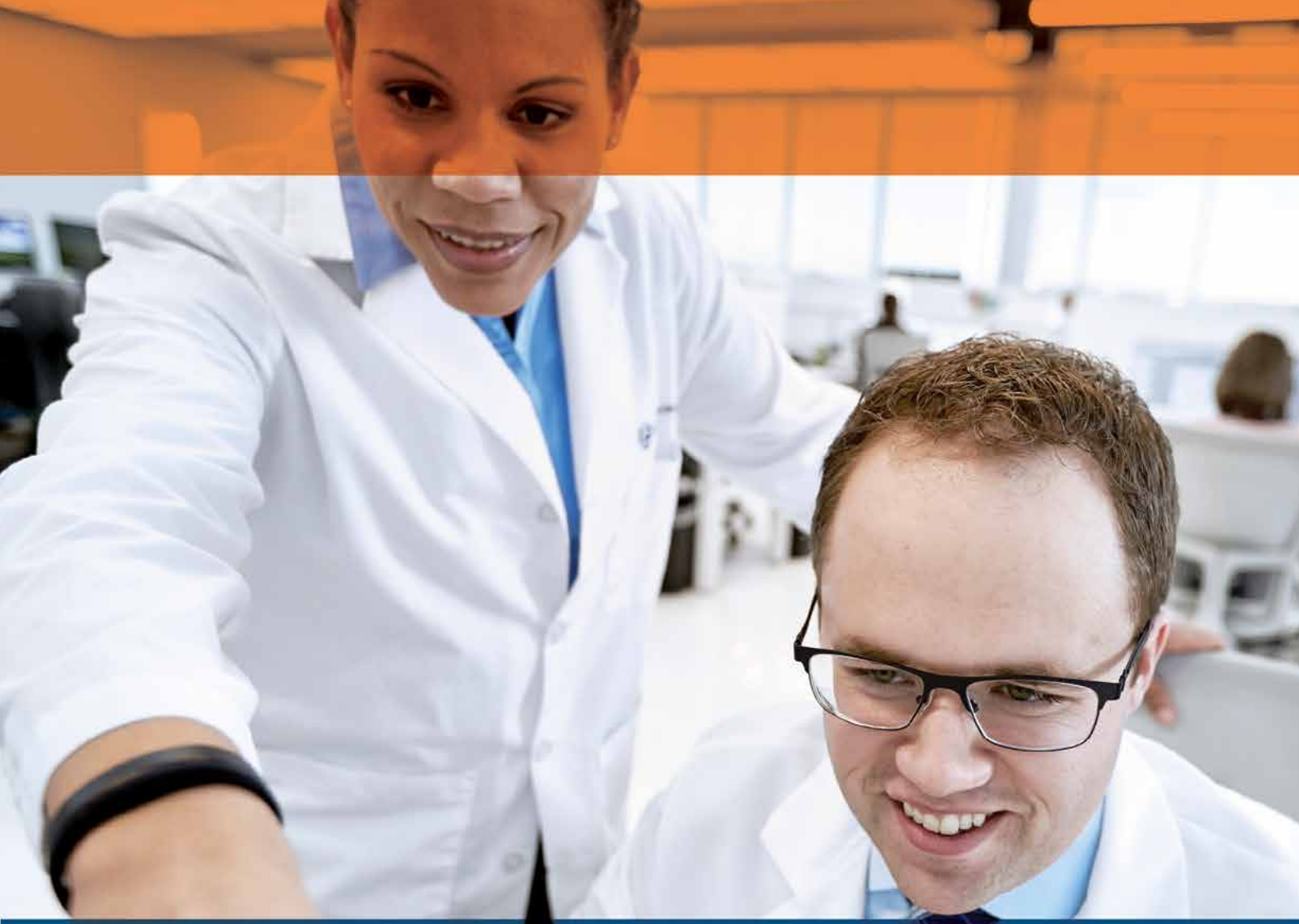
- Aligning member and plan sponsor interests through intelligent design solutions, including incentives for optimizing therapy;
- Identification of opportunities, such as capturing the attention of plan members at the right time to influence optimal treatment decisions;
- Empowering and engaging members;
- Helping members conveniently implement their optimal decisions.

Urgent action to control costs and close gaps in care is essential.

Our research is conclusive: by adopting comprehensively managed plans, it is possible for plan sponsors to control costs and improve health outcomes for their employees.

OTHER 2017 DRUG TRENDS AT A GLANCE

- High-cost specialty medications, which make up 2% of total claims but account for over 31% of total drug spending, increased by 6.5% in 2017.
- Use of generics increased to 63.1% of all claims, up from 62.3% in 2016, due to a combination of patent expirations and generic substitution plan controls.
- The top 10 therapy classes by spending accounted for 58.6% of overall spending. Use of high-cost specialty medications continues to grow within categories such as Asthma/COPD and High Cholesterol which have historically been treated with traditional medications only.
- Medications for inflammatory conditions and diabetes accounted for almost 24% of overall spending; spending on treatment for these two conditions increased by 8.5% and 4.8%, respectively.
- Drugs used to treat inflammatory conditions continued to account for the largest portion of spending, with only 1.2% of claimants but 14.2% of overall spending.
- The diabetes therapy class accounted for the most spending among traditional therapies. Both overall spending and the percentage of claimants increased from 2016.
- Cancer spending increased by 10.8% and ranked #7 by overall spend in 2017, up from #10 in 2016.
- In Ontario, OHIP+ came into effect in January 2018, providing full coverage of more than 4,400 prescription drugs for four million children and young adults (under 25 years of age). In comparing year-over-year expenditures, private payor drug spending for youth in Ontario dropped by 55% for the month of March 2018 versus March 2017.
- The near-term drug development pipeline is dominated by over 145 new high-cost medications that will lead to continuing cost pressures, including gene-based therapy. Expanding indications of existing high-cost drugs will also add to cost concerns moving forward.



METHODOLOGY AND TERMINOLOGY

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METHODOLOGY AND TERMINOLOGY

DRUG TREND REPORT METHODOLOGY

Express Script Canada's **drug trends** measure the rates of change in the **gross cost per claimant,** which includes the **eligible drug cost** as well as the **eligible dispensing fee. Gross cost** includes the member's portion of the eligible cost as well as the plan sponsor's portion of the eligible cost. **Claimant** includes each unique individual with a prescription, including all dependents who are eligible for coverage.

Total trends comprise the utilization trend and cost per prescription trend. **Utilization trends** are the rates of change in the number of eligible prescription drug claims per claimant. **Cost per prescription trends** are the rates of change in eligible cost per prescription. Only claimants who were continuously eligible for coverage throughout the course of the year were included. Claimants who were not eligible for coverage throughout the entire calendar year were excluded from the analysis.

Please note: Express Scripts Canada's drug trend is based on a **retrospective** or historical methodology – a look back at the past. In this way, it differs from an insurance carrier's health plan premium increase, which is based on a **prospective** methodology. An insurance carrier's health plan premium increase incorporates data trends to anticipate future costs including a drug plan's specific claims experience, changes in proportion of eligible members with a claim, demographic changes, anticipated changes in the future mix of drugs, any erosion of member contributions, a risk component, and other health plan claims experience. As a result, Express Scripts Canada's trend factor will typically be lower than an insurance carrier's predicted average increase for extended healthcare plans, of which prescription drugs are only one component.

ADHERENCE

Adherence was calculated using the medication possession ratio (MPR), which is the sum of the days' supply for all fills of oral medications in a particular period, divided by the number of days in the period, for any patient with three or more fills of the drug during the period. Patients with an MPR of less than 0.8 or 80% were considered nonadherent.

TERMINOLOGY USED IN THIS REPORT

MEDICATION CATEGORIZATIONS:

- **Therapy class:** A grouping of medications defined by their most common indication (the disease that the drug is most commonly used to treat).
- **Specialty drugs:** Medications typically used to treat chronic, complex conditions such as severe rheumatoid arthritis, multiple sclerosis and cancer. Specialty medications include injectable and non-injectable drugs.

THEY HAVE ONE OR MORE OF THE FOLLOWING QUALITIES:

- They may require frequent dosing adjustments and/or intensive clinical monitoring;
- They may require intensive patient training and/or compliance assistance;
- They may have limited distribution;
- They may have specialized handling and/or administration requirements.

- **Traditional drugs:** Medications that are easy to self-administer and that require less intensive clinical monitoring, such as those typically used to treat diabetes and high blood pressure.

GENERAL:

- **Spending:** Total gross cost, including the plan member's portion of the eligible cost as well as the plan sponsor's portion of the eligible cost.
- **Claimant, Patient or Member:** Each unique person who submits a prescription drug claim, including all dependents who are eligible for coverage.
- **Trend:** The historical increase in gross cost per claimant over the previous year, which includes the eligible drug cost as well as the eligible dispensing fee.

The **total trend** is comprised of:
- **The utilization trend:** The rate of change in the number of eligible prescription drug claims per member.
- **The cost per prescription trend:** The rate of change in eligible cost per prescription drug claim.

SECTION I.

INSIGHTS INTO CHALLENGES AND OPPORTUNITIES

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SECTION I.

INSIGHTS INTO CHALLENGES AND OPPORTUNITIES

A slow but steady increase in overall private drug plan spending continued in 2017. Controlling costs is critical because of swiftly increasing levels of specialty medication spending and new challenges in the pharmacy landscape. Most significant among these challenges is the introduction of extremely high-cost gene-based therapies expected in the near future.

Overall, **specialty drug costs increased from 15% of total private plan spending in 2008 to 31% in 2017.**

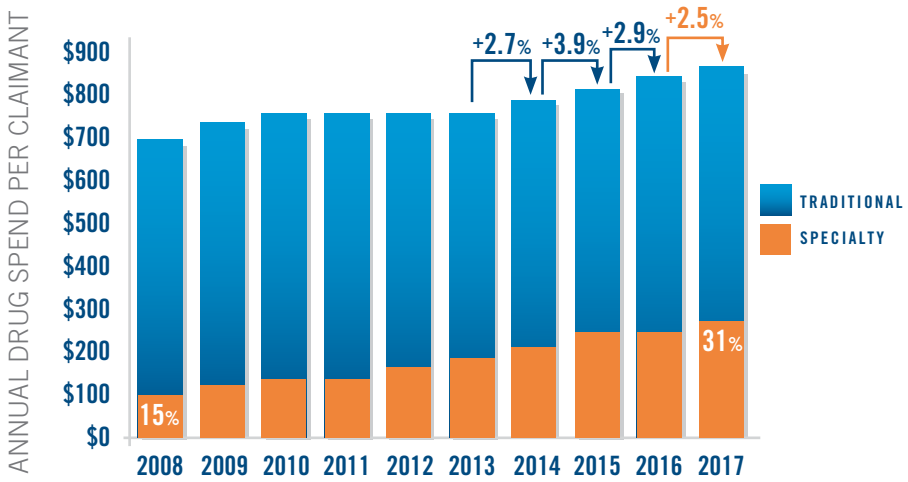
Sources in the benefit industry report that the alarm about specialty medication costs reached a tipping point this year, with some plan sponsors adopting spending caps in a move towards a defined contribution approach.

Our analysis reveals this is not the most effective, evidence-based response. In fact, the subsequent reduction in access to specialty medications may set the stage for higher long-term costs. As the drugs that members need become less accessible, adherence can worsen, potentially translating into more absenteeism and disability. The perceived value of the employer health benefit is diminished, with implications for engagement and the ability to attract and retain high-quality employees.

These reactive approaches are unnecessary. The evidence provided by our analysis of prescription drug claims for millions of Canadians reveals that there are much more effective ways of managing and leveraging benefit investment, proven approaches that optimize costs along with employee health.

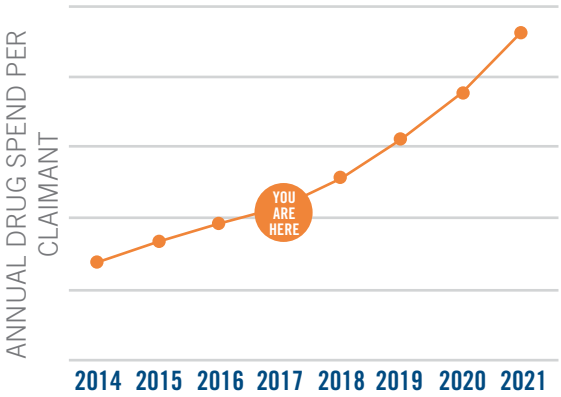
SLOW BUT STEADY INCREASE IN DRUG SPEND CONTINUES

Dramatic increase in specialty spend over the past 10 years



Looking forward, growth in new high-cost therapies will continue to be the primary driver of benefit spending. These drugs dominate the development pipeline, and the number of disorders for which they are approved continues to expand.

GROWTH IN NEW HIGH-COST THERAPIES WILL CONTINUE TO DRIVE FUTURE BENEFIT COSTS



PAYOR CHALLENGE
Balance patient care and benefit affordability

Balancing patient care and benefit affordability presents a challenge for plan sponsors moving forward. As we drill down on claim and claimant distribution, it becomes clear that members with high-cost chronic conditions need help managing treatment complexity and cost. As these claimants drive almost 80% of plan spending, responding to this challenge demands a holistic approach that focuses efforts here, through comprehensively managed drug plans.

> LOOKING FORWARD, GROWTH IN NEW HIGH-COST THERAPIES WILL CONTINUE TO BE THE PRIMARY DRIVER OF BENEFIT SPENDING.

PATIENT-LEVEL CHALLENGES

Express Scripts Canada's research provides insights into the challenges Canadians experience within an ever-changing drug landscape. The data shows that plan members need proactive support to make decisions that result in lower costs and healthier outcomes. A comprehensive set of tools is essential.

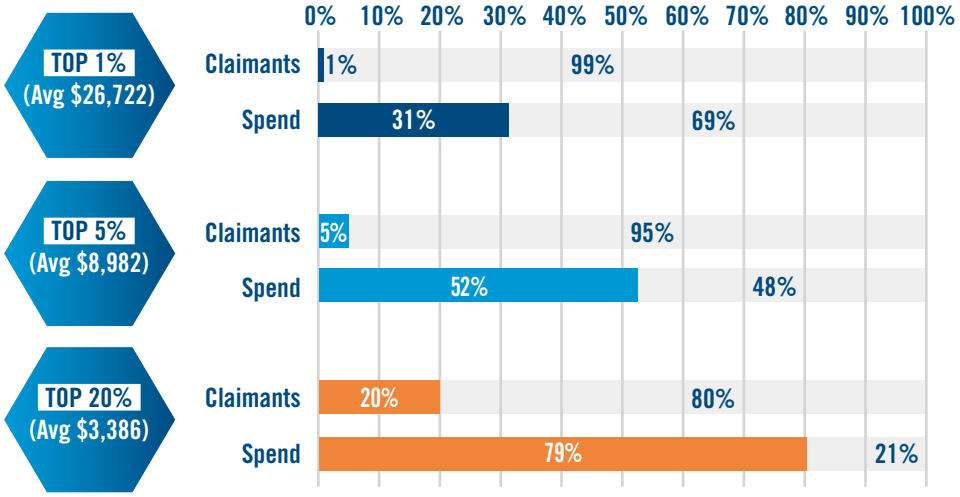
PATIENT CHALLENGE 1:
RECOGNIZING THE DRUG BENEFIT 80/20 RULE

One of the primary keys to unlocking the value of these new approaches is understanding the 80/20 rule as it applies to benefit plans. Clinical analysis of the "big data' provided by the claims we process shows that:

- The top 1% of claimants represent 31% of plan spending, with an average cost per claimant of $26,722;
- The top 5% of claimants represent 52% of plan spending, with an average cost per claimant of $8,982;
- The top 20% of claimants represent 79% of plan spending, with an average cost per claimant of $3,386.

By understanding the needs of this 20% of members and concentrating efforts on providing them with timely support, we can impact the vast majority of drug spending. Indeed, this data demonstrates that a scaled approach, targeting efforts toward as small a proportion of members as possible, can have a powerful impact on controlling costs.

ESC RESEARCH REVEALS THAT 20% OF CLAIMANTS REPRESENT 79% OF TOTAL SPEND



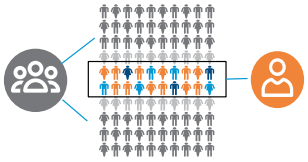
FOCUS EFFORT ON DRIVING BETTER DECISIONS AMONG TOP 20% TO IMPACT MAJORITY OF SPEND

PATIENT CHALLENGE 2:

HIGH-COST CHRONIC CONDITIONS, TREATMENT COMPLEXITY

The top 20% of claimants struggle with the complexity of treating their chronic conditions. Their annual drug spending is 15 times that of other claimants (an average of $3,386) and often includes unnecessary spending that does not improve health outcomes.

CLAIMANTS WITH HIGH-COST CHRONIC CONDITIONS NEED HELP MANAGING TREATMENT COMPLEXITY AND COST



	AVERAGE PER CLAIMANT	TYPICAL CLAIMANT	CLAIMANTS WITH HIGH- COST CHRONIC CONDITIONS
		80% 21% **TOTAL CLAIMANTS TOTAL SPEND**	20% 79%
MANAGING OVERALL COST		$230	$3,386
MANAGING MULTIPLE COMORBIDITIES		3.0	7.8
MANAGING MULTIPLE PHYSICIANS		1.9	3.3
MANAGING MULTIPLE UNIQUE MEDICATIONS		3.2	8.9
MANAGING GAPS IN ADHERENCE*		39.0%	49.5%

* % of claimants deemed nonadherent to one or more oral medications

These members have difficulty managing:

- Their **multiple chronic conditions** – an average of 7.8 compared to 3 per typical claimant;
- The coordination of care provided by **multiple physicians** – an average of 3.3 prescribers compared to 1.9 for typical claimants;
- **Multiple medications** – an average of 8.9, almost three times as many as a typical claimant.

This level of treatment complexity ultimately leads to gaps in adherence – an average of 49.5% of these members were deemed nonadherent to one or more of their medications. Nonadherence leads to high-potential risk of worsening health, complications and disability, which in turn lead to further increases in costs.

By focusing on this 20% of members – treating and supporting the whole patient rather than just their symptoms or disease – this next-level approach makes it possible to bend the curve on drug spending, now and into the future.

PATIENT CHALLENGE 3:

PREVALENCE AND COST OF NONADHERENCE

Former U.S. Surgeon General C. Everett Coop's famous 1985 aphorism, "Drugs don't work in patients who don't take them," accurately describes the experience of patients with high-cost chronic conditions in today's pharmacy environment.

Gaps in adherence among individuals living with chronic conditions can have a profound impact on the costs of care. Recent research by Express Scripts Canada's parent company provides some notable examples, in both financial and health terms.

In a study of 1.3 million people in the U.S. living with diabetes, the analysis revealed that:

- Individuals who were adherent to their oral diabetes medications had 235 fewer emergency room visits and 50 fewer hospitalizations per 1,000 patients;
- People with complications such as blindness, diabetic foot pain or chronic kidney disease who were adherent had healthcare costs 9.4% lower than nonadherent individuals.

It is evident, from this research, that there is a strong link between adherence and cost and health outcomes.

NONADHERENCE IN CANADA TODAY

Express Scripts Canada's research reveals gaps in adherence for several types of claimants. While we can't know for sure that plan members take the medication they have on hand, we can analyze their claims retrospectively to determine if they had enough medication to be adherent over the course of their treatment.

Members who are "deemed nonadherent" did not have enough medication to benefit fully from the treatment prescribed to them. Without the support of a comprehensively managed plan, these patients are – for a myriad of possible reasons – exposing themselves to the risks of worsening health.

Given high levels of coexisting conditions, we must look at members holistically to truly measure their treatment adherence. For example, 88.5% of members living with diabetes are also using medications to treat other conditions, as are 87.4% of members with high cholesterol, 76.2% of members with high blood pressure and 69.8% of members living with depression.

Our research found that 42% of patients using a diabetes medication were deemed nonadherent to one or more of their therapies, with the associated exposure to increased potential risk of complications such as strokes, heart attacks, kidney failure, blindness and amputation.

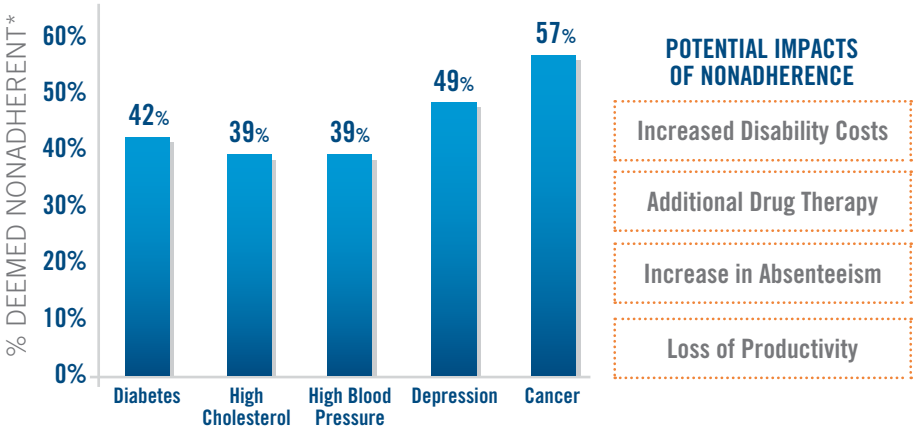
In addition, 39% of patients using a high cholesterol medication or a high blood pressure medication, 49% of members with depression and 57% of patients with cancer were deemed to be nonadherent to at least one of their medications.

These gaps in adherence across common chronic and complex conditions expose members to a potentially higher risk of increased disability and the need for additional drug therapy that could be avoided if medications were taken as prescribed.

ESC RESEARCH REVEALS GAPS IN ADHERENCE

Poor adherence can potentially lead to additional costs for private payors

NONADHERENCE BY TYPE OF CLAIMANT



* % of claimants deemed nonadherent to one or more oral medications

PATIENT CHALLENGE 4:

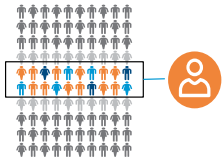
THE NEED FOR A HOLISTIC APPROACH TO CARE

While it is specialty drugs with exorbitant price tags that capture media attention, our research shows that 18 out of the top 20% of claimants take only traditional medications. The other 2% use one or more high-cost specialty medications, plus an average of 8.5 traditional medications. The 18% using only traditional drugs account for 49% of overall plan spending.

Both types of claimants within the top 20% face a high degree of treatment complexity and need similar support, as shown in the chart below.

NEED TO MANAGE BOTH TRADITIONAL AND SPECIALTY CLAIMANTS

Holistic approach to care is required



		HIGH-COST CLAIMANTS WITH TRADITIONAL CONDITIONS ONLY	HIGH-COST CLAIMANTS WITH SPECIALTY CONDITIONS
		18% / 49%	**TOTAL CLAIMANTS / TOTAL SPEND**	2% / 30%
MANAGING OVERALL COST	AVERAGE PER CLAIMANT	$2,337	$12,235
MANAGING MULTIPLE COMORBIDITIES		7.7	8.8
MANAGING MULTIPLE PHYSICIANS		3.2	4.2
MANAGING MULTIPLE UNIQUE MEDICATIONS		Traditional 8.8 Specialty 0.0 8.8	Traditional 8.5 Specialty 1.5 10.0
MANAGING GAPS IN ADHERENCE*		48.5%	58.3%

* % of claimants deemed nonadherent to one or more oral medications

Providing targeted, timely support to help these members make decisions that optimize cost and care is essential. This is true whether they live with conditions such as diabetes (traditional) and use medications to prevent or treat high cholesterol, high blood pressure and kidney failure, or live with cancer (specialty) and also struggle with additional medications for a variety of related complications.

This can be achieved by:

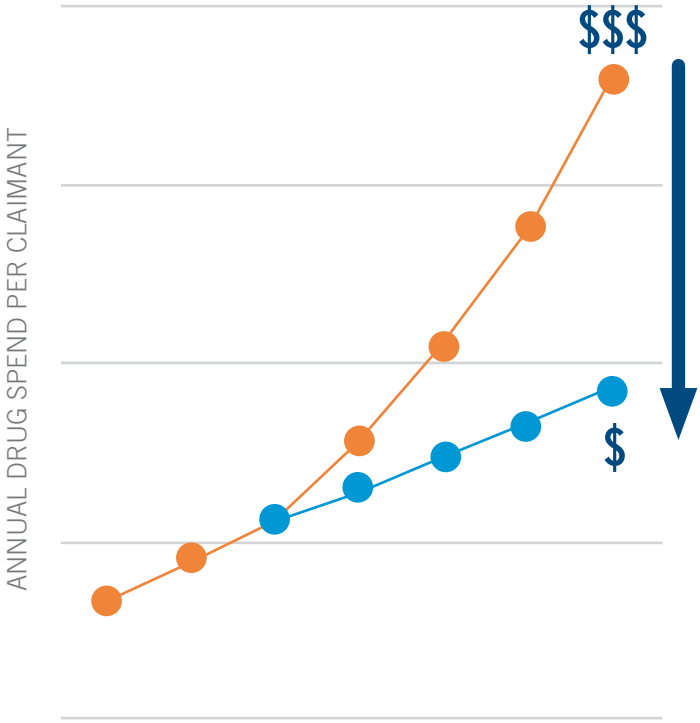
- Aligning member and plan interests through intelligent design solutions, including incentives for optimizing therapy;
- Identification of opportunities, such as capturing the attention of plan members at the right time to influence optimal treatment decisions;
- Empowering and engaging members;
- Helping members conveniently implement their optimal decisions.

SOLUTIONS: BENDING THE CURVE ON DRUG SPENDING AND SUBOPTIMAL TREATMENT

As mentioned earlier in this report, growth in new high-cost therapies will remain the primary driver of benefit spending going forward.

Within this environment, **comprehensively managed plans** align the interests of members and sponsors while empowering better treatment decisions, helping members stay healthier and feel more supported in their treatment journey. Simultaneously, these plans lower costs for plan sponsors and members to help improve treatment access and adherence.

COMPREHENSIVELY MANAGED PLANS CAN BEND THE CURVE ON DRUG SPENDING



COMPREHENSIVELY MANAGED PLAN TOOLS:

Formulary Management
Provide access to clinically effective medications while targeting high-cost therapies that offer no added clinical benefit.

Utilization Management
Use of tools such as prior authorization (PA) and step therapy programs to guide patients to safer, more cost-effective drug choices and to ensure the right drug is provided to the right patient, by the right payor, at the right time.

Channel Management
Leveraging a network of preferred pharmacies to drive down costs while delivering optimal patient care.

Patient Health Management
Specialized holistic care can help patients better manage treatment complexity to achieve lower cost and healthier outcomes.

PROACTIVELY DRIVE BETTER DECISIONS TO ENSURE LOWER COSTS & HEALTHIER OUTCOMES

Comprehensively managed plans align drug utilization with clinical guidelines, empower members at critical decision points and provide holistic care to those with multiple chronic conditions. To do so, they incorporate synergistic management techniques, including formulary management, utilization management, channel management and patient health management tools.

The following services align the interests of sponsors and patients and engage member attention at the right time to help them implement better decisions:

1. FORMULARY MANAGEMENT

An effective formulary opens access to all clinically superior medications while **targeting high-cost therapies that offer no added clinical benefit.**

2. UTILIZATION MANAGEMENT

Prior authorization (PA) and step therapy programs are important examples of intelligent plan design that guide patients to safer, more cost-effective drug choices, using clinically based criteria. Use of these tools **ensures the right drug is provided to the right patient, in the right amount, by the right payor, at the right time.**

As new drugs come to market and indications for existing medications expand, it is vital that plans regularly review and update their utilization management programs to control costs and assist patients in making the most effective treatment decisions.

3. CHANNEL MANAGEMENT

Leveraging a specific network of preferred pharmacies can **drive down costs for both plans and patients while still offering choice,** minimal member disruption and optimal patient care. Research shows that patients who fill 90-day maintenance medications through a preferred provider are 15% to 25% more adherent compared to those who fill through other providers. Furthermore, specialty networks can help identify the right payor through effective reimbursement navigation services, resulting in more holistic patient care as well as tighter cost controls.

4. PATIENT HEALTH MANAGEMENT

Patients with complex conditions such as diabetes, cardiovascular disease, cancer and multiple sclerosis need specialized care. Specialized pharmacists can help these patients **better manage their conditions to achieve lower costs and better health outcomes.** A holistic approach can help these members manage treatment complexity and ensure medication is being used properly.

> “HIGH-COST CLAIMANTS USING ONLY TRADITIONAL MEDICATIONS REPRESENT 18% OF TOTAL CLAIMANTS, BUT 49% OF OVERALL SPENDING.”

INTELLIGENT PLAN DESIGN IN ACTION

Comprehensively managed plans can have a profoundly positive impact on care for patients with high-cost chronic conditions, delivering lower costs and healthier outcomes.

PATIENT CASE STUDY A

Brad, aged 56, was recently diagnosed with type 2 diabetes. He has access to the treatment and supplies he needs through his employer-sponsored plan. (According to Diabetes Canada, 57% of Canadians with diabetes report they cannot adhere to their treatment regimen because of unaffordable costs.)

When asked by his primary care physician, Dr. Smith, Brad informed her that he has an "excellent" drug plan. Dr. Smith then prescribed a new drug called Januvia®.

Brad is a member of a **comprehensively managed drug plan.** It includes a step therapy program that requires the use of the first-line drug for type 2 diabetes, metformin, and will only cover Januvia® if intolerance to metformin is established. This aligns with Diabetes Canada guidelines; abundant data supports the use of metformin, including its durability and long history of safety. Brad's therapy was therefore switched from Januvia® to metformin.

Coming to terms with his diabetes diagnosis has been understandably stressful for Brad. His plan offers access to patient health management services, so he decided to take advantage of this benefit and was pleased to receive a call from one of the Therapeutic Resource Centre (TRC) specialist pharmacists. His questions about the switch from Januvia® to metformin were answered; he learned about metformin's potential benefits of durability and longer history of safety, and about his annual out-of-pocket cost savings of $200. He found this information reassuring.

The TRC pharmacist also spoke to Brad about additional therapies, a drug used to treat high cholesterol and one used to treat high blood pressure. When Brad replied that he does not have high blood pressure or high cholesterol, the pharmacist advised him that Diabetes Canada recommends these drugs for individuals his age, whatever their blood pressure and cholesterol levels, because of clinical evidence showing they can be protective of kidney, heart and circulatory function and can help prevent eye disease.

Brad later discussed this with Dr. Smith, who agreed with the pharmacist and prescribed a statin and an ACE inhibitor. As a result of these discussions, using motivational interviewing techniques, Brad is now fully on track with his medications.

OPTIMIZED COST AND CARE THROUGH A COMPREHENSIVELY MANAGED PLAN

COMPREHENSIVE OUTCOMES

- Utilization Management via Step Therapy led to a switch in drug therapy and annual plan savings over $1,000.
- Patient Health Management via a Therapeutic Resource Centre filled a gap in care potentially decreasing risks of complications.

BRAD WAS…

- switched from 2nd line Januvia® to 1st line metformin, reducing Brad's annual out-of-pocket costs by $200;
- prescribed additional drug therapy with a statin and an ACE inhibitor to protect his kidneys, heart and vision, as per the most recent guideline recommendations.

LOWER COSTS

+

HEALTHIER OUTCOMES

For Brad, being a member of a comprehensively managed plan means enjoying lower costs and a reassuring level of care – while looking forward to healthier outcomes.

CASE STUDY B

Heather is a 45-year-old woman with relapsing, remitting multiple sclerosis (MS). She has multiple chronic conditions for which she currently takes eight drugs, including the specialty drug Gilenya®.

In large-scale studies, Gilenya® has been shown to decrease MS relapses to slow the accumulating disability, brain lesions and nerve damage that relapses trigger. However, it costs more than $2,700 for a 28-day supply.

MS attacks the myelin sheath that protects nerves throughout the body, so individuals who live with the disease are often managing many complications, with many possible treatment options and many healthcare providers. Along with complications, people with MS are exposed to higher risks of other disorders, known as comorbidities.

MULTIPLE CONDITIONS, MULTIPLE PHYSICIANS AND MULTIPLE TREATMENTS LEAD TO GAPS IN CARE

Heather suffers from bladder and urinary issues, which are common complications of MS. She also has many comorbidities, including depression, anxiety, high blood pressure, high cholesterol and chronic obstructive pulmonary disease (COPD). While her MS treatment is overseen by her neurologist, each of these comorbidities is being treated with drug therapies prescribed by a variety of healthcare professionals, from Heather's primary care physician (for high blood pressure and high cholesterol) to a psychiatrist (for anxiety and depression) and respirologist (for COPD). Each treatment option has its own cost and coverage implications, side effects, potential for drug interactions, and possible health outcomes for Heather.

Heather's need for multiple medications places a substantial financial burden on her through member deductibles and copayments.

OPTIMIZED SUPPORT THROUGH A COMPREHENSIVELY MANAGED PLAN

MEET HEATHER

HEATHER HAS…

- been diagnosed with multiple sclerosis (MS);
- been using Gilenya® to reduce the frequency of MS exacerbations;
- experienced several complications associated with MS that required additional drug therapies;
- been diagnosed with comorbid depression.

COMPREHENSIVELY MANAGED PLANS DRIVE LOWER COSTS & HEALTHIER OUTCOMES

With no one to coordinate care between her various healthcare providers and to explain the implications of her many therapeutic options, Heather's prognosis would be similar to that of most Canadians with a complex disease and multiple chronic conditions. Her costly treatment regimens wouldn't be optimized for maximum benefit and she would have difficulty taking them as prescribed. Nonadherence might then lead to worsening health as well as wasted and additional out-of-pocket and plan spending. For Heather, it would mean that more costly treatments would likely become necessary as her level of disability increased and her productivity and ability to work declined.

Since Heather is now a member of a comprehensively managed plan, however, her probable outcomes are much more positive.

ESC's patient health management, consisting of a personalized clinical assessment by a TRC specialist pharmacist, optimized Heather's drug regimen. In the process, a number of potential drug interactions that could have resulted in negative health outcomes were resolved. She was provided with reimbursement navigation that includes ongoing assistance applying for a patient-support program sponsored by Gilenya®'s manufacturer. The pharmacist also arranged to reach out to Heather on a regular basis to help her manage any side effects by providing tips on how to deal with common problems as they arise.

In addition, Heather's comprehensively managed plan includes channel management, which gives her access to a preferred provider network (PPN) of pharmacies. Through an agreement with her plan, the pharmacy charges reduced markups and dispensing fees, leading to annual plan savings in excess of $1,000, and annual savings of more than $250 for Heather. The PPN pharmacy will deliver Heather's medications to her before she is due to run out to ensure she has medication on hand when she needs it. Heather finds this to be of great convenience since MS has reduced her mobility.

OPTIMIZED SUPPORT THROUGH A COMPREHENSIVELY MANAGED PLAN

COMPREHENSIVE OUTCOMES

- Channel Management through a Preferred Specialty Pharmacy Provider led to an annual plan savings of over $1,000.
- Patient Health Management via a Therapeutic Resource Centre:
  – assisted with drug side effect management and maintenance of adherence;
  – assisted in coordinating medications and care from multiple providers.

HEATHER WAS…

- able to receive copay assistance through the manufacturer's patient assistance program as well as coordination with public coverage;
- educated on techniques to improve adherence to multiple drugs and management of side effects.

LOWER COSTS

+

HEALTHIER OUTCOMES

> "NONADHERENCE MIGHT THEN LEAD TO WORSENING HEALTH AS WELL AS WASTED AND ADDITIONAL OUT-OF-POCKET AND PLAN SPENDING."

> STRATEGIC SERVICES, INFORMED BY DATA ANALYSIS AND CLINICAL EXPERTISE, MAKE IT POSSIBLE TO UNLOCK THE FULL VALUE OF ONGOING 'BIG DATA' ANALYSIS.

SUMMARY

COMPREHENSIVELY MANAGED PLANS CHANGE THE FUTURE FOR PLAN MEMBERS AND SPONSORS

As demonstrated by these case studies, comprehensively managed plans mean lower costs and better care.

Strategic services, informed by data analysis and clinical expertise, make it possible to unlock the full value of ongoing "big data" analysis. In turn, these insights enable the design of support strategies informed by documented patient behaviour as well as evidence-based behavioural science. By applying these strategic insights holistically, it is possible to deliver better outcomes at a patient level:

- A person living with hepatitis C receives a prescription for Epclusa™ but doesn't have the means to pay the 20% copayment. A TRC pharmacist tells him about the Momentum hepatitis C support program and calls the program to secure coverage, so the patient doesn't have to pay anything out of his pocket. The cost of the drug at the patient's retail pharmacy is also revealed to be $6,172 higher for the 12-week treatment than at the ESC pharmacy, which translates into a significant saving for the patient's plan.
- A person living with arthritis develops sudden vision problems and muscle aches and mentions it to a care specialist during a treatment follow-up call; the care specialist determines that this is a documented but rare side effect of a drug the patient is taking, and faxes a report to the patient's physician, who changes the prescription.

Today, these and countless other members of comprehensively managed plans are reaping the health and financial benefits of optimized treatment.

PROACTIVE, NOT REACTIVE

Urgent action is essential.

The research is conclusive: by adopting comprehensively managed plans, plan sponsors can control costs and improve health outcomes for their employees.

SECTION II.

A LOOK AT THE OVERALL DRUG TREND FOR 2017

PAGES 29 – 50

SECTION II.

A LOOK AT THE OVERALL DRUG TREND FOR 2017

OVERALL TRENDS IN 2017

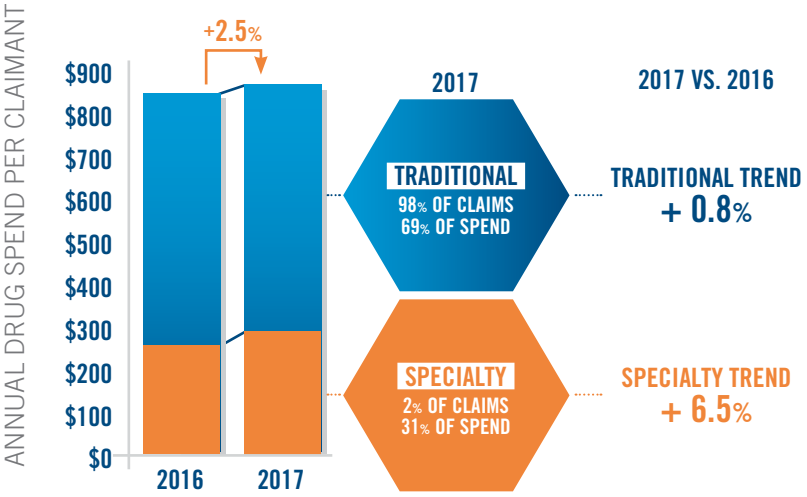
Each year, Express Scripts Canada analyzes both traditional and specialty drug trends in order to empower private plan sponsors, providing the information they need to preserve treatment access while controlling costs.

The overall drug trend reflects two factors: utilization (the number of prescriptions per claimant) and cost per prescription (the total eligible cost per claim).

Private plan spending as a whole continued its slow and steady growth in 2017. Nationally, average annual drug spending per claimant increased by 2.5% in 2017, to $861.50, slightly less than the 2016 spending increase of 2.9%. The 2017 increase was made up of a 0.8% increase in spending for traditional medications, along with an increase of 6.5% in spending for specialty medications.

INCREASE IN DRUG SPEND DRIVEN BY SPECIALTY GROWTH

Traditional drug trend remains flat in 2017



TRADITIONAL DRUG TREND OVERVIEW

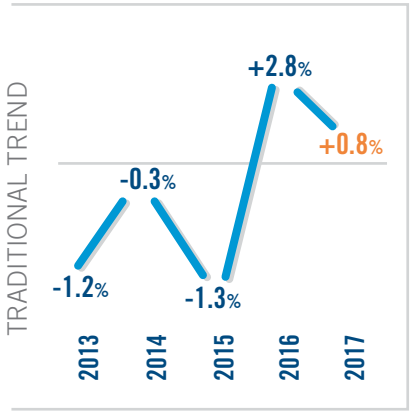
Traditional drugs, defined as those used to treat common medical conditions, made up 98% of the total number of claims in 2017. From a spending perspective, traditional drugs accounted for 69% of the 2017 total, down slightly from 69.9% in 2016.

Spending on traditional medications remained flat at 0.8%, a substantial change from the 2.8% increase in 2016. The utilization of traditional medications increased just 0.2% in 2017, while the cost per prescription rose at 0.6%.

The primary upward trend pressures in this category came in the form of a shift to new higher-cost medications. This was mitigated by several downward pressures in cost per prescription, including the impact of patent expirations and greater use of plan design controls. In particular, use of generics increased to 63.1% of all claims in 2017, up from 62.3% in 2016, due to a combination of patent expirations and generic substitution plan controls. Ongoing pan-Canadian Pharmaceutical Alliance (pCPA) reforms also contributed, with lower 2017 generic prices for highly utilized molecules such as Crestor® (rosuvastatin) and metformin.

TRADITIONAL DRUG TREND FELL FLAT IN 2017

Downward pressure helped mitigate increase in cost per traditional script



FACTORS IMPACTING TRADITIONAL TREND IN 2017

\+ Introduction of new, higher-cost brands

\+ Shift to higher-cost medications

– Impact of patent expirations
– Ongoing pCPA initiatives
– Greater use of plan design controls

SPECIALTY DRUG TREND OVERVIEW

Specialty spending in Canada has grown from 15% of total drug spending in 2008 to 31% in 2017. While specialty prescriptions represented just 2% of total claims, they made up almost one-third of total drug spending.

Specialty spending increased by 6.5% in 2017 due to a 5% increase in utilization and a 1.5% increase in cost per prescription. This was a larger increase than the previous year, when the hepatitis C "bubble" caused a dramatic increase in the specialty trend in 2015, followed by a much more muted trend in 2016 as the initial surge of patients with hepatitis C completed their curative treatment.

The factors driving an increase in spending in this category in 2017 included a greater utilization of specialty medications within common conditions such as asthma and high cholesterol. In addition, spending was driven upwards by the introduction of new high-cost medications, and new indication approvals for existing medications.

Conversely, factors that helped mitigate this increase included higher adoption of plan control strategies to optimally manage spending, such as:

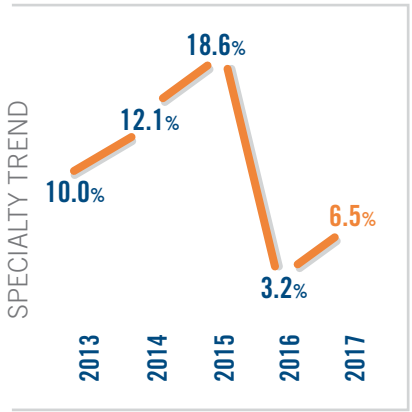
- product listing agreements;
- robust clinical prior authorization criteria;
- specialty pharmacy preferred-provider networks;
- claim coordination with provincial programs.

In addition, ongoing patent expirations helped lessen the increase in cost per prescription, with greater use of generic alternatives within the non-biologic specialty categories. Overall, the generic fill rate for specialty medications increased from 22% in 2016 to 22.5% in 2017.

Increasing availability of biosimilars also drove more competition, which helped mitigate the specialty trend. Several biosimilars are now available in Canada, including alternatives to high-cost specialty medications that treat inflammatory conditions, such as Remicade® and Enbrel®. A second biosimilar for each of these medications was introduced in 2017, driving further decreases in the cost per prescription.

SPECIALTY TREND CONTINUES UPWARD IN 2017

Rate of increase in specialty spend has stabilized after hepatitis C bubble



FACTORS IMPACTING SPECIALTY TREND IN 2017

+ Increasing prevalence
+ New high-cost specialty medications
+ New indication approvals

– Higher adoption of plan controls including impact of specialty pharmacy PPNs
– Ongoing specialty patent expirations:
  - Increasing use of generics for non-biologics
  - Increasing availability of biosimilars for biologics

TOP 10 THERAPY CLASSES

The top 10 therapy classes accounted for 58.6% of overall spending.

In this year's report, the diabetes and inflammatory conditions classes have been reorganized to take all relevant medications into account. The diabetes class has been updated to include diabetic supplies, such as blood glucose test strips, in addition to diabetic medications. The inflammatory conditions class now includes both traditional and specialty medications for inflammatory conditions (e.g. Remicade® and Humira®), rheumatoid arthritis medications (e.g. methotrexate and Arava®), and inflammatory bowel agents (e.g. Mezavant®). With this change, the inflammatory conditions and diabetes therapy classes now account for a greater portion of spending.

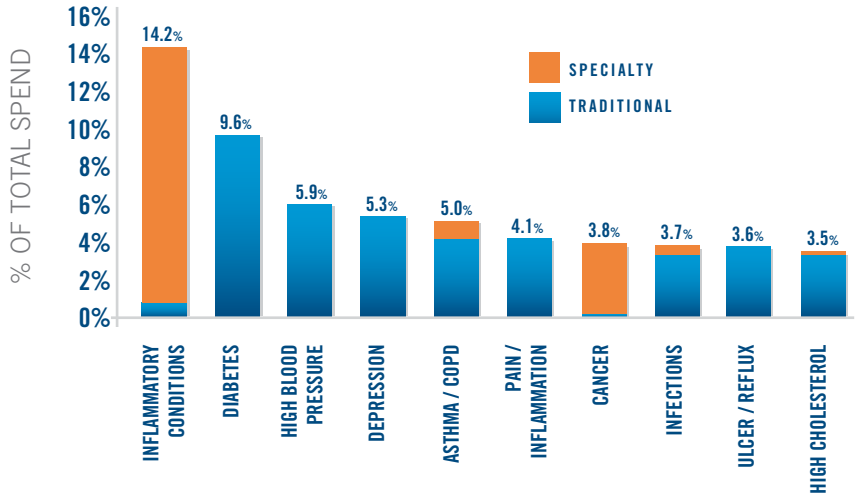
Also new for 2017, the drug trend report includes insights regarding prevalence (percentage of claimants) and the cost per claimant at a therapy class level, as well as the traditional versus specialty drug mix.

Medication for inflammatory conditions and diabetes accounted for 24% of overall spending in 2017; spending for these two conditions increased by 8.5% and 4.8% respectively. There was also double-digit growth in spending on cancer medications during 2017.

Moving forward, a mix of traditional and specialty therapy classes will continue to put upward pressure on overall spending.

TOP 10 CLASSES DOMINATED BY TRADITIONAL DRUG SPEND

Specialty drugs entering categories previously dominated by traditional drugs



PREVALENCE (% OF CLAIMANTS)	1.2%	7.5%	17.7%	14.0%	14.7%	28.2%	1.4%	44.6%	14.9%	12.1%
COST PER CLAIMANT	$10,041	$1,058	$279	$313	$286	$120	$2,174	$69	$204	$238

TOP 10 MEDICATIONS BY SPENDING

The 2017 list of the top 10 medications by spending was dominated by specialty drugs that treat inflammatory conditions, including infliximab (Remicade® and Inflectra®) and adalimumab (Humira®).

Traditional medications that treat high cholesterol, ulcer/reflux, depression, and diabetes also continue to represent a significant portion of overall spending.

TRADE NAME	CHEMICAL	COMMON INDICATION	CATEGORY*	% OF TOTAL SPENDING	RANK BY SPENDING
Remicade® / Inflectra®	Infliximab	Inflammatory Conditions	S	4.76%	1
Humira®	Adalimumab	Inflammatory Conditions	S	3.73%	2
Contour® Next / One Touch Verio®/ Others	Blood Glucose Test Strips	Diabetes	T	1.59%	3
Ritalin®	Methylphenidate HCl	Attention-Deficit Disorder	T	1.55%	4
Enbrel®	Etanercept	Inflammatory Conditions	S	1.26%	5
Crestor®	Rosuvastatin	High Cholesterol	T	1.36%	6
Stelara®	Ustekinumab	Inflammatory Conditions	S	1.29%	7
Vyvanse®	Lisdexamfetamine	Ulcer/Reflux	T	1.26%	8
Nexium®	Esomeprazole	Ulcer/Reflux	T	1.01%	9
Cipralex®	Escitalopram oxalate	Depression	T	0.99%	10

*S = Specialty; T = Traditional

Further insights are outlined in the following therapy class section.

> NATIONALLY, AVERAGE ANNUAL DRUG SPENDING PER CLAIMANT INCREASED BY 2.5% IN 2017, TO $861.50, SLIGHTLY LESS THAN THE 2016 SPENDING INCREASE OF 2.9%.

TOP 10 THERAPY CLASSES AND INSIGHTS

SPENDING RANK #1
INFLAMMATORY CONDITIONS

Drugs used to treat inflammatory conditions continue to account for the largest portion of private plan spending.

This therapy class affected just 1.2% of claimants, yet represented 14.2% of overall spending due to the high annual cost of treatments.

Drugs in this class are used to treat a variety of diseases, including rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, psoriasis, and Crohn's disease. Specialty drugs account for 95% of spending; the average cost per specialty prescription is 15 times higher than that of traditional prescriptions.

The inflammatory conditions therapy class has been number one in drug spending for the past five years.

The top three chemicals remain the same for 2017 when compared to 2016:

1. Remicade® and Inflectra® (infliximab);
2. Humira® (adalimumab);
3. Enbrel® and Brenzys® (etanercept).

Infliximab drove an overall increase in utilization within this class and accounts for 33% of spending, down from 36% in 2016. The average cost per infliximab prescription declined in 2017 as increasing availability of biosimilars enhanced competition on price, which helped drive lower net costs.

Traditional drugs include medications for rheumatoid arthritis, such as methotrexate and Arava® (leflunomide), and inflammatory bowel disease treatments such as Mezavant® (mesalazine). Traditional drugs account for almost half of all claims (45%) in the class but only 5% of spending.

Many specialty drugs are approved for the treatment of multiple inflammatory diseases. New indications were approved in 2017 for several existing drugs, which contributed to an increase in overall utilization. These included:

1. Stelara® (ustekinumab), with existing indications for moderate to severe plaque psoriasis and psoriatic arthritis, received additional approval for moderately to severely active Crohn's disease in adults.
2. Enbrel®, previously approved for chronic severe plaque psoriasis in adults, received expanded approval for patients aged 4 to 17. Enbrel® is also approved for moderately to severely active rheumatoid arthritis, moderately to severely active polyarticular juvenile idiopathic arthritis, psoriatic arthritis, and ankylosing spondylitis.
3. Kineret® (anakinra), previously indicated for rheumatoid arthritis, received additional approval for cryopyrin-associated periodic syndromes.
4. Actemra® (tocilizumab) was approved for giant cell arteritis in adults. Actemra® was previously approved for rheumatoid arthritis, polyarticular juvenile idiopathic arthritis, and systemic juvenile idiopathic arthritis.

Biosimilars in this class offer lower-cost alternatives to the reference biologic. For example, Brenzys®, a biosimilar for Enbrel®, was approved in 2016. Its price was further reduced in 2017; it now offers 37% cost savings compared to Enbrel®. Additionally, two new biosimilars were approved in this class in 2017, Erelzi® (a biosimilar for Enbrel®) and Renflexis® (a biosimilar for Remicade®). Although there is still a low uptake of biosimilars, their availability enhances competition to lower costs.

The inflammatory condition class is an ongoing area of focus for drug development. A new biologic, Tremfya® (guselkumab), was approved in 2017 for use in moderate to severe plaque psoriasis. It has the same pharmacologic mechanism of action as Stelara® (ustekinumab) with a lower cost, and is expected to occupy the same place in therapy. Another new biologic, Kevzara® (sarilumab), was approved in 2017 for use in rheumatoid arthritis. While the mechanism of action is comparable to Actemra® (tocilizumab), Kevzara®'s dosage, and therefore its cost, is more predictable.

The potential approval of a biosimilar for Humira® in or after 2019 will increase competition and help to drive lower costs.

Increases in utilization and expanding indications will continue to drive future increases in spending for this therapy class.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
1	Inflammatory Conditions	14.2%	1.7%	6.8%	8.5%

PREVALENCE OF USE (% OF CLAIMANTS):	1.2%
AVERAGE COST PER CLAIMANT:	$10,041
DRUG TYPE CLASSIFICATION BY CLAIMS:	45% Traditional / 55% Specialty
DRUG TYPE CLASSIFICATION BY SPEND:	95% Traditional / 5% Specialty
2016 RANK:	1

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	infliximab	Remicade® / Inflectra®	Specialty	33.2%
2	adalimumab	Humira®	Specialty	26.0%
3	etanercept	Enbrel® / Brenzys®	Specialty	8.8%
4	ustekinumab	Stelara®	Specialty	8.8%
5	golimumab	Simponi®	Specialty	4.2%
	Others			19.1%

> THE INFLAMMATORY CONDITIONS THERAPY CLASS HAS BEEN NUMBER ONE IN DRUG SPENDING FOR THE PAST FIVE YEARS.

SPENDING RANK #2
DIABETES

The diabetes therapy class is the most expensive among traditional therapies. The proportion of overall spending (9.6%) and percentage of claimants (7.5%) increased from 2016.

Diabetes is a chronic condition that may lead to serious complications if the disease is not managed appropriately. About 5% to 10% of people with the disease have type 1 diabetes, a disorder in which the pancreas does not produce insulin. Type 2 diabetes, a disorder in which the body cannot properly use the insulin that is released or does not produce enough insulin, accounts for the other 90%. Hyperglycemia, or high levels of blood glucose, is a common effect of uncontrolled diabetes, and over time leads to damage to many of the body's systems, including the heart, eyes, kidneys, and nerves. The number of people with diabetes globally has almost quadrupled over the last 35 years and will continue to grow as the world's population ages.

The diabetes therapy class includes oral and injectable medications, insulin, and diabetic supplies such as blood glucose test strips, lancets, and syringes. The breakdown of spending in this therapy class is as follows: medications (54.3%), insulin (22.5%), and supplies (23.2%).

The overall trend of 4.8% was driven mainly by an increase in cost per prescription (4.4%). Utilization remained relatively flat at 0.4%.

There are a number of drug classes that target different pathophysiologic abnormalities associated with type 2 diabetes to lower glucose levels. Metformin is generally the first choice for type 2 diabetes because of its efficacy, safety, and low cost. If metformin and lifestyle modifications are not sufficient to control blood glucose levels, other medications may be added.

Second-line glucose-lowering medications include dipeptidyl peptidase 4 inhibitors (DPP-4 inhibitors), glucagon-like peptide-1 receptor agonists (GLP-1 receptor agonists), sodium-glucose transport-2 inhibitors (SGLT2 inhibitors), insulin secretagogues, thiazolidinediones, and insulin.

- **DPP-4 inhibitors** lower blood glucose by increasing insulin levels after meals and by lowering glucagon levels (a hormone that raises blood glucose). They do not cause weight gain and are associated with a low risk of hypoglycemia (dangerously low blood glucose levels). DPP-4 inhibitors include Trajenta® (linaliptin), Onglyza® (saxagliptin), and Januvia® (sitagliptin).
- **GLP-1 receptor agonists** are injectable medications. They increase insulin levels, which helps lower blood glucose and glucagon levels. They also slow digestion and reduce appetite. They are associated with weight loss and a low risk of hypoglycemia. GLP-1 receptor agonists include Victoza® (liraglutide), Byetta® / Bydureon® (exenatide), and Trulicity® (dulaglutide).
- **SGLT2 inhibitors** work by eliminating glucose into the urine. They are associated with weight loss and a low risk of hypoglycemia. SGLT2 inhibitors include Invokana® (canagliflozin), Forxiga® (dapagliflozin), and Jardiance® (empagliflozin).
- **Insulin secretagogues** help the pancreas release more insulin. Examples include Diamicron® (gliclazide) and GlucoNorm® (repaglinide).
- **Thiazolidinediones** make the body's tissues more sensitive to insulin. Side effects include weight gain and an increased risk of heart failure and fractures. Thiazolidinediones include Actos® (pioglitazone) and Avandia® (rosiglitazone).
- Many people who have type 2 diabetes need **insulin therapy** as well. A mixture of insulin types may be required day and night. Often, people with type 2 diabetes start with one injection of long-acting insulin at night.

Within the top five, two branded medications, Janumet®/Janumet® XR (rank #2) and Victoza® (rank #4), accounted for 19.7% of spending. Janumet® is a combination product containing Januvia® and metformin. On its own, metformin had the highest number of claims in this class, but ranked #5 by spending due to its low cost. In comparison, Victoza® is over 13 times the cost per prescription of metformin.

As mentioned above, insulin accounts for 22.5% of spending in the diabetes therapy class. Of note:

- Basaglar™ (insulin glargine) – the first biosimilar insulin to Lantus® – launched in December 2015, helped reduce insulin spending. Lantus®, ranked #2 by spending in 2016, moved to #3 in 2017. Basaglar™ offers 25% cost savings over Lantus®.
- Spending on Toujeo™ increased to 22% in 2017 from 15% in 2016. Toujeo™ is a concentrated form of Lantus® and Basaglar™.
- Tresiba® (insulin degludec), a new long-acting insulin, was approved in 2017 and will compete with insulin glargine and insuling determir (Levemir®) products.
- A second biosimilar in this class, Admelog® (insulin lispro) was approved in December 2017 but has not yet been launched. A rapid-acting insulin, Admelog® is highly similar to the reference product Humalog®, with comparable quality, safety, and efficacy.

Diabetes treatment continues to be a focus of drug development. In June 2017, Adlyxine® (lixisenatide) became the fifth GLP-1 agonist approved in Canada. Adlyxine® is the second GLP-1 agonist with once-daily dosage, after Victoza®. In February 2018, the sixth GLP-1 agonist, Ozempic® (semiglutide), was approved. Ozempic®'s full role in therapy will develop as further information becomes available with respect to cardiovascular risk reduction.

In December 2017, Victoza® (liraglutide) became the second drug, after Jardiance® (empagliflozin), to be indicated to reduce the incidence of cardiovascular death in type 2 diabetes patients with established cardiovascular disease. This expanded indication was supported by the results of the liraglutide cardiovascular outcomes trial published in June 2016, **L**iraglutide **E**ffect and **A**ction in **D**iabetes: **E**valuation of Cardiovascular Outcome **R**esults (LEADER).

Looking forward, a rising trend is expected in this therapy class due to increased utilization of Victoza® and other expensive therapies that have positive cardiovascular effects. As a result, the high blood pressure and high cholesterol therapy classes will follow the same trend, as these drugs are prescribed for vascular protection in diabetics without diagnosed high blood pressure or high cholesterol, assuming prescribers follow guidelines.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
2	Diabetes	9.6%	0.4%	4.4%	4.8%

PREVALENCE OF USE (% OF CLAIMANTS):	7.5%
AVERAGE COST PER CLAIMANT:	$1,058
DRUG TYPE CLASSIFICATION BY CLAIMS:	100% Traditional
DRUG TYPE CLASSIFICATION BY SPEND:	100% Traditional
2016 RANK:	2

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	blood glucose test strips	Contour® Next/ One Touch Verio®/ Others	Traditional	18.1%
2	sitagliptin-metformin	Janumet®/Janumet® XR	Traditional	11.0%
3	insulin glargine	Lantus®/Basaglar™/Toujeo™	Traditional	10.3%
4	liraglutide	Victoza®	Traditional	8.7%
5	metformin	Glucophage®	Traditional	7.0%
	Others			44.9%

SPENDING RANK #3

HIGH BLOOD PRESSURE

Hypertension (high blood pressure), affects close to a quarter of Canadian adults and is a major risk factor for heart disease and stroke. Traditional drugs used to treat this disorder ranked first in claims volume and third in spending. In addition, this class ranked highest for prevalence of claimants (17.7%) for chronic conditions.

The overall trend decreased by 2.1%, primarily due to a decrease in the cost per prescription. The average cost per claimant also decreased slightly in 2017, to $279 from $284.

The first generic for Olmetec® (olmesartan) and Olmetec® Plus (olmesartan/hydrochlorothiazide) was launched in May 2017. Spending on olmesartan and olmesartan/hydrochlorothiazide decreased by 0.9% in 2017 due to the availability of lower-cost generic alternatives. For olmesartan alone, the cost per prescription declined by 25.4%. The first-time generic for Inspra® (eplerenone), approved in 2017, will have minimal impact due to low spending on this medication (0.3%).

The trend for this therapy class is projected to continue to decline due to the generic availability of Coversyl® (olmesartan) and Coversyl® Plus (olmesartan/hydrochlorothiazide), approved in March 2018. Coversyl® and Coversyl® Plus accounted for 23.6% of spending within this class in 2017 and ranked #1 and #3, respectively.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
3	High Blood Pressure	5.9%	-0.9%	-1.2%	-2.1%

PREVALENCE OF USE (% OF CLAIMANTS):	17.7%
AVERAGE COST PER CLAIMANT:	$279
DRUG TYPE CLASSIFICATION BY CLAIMS:	100% Traditional
DRUG TYPE CLASSIFICATION BY SPEND:	100% Traditional
2016 RANK:	3

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	perindopril	Coversyl®	Traditional	16.1%
2	amlodipine	Norvasc®	Traditional	10.7%
3	perindopril–indapamide	Coversyl® Plus	Traditional	7.5%
4	ramipril	Altace®	Traditional	5.3%
5	nifedipine	Adalat®	Traditional	4.7%
	Others			55.7%

SPENDING RANK #4

DEPRESSION

Depression, a complex mood disorder associated with major productivity losses such as absenteeism and disability, ranked third in claims volume and fourth in spending. The overall trend decreased by 1.9%, driven mainly by a reduction in cost per prescription.

The top five drugs by market share, all generics, captured 60.8% of spending. Note that the first generic for Pristiq® (desvenlafaxine) was only launched in November 2017, so the shift from brand-to-generic will have more impact in 2018. Cymbalta® (duloxetine) dropped from #1 to #4 in 2016, after generic alternatives became available the same year, with a reduction of 43% in cost per prescription.

Viibryd® (vilazodone), the first drug of a new class, selective partial agonist reuptake inhibitor (SPARI), launched in January 2018. Due to its unique mode of action, Viibryd® may be useful in patients whose depression has not responded to treatment with other, older antidepressants.

No new drugs targeting widespread depression are in the pipeline. Instead, development is focused on small populations who have severe, treatment-resistant depression. With decreases in cost per prescription expected to level off and no significant drugs in development, the spending trend in this category is expected to remain relatively flat.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
4	Depression	5.3%	4.1%	-6.0%	-1.9%

PREVALENCE OF USE (% OF CLAIMANTS):	14.0%
AVERAGE COST PER CLAIMANT:	$313
DRUG TYPE CLASSIFICATION BY CLAIMS:	100% Traditional
DRUG TYPE CLASSIFICATION BY SPEND:	100% Traditional
2016 RANK:	4

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	escitalopram	Cipralex®	Traditional	19.0%
2	venlafaxine	Effexor®	Traditional	12.4%
3	desvenlafaxine	Pristiq®	Traditional	11.4%
4	duloxetine	Cymbalta®	Traditional	10.6%
5	sertraline	Zoloft®	Traditional	7.4%
	Others			39.2%

SPENDING RANK #5

ASTHMA AND COPD

The asthma and chronic obstructive pulmonary disease (COPD) therapy class ranked fifth in spending, with a high prevalence of claimants (14.7%). These conditions are treated primarily with traditional medications but claims volume for specialty drugs within this class is growing. Specialty spending increased from 14% in 2016 to 17% in 2017, contributing to an overall increase in cost per prescription. The average cost per specialty prescription is 23 times higher than that of traditional prescriptions.

Although COPD and asthma are considered separate respiratory diseases, they have some symptoms in common and are treated by the same medications. As an example, the highest spending in this category in 2016 and 2017 was for Symbicort® (budesonide/formoterol), a combination of inhaled corticosteroid and long-acting beta-agonist bronchodilator indicated for asthma and COPD.

The second-highest drug by spending is Xolair® (omalizumab), a specialty drug for severe allergic asthma not adequately controlled with other treatments. In 2017, this indication was expanded to patients from 6 to 12 years of age, which will contribute to increased utilization.

A new specialty medication in this class, Fasenra® (benralizumab), was approved in early 2018. An adjunct therapy, Fasenra®, will be used for maintenance treatment of adult patients with severe eosinophilic asthma. Compared to Nucala™ (mepolizumab) and Cinqair™ (reslizumab), the drugs currently used for these patients, Fasenra®'s dosing schedule of every eight weeks may represent a practical advantage. Utilization for Nucala™ and Cinqair™ is low; these two medications combined account for 11% of specialty spending within this class.

Spending on traditional medications is projected to decline with the possible approval of generic alternatives for Flovent® (fluticasone) and Advair® (fluticasone/salmetrol) in the coming years. The delay in the introduction of generic versions in this class is due to the complexity of the manufacturing process for respiratory delivery devices. The majority of drugs are delivered by inhalation to minimize adverse effects and provide targeted efficacy. Most drugs in this class are branded inhaled drugs with similar costs. Minimal cost savings opportunities are available. The wide variety of delivery devices available make device-patient matching and device training essential for appropriate use of these drugs. Other new drugs may increase competition within this therapy class in the future, potentially lowering costs.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
5	Asthma and COPD	5.0%	-2.3%	6.5%	4.2%

PREVALENCE OF USE (% OF CLAIMANTS):	14.7%
AVERAGE COST PER CLAIMANT:	$286
DRUG TYPE CLASSIFICATION BY CLAIMS:	83% Traditional / 17% Specialty
DRUG TYPE CLASSIFICATION BY SPEND:	99% Traditional / 1% Specialty
2016 RANK:	5

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	budesonide-formoterol	Symbicort®	Traditional	17.1%
2	omalizumab	Xolair®	Specialty	16.4%
3	fluticasone-salmeterol	Advair®	Traditional	14.3%
4	fluticasone	Flovent®	Traditional	11.6%
5	montelukast	Singulair®	Traditional	8.2%
	Others			32.3%

SPENDING RANK #6

PAIN AND INFLAMMATION

Medications used to treat pain and inflammation include opioids, nonsteroidal anti-inflammatory drugs (NSAIDs) and non-narcotic drugs. The trend in this class decreased by 2.7%, influenced by a decline in cost per prescription (3.3%) and fairly flat utilization (0.5%). Drugs for pain and inflammation are widely used, with more than one in four claimants using a drug within this therapy class. The breakdown of spending is as follows: opioids (45.3%), NSAIDs (27.8%) and non-narcotic drugs (26.9%). Within the top 10 drugs in this class by spending, unit costs went down for most drugs, with a decrease of more than 10% for oxycodone, celecoxib, and tramadol. The first-time generic for Vimovo® (esomeprazole-naproxen), approved in early 2017, had minimal impact due to a decrease in cost per prescription of only 3.1%.

The overall trend for pain and inflammation is expected to continue to decline over the next few years due to concerns about opioid abuse. Compensatory increases in NSAIDs and non-narcotic drugs may potentially occur.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
6	Pain and Inflammation	4.1%	0.5%	-3.3	-2.7%

PREVALENCE OF USE (% OF CLAIMANTS):	28.2%
AVERAGE COST PER CLAIMANT:	$120
DRUG TYPE CLASSIFICATION BY CLAIMS:	100% Traditional
DRUG TYPE CLASSIFICATION BY SPEND:	100% Traditional
2016 RANK:	6

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	oxycodone	Oxyneo®, Oxy-IR®	Traditional	9.2%
2	naproxen	Naprosyn®	Traditional	8.8%
3	esomeprazole-naproxen	Vimovo®	Traditional	8.5%
4	hydromorphone	Dilaudid®	Traditional	8.3%
5	tramadol-acetaminophen	Tramacet®	Traditional	7.3%
	Others			57.9%

SPENDING RANK #7

CANCER

Almost half of all Canadians will develop cancer in their lifetime – one-quarter of Canadians are expected to die of the disease, which has been the leading cause of death in Canada for the last 10 years. Due to these alarming statistics, the most prolific drug development research underway today is aimed at the treatment of cancer.

The latest milestones include immunotherapy and targeted therapy:

- Immunotherapy uses the body's immune system to fight cancer cells (immune checkpoint inhibitors are a type of immunotherapy);
- Targeted therapy refers to treatment with drugs that have been developed to "target" cancer cells, leaving healthy cells alone.

Cancer ranked #7 by overall spending in 2017, up from #10 in 2016. Specialty spending accounts for 95% of costs in this class; the average cost per specialty prescription is nine times higher than traditional prescriptions.

For 2017, the trend increased by 10.8% due to an 11.2% increase in cost per prescription.

New developments continue. For example, immune checkpoint inhibitors block proteins that stop the immune system from attacking cancer cells. Since these targets are present in many different types of cancer, drugs within this class may potentially be used for different tumour types. In 2017, immune checkpoint inhibitors Opdivo® (nivolumab) and Keytruda® (pembrolizumab) were each approved for two additional indications.

There were also two new cancer drug approvals in 2017: Tecentriq® (atezolizumab) was approved for locally advanced or metastatic urothelial carcinoma and Rydapt® (midostaurin) became the first targeted therapy for the most common form of acute myeloid leukemia.

The trend in this class will continue to increase due to the high cost of branded cancer medications. The availability of generic cancer medications for geftinib, melphalan, and busulfan, approved in 2017, will have minimal impact on spending in 2018 due to their low utilization. The increasing prevalence of self-administered cancer medications, sometimes as maintenance therapy, is expected to result in higher utilization and cost moving forward. A strong pipeline in specialty cancer therapies will also contribute to future brand inflation over the next three years. Refer to the appendix for a listing of possible near-term approvals of new brands.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
7	Cancer	3.8%	-0.4%	11.2%	10.8%

PREVALENCE OF USE (% OF CLAIMANTS):	1.44%
AVERAGE COST PER CLAIMANT:	$2,174
DRUG TYPE CLASSIFICATION BY CLAIMS:	34% Traditional / 66% Specialty
DRUG TYPE CLASSIFICATION BY SPEND:	5% Traditional / 95% Specialty
2016 RANK:	10

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	lenalidomide	Revlimid®	Specialty	14.9%
2	leuprolide	Eligard®	Specialty	6.0%
3	imatinib	Gleevec®	Specialty	5.1%
4	rituximab	Rituxan®	Specialty	4.9%
5	dasatinib	Sprycel®	Specialty	4.8%
	Others			64.2%

SPENDING RANK #8
INFECTIONS

Antibiotics have been one of the most important discoveries of the 20th century. They are indispensable in treating everyday bacterial infections, helping to save millions of lives, and controlling the spread of infectious diseases. The infections therapy class includes antibiotics, antifungals, and antivirals primarily used for treating acute infections. Drugs used for high-cost infectious diseases, such as HIV/AIDS, chronic hepatitis C, and lung infections among cystic fibrosis patients, are in other distinct therapy classes.

Drugs in the infections therapy class have a high utilization (45% of claimants) and rank fourth by claims volume. Spending will continue to decrease due to more conservative prescribing, as there is greater awareness among the medical community about potential overprescribing leading to antimicrobial resistance.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
8	Infections	3.7%	-6.2%	2.1%	-4.1%

PREVALENCE OF USE (% OF CLAIMANTS):	44.6%
AVERAGE COST PER CLAIMANT:	$69
DRUG TYPE CLASSIFICATION BY CLAIMS:	99% Traditional / 1% Specialty
DRUG TYPE CLASSIFICATION BY SPEND:	92% Traditional / 8% Specialty
2016 RANK:	8

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	amoxicillin	Amoxil®	Traditional	13.9%
2	valacyclovir	Valtrex®	Traditional	12.0%
3	clarithromycin	Biaxin®	Traditional	6.8%
4	azithromycin	Zithromax®	Traditional	5.6%
5	cephalexin	Keflex®	Traditional	4.9%
	Others			56.8%

> SPECIALTY SPENDING ACCOUNTS FOR 95% OF COSTS IN THIS [CANCER] CLASS; THE AVERAGE COST PER SPECIALTY PRESCRIPTION IS NINE TIMES HIGHER THAN TRADITIONAL PRESCRIPTIONS.

SPENDING RANK #9

ULCER AND REFLUX

Drugs used to treat gastric ulcers and gastroesophageal reflux include proton-pump inhibitors (PPIs) and histamine H_2 receptor antagonists (H_2RAs). This class consists of traditional drugs, with PPIs accounting for 94.2% of spending. The overall trend for this class decreased by 7.1% as a result of reductions in both cost per prescription (4.4%) and utilization (2.7%). Almost all PPIs and H_2RAs are available as generics, with the exception of Dexilant® (dexlansoprazole). All PPI unit costs decreased, with the greatest reduction for pantoprazole magnesium (12.2%).

Most common indications, such as gastroesophageal reflux disease (GERD), require short-term treatment; however, chronic use frequently occurs. The latest guidelines recommend deprescribing PPIs (reducing dose, stopping, or using "on-demand" dosing) in adults who have completed a minimum of four weeks of treatment for mild to moderate gastroesophageal reflux disease or esophagitis, and whose symptoms are resolved. This will continue to drive a downward trend in utilization for this class.

This trend is projected to continue to decline due to deprescribing initiatives and because there are no new therapies in the pipeline for this class.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
9	Ulcer and Reflux	3.6%	-2.7%	-4.4%	-7.1%

PREVALENCE OF USE (% OF CLAIMANTS):	14.9%
AVERAGE COST PER CLAIMANT:	$204
DRUG TYPE CLASSIFICATION BY CLAIMS:	100% Traditional
DRUG TYPE CLASSIFICATION BY SPEND:	100% Traditional
2016 RANK:	7

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	esomeprazole magnesium	Nexium®	Traditional	31.1%
2	pantoprazole sodium	Pantoloc®	Traditional	20.6%
3	dexlansoprazole	Dexilant®	Traditional	16.8%
4	lansoprazole	Prevacid®	Traditional	9.7%
5	omeprazole	Losec®	Traditional	6.2%
	Others			15.5%

SPENDING RANK #10

HIGH CHOLESTEROL

A negative trend continued for medications treating high blood cholesterol due to a slight decrease in utilization and cost per prescription. Traditional medications make up 99% of market share in this class and include statins, fibrates, cholesterol absorption inhibitors, bile-acid sequestrants, and niacin (nicotinic acid) derivatives, all of which are available as generics.

Specialty drugs for high blood cholesterol, which include PCSK9 inhibitors, are included in this therapy class. Use of PCSK9 inhibitors remains low due to robust clinical prior authorization criteria and a higher than average prior authorization rejection rate. However, PCSK9 inhibitors now represent 3% of spending in this class, up from 0.4% in 2016. Repatha® (evolocumab) ranked #6 in 2017, up from #14 in 2016. The average cost per specialty prescription is 18 times higher than traditional prescriptions.

In 2017 and early 2018, two trials were conducted with the two available PCSK9 inhibitors, Repatha® and Praluent® (alirocumab) (called FOURIER and ODYSSEY OUTCOMES, respectively), to see if adding these drugs to optimized statin therapy would deliver a reduction in cardiovascular events. Individuals receiving PCSK9 inhibitors reached very low LDL-C levels and also experienced significant improvements in cardiovascular risk. This type of cardiovascular risk reduction may potentially increase utilization of high-cost PCSK9 inhibitors in the future.

Spending on traditional medications in this class is expected to continue to decline due to generic cost reductions; spending on specialty medications in this class is expected to continue to increase with greater utilization of PCSK9 inhibitors.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
10	High Cholesterol	3.5%	-1.6%	-2.9%	-4.4%

PREVALENCE OF USE (% OF CLAIMANTS):	12.1%
AVERAGE COST PER CLAIMANT:	$238
DRUG TYPE CLASSIFICATION BY CLAIMS:	99% Traditional / 1% Specialty
DRUG TYPE CLASSIFICATION BY SPEND:	97% Traditional / 3% Specialty
2016 RANK:	9

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	rosuvastatin	Crestor®	Traditional	42.3%
2	atorvastatin	Lipitor®	Traditional	31.2%
3	ezetimibe	Ezetrol®	Traditional	6.9%
4	fenofibrate	Lipidil®	Traditional	3.7%
5	pravastatin	Pravachol®	Traditional	2.8%
	Others			13.0%

OTHER NOTABLE THERAPY CLASSES

MULTIPLE SCLEROSIS (SPENDING RANK #12)

Multiple sclerosis (MS) is a potentially disabling disease of the brain and spinal cord (central nervous system). Canada has one of the highest rates of MS in the world, with an estimated one in 340 Canadians living with the disease. In individuals with MS, the immune system attacks the protective sheath (myelin) that covers nerve fibers, which causes communication problems between the brain and the rest of the body. Signs and symptoms vary widely, depending on the amount of nerve damage and on which nerves are affected. Some people with severe MS may lose the ability to walk independently or at all, while others may experience long periods of remission without any new symptoms.

This therapy class impacted only 0.13% of claimants yet represented 3% of overall spending due to a high annual cost per treatment. The average cost per claimant increased to $19,251 in 2017. The utilization trend was negative, with a decline of 1.3%. This class is currently dominated by Gilenya® (fingolimod), Tecfidera® (dimethyl fumarate), Copaxone® (glatiramer acetate), Rebif®/ Avonex® (interferon beta-1a), and Aubagio® (teriflunomide). These five drugs account for more than 80% of prescriptions and more than 80% of spending within this class.

In early 2017, Glatect™ became the first subsequent-entry, non-biological complex drug for Copaxone® (glatiramer acetate). Glatect™ is not a biologic because it is not a substance produced by living cells; however, it is a complex drug, and, as a result, the approval process is comparable to that of biosimilars. In addition, unlike generics, Glatect™ cannot be substituted for Copaxone® at the pharmacy point of care. In 2017, Glatect™'s cost was further reduced in 2016. Although there was low uptake of Glatect™ in 2017, its availability enhances competition to potentially drive lower costs.

Ocrevus™ (ocrelizumab) became available in 2017, the first drug approved in Canada for primary progressive multiple sclerosis (PPMS). Approximately 15% of people with MS are diagnosed with PPMS, which is characterized by worsening neurologic function (accumulation of disability) from the onset of symptoms, without early relapses or remissions.

Zinbryta™ (daclizumab), approved in 2017, was voluntarily withdrawn in 2018 due to reports of serious inflammatory brain disorders, including encephalitis.

A continued rising trend is expected due to increases in cost per prescription as oral therapies continue to dominate this class.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
12	Multiple Sclerosis	3.0%	-1.3%	1.6%	0.4%

PREVALENCE OF USE (% OF CLAIMANTS):	0.13%
AVERAGE COST PER CLAIMANT:	$19,251
DRUG TYPE CLASSIFICATION BY CLAIMS:	100% Specialty
DRUG TYPE CLASSIFICATION BY SPEND:	100% Specialty
2016 RANK:	11

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	fingolimod	Gilenya®	Specialty	21.8%
2	dimethyl fumarate	Tecfidera®	Specialty	16.0%
3	glatiramer acetate	Copaxone®	Specialty	15.2%
4	interferon beta-1a	Avonex® / Rebif®	Specialty	13.8%
5	teriflunomide	Aubagio®	Specialty	13.2%
	Others			19.9%

HEPATITIS C (SPENDING RANK #27)

Hepatitis C virus causes both acute and chronic infection. Acute infection is usually asymptomatic and is rarely, if ever, associated with life-threatening diseases. About 15% to 45% of infected individuals spontaneously clear the virus within six months of infection without any treatment. The remaining persons will develop chronic infection; their risk of developing cirrhosis of the liver within 20 years is between 15% and 30%.

The therapy class for hepatitis C dropped from 3% of overall spending in 2015 to 1.1% in 2016 as the initial surge of patients on curative therapy ended. In 2017, there was a further drop in utilization, with this class now accounting for slightly less than 1% of total spending. The overall downward trend was driven by a large decline in utilization (27.5%).

This class includes specialty drugs with an average cost per claimant of $18,058. Growing use of Epclusa™ (sofosbuvir/velpatasvir) accounts for almost half of all prescriptions. Epclusa™ and Harvoni® (ledipasvir-sofosbuvir) together capture 83.9% of market share. Harvoni®, approved in 2014, is among the curative therapies that propelled this class into the top 10 in 2015.

New drugs Vosevi™ (sofosbuvir/velpatasvir/voxilaprevir) and Maviret™ (glecaprevir/pibrentasvir), approved in September 2017, captured 1.5% of market share. Both are indicated for treatment-experienced patients (those who have not responded to earlier treatments); Maviret™ also received approval for treatment-naïve patients (those who have never received treatment). Due to the quick uptake of Vosevi™ , it appeared in the top five drugs for this class by market share in 2017. This is a result of treatment-experienced patients waiting for therapy to become available; a similar effect occurred when these drugs first became available.

Spending for hepatitis C will continue to decline, though not as sharply as in 2016 and 2017, as utilization has plateaued.

2017 RANK	THERAPY CLASS	% OF OVERALL SPEND	TREND		
			UTILIZATION	COST	TOTAL
27	Hepatitis C	0.8%	-27.5%	18.3%	-9.2%

PREVALENCE OF USE (% OF CLAIMANTS):	0.04%
AVERAGE COST PER CLAIMANT:	$18,058
DRUG TYPE CLASSIFICATION BY CLAIMS:	100% Specialty
DRUG TYPE CLASSIFICATION BY SPEND:	100% Specialty
2016 RANK:	25

TOP DRUGS BY SPEND	DRUG NAME	COMMON (REFERENCE) BRAND	DRUG TYPE	% OF SPENDING WITHIN CATEGORY
1	sofosbuvir-velpatasvir	Epclusa™	Specialty	66.3%
2	ledipasvir-sofosbuvir	Harvoni®	Specialty	17.6%
3	elbasvir-grazoprevir	Zepatier®	Specialty	6.9%
4	ombitasvir-paritaprevir-ritonavir-dasabuvir	Holkira® Pak	Specialty	4.9%
5	sofosbuvir-velpatasvir-voxilaprevir	Vosevi™	Specialty	1.3%
	Others			3.0%

SECTION III.

NATIONAL AND PROVINCIAL OVERVIEW

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SECTION III.

NATIONAL AND PROVINCIAL OVERVIEW

There were several 2017 developments at national and provincial levels that could potentially impact the pharmacy landscape for private drug plans in Canada. This section highlights these notable changes and explores drug trends at a provincial level.

NOTEWORTHY NATIONAL DEVELOPMENTS

Genetic Non-Discrimination Act. In force since May 2017, this act prohibits any person from requiring an individual to undergo a genetic test or disclose the results of such a test as a condition of providing goods or services to, entering into or continuing a contract or agreement with, or offering specific conditions in a contract or agreement with the individual. Exceptions are provided for healthcare practitioners and researchers. The act also provides individuals other protections related to genetic testing and test results. Medical information collection and clinical criteria are concretely impacted: genetic diseases are no longer identified and reimbursement criteria relating to genetic tests have been abolished. This act could potentially have a negative impact on the ability of a plan to determine the "right drug" for the "right person" in cases where prior authorization criteria rely on the identification of a genetic characteristic to determine the appropriateness of a therapy.

The "abortion pill." Mifegymiso® (mifepristone/misoprostol), initially known as RU-486, is the first medication available in Canada to bring about abortions. Following a lengthy approval process, provinces such as Ontario, Quebec, British Columbia, Alberta, and New Brunswick began to provide free access to the drug to women with a valid health card and a prescription from an eligible healthcare practitioner. Other provinces, such as Saskatchewan and Manitoba, have added the abortion pill as a regular benefit under pharmacare.

Opioid control. The growing number of overdoses and deaths caused by opioids is a national public health crisis, which the Federal Minister of Health addressed as a top priority in 2016. Opioids are thought to have caused more than 2,800 deaths in 2016 – a rate of 8.8 deaths per 100,000 Canadians. Health Canada estimates that 4,000 deaths were caused by opioids in 2017, showing that this crisis persists, and its extent continues to grow significantly.

In response, the Public Health Agency of Canada (PHAC) developed an emergency plan in February 2017. One of the major measures was to move naloxone, an emergency drug that prevents or reverses the effects of opioids, from Schedule I to Schedule II on the Prescription Drug List. This allows pharmacists to distribute naloxone without a prescription and therefore improves access. Many provinces allow the distribution of naloxone (in the form of a take-home kit) through provincial programs, making it free of charge for all opioid users or to individuals likely to witness and respond to an overdose.

Additionally, Health Canada now allows urgent importation of drugs needed to treat opioid addiction. These drugs, currently not accessible on the Canadian market, will be listed for a year, after which time they will be removed unless Health Canada receives notification for continuous access to this medication. Finally, the federal government is making access to treatment for opioid addiction easier. It will eliminate the need for prescribers to get an exemption to prescribe or administer methadone. Additionally, forthcoming legal changes will allow patients to access prescribed heroin outside of a hospital setting when appropriate. These measures are expected to facilitate access to treatment for patients who struggle with addiction.

Patented Medicine Prices Review Board (PMPRB) Reform. In 2017, the Government of Canada proposed changes to the Patented Medicines Regulations, representing the first major update in more than 20 years. These guidelines, expected in 2019, are intended to provide the PMPRB with the tools it needs to better protect Canadians from the high prices of patented drugs, improving accessibility, affordability, and appropriate use of medicine to better meet healthcare needs. The proposed amendments focus on five key areas:

- Providing the PMPRB with new factors to consider in regulating the price of a patented medicine;
- Amending the list of countries used for international price comparisons to include those with similar consumer protection priorities, economic wealth, and marketed medicines;
- Reducing the regulatory burden for generic drugs with a patent, as these products pose a lower risk of asserting market power and charging excessive prices;
- Modernizing reporting requirements for patentees in relation to the new factors;
- Requiring patentees to report price and revenue information net of all price adjustments, such as direct or indirect third-party discounts or rebates.

Reduced prices for patented medicines are estimated to produce a net benefit to Canadians of $12.6 billion over 10 years. Lower prices will alleviate financial pressures on public and private insurers and improve affordable access for Canadians paying out-of-pocket.

Cannabis legalization. Cannabis legalization is planned for August 2018. However, the framework and application of this new act remain blurry. Plan sponsors will need to consider coverage of medical cannabis, as it could impact them greatly. ESC is closely monitoring new developments in this matter to provide optimal solutions for carriers when the law goes into effect.

National Pharmacare. The House of Commons' standing committee on health has studied the development of a national pharmacare program. In April 2018, a report entitled "Pharmacare Now: Prescription Medicine Coverage For All Canadians' was issued, recommending the creation of a universal, single public payor prescription drug coverage program for all Canadians. The ultimate goal is to provide greater access to prescription drugs for those who can't currently afford their medication, especially Canadians lacking a group benefit plan. The federal government also announced the establishment of a national advisory council panel to look at how pharmacare could be implemented, with a final report due next spring.

Pharmacare is expected to loom large in the next federal election, which is scheduled on or before October 2019. As this measure could greatly impact plan sponsors, ESC will continue to monitor closely.

> HEALTH CANADA ESTIMATES THAT 4,000 DEATHS WERE CAUSED BY OPIOIDS IN 2017, SHOWING THAT THIS CRISIS PERSISTS, AND ITS EXTENT CONTINUES TO GROW SIGNIFICANTLY.

PAN-CANADIAN PHARMACEUTICAL ALLIANCE (pCPA)

Provincial health authorities continued to work together in 2017 through the pan-Canadian Pharmaceutical Alliance (pCPA) to achieve greater value for drugs, patients and publicly funded programs. Established in August 2010, the pCPA conducts joint provincial and territorial negotiations for generic and brand-name drugs. All brand-name drugs submitted for funding through the national review process – Common Drug Review (CDR) or pan-Canadian Oncology Drug Review (pCODR) – are considered for negotiation through the pCPA. As of March 31, 2017, the pCPA's efforts and collaborative negotiations have led to an estimated $1.28 billion in annual savings.

Generic Initiative. As of April 1, 2018, the generic versions of nearly 70 of the most commonly prescribed drugs in Canada will be priced at 10% or 18% of the equivalent brand-name product, the result of a five-year agreement made between pCPA and the Canadian Generic Pharmaceutical Association (CGPA) in January 2018. Overall discounts of up to 90% are expected; in exchange, tendering will not be pursued by the participating drug plans over the five-year term. The province of Quebec helped drive this agreement by adopting Bill 81 in 2016, allowing the Minister of Health to call for tenders on select generic molecules. The pharmaceutical industry reacted by initiating intense negotiations to avoid other provinces and private insurance plans asking for the same discounts. Eventually, the generic drug companies voluntarily lowered their prices to avoid a tender process.

A similar agreement was negotiated between the Government of Quebec and CGPA in July 2017, which will result in provincial savings of $1.5 billion over the five-year term of the agreement. Quebec has agreed to refrain from tendering for generic prescription medicines during the period of the agreement. Initially intended to take effect in October 2017, this agreement went into effect on April 3, 2018, following the example of other provinces (except for Saskatchewan, which decided to allow a washout period of 30 days).

The expected savings vary between 1.5% to 2% of total overall drug expenditures.

DRUG MOLECULES	COST PERCENTAGE OF REFERENCE BRAND
amlodipine, atorvastatin, citalopram, clopidogrel, donepezil, ezetimibe, gabapentin, metformin, olanzapine, olanzapine orally disintegrating tablet (ODT), omeprazole, pantoprazole, quetiapine, rabeprazole enteric coated (EC), ramipril, ranitidine, rosuvastatin, simvastatin, venlafaxine extended release (XR), zopiclone	10%
alendronate, almotriptan, amiodarone, anastrozole, atenolol, atomoxetine, azithromycin, bicalutamide, bisoprolol, candesartan, candesartan/hydrochlorothiazide, carvedilol, celecoxib, ciprofloxacin, clonazepam, cyclobenzaprine, domperidone, dutasteride, eletriptan, escitalopram, famciclovir, finasteride, fluoxetine, imatinib, irbesartan, irbesartan/hydrochlorothiazide, lamotrigine, levetiracetam, memantine, minocycline, montelukast, mycophenolate, paroxetine, pramipexole, pravastatin, pregabalin, risedronate, risperidone, sertraline, solifenacin, sumatriptan film-coated tablet (DF) , telmisartan, telmisartan/hydrochlorothiazide, terbinafine, topiramate, valacyclovir, valsartan, valsartan/hydrochlorothiazide	18%

PROVINCIAL OVERVIEW

BRITISH COLUMBIA

PRIVATE DRUG TREND

The overall drug trend for private plans in British Columbia was 3.4% in 2017, driven largely by an increase of 2.5% in cost per prescription along with a 0.9% increase in utilization. Specialty drugs represent a lower portion of spending here compared to the national average, 12.8% versus 31% nationally, as BC PharmaCare becomes first payor once a deductible is met, reducing the cost burden of high-cost specialty drugs for private plans. This resulted in an average cost per claimant 36% lower than the national average.

NOTEWORTHY DEVELOPMENTS WITHIN THE PROVINCIAL PUBLIC DRUG BENEFIT PROGRAM

First Nations Health Benefits Plan (Plan W). Since October 2017, First Nations Health Authority (FNHA) clients joined the BC PharmaCare program. Most FNHA clients who receive benefits through Health Canada's Non-Insured Health Benefits (NIHB) program are eligible for coverage of prescribed medications and pharmacy services under the PharmaCare First Nations Health Benefits Plan (or Plan W), which functions with a formulary very similar to the Fair PharmaCare plan (Plan I). Plan W covers 100% of eligible prescriptions and dispensing fee costs (up to the usual PharmaCare maximums) and certain medical supplies and devices for eligible individuals. It is not income-tested, and no deductibles or family maximums apply. This change ensures that BC First Nations have access to drug benefits in the same way as other British Columbians and eliminate problematic interfaces between federal and provincial benefits.

Markup limit. The maximum markup on designated hepatitis C drugs (including Harvoni®, Solvadi®, Galexos® and Holkira® Pak) was reduced from 5% (the usual markup on high-cost drugs under the BC Pharmaceutical Services Act) to 2%.

Biosimilars. BC PharmaCare now covers Brenzys® (biosimilar to Enbrel®) as a Limited Coverage Drug through the Special Authority (SA) program for new patients who require treatment of rheumatoid arthritis and ankylosing spondylitis. PharmaCare will continue to cover patients already approved for Enbrel®. It will also continue to approve Enbrel® for psoriatic arthritis, moderate to severe psoriasis and pediatric patients. In early 2017, BC Pharmacare also added Grastofil® (a biosimilar to Neupogen®) as a Limited Coverage Drug through the SA Program for multiple indications. PharmaCare covers only the biosimilar for all new requests for coverage but continues to cover Neupogen® for existing patients until the expiration of SA coverage.

Opioid control. As part of its response to the opioid crisis, BC Pharmacare now covers Kadian® (slow-release oral morphine) and hydromorphone injection 50 mg/mL as opioid agonist therapies for the treatment of opioid use disorder. Both drugs and dispensing fees are covered up to Pharmacare maximums. However, this has little impact on private payors.

ALBERTA

PRIVATE DRUG TREND

The overall drug trend for private plans in Alberta was 3.7% in 2017. The cost per prescription increased by 3.3% as utilization grew slightly by 0.4%. Specialty drugs represent a lower portion of total spending here compared to the national average (23% versus 31%). This contributed to an average cost per claimant 26% lower than the national average.

NOTEWORTHY DEVELOPMENTS WITHIN THE PROVINCIAL PUBLIC DRUG BENEFIT PROGRAM

Health savings. In early 2018, the Alberta Pharmacists' Association and provincial government announced a collaborative funding framework to reduce healthcare costs and increase affordability for Albertans. This agreement is expected to save $150 million over two years by slowing the growth of spending on the government-sponsored drug program while respecting pharmacy practices. Some of the actions that will take effect in May 2018 include a reduction in dispensing fees and a limit on the number of dispensing fees per patient per year.

Biosimilars. Alberta facilitated access to biosimilars in the same fashion as other provinces. Erelzi® and Brenzys® (biosimilars to Enbrel®) were added to the drug list as first-line treatments for all new coverage requests for rheumatoid arthritis, ankylosing spondylarthritis and polyarticular juvenile idiopathic arthritis (Erelzi® only). Basaglar™ (biosimilar to Lantus®) has also been added as a regular benefit. Additionally, Grastofil® (biosimilar to Neupogen®) was added to the Alberta Drug Benefit List as a drug requiring a special authorization. All requests are now assessed for coverage with Grastofil® instead of Neupogen®; however, coverage for Neupogen® will continue for pediatric patients and patients with specific conditions who are currently maintained on Neupogen®.

> AS OF MARCH 31, 2017, THE pCPA'S EFFORTS AND COLLABORATIVE NEGOTIATIONS HAVE LED TO AN ESTIMATED $1.28 BILLION IN ANNUAL SAVINGS.

SASKATCHEWAN

PRIVATE DRUG TREND

The overall drug trend for private plans in Saskatchewan was 4.8% in 2017, driven almost equally by utilization trend growth (2.5%) and an increase in the cost per prescription (2.3%). Specialty spending was up 1.2%, which explains the cost per prescription increase. However, specialty spending here remains the lowest in the country (5.6% versus the national average of 31%) as Saskatchewan provides coverage for high-cost drugs based on household income and therefore reduces the financial burden on private payors. This resulted in an average cost per claimant 44% lower than the national average.

NOTEWORTHY DEVELOPMENTS WITHIN THE PROVINCIAL PUBLIC DRUG BENEFIT PROGRAM

Maximum Allowable Cost (MAC) policy change. As of January 2017, Saskatchewan made changes to its MAC policy. Under this policy, the price of the most cost-effective drugs, selected from a group of similarly safe and beneficial medications, is used as a guide to set the maximum allowable cost the provincial drug plan will cover for similar drugs used to treat the same condition. Patients taking a prescribed drug whose price is above the MAC have to pay the difference, or they can ask their prescriber for a switch to a drug that is within the MAC. The latter requires a new prescription. Two intranasal corticosteroids (fluticasone and triamcinolone) are no longer covered as they are available over-the-counter for purchase without a prescription. Also, the MAC price threshold was applied to generic versions of intranasal corticosteroids mometasone, beclomethasone, and budesonide. Saskatchewan also lowered the MAC price threshold for the generic versions of proton-pump inhibitors pantoprazole magnesium (Tecta®) and rabeprazole (Pariet®). Reduced reimbursement under the public plan will result in subsequent balance billing to private payors or patients, leading to higher private spending.

Biosimilars. Brenzys® (biosimilar to Enbrel®) was added to the provincial formulary for the treatment of rheumatoid arthritis and ankylosing spondylitis for new patients meeting the criteria for coverage. Patients who had initial approval before October 2017 or those treated for psoriatic arthritis or juvenile rheumatoid arthritis can still obtain coverage for Enbrel®.

MANITOBA

PRIVATE DRUG TREND

The overall drug trend for private plans in Manitoba was 3.7% in 2017, with utilization up 1.5% and the cost per prescription up 2.2%. Although specialty spending here is among the lowest in the country, it increased from 11% to 12% in 2017, bringing the cost per prescription upward. The average cost per claimant in Manitoba was 33% lower than the national average.

NOTEWORTHY DEVELOPMENTS WITHIN THE PROVINCIAL PUBLIC DRUG BENEFIT PROGRAM

Fee limit. Manitoba introduced a cap on dispensing fees to help reduce costs for patients and provincial drug plans while ensuring pharmacies remain able to recover the costs associated with dispensing drugs. Previously, pharmacies could charge a professional fee of their own choice. Since August 2017, a maximum of $30 per prescription can be charged to provincial drug programs, regardless of the base cost of a drug or how a drug is packaged, and for compounding services in a pharmacy. For compounded sterile preparations, no more than $60 per prescription can be charged to Pharmacare. This change will have no impact on private payors as dispensing fees have a lower cap. Later in 2017, Manitoba also reduced the allowable wholesale markup on designated high-cost drugs, ranging from 2% to 5%. This could lead to potential savings for private plans if they decide to follow the government's example.

The Special Drug Program (SDP) policy change. The SDP was launched in 1968 to help Manitobans with medical conditions associated with high drug costs; the plan covered the entire cost of prescriptions. In 1996, Pharmacare was introduced in the province, and new patients enrolling in the program had to pay a deductible based on their household income. People who were already enrolled in the SDP were grandfathered and did not have to pay deductibles. Beginning in April 2018, these previously exempt patients will need to pay the means-tested deductible. This could increase spending for private sponsors as the bill will probably be passed on to them by members.

Exception Drug Status policy change. Most of the drugs under Part 3 Formulary no longer require Exception Drug Status renewal after the initial approval. Maintenance drugs for chronic conditions (for example, Jardiance® and Victoza® for diabetes or Pradaxa® and Eliquis® for anticoagulation) will be indefinitely approved once initial coverage is granted. Any patient who had an active EDS approval as of October 1, 2017, automatically had the approval extended indefinitely.

Biosimilars. Basaglar™ (biosimilar to Lantus®) and Brenzys® (biosimilar to Enbrel®) have been added to the Manitoba Exception Drug Status (EDS) Program, following the example of most provinces. Brenzys® will be the preferred option for all etanercept-naïve patients for the treatment of rheumatoid arthritis and ankylosing spondylitis. Basaglar™ is now the first-line insulin alternative. Grastofil® has also been added as the preferred treatment for all filgrastim-naïve patients under the EDS Program.

ONTARIO

PRIVATE DRUG TREND

The overall drug trend for private plans in Ontario was 2.4% in 2017. The cost per prescription increased by 2.5% as specialty spending increased by 1.1% compared to 2016; utilization was stagnant at -0.1%. Specialty spending here is similar to the national average, 32.5% versus 31%.

NOTEWORTHY DEVELOPMENTS WITHIN THE PROVINCIAL PUBLIC DRUG BENEFIT PROGRAM

OHIP+. OHIP+ came into effect in January 2018, providing full coverage of 4,400 prescription drugs for four million children and young adults under 25 years old. Private payors will likely have to cover drugs not listed under the Ontario Drug Benefit (ODB) or drugs for which patients are not eligible under the Exceptional Access Program (EAP) or Limited Use (LU). In comparing year-over-year expenditures, drug spending for youth in Ontario has dropped by 55% for the month of March 2018 versus March 2017. The impact of OHIP+ will continue to grow as transition DINs begin to get pushed from private to public later this year.

As part of Ontario's 2018 budget, it was proposed that OHIP+ would be expanded to the 2.6 million senior Ontario residents on April 1, 2019. As a result, Ontarians over 65 years old would no longer have to pay a deductible or copayment for prescription drugs covered by the province. This program extension would have a significant impact on employers that offer retiree benefits in Ontario. In the same budget, the Ontario government is also proposing a new drug and dental program, the Ontario Drug and Dental Program (ODDP), in which Ontarians would be reimbursed up to 80% for prescription drugs and dental visits. The program will be capped at a maximum of $400 per person for both drug and dental, $600 per couple, plus $50 for each child in the family. This program targets the 25% of working-age Ontarians who don't currently have access to health benefits. However, these two proposals need to be adopted by the legislature and carried over through the next provincial election to become official.

Biosimilars. Erelzi® (biosimilar for Enbrel®) was added to the Ontario Public Drug Plan for the treatment of rheumatoid arthritis, ankylosing spondylitis and polyarticular juvenile idiopathic arthritis. Similar to other provinces, Enbrel® will remain covered for patients already approved. However, contrary to other provinces, Basaglar™ and Lantus® are both listed as general benefit drugs. Ontario also added Grastofil® (biosimilar to Neupogen®) to its Drug Benefit Program (ODB) in December 2016 as a general benefit while Neupogen® remains a Limited Use (LU) benefit.

QUEBEC

PRIVATE DRUG TREND

The overall drug trend for private plans in Quebec was just 1.9% in 2017; however, drug spending per claimant remains much higher here ($987) than in the rest of the country ($822).

The cost per prescription in Quebec increased by 1.7% in 2017 while utilization increased by 0.2%. Specialty spending is slightly higher here than the national average (33% versus 31%) and is up 0.7% over 2016. On the other hand, the generic fill rate was up 2% this year, reaching 62.5% and nearing the rate in the rest of Canada (63.4%). This helped lessen the drug trend in Quebec.

NOTEWORTHY DEVELOPMENTS WITHIN THE PROVINCIAL PUBLIC DRUG BENEFIT PROGRAM

Biosimilars. Enbrel® and Lantus® were delisted from the RAMQ formulary, replaced by biosimilars Erelzi® and Basaglar™ for all new requests for coverage. Previously approved patients on brand-name drugs (before August 2017) are still covered.

The abolishment of accessory costs. Since January 26, 2017, the government of Quebec has made it illegal for a healthcare provider to bill for covered services (called accessory costs) to their patients, whether the patient is covered by the Régie's Public Prescription Drug Insurance Plan or by a private insurance plan. The RAMQ created a pseudoDIN for pharmacists to allow the reimbursement of CoaguChek® test strips, used for the monitoring of patients taking anticoagulants.

Limitation in coverage. In May 2017, the RAMQ adopted limitations for members taking proton-pump inhibitors (PPIs) and glucose test strips to promote the optimal use of medication and reduce costs. Quebec is among the last provinces to adopt such regulations: for example, Ontario adopted similar restrictions in 2013, British Columbia in 2015 and Newfoundland in 2016.

- PPI reimbursement is now limited to a maximum of 90 days of treatment per year except for chronic conditions as defined by RAMQ. For these chronic conditions, an exception code written on a new prescription might be used to extend the duration of treatment to 12 or 24 months.
- For patients living with diabetes with or without medication (excluding insulin, sulfonylureas and repaglinide), a maximum of 200 test strips per year is covered. The maximum increases to 400 for patients treated with medication (including repaglinide and sulfonylureas) and to 3,000 for patients taking insulin.

The table below shows the proportion of spending allocated to these two products. Lower spending for PPIs is explained by the reduction of the generic price of three molecules: rabeprazole (priced 18% of brand), pantoprazole (priced 15% of brand) and omeprazole (priced 18% of brand) on April 1, 2017, as per the pCPA Generics Initiative bridging arrangement.

PROPORTION OF TOTAL SPENDING IN QUEBEC FOR GLUCOSE TEST STRIPS AND PPIs

	PROTON-PUMP INHIBITORS (PPIs)	GLUCOSE TEST STRIPS
2017	2.9%	1.2%
2016	3.3%	1.3%
DIFFERENCE	-0.4%	-0.1%

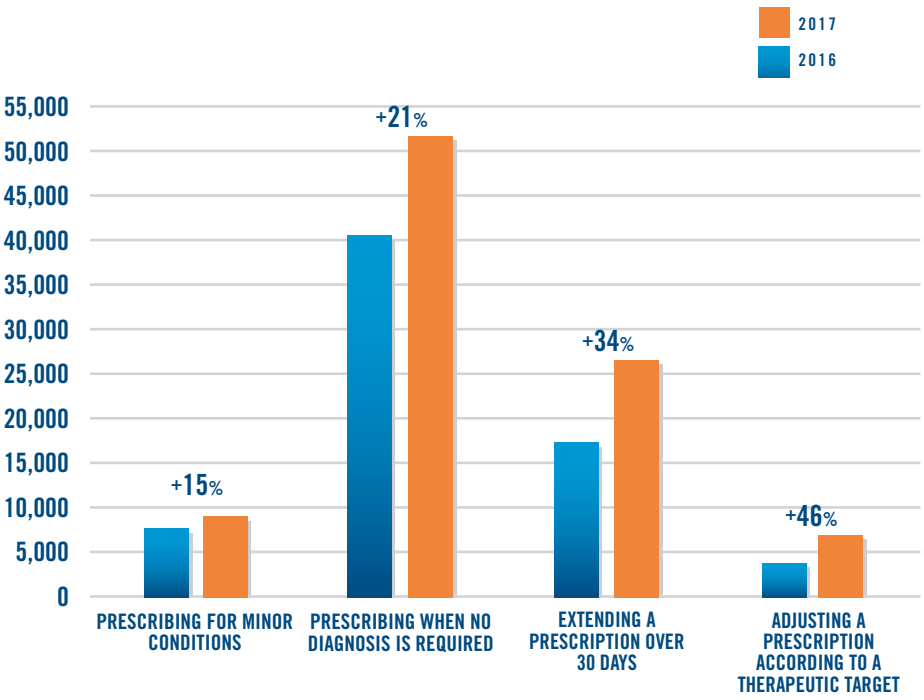
OTHER NOTEWORTHY DEVELOPMENTS WITHIN QUEBEC

Update on Law 41. Since June 2015, Law 41 allows pharmacists to deliver billable professional services to the population of Quebec. These services include:

- Prescribing for minor conditions;
- Prescribing when no diagnosis is required;
- Extending prescriptions over 30 days;
- Adjusting a prescription according to a therapeutic target.

The distribution of these four types of claims is consistent from 2016 to 2017. Members with private coverage are younger and working; they also tend to travel more. Therefore, they might require more medication for prevention of travellers' diseases (malaria and travellers' diarrhea) or pregnancy-related conditions (prevention of nausea and multivitamins).

NUMBER OF CLAIMS PER SERVICE



The number of claims for Law 41 services increased by 26% compared to 2016. The service with the most important growth is "Adjusting a prescription according to therapeutic target'" (46%), although it remains last in terms of the number of claims. This is one of the many consequences of the abolishment of accessory costs as follow-up of anticoagulant therapy is now transferred to the pharmacy since medical clinics cannot charge any fee for this service. The balance for the follow-up is passed to private insurers. Additionally, Law 41 is now implanted in Quebec's healthcare habits: healthcare professionals are more aware of the capabilities that pharmacies can provide. We may see these numbers continue to increase in the future.

Detailed receipts at the pharmacy. Since September 2017, Quebec pharmacy receipts must disclose the price covered by the general plan for a drug and the pharmacist's professional fees as well as the wholesaler's margin, as dictated by Bill 92. This measure aims to provide more transparency of prescription charges to patients, enabling them to make better pharmacy choices.

NEW BRUNSWICK

PRIVATE DRUG TREND

The overall trend for private plans in New Brunswick was 3.8% in 2017, with a cost per prescription trend growth of 3.5% and a utilization trend of 0.3%. Specialty spending continues to grow (33.5% this year versus 32.9% in 2016) but to stay relatively close to the national average of 31%. New Brunswick is a payor of last resort; therefore, the financial burden of specialty drugs is passed on to private plan sponsors.

NOTEWORTHY DEVELOPMENTS WITHIN THE PROVINCIAL PUBLIC DRUG BENEFIT PROGRAM

Biosimilars. Basaglar™ (biosimilar to Lantus®) was added to the provincial formulary as a regular benefit. As of November 1, 2017, no new requests for Lantus® will be approved, except for individuals who had claims before this date. Brenzys® (biosimilar to Enbrel®) was also added to the formulary for the treatment of rheumatoid arthritis and ankylosing spondylitis, requiring Special Authorization (SA). Finally, Grastofil® was added to the formulary in May 2017 with SA criteria: all requests submitted are now assessed for coverage of Grastofil® brand and patients who received approval for the Neupogen® brand before May 2017 continue to benefit from coverage until the current SA expiration.

PRINCE EDWARD ISLAND

PRIVATE DRUG TREND

The overall trend for private plans in Prince Edward Island was 5.4% in 2017, attributable almost equally to utilization growth (2.5%) and costs (2.9%). Specialty spending remained unchanged from 2016 at 25.1%. Prince Edward Island Pharmacare is a payor of last resort for public drug programs since 2014.

NOTEWORTHY DEVELOPMENTS WITHIN THE PROVINCIAL PUBLIC DRUG BENEFIT PROGRAM

There were no noteworthy legislative or pharmacy practice changes identified in 2017.

NOVA SCOTIA

PRIVATE DRUG TREND

The overall trend for private plans in Nova Scotia was 4.6% in 2017, with utilization growth up 2% and cost per prescription up 2.6%. Nova Scotia specialty spending is 34%, the highest in the country, consistent with the fact that the province is a payor of last resort and private plans bear the cost burden of high-cost specialty drugs.

NOTEWORTHY DEVELOPMENTS WITHIN THE PUBLIC DRUG BENEFIT PROGRAM

Biosimilars. Nova Scotia is also facilitating access to biosimilars. Basaglar™ (biosimilar to Lantus®) is now available as a full benefit to Pharmacare without the need for approval. Brenzys® (biosimilar to Enbrel®) is now the product approved for etanercept-naïve patients initiating therapy after November 1, 2017, for the treatment of ankylosing spondylitis and rheumatoid arthritis.

New fund. Nova Scotia announced a new fund to cover the costs of self-administered cancer drugs included in Nova Scotia's Pharmacare program. While this program was launched in early 2018, it will retrospectively cover claims dating back to April 2017.

NEWFOUNDLAND AND LABRADOR

PRIVATE DRUG TREND

The overall trend for private plans in Newfoundland and Labrador was 2.5% in 2017, driven by an increase in the cost per prescription (3.0%) as the utilization trend is down by 0.5%. An increase of 1% in specialty spending (to 32.4%) correlates with the increased prescription costs. Newfoundland and Labrador Prescription Drug Program (NLPDP) is a payor of last resort.

NOTEWORTHY DEVELOPMENTS WITHIN THE PROVINCIAL PUBLIC DRUG BENEFIT PROGRAM

Biosimilars. Basaglar™ was added to the provincial formulary as a regular benefit; however, Lantus® is still being covered for previously approved patients. These patients are also eligible for coverage of Basaglar™ , should they choose to switch. Grastofil® was also added this year, with special authorization criteria, as the preferred filgrastim product for patients who have never had a prescription for this drug. Neupogen® will still be covered for patients undergoing treatment until the completion of the current cycle.

SECTION IV.

THE PHARMACY LANDSCAPE

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SECTION IV.

THE PHARMACY LANDSCAPE

This section provides an analysis of market forces in the Canadian pharmacy landscape as well as a look forward at anticipated developments in the drug research pipeline.

MARKET FORCES

2017 FIRST-TIME GENERICS INTRODUCTION

The introduction of new first-time generics helped drive increases in Canada's generic fill rate (GFR). Indeed, the GFR climbed to 63.1% of all claims in 2017, up from 62.3% in 2016. Generics contributed directly to lower costs in 2017 and beyond.

The brand-name drugs for which generic alternatives were first made available in 2017 represented 9.04% of overall spending, a considerable increase over 2016 when patent expiration affected 3.4% of overall spending.

For traditional drugs, interchangeability from brand-name to generic medicines is often not a clinical issue. Therefore, plan sponsors who use mandatory substitution plans are in a good position to benefit from the potential savings generated by the advent of these generics.

Specialty drugs for which patents expired in 2017 represent the largest portion of overall spending (6.64%). A number of nonbiologic drugs for cancer and HIV/AIDS had patents expire this year. Since these generics are interchangeable with their brand-name drugs, their increasing use might contribute to a cost reduction for private payors should they choose to make generic use mandatory.

> "…THE GFR [GENERIC FILL RATE] CLIMBED TO 63.1% OF ALL CLAIMS IN 2017, UP FROM 62.3% IN 2016. GENERICS CONTRIBUTED DIRECTLY TO LOWER COSTS IN 2017 AND BEYOND."

BRAND-NAME DRUGS FOR WHICH GENERIC ALTERNATIVES WERE MADE AVAILABLE IN 2017

CATEGORY	BRAND-NAME DRUG	CHEMICAL NAME	COMMON INDICATION	% OF TOTAL SPEND IN 2017
TRADITIONAL	BenzaClin®	Benzoyl peroxide/clindamycin	Acne	0.09%
	Pulmicort® Nebuamp®	Budesonide	Asthma/COPD	0.10%
	Pristiq®	Desvenlafaxine	Depression	0.62%
	Restasis®	Cyclosporine	Eye Disease, Miscellaneous	0.22%
	Diclectin®	Doxylamine/pyridoxine	Gastrointestinal	0.18%
	Dicetel®	Pinaverium bromide	Gastrointestinal	0.04%
	Edecrin®	Ethacrynate sodium	High Blood Pressure	0.00%
	Olmetec®	Olmesartan medoxomil	High Blood Pressure	0.15%
	Olmetec Plus®	Olmesartan medoxomil/hydrochlorothiazide	High Blood Pressure	0.12%
	Inspra®	Eplerenone	High Blood Pressure	0.02%
	Androgel®	Testosterone	Hormone Replacement	0.22%
	Sporanox®	Itraconazole	Infections	0.03%
	Cancidas®	Caspofungin acetate	Infections	0.00%
	Avelox® I.V.	Moxifloxacin HCL	Infections	0.00%
	Suprax® 100mg/5mL	Cefixime	Infections	0.01%
	Soriatane®	Acitretin	Inflammatory Conditions	0.03%
	Vimovo®	Naproxen/esomeprazole	Pain/Inflammation	0.30%
SPECIALTY	Exjade®	Deferasirox	Antidotes/Chelating Agents	0.03%
	Busulfex®	Busulfan	Cancer	N/A
	Iressa®	Gefinitib	Cancer	0.02%
	Vidaza®	Azactadine	Cancer	N/A
	Alkeran®	Melphalan	Cancer	0.00%
	Atripla®	Efavirenz/emtricitabine/tenofovir disoproxil fumarate	HIV/AIDS	0.11%
	Viread®	Tenofovir disoproxil fumarate	HIV/AIDS	0.22%
	Reyataz®	Atazanavir	HIV/AIDS	0.02%
	Truvada®	Emtricitabine/tenofovir disoproxil fumarate	HIV/AIDS	0.29%
	Renvela®	Sevelamer carbonate	Kidney/Bladder Disease	0.02%

2017 BIOSIMILARS INTRODUCTION

A biosimilar is a drug demonstrated to be highly similar to an authorized biologic. These drugs, which are not considered to be generics because they are not identical to their brand-name reference products, are approved based on a thorough comparison to a reference drug.

The introduction of biosimilars enhances competition on price and drives lower net costs. While the availability of biosimilars places pricing pressure on the brand-name product, the uptake of biosimilars has been limited to date. Once a biosimilar becomes available, it takes time for physicians to become comfortable prescribing the alternative therapy. This is a key constraint, as these items are not interchangeable with the reference biologic drug at the pharmacy level. Moreover, biosimilars are not always approved for the same array of indications that their brand-name reference drugs cover, for multiple reasons. For example, some indications might still be under patent and therefore cannot be authorized; Health Canada may decide to refuse authorization for a certain indication based on scientific considerations, or the manufacturer might choose to seek approval for specific indications only. The use of biosimilars is often limited only to the treatment of patients newly diagnosed with the restricted number of indications.

In 2017, new biosimilars of blockbusters such as Remicade® and Enbrel® entered the market. Both drugs already had biosimilar versions available (Brenzys® for etanercept and Inflectra® for infliximab); however, the most recent biosimilars may further enhance competition. As an example, Erelzi® has been approved for polyarticular juvenile idiopathic arthritis while Brenzys® cannot be used for this indication, and Renflexis® received approval for use in the pediatric population (only for ulcerative colitis and Crohn's disease) while Inflectra® is contraindicated for patients under 18 years of age.

CATEGORY	CHEMICAL NAME	BIOSIMILAR NAME	REFERENCE BRAND-NAME BIOLOGIC	COMMON INDICATION	% OF TOTAL SPEND IN 2017
TRADITIONAL	Insulin lispro	Admelog®	Humalog®	Diabetes	0.34%
SPECIALTY	Etanercept	Erelzi®	Enbrel®	Inflammatory Conditions	1.43%
	Infliximab	Renflexis®	Remicade®	Inflammatory Conditions	5.38%

> WHILE THE AVAILABILITY OF BIOSIMILARS PLACES PRICING PRESSURE ON THE BRAND-NAME PRODUCT, THE UPTAKE OF BIOSIMILARS HAS BEEN LIMITED TO DATE.

2017 NEW BRAND APPROVALS (IN ALPHABETICAL ORDER OF COMMON INDICATIONS)

Newly approved brands placed upward pressure on spending in 2017 and will continue to do so for the foreseeable future. This is particularly true of new high-cost therapeutic options available for rare diseases, cancer and inflammatory conditions. In the traditional landscape, drugs for diabetes have also seen an upsurge in development, with six new drugs approved this year, including four new insulin formulations.

“NEWLY APPROVED BRANDS PLACED UPWARD PRESSURE ON SPENDING IN 2017 AND WILL CONTINUE TO DO SO FOR THE FORESEEABLE FUTURE.”

CATEGORY	CHEMICAL NAME	BRAND-NAME DRUG	COMMON INDICATION
TRADITIONAL	Allergen extract – house dust mites	Acarizax™	Allergy
	Fluticasone propionate	Aermony Respiclick™	Asthma/COPD
	Salbutamol	Baca Respiclick™	Asthma/COPD
	Levonorgestrel releasing intrauterine system	Kyleena®	Birth Control
	Ivabradine HCL	Lancora™	Cardiovascular Disease
	Vernakalant HCL	Brinavess™	Cardiovascular Disease
	Linagliptine/empagliflozin	Glyxambi™	Diabetes
	Insulin aspart	Fiasp®	Diabetes
	lixisenatide	Adlyxine™	Diabetes
	Regular human Insulin U-500	Entuzity™ KwikPen®	Diabetes
	Insulin lispro	Humalog® Junior Kwikpen®	Diabetes
	Insulin degludec	Tresiba®	Diabetes
	Iodine – ethiodized oil	Lipiodol® Ultra Fluid	Diagnostic Agents
	Ciprofloxacin-fluocinolone acetonide	Otixal™	Ear, Nose, Throat Disorders
	Eluxadoline	Viberzi™	Gastrointestinal
	Netupitant/palonosteron	Akynzeo™	Gastrointestinal
	Progesterone	Utrogestan®	Hormone Replacement
	Permivir	Rapivab™	Infections
	Propiverine HCL	Mictoryl®	Kidney/Bladder Disease
	Brexpiprazole	Rexulti™	Mental Disorders
	Ibuprofen sodium	Advil® Migraine/Advil® Headache/Advil® Headache & Migraine	Pain/Inflammation
	Immune globulin (human)	Cuvitru™	Preventative Vaccine
	Immune globulin (human)	Flebogamma® 5%/10% Immune globulin	Preventative Vaccine
	Meningitis B vaccine	Trumenba™	Preventative Vaccine
	Herpes zoster vaccine	Shingrix™	Preventative Vaccine
	Ozenoxacin	Ozanex™	Skin Conditions
SPECIALTY	Botulism antitoxin heptavalent	BAT®	Antidote/Chelating Agents
	Fibrinogen (human)	Fibryna®	Blood Disorders
	Human C1-esterase inhibitor	Haegarda™	Blood Disorders
	Necitumumab	Portrazza™	Cancer
	Thiotepa	Tepadina®	Cancer
	Atezolizumab	Tecentriq®	Cancer
	Midostaurin	Rydapt™	Cancer
	Irinotecan liposome	Onivyde®	Cancer
	Defibrotide	Defitelio™	Cardiovascular Disease
	AbobotulinumtoxinA	Dysport Aesthetic™/Dysport Therapeutic™	Cosmetic Agents
	Obeticholic acid	Ocaliva™	Gastrointestinal
	Glecaprevir/pibrentasvir	Maviret™	Hepatitis C
	Sofosbuvir/velpatasvir/voxilaprevir	Vosevi™	Hepatitis C
	Emtricitabine/rilpivirine/tenofovir/ alafenamide	Odesfey®	HIV/AIDS
	Tenofovir alafenamide	Vemlidy™	Infections
	Letermovir	Prevymis™	Infections
	Sarilumab	Kevzara™	Inflammatory Conditions
	Guselkumab	Tremfya™	Inflammatory Conditions
	Mercaptamine bitartrate	Procysbi™	Kidney/Bladder Disease
	Daclizumab beta	Zinbryta™	Multiple Sclerosis
	Glatimer acetate	Glatect™	Multiple Sclerosis
	Ocrelizumab	Ocrevus™	Multiple Sclerosis
	Anthrax immune globulin	Anthrasil®	Preventative Vaccine
	Nitisinone	Orfadin®	Rare Disease
	Eliglustat	Cerdelga™	Rare Disease
	Nusinersen sodium	Spinraza™	Rare Disease
	Migalastat	Galafold™	Rare Disease
	Dupilumab	Dupixent™	Skin Conditions

2017 NEW INDICATION APPROVALS (IN ALPHABETICAL ORDER OF COMMON INDICATIONS)

New indication approvals will continue to drive costs up as a growing number of drugs are approved for new uses. In particular, expanding indications for high-cost specialty drugs for diseases such as cancer and inflammatory conditions create intense upward pressure on drug spending.

CATEGORY	BRAND-NAME DRUG	CHEMICAL NAME	COMMON INDICATION
TRADITIONAL	Fraxiparine®	Nadroparin calcium	Cardiovascular Disease
	Victoza®	Liraglutide	Diabetes
	Emend® I.V.	Fosaprepitant dimeglumine	Gastrointestinal
	Mifegymiso®	Mifepristone/misoprostol	Gynecologic Miscellaneous
	Latuda®	Lurasidone	Mental Disorders
	Vimpat®	Lacosamide	Neurological Disorders
	Influvac®	Influenza vaccine	Preventative Vaccine
	Panzyga®	Human immune globulin	Preventative Vaccine
SPECIALTY	Xolair®	Omalizumab	Asthma/COPD
	Revolade®	Eltrombopag olamine	Blood Disorders
	Berinert®	C1 esterase inhibitor	Blood Disorders
	Niastase RT®	Eptacog alfa	Blood Disorders
	Revlimid®	Lenalidomide	Cancer
	Gazyva®	Obinutuzumab	Cancer
	Imbruvica®	Ibrutinib	Cancer
	Lupron Depot®	Leuprolide acetate	Cancer
	Darzalex®	Daratumumab	Cancer
	Tarceva®	Erlotinib	Cancer
	Opdivo®	Nivolumab	Cancer
	Tafinlar®	Dabrafenib	Cancer
	Mekinist®	Trametinib	Cancer
	Ibrance™	Palbociclib	Cancer
	Blincyto®	Blinatumomab	Cancer
	Keytruda®	Pembrolizumab	Cancer
	Adcetris®	Brentuximab vedotin	Cancer
	Halaven®	Eribulin mesylate	Cancer
	Xalkori®	Crizotinib	Cancer
	Stivarga®	Regorafenib	Cancer
	Lenvima™	Lenvatinib mesylate	Cancer
	Mavenclad™	Cladribine	Cancer
	Faslodex®	Fulvestrant	Cancer
	Afinitor® Disperz™	Everolimus	Cancer
	Dysport Aesthetic™ /Dysport Therapeutic™	AbobotulinumtoxinA	Cosmetic Agent
	Orkambi®	Lumacaftor/ivacaftor	Cystic Fibrosis
	Eylea®	Aflibercept	Eye Disease, Macular Degeneration
	Harvoni®	Ledipasvir/sofosbuvir	Hepatitis C
	Technivie™	Ombitasvir/paritaprevir/ritonavir	Hepatitis C
	Galexos®	Simprevir	Hepatitis C
	Tivicay®	Dolutegravir	HIV/AIDS
	Triumeq®	Abacavir/dolutegravir/lamivudine	HIV/AIDS
	Stelara®	Ustekinumab	Inflammatory Conditions
	Enbrel®	Etanercept	Inflammatory Conditions
	Kineret®	Anakinra	Inflammatory Conditions
	Actemra® S.C.	Tocilizumab	Inflammatory Conditions
	Ilaris®	Canakinumab	Rare Disease
	Prolastin®-C	Alpha 1-proteinase inhibitor	Rare Disease

A LOOK FORWARD …

BIOSIMILARS IN DEVELOPMENT

There are a number of biosimilars now in the research pipeline, with potential approval anticipated in Canada in 2018 or later. The growing availability of biosimilars will drive further competition, which will generate additional savings through a combination of lower-cost biosimilars as well as additional product listing agreement opportunities.

BIOSIMILARS UNDER REVIEW BY HEALTH CANADA

INNOVATOR	THERAPY CLASS	% OF TOTAL SPEND IN 2017	HEALTH CANADA SUBMISSION STATUS	FORECASTED APPROVAL
Neulasta® (pegfilgrastim)	Blood Disorders	0.54%	February/June 2017	2018
Humira® (adalimumab)	Inflammatory Conditions	4.01%	April 2017	2019-2021
Rituxan® (rituximab)	Cancer	0.20%	September 2017	2019-2021
Avastin® (bevacizumab)	Cancer	0.08%	February 2017	2020-2022
Herceptin® (trastuzumab)	Cancer	0.004%	June/October/November 2017	2019-2021

PIPELINE

RARE DISEASE: THE PARADOX OF RARITY

Rare diseases are serious, life-altering and often catastrophic conditions for patients and their families. Also known as orphan disorders, rare diseases are those that affect fewer than five in 10,000 persons in Canada. Though each disease is rare, with more than 7,000 known rare diseases, the total impact is considerable. In fact, one in 12 Canadians (approximately three million people) has one of these disorders. This is comparable to diabetes, one of the most common chronic diseases in Canada, affecting more than 3.4 million Canadians. Less than 5% of 7,000 rare diseases currently have approved treatments.

From early mortality rates to critical emergencies, patients with rare diseases face alarming realities. Due in part to their genetic component, more than half are diagnosed during childhood.

Rare disease treatment is a growing area of innovation and a growing therapeutic field that continues to be a focus of research and development efforts. Between 2013 and 2017, 85 orphan drugs were approved. Additionally, there are over 500 molecules in the orphan drug pipeline. Due to the low number of patients with each disorder, drugs used to treat these diseases tend to be ultra-high-cost. The annual cost per patient for certain rare diseases is over $500,000.

The table below provides examples of the high-cost drug claims that affected private plans in 2017.

ECONOMIC BURDEN OF RARE DISEASES

Ultra high-cost drugs present critical cost and care challenges

DRUG & INDICATION	PREVALENCE	ANNUAL COST PER TREATMENT	% OF TOTAL SPEND IN 2017
MYOZYME® Pompe's disease	1 in 40,000 births	$637,225*	0.03%
ILARIS® Cryopyrin-associated periodic syndrome (CAPS)	1 in 500,000 - 1,000,000	$123,753–$561,017	0.09%
VIMIZIM® MPS-IV (Morquio A disease)	1 in 200,000 – 300,000	$997,568*	0.15%
CEREZYME® Gaucher's disease Types I and III	1 in 100,000	$511,680*	0.02%

*Estimated (weight-based dosing)

While prevalence and utilization of these medications remain low, the economic burden for impacted plans can be severe. As access to these drugs is often the only solution to life-threatening conditions, treatment is often a question of life or death. Patients will likely take these medications throughout their lifetime. These ultra-high-cost drugs present critical cost and care challenges.

GENE-BASED THERAPY HOLDS GREAT PROMISE, AT GREAT COST

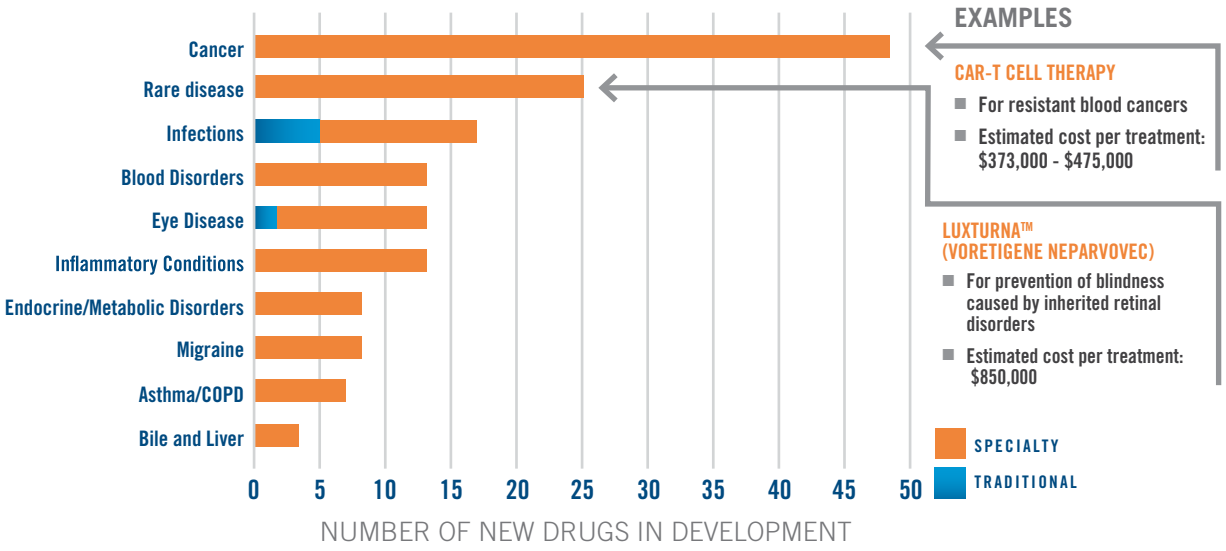
Within the development pipeline, there is great promise for gene therapy. Approximately 4,000 diseases are linked to gene disorders, many without any effective treatment. More than 1,500 potential treatments are in research and development, including nearly 600 that target cancers and 500 for rare and debilitating or deadly conditions.

Gene therapies introduce genetic material into an individual's DNA to replace faulty or missing material that leads to disease. These therapies are administered once, unlike nearly all other medications that are repeatedly taken over time. Many gene therapies target extremely rare diseases, so there aren't many patients to share the costs drug makers require to offset the expense of research, development, and commercialization. The result is exorbitantly high price tags.

The pipeline is dominated by high-cost medications that put upward pressure on costs. The graph below includes notable items being tracked in the drug development pipeline, including drugs in phase III clinical trials. Most of these are high-cost specialty medications that will increase spending for private payors.

NEW MEDICATIONS IN PIPELINE WILL ADD TO COST PRESSURES

Near-term pipeline includes gene-based therapies



Cancer remains the #1 focus within the drug development pipeline. These treatments include targeted agents that help minimize toxicity to avoid damaging healthy cells, and CAR-T cell gene-based therapies for blood cancers that have a one-time treatment cost of $373,000 to $475,000.

There are two CAR-T cell therapies currently under review by Health Canada, Kymriah™ and Yescarta™. Kymriah™ (tisagenlecleucel) is used for children and adolescents with resistant or recurring forms of acute lymphoblastic leukemia. The medicine is customized for each individual, using genetically modified versions of the patient's immune cells to target and kill leukemia cells. Yescarta™ (axicabtagene ciloleucel) is for patients with certain forms of non-Hodgkin's lymphoma and other large B-cell lymphomas.

Luxturna™ (voretigene neparvovec-rzyl) is another notable gene-based therapy in the pipeline, used to treat children and adults with an inherited form of vision loss that may result in blindness. The estimated cost to treat both eyes is $850,000. Treatment must be done separately in each eye on separate days, with at least six days between surgical procedures. It is administered via subretinal injection by a surgeon experienced in performing intraocular surgery, potentially requiring administration in a hospital setting. As a result, the cost of this therapy might not impact private plans in Canada.

Gene-based innovations provide remarkable treatment breakthroughs. However, their exceptionally high prices also put upward pressure on costs. As these life-saving, revolutionary treatments are developed, new types of reimbursement models need to be considered to keep costs under control.

Refer to the a*ppendix* for a listing of possible near-term approvals of new brands.

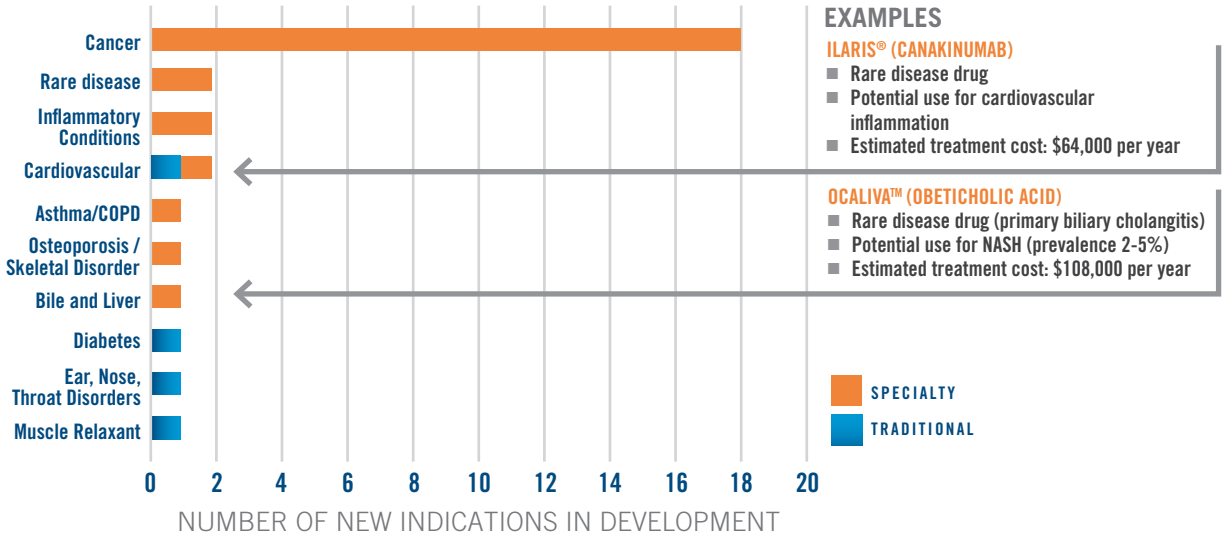
EXPANSION OF USE OF HIGH-COST MEDICATIONS

Expanding indications of existing medications will also add to cost pressures, with high-cost specialty medications expanding into more common conditions.

A large number of existing cancer medications are under review for use in other tumour types. This expanded use will increase utilization, and subsequently spending, within the cancer therapy class. The graph below includes notable indications being tracked in the drug development pipeline, including those in phase III clinical trials.

EXPANDING INDICATIONS WILL ADD TO COST PRESSURES

Indications for specialty drugs expanding to more common conditions



Specialty medications for rare diseases may potentially be approved for more common indications. Impending new indications for Ocaliva™ (obeticholic acid) and Ilaris® (canakinumab) are of concern due to the possibility of increasing utilization beyond that of rare diseases.

Ocaliva™ was approved in 2017 for the treatment of primary biliary cholangitis (PBC), a rare disease with reported prevalence of only 19 to 402 cases per million. The annual cost for Ocaliva™ for PBC is $38,000. The next indication on the horizon for Ocaliva™ is nonalcoholic steatohepatitis (NASH). NASH is a form of fatty liver disease that can progress to cirrhosis, liver failure, and cancer. The prevalence of NASH is between 2% and 5%. The estimated annual cost of Ocaliva™ for NASH is $108,000. This will potentially expand use of Ocaliva™ from a rare disease treatment into the realm of common conditions, still at a rare disease price.

Ilaris®, approved as a treatment for several rare inflammatory diseases, acts by targeting an inflammatory pathway known as interleukin 1 beta (IL-1). A potential new indication is to reduce the risk of major cardiovascular events in patients with prior heart attack and atherosclerosis. The **C**anakinumab **An**ti-inflammatory **T**hrombosis **O**utcomes **S**tudy (CANTOS) trial demonstrated a reduction in the risk for major cardiovascular events and cardiovascular death in patients who had a heart attack and inflammatory atherosclerosis. The estimated annual cost of Ilaris® is $64,000 for this indication, which is 200 to 250 times the cost of traditional high blood pressure and high cholesterol medications.

Refer to the appendix for a listing of possible near-term approvals of new indications now under Health Canada review.

Overall, in the absence of a proactive response, new high-cost medications in the pipeline as well as expanding indications will continue to put upward pressure on costs moving forward.

APPENDIX

THE DRUG DEVELOPMENT PIPELINE

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APPENDIX

THE DRUG DEVELOPMENT PIPELINE

POSSIBLE NEAR-TERM APPROVALS OF NEW BRANDS (IN ALPHABETICAL ORDER OF COMMON INDICATIONS)

CATEGORY	CHEMICAL NAME	COMMON INDICATION
TRADITIONAL	Prasterone	Alternative Medicine
	Fluticasone furoate, umeclidinium bromide, vilanterol trifenatate	Asthma/COPD
	Fluticasone proprionate, salmeterol xinafoate	Asthma/COPD
	Formoterol fumarate dihydrate, glycopyrronium bromide	Asthma/COPD
	Ferric derisomaltose	Blood Disorders
	Ertugliflozin pidolate	Diabetes
	Ertugliflozin pidolate, metformin hydrochloride	Diabetes
	Ertugliflozin pidolate, sitagliptin phosphate monohydrate	Diabetes
	Insulin degludec, liraglutide	Diabetes
	Insulin glargine	Diabetes
	Insulin glargine, lixisenatide	Diabetes
	Semaglutide	Diabetes
	Fluocinolone acetonide	Eye Disease
	Cyclosporin	Eye Disease Misc.
	Cinnarizine, dimenhydrinate	Gastrointestinal
	Mesalazine	Gastrointestinal
	Bisoprolol fumarate	High Blood Pressure
	Perindopril arginine	High Blood Pressure
	Estriol, lactobacillus acidophilus	Hormone Replacement
	Tibolone	Hormone Replacement
	Ivermectin	Infections
	Brodalumab	Inflammatory Conditions
	Sucroferric oxyhydroxide	Kidney / Bladder Disease
	Calcifediol	Kidney / Bladder Disease
	Romosozumab	Osteoporosis / Skeletal Disorder
	Buprenorphine hydrochloride	Pain/Inflammation
	Erenumab	Pain/Inflammation
	Methoxyflurane	Pain/Inflammation
	Oxycodone	Pain/Inflammation
	Haemagglutinin-strain A(H1N1), haemagglutinin-strain A(H3N2), haemagglutinin-strain B(Victoria), haemagglutinin-strain B(Yamagata)	Preventative Vaccines
	Immunoglobulin G (human)	Preventative Vaccines
	Suvorexant	Sedative/Hypnotic
	Betamethasone valerate, fusidic acid	Skin Conditions
	Crisaborole	Skin Conditions
	Dermatophagoides farinae, dermatophagoides pteronyssinus	Skin Conditions
	Mometasone furoate	Skin Conditions
	Bupropion hydrochloride, naltrexone hydrochloride	Weight Loss
	Lorcaserin hydrochloride	Weight Loss

Note: Some drugs on this list may have been approved after the publication of this report.

CATEGORY	CHEMICAL NAME	COMMON INDICATION
SPECIALTY	Antihemophilic factor (human), Von Willebrand factor (human)	Blood Disorders
	Damoctocog alfa pegol	Blood Disorders
	Pegfilgrastim	Blood Disorders
	Avelumab	Cancer
	Belinostat	Cancer
	Bevacizumab	Cancer
	Brigatinib	Cancer
	Cabozantinib	Cancer
	Durvalumab	Cancer
	Elagolix	Cancer
	Inotuzumab ozogamicin	Cancer
	Pralatrexate	Cancer
	Ribociclib	Cancer
	Rituximab	Cancer
	Trastuzumab	Cancer
	Ivacaftor, tezacaftor	Cystic Fibrosis
	Telotristat etiprate	Gastrointestinal
	Bictegravir sodium, emtricitabine, tenofovir alafenamide hemifumarate	HIV/AIDS
	Cobicistat, darunavir ethanolate, emtricitabine, tenofovir alafenamide hemifumarate	HIV/AIDS
	Dolutegravir sodium, rilpivirine hydrochloride	HIV/AIDS
	Doravirine	HIV/AIDS
	Cidofovir	Infections
	Adalimumab	Inflammatory Conditions
	Baricitinib	Inflammatory Conditions
	Patiromer sorbitex calcium	Kidney / Bladder Disease
	Prabotulinumtoxina	Muscle Relaxant
	Human heterologous liver cells	Rare Disease

Note: Some drugs on this list may have been approved after the publication of this report.

POSSIBLE NEAR-TERM APPROVALS OF NEW INDICATIONS (IN ALPHABETICAL ORDER OF COMMON INDICATIONS)

CATEGORY	CHEMICAL NAME	COMMON INDICATION
TRADITIONAL	Fluticasone furoate	Allergy
	Levonorgestrel	Birth Control
	Abiraterone acetate	Cancer
	Apixaban	Cardiovascular Disease
	Enoxaparin sodium	Cardiovascular Disease
	Rivaroxaban	Cardiovascular Disease
	Tinzaparin sodium	Cardiovascular Disease
	Vilazodone hydrochloride	Depression
	Canagliflozin	Diabetes
	Canagliflozin, metformin hydrochloride	Diabetes
	Empagliflozin	Diabetes
	Empagliflozin, linagliptin	Diabetes
	Exenatide	Diabetes
	Insulin degludec	Diabetes
	Linagliptin	Diabetes
	Gadoterate meglumine	Diagnostic Agents
	Lanreotide acetate	Endocrine / Metabolic Disorders
	Bazedoxifene acetate, conjugated estrogens	Hormone Replacement
	Brexpiprazole	Mental Disorders
	Lurasidone hydrochloride	Mental Disorders
	Eslicarbazepine acetate	Neurological Disorders
	Eslicarbazepine acetate	Neurological Disorders
	Perampanel	Neurological Disorders
	Denosumab	Osteoporosis / Skeletal Disorder
	Human immunoglobulin	Preventative Vaccines
	Japanese encephalitis virus vaccine inactivated	Preventative Vaccines
	Meningococcal polysaccharide antigen groups A, C, W-135, and Y, tetanus toxoid	Preventative Vaccines
	Outer membrane vesicles (Neisseria meningitidis group B NZ98/254 strain), recombinant Neisseria meningitidis group B NHBA fusion protein, recombinant Neisseria meningitidis group B NadA protein, recombinant Neisseria meningitidis group B fHBP fusion protein	Preventative Vaccines

Note: Some drugs on this list may have been approved after the publication of this report.

CATEGORY	CHEMICAL NAME	COMMON INDICATION
SPECIALTY	Mepolizumab	Asthma/COPD
	Antihemophilic factor (recombinant), pegylated	Blood Disorders
	Afatinib dimaleate	Cancer
	Alectinib	Cancer
	Atezolizumab	Cancer
	Bevacizumab	Cancer
	Blinatumomab	Cancer
	Dabrafenib	Cancer
	Daratumumab	Cancer
	Midostaurin	Cancer
	Nilotinib	Cancer
	Nivolumab	Cancer
	Obinutuzumab	Cancer
	Olaparib	Cancer
	Osimertinib mesylate	Cancer
	Pembrolizumab	Cancer
	Pertuzumab	Cancer
	Rituximab	Cancer
	Sunitinib malate	Cancer
	Trametinib	Cancer
	Ixekizumab	Diabetes
	Pasireotide	Endocrine / Metabolic Disorders
	Somatropin	Endocrine / Metabolic Disorders
	Evolocumab	High Cholesterol
	Cobicistat, elvitegravir, emtricitabine, tenofovir alafenamide hemifurate	HIV/AIDS
	Dolutegravir	HIV/AIDS
	Abatacept	Inflammatory Conditions
	Certolizumab pegol	Inflammatory Conditions
	Golimumab	Inflammatory Conditions
	Sarilumab	Inflammatory Conditions
	Tofacitinib	Inflammatory Conditions
	AbobotulinumtoxinA	Muscle Relaxant
	Incobotulinumtoxina	Muscle Relaxant
	OnabotulinumtoxinA	Muscle Relaxant

Note: Some drugs on this list may have been approved after the publication of this report.

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The authors would like to thank the many individuals throughout the Express Scripts Canada organization who contributed time and insight toward the completion of the 2017 Drug Trend Report.

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