

The Conference  
Board of Canada



# Accessing Necessary Arthritis Medications

A Pan-Canadian Analysis

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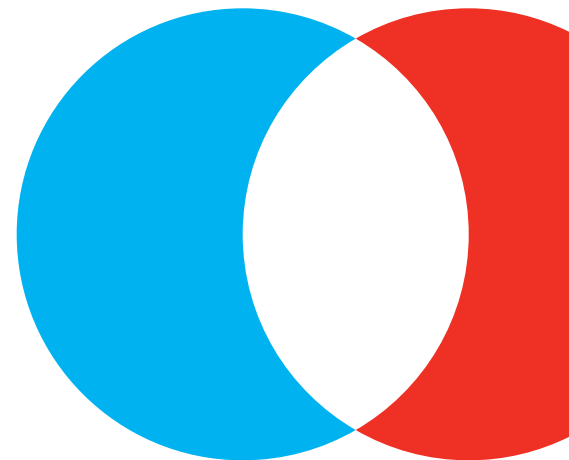
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# Definitions

**Active ingredient:** A medical component contained in a drug product that affects the prevention, diagnosis, cure, treatment, or mitigation of disease. In this impact paper, we use the terms *drugs*, *active ingredient(s)*, and *medication(s)* interchangeably for simplicity.

**Drug class:** A group of drugs or drug components (active ingredients) that share a similar chemical structure, mechanism of action, and/or therapeutic utilization. Each drug can be classified into one or more drug classes.

**Drug identification number (DIN):** A unique identifier assigned by Health Canada to a drug product that is approved for sale in Canada. A DIN identifies six unique product characteristics: manufacturer, product name, active ingredient(s), strength(s) of active ingredient(s), pharmaceutical form (e.g., tablet, capsule, solution), and route of administration (e.g., oral, subcutaneous, intravenous).

**Exceptional drugs:** Drug products that may be considered for reimbursement in an individual's specific circumstance. Special authorization is required for coverage on a case-by-case basis. Exceptional drugs on public plans are not listed on the formulary in most provinces (except Saskatchewan and Prince Edward Island), and they are funded by the exceptional access program. Exceptional drugs are also not generally listed on private formularies.

**Formulary:** A list of drugs and medical devices and supplies that are eligible for benefit along with benefit status (e.g., drug plans for which the product is considered a benefit, whether a special authorization is required prior to reimbursement), eligibility and use criteria, and related drug price. Formularies are unique to the various public and private drug plans that are available to Canadians.

**Open benefits:** Drug products eligible for reimbursement under all prescribed circumstances. They are also referred to as "regular benefit" or "general benefit." These benefits are also unique to the various public and private drug plans that are available to Canadians.

**Restricted-use benefits:** Drug products that are eligible for reimbursement only when the specified terms and conditions have been met. Restrictions can include eligibility criteria (such as demographic and clinical criteria) and use requirements (such as quantity limit and the length of time). Access to these drugs may require a special authorization. They are also referred to as "limited use drugs" or "limited coverage drugs."

**Special authorization:** A process for the request and evaluation for the coverage (through public or private plans) of most restricted-use drugs and all exceptional drugs. An application is normally made by the beneficiary’s physician/ specialist, and the approval is normally made by an expert advisory committee. Generally, the process for exceptional drugs is more involved in lieu of restricted benefits. They are also referred as “special authority” in British Columbia and “prior approval” in the Non-Insured Health Benefits program.

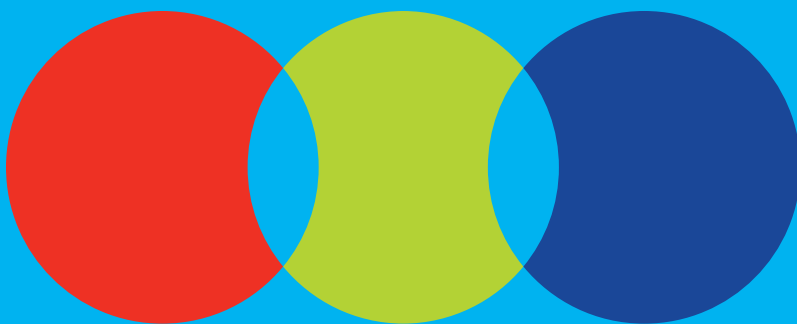
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# Key findings

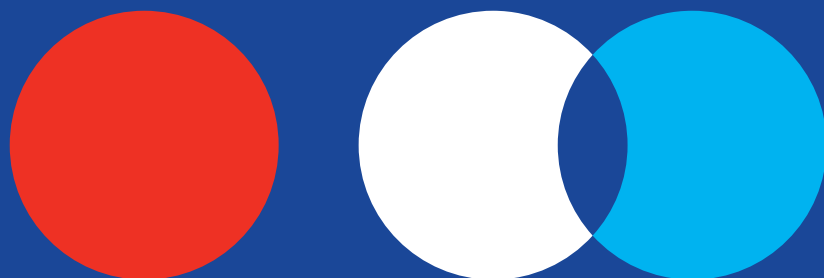
For patients living with arthritis, there is no cure, so medications are critical to managing the disease and improving quality of life. As part of the Conference Board's research series on Canadians' access to medications, the analyses presented here show that patients' access to and cost of arthritis medications differ by jurisdiction and type of drug plan.

- Public access to new and innovative arthritis medications – notably biologics – lags behind private access in terms of availability and timeliness.
- Compared with public plans, private plans offer broader access to anti-inflammatory drugs, and to a larger majority of analgesics, corticosteroids, and anti-rheumatic drugs.
- Canadians spent \$1.9 billion on 16.5 million claims for arthritis drugs in 2017.
- Of all arthritis drugs, 22 per cent are paid for out-of-pocket, representing \$248.9 million in uninsured spending.
- While private plans provide coverage for all 79 arthritis drugs currently being prescribed in Canada, about 10 per cent of these drugs are not accessible through public plans.
- Public coverage of arthritis medications varies across jurisdictions, with people reliant on public plans facing different hurdles depending on where they live.
- Medically necessary drugs could be virtually unaffordable for those without access to private plans.
- Some type of health system reform is needed to improve access to drugs, their affordability, and consistency in coverage across the country.



**Section 1**

# **Arthritis in Canada**



**Arthritis is a grouping of more than 100 forms of degenerative and autoimmune inflammatory conditions. Together, these conditions affect nearly one in five Canadian adults—some 6 million people. While arthritis becomes more common at older ages, over half of Canadians with arthritis are younger than 65.<sup>1</sup> It is also more common among women (59 per cent) than men.<sup>2</sup>**

Still, arthritis is not well understood and affects everyone differently. While different treatment options exist for people living with arthritis, many rely on medically necessary drugs to help manage, self-regulate, and treat their symptoms. Ideally, treatment is tailored to individual needs and conditions of patients.<sup>3</sup> This is typically achieved through guidance from health care professionals, including an individual's family doctor, rheumatologist, orthopedic surgeon, physiotherapist, and/or occupational therapist. A patient's actual ability to access the necessary medications, however, is a central consideration in these discussions.

The Conference Board of Canada sought to understand the issue of access to arthritis medications faced by Canadians. This impact paper examines how medication use can vary depending on the level of access and costs incurred across jurisdictions and types of drug plans.

## **Treatment options are often tailored to the individual**

Medications to treat all arthritis conditions include non-steroidal anti-inflammatory drugs (NSAIDs). Patients with inflammatory arthritis conditions receive disease-modifying anti-rheumatic drugs (DMARDs) and/or biologics.<sup>4</sup> These drugs help treat inflammatory arthritis by reducing inflammation and thereby preserving joints.<sup>5</sup> (Inflammation can slowly destroy joint tissue over the years to the point where joint function is severely limited or fully lost.) There are also medications that relieve pain due to arthritis; these can be purchased over the counter (such as acetaminophen or ibuprofen) or with a prescription (such as tramadol, opioids, duloxetine, or gabapentin).

1 Badley and others, *The Status of Arthritis in Canada*.

2 Arthritis Society, "Arthritis Facts and Figures."

3 Arthritis Society, "About Arthritis."

4 Many people living with arthritis do not require regular medical therapy. A small portion of those living with arthritis require access to regular and consistent medication therapies. Of those who are prescribed medications, approximately one-third require advanced medication pathways.

5 Arthritis Foundation, "DMARDs Overview."



Patient-regulated interventions, such as lifestyle changes, healthy eating, exercise, and physical therapy, are critical parts of the management for all forms of arthritis as well. Medications to control disease activity and pain management may also be indicated, as would surgery in some instances.<sup>6</sup> Surgery is performed when arthritis has affected joints like the hip or the knee, the pain and loss of function has become severe, and other treatments no longer relieve pain.

## The range of public and private drug insurance in Canada

Medications not only extend life; they also improve functionality and quality of life. Previous research by The Conference Board of Canada has demonstrated that improving medication adherence and encouraging drug innovation can offset and reduce overall health care spending. Relatedly, innovation in the pharmaceutical industry can boost economic output by reducing lost productivity due to illness.<sup>7</sup> Conference Board research has also discussed the real and potential obstacles to accessing these medications, outlining the differences between the various public, private, and national prescription drug programs in Canada, and the extent to which they provide medication coverage for individuals in their province of residence.<sup>8</sup> With each province and territory having its own health system, there are various ways in which public programs interact with private programs that impact access to medications to treat arthritis.

Both public and private plans may provide insurance coverage for arthritis medications. Coverage varies by age. Canadians under 25 years of age generally have access to public coverage if they are not a beneficiary of their parents' group plan.<sup>9</sup> Among working-age adults

6 Arthritis qualifies for certain Canadian disability benefits, such as the Disability Tax Credit, depending on its severity.

7 Hermus and others, *Reducing the Health Care and Societal Costs of Disease: The Role of Pharmaceuticals*.

8 Dinh and Sutherland, *Understanding the Gap*.

9 Ibid.



(25 to 64 years of age), a greater proportion are enrolled in a private, employer-based group plan, although employed individuals with no access to a group plan (as a primary member or beneficiary) and unemployed individuals must rely on a public plan or pay out-of-pocket. Some working-age adults are even enrolled in both a public and private plan; this can vary significantly by province of residence. Canadians over 65 years of age are generally enrolled in a public plan rather than a private plan, although some are enrolled in both.<sup>10</sup>

The different levels of private, public, and national coverage across Canada are driving much of the discussion around the need to redesign Canada's official lists of approved medications that may be prescribed, known as the drug formulary systems.<sup>11,12,13</sup> An often-neglected part of this discussion—and in the development and analysis of possible alternatives—is the actual lived experiences of patients and their caregivers. Although the proportion of Canadians who do not have access to some type of prescription drug coverage (public or private) is low, at less than 2 per cent, there are significant challenges faced by many patients and caregivers when trying to access the medications they need.<sup>14</sup> These challenges include the following:

- discrepancies in public and private coverage for specific drugs across provinces and federal programs (known as formulary coverage challenges);<sup>15</sup>

- process or administrative barriers that patients and caregivers face in obtaining coverage (e.g., with respect to enrolment) and in accessing medications (even when a drug is on a provincial government's official list);
- out-of-pocket costs for patients and caregivers if a drug does not line up properly with a provincial or insurer's official list of approved drugs (e.g., full cost if drug is not on formulary; partial cost if there is a co-payment or deductible);
- difficulties that clinicians and pharmacists endure due to administrative inefficiencies, including program re-application hurdles and the time needed for pharmacists to help patients and physicians navigate Canada's pharmaceutical systems.

<sup>10</sup> Ibid.

<sup>11</sup> Canadian Pharmacists Association, *Prescriptions for a Healthy and Prosperous Canada*.

<sup>12</sup> Canadian Medical Association, *Improving the Health of All Canadians*.

<sup>13</sup> Mackenzie and Rachlis, *The Sustainability of Medicare*.

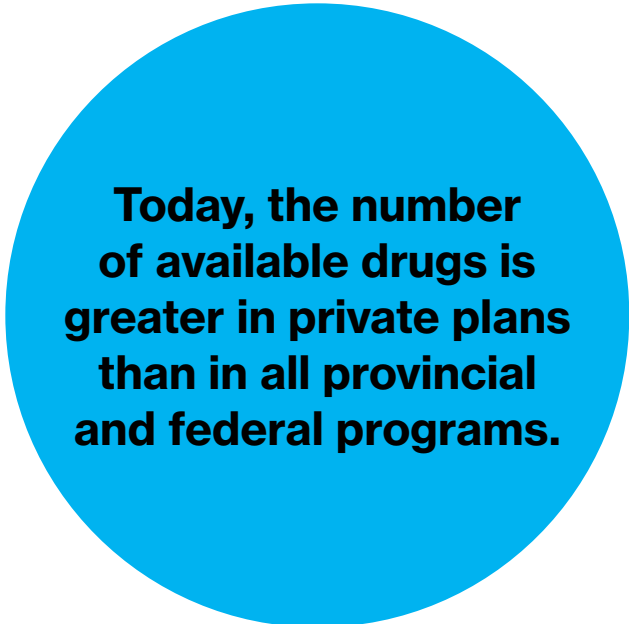
<sup>14</sup> Dinh and Sutherland, *Understanding the Gap*.

<sup>15</sup> Reimbursement pricing discrepancies across Canada also relate to equitability issues. Some patients in some provinces must pay more for prescription drugs than patients in other provinces living with similar medical conditions.

## Drug availability

The complexity of the current prescription drug insurance landscape and the variety of different public and private insurance programs within and across provinces add to the confusion around which drugs are available on public and private formularies for patients who must navigate these systems. Today, the number of drugs covered by private plans is greater than those covered by provincial and federal programs. Medications that treat arthritis pain (i.e., analgesics) are usually covered under standard formularies (with more covered privately than publicly) while medications that are more arthritis-specific (such as DMARDs and NSAIDs) are covered almost evenly by public and private formularies.<sup>16</sup>

In public drug plans, biologic drugs are commonly part of “exceptional access” programs or “specialized drug” programs.<sup>17</sup> Each province has its own exceptional access program that provides access (and full or partial coverage) to drugs for patients with specific medical circumstances. The process for accessing biologics using these programs is basically the same in all jurisdictions: the specialist completes a form requesting the use of the drug, with approval following a review process.<sup>18</sup> (See Appendix E for a summary of the public plans available in each province, and which provinces provide coverage of the necessary analgesics, DMARDs, and NSAIDs for arthritis patients. It also provides additional information on the exceptional access programs in each region.)



**Today, the number of available drugs is greater in private plans than in all provincial and federal programs.**

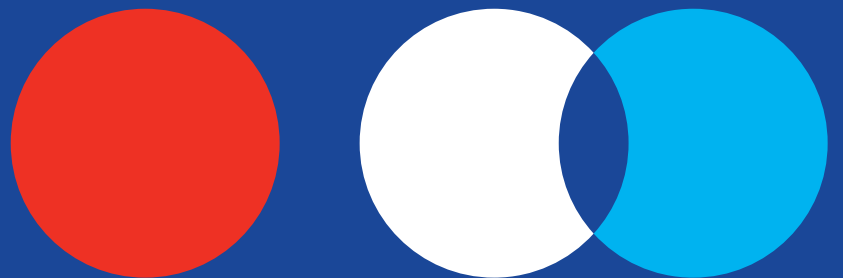
<sup>16</sup> In Ontario, there are seven more NSAIDs covered on private plans than on public plans, noticeably more than in other provinces. Diclofenac potassium, diphenhydramine hydrochloride, etodolac, ketorolac tromethamine, naproxen, naproxen sodium, and tenoxicam are available on private plans but not on public plans. Diclofenac potassium and etodolac are considered arthritis-specific NSAIDs, while the rest relieve pain (however, diphenhydramine hydrochloride is used more for allergies).

<sup>17</sup> Here, we focus only on the experience public plans have with special/exceptional drug access programs.

<sup>18</sup> Exceptional use drugs are normally prescribed following a non-response to a DMARD or NSAID.

## Section 2

# Results and analysis



## Variations in drug costs

Table 1 displays the various average costs of three arthritis drugs, namely infliximab (a biologic), tofacitinib (a targeted synthetic DMARD), and naproxen (an NSAID).<sup>19</sup> All are available on public plans across the country as well as the Non-Insured Health Benefits (NIHB) program.<sup>20</sup> These three drugs were selected as examples from each drug class.

For infliximab, the average cost per claim on the public plan ranged from a low of \$4,049 in Nova Scotia to a high of \$5,391 in Manitoba.<sup>21</sup> What this shows is that the cost to the public plan varies significantly across provinces.

For tofacitinib, the average cost per claim ranges from \$1,084 in Quebec to as high as \$1,703 in Ontario. This discrepancy may stem from the drug use,<sup>22</sup> as dosage may differ for individuals with rheumatoid or psoriatic arthritis compared with ulcerative colitis.<sup>23</sup>

**Table 1**  
Average cost per claim for public plans (2017)  
(\$)

Region	Drugs		
	Infliximab (biologic)	Tofacitinib (targeted synthetic DMARD)	Naproxen (NSAID)
Alberta	5,378.39	1,480.14	10.97
British Columbia	4,618.32	1,420.01	9.65
Manitoba	5,391.42	1,692.85	28.90
New Brunswick	4,636.22	1,539.07	12.61
Newfoundland and Labrador	4,563.41	1,525.05	18.51
Nova Scotia	4,049.41	1,539.04	20.08
Ontario	4,474.29	1,703.45	15.11
Prince Edward Island	n.a.	n.a.	n.a.
Quebec	4,857.76	1,084.06	9.29
Saskatchewan	4,890.44	1,531.71	17.45
NIHB program	4,984.09	1,453.39	13.18

Notes: Data for Prince Edward Island are unavailable; values are per claim (per variable dose recommended); 2017 annualized values. Sources: IQVIA Canada; PharmaStat Plus; The Conference Board of Canada.



19 The cost per claim is based on the originator biologic, or brand-name drug.

20 A national program that provides coverage to registered First Nations and recognized Inuit.

21 The average price per unit of infliximab ranged from \$93.78 in Manitoba compared with \$978.55 in Nova Scotia. The price per unit prescribed in Manitoba and Saskatchewan is much smaller than the other provinces, but the units needed for the same dosage are significantly higher, bringing the cost per claim in those two provinces in line with the rest.

22 Medscape, “Drugs and Diseases: Tofacitinib (Rx).”

23 Although the multiple indication rate estimates the number of arthritis-specific claims, it would not entirely factor in the unit costs per condition.

Finally, the average claim cost for naproxen ranges from \$9.65 in British Columbia to \$28.90 in Manitoba. The discrepancy in average cost per claim may be a function of condition-specific dosage.<sup>24</sup> For instance, the immediate-release recommended dosage for ankylosing spondylitis, osteoarthritis, and rheumatoid arthritis patients is up to 500 mg twice a day.<sup>25</sup> There are similar ranges for controlled- and delayed-release dosages. Prescriptions with different dosages in these ranges would lead to varying costs per claim.<sup>26</sup>

## Access depends on where you live

What are the gaps in coverage for arthritis medications? The answer depends on the province of residence. For biologics, patients in all provinces must be granted approval to receive the drug through stepwise processes. This means that the patients have not responded to other medications and now need access to a drug with the potential to better address their symptoms. However, special-use drugs still may lead to out-of-pocket spending in some regions. In Prince Edward Island and Saskatchewan, co-payments still apply, though they are most likely capped for biologics. In Prince Edward Island, even with approval, coverage is available only for drugs that are on the formulary—out-of-pocket costs are significant if approval is granted for a biologic not on the formulary. In British Columbia, deductibles

still apply for special-use drugs, and the amount of the deductible is contingent on the degree of coverage under Fair Pharmacare. Meanwhile, in New Brunswick, specially authorized drugs not on the formulary are reviewed on a case-by-case basis, and approval may lead to significant out-of-pocket costs.

Provincial specialized drug programs normally grant approval for rituximab, infliximab, etanercept, adalimumab, abatacept, certolizumab pegol, golimumab, and tocilizumab. Coverage for sarilumab is not provided by many provinces, even though it has been approved by Health Canada. Sarilumab had been approved by Health Canada in 2017, but was not listed on many provincial formularies (i.e., not covered by provincial drug plans) until February 2019, because that's when pCPA (pan-Canadian Pharmaceutical Alliance) negotiations for the drug were reached (provincial plans do not list new drugs until negotiations are complete and an agreement is reached). At the time these analyses were completed, sarilumab was not listed on most public plans.

The average cost per claim of these biologics is outlined in Table 2. Infliximab (as listed in Table 1) and rituximab are the most expensive. However, the cost per claim of these biologics is also a function of the frequency of utilization. Here, we assume that infusions for infliximab and rituximab are given every eight weeks following the first three infusions that take place within four

24 We use average reimbursement costs to account for different dosage sizes so that the upper limit and lower limit prices negate each other to a reasonable degree. Ideally, data would be stratified by precise dosage quantities.

25 Drugs.com, "Naproxen Dosage."

26 There is only one dose (strength) of infliximab and tofacitinib.

weeks.<sup>27</sup> We also assume that injections are administered every four weeks for abatacept, certolizumab pegol, golimumab, and tocilizumab.<sup>28</sup> Meanwhile, injections of etanercept and adalimumab are administered every week or two weeks, respectively. This may affect the average cost per claim.

For DMARDs and NSAIDs that are on the provincial formulary, the standard deductibles, premiums, and co-payments exist, which lead to some out-of-pocket costs. In Ontario and Newfoundland and Labrador, accessing these drugs without private coverage means the entire cost may be absorbed out-of-pocket if the

individual does not qualify for any of the public plans outlined in Appendix E. In Nova Scotia, Quebec, Manitoba, and British Columbia, the cost of accessing these drugs would be the annual deductible of the public plan, which is based on income. In Alberta and New Brunswick, the cost would be the regular annual premium and co-payment, while in Prince Edward Island it is the cost of the co-payment.

**Table 2**  
**Average cost per claim for public plans, biologics (2017)**  
(\$)

Region	Drugs								
	Infliximab	Rituximab	Etanercept	Adalimumab	Abatacept	Certolizumab pegol	Golimumab	Tocilizumab	
Alberta	5,378	4,820	1,549	1,584	1,489	1,395	1,570	1,079	
British Columbia	4,618	4,815	1,303	1,808	1,523	1,417	1,644	933	
Manitoba	5,391	4,819	1,524	2,385	1,739	2,083	2,219	1,043	
New Brunswick	4,636	4,738	1,400	1,509	1,579	1,435	1,653	769	
Newfoundland and Labrador	4,563	4,092	1,578	1,699	1,663	1,424	1,696	980	
Nova Scotia	4,049	4,708	1,857	1,785	1,462	1,579	1,618	884	
Ontario	4,474	4,668	1,810	2,138	1,676	2,372	2,112	1,017	
Prince Edward Island	4,858	4,599	1,323	1,772	1,407	1,425	1,547	913	
Quebec	5,378	4,820	1,549	1,584	1,489	1,395	1,570	1,079	
Saskatchewan	4,618	4,815	1,303	1,808	1,523	1,417	1,644	933	
NIHB program	4,984	5,000	1,350	1,848	1,671	1,540	1,727	988	

Notes: The average-cost data include whether the biologic or biosimilar is prescribed; 2017 annualized values.  
Sources: IQVIA Canada; PharmaStat Plus; The Conference Board of Canada.

27 Typically, infusions for rituximab are given every six months as two doses, two weeks apart; infusions for infliximab are given as three loading doses at weeks zero, two, and six, then every eight weeks following the loading phase.

28 Abatacept is typically administered every four weeks or subcutaneously every week. Certolizumab pegol is given as three loading doses of 400 mg every two weeks; maintenance is then 200 mg every two weeks or 400 mg every four weeks by injection. Moreover, subcutaneous infusions for tocilizumab may also occur every one to two weeks, depending on patient severity and formulary responsiveness.

## Variations in access to arthritis drugs

**As the cost per claim of arthritis medications varies across the country, so too does the level of access to those medications. To showcase these regional differences, the following section presents a breakdown of what patients and physicians must do to access some arthritis medications through public coverage.<sup>1</sup>**

Across the country, there were approximately 810,000 claims (from all payers) for arthritis-related biologics in 2017, which represents 17.4 per cent growth per year from 2010. Infliximab specifically accounted for about 238,500 claims (or 29.4 per cent of all arthritis-related biologic claims), second only to the 388,500 claims of adalimumab. These arthritis-specific claims accounted for \$1.1 billion of the \$2.7 billion total reimbursement for biologics. Claims for infliximab have grown by an average of 11.5 per cent annually since 2010, compared with claims for adalimumab, which have increased by about 15.6 per cent per year.

Meanwhile, tofacitinib (a targeted synthetic DMARD) has witnessed the number of claims increasing from 330 in 2014 to more than 28,000 in 2017, generating total reimbursement of \$43.9 million across all payers.

This sharp increase is clearly due to tofacitinib's approval in 2014 for treatment of rheumatoid arthritis on public plans. Conversely, there were nearly 3.8 million claims for naproxen (an NSAID) in 2017, which was just a mere 3.0 per cent average annual increase from 2010.

In Nova Scotia, infliximab is accessed through an exceptional-drug status request. The specialist completes the Anti-TNF Agents Form for infliximab and, once approved, the usual deductible and co-payment rules apply for the approved coverage period.<sup>2</sup> For tofacitinib and naproxen, patients can refer to their regular benefits for coverage. Deductibles are usually quite expensive (e.g., \$424 for a senior couple with an income of \$50,000, and \$1,980 for a family earning \$50,000 per year with two dependants), and the plan has a co-payment limit. That is, there is a cap on the amount the public program will pay, and the individual is responsible for any amounts above that limit.

1 Physicians are included in our patient experience analysis based on their critical role in encouraging and supporting successful patient outcomes.

2 Nova Scotia Department of Health and Wellness, "Nova Scotia Pharmacare."

In Ontario, infliximab and tofacitinib are accessed as limited use drug products or through the Exceptional Access Program (EAP). Both mechanisms provide the opportunity for these drugs—which are not listed on the general formulary—to be available as benefits. The specialist completes the standard form and, when approved, the patient accesses the medication at a cost of the deductible of their current plan (including the Trillium Program and Exceptional Access Program).<sup>3</sup> Naproxen is covered under the Ontario Drug Benefit (ODB) program. For individuals under 25 years of age without private insurance or for seniors above 65 years of age, it is covered as part of OHIP+<sup>4</sup> or the Seniors Plan, respectively. Seniors are automatically enrolled in the program and pay a \$100 annual deductible and then a maximum co-payment of \$6.11 per drug. Low-income seniors pay a maximum of \$2 per prescription (and no deductible). For working-age Ontarians (i.e., between 25 and 64 years of age), the story is different. Coverage for naproxen is available only as a group benefit, unless the applicant qualifies for an ODB program that is not designed specifically for younger or elderly cohorts—such as those targeting low-income Ontarians or people receiving home care, long-term care, or disability support. Working-age residents who are not eligible for an ODB program could claim naproxen through the Trillium Drug Program if their out-of-pocket costs for the drug are deemed high (i.e., over 4 per cent) relative to their disposable income.



In Alberta, infliximab or tofacitinib can be accessed only by special authorization. The specialist completes a specific form (ABC 60027) to document that the patient was unresponsive to methotrexate (subcutaneous) in combination with another DMARD and/or a leflunomide trial. Once approved, coverage is available for a specified duration, and the specialist must re-apply on behalf of the patient at the end of that period. The drug is then 100 per cent covered and deducted from a patient's public drug program as any other medication would be. Conversely, naproxen is a regular benefit under non-group and seniors' coverage. For individuals under 65 years of age, application for non-group coverage is required (for seniors, enrolment is automatic). The premium for both plans is \$63.50 per month for a single individual or \$118 per month for a family, but there is no co-payment. However,

3 The Trillium Program helps patients with low income in Ontario, while the Exceptional Access Program grants some patients access to medications that are not listed publicly.

4 Naproxen is currently a regular benefit under OHIP+ (2018). This is subject to change under ongoing OHIP+ revisions.



an individual (or family) must have non-group coverage if they require a special authorization drug, so the premiums for all three drugs are the same.

## Public coverage lags behind private insurance programs

### More new and innovative drugs are accessible only through private plans

There are numerous drugs used to treat arthritis and approved for sale in Canada. (See Appendix C.) These drugs span several drug classes and treat various symptoms of arthritis. For instance, analgesics are normally used to treat the pain caused by arthritis and are generally used for more than one disease; acetaminophen, fentanyl, and codeine are all pain-relieving drugs used for many conditions including arthritis. Corticosteroids are also used for numerous conditions, but fight inflammation rather than treating pain. Non-steroidal anti-inflammatory drugs (NSAIDs) can also be used to treat multiple conditions, but have the combined effect of fighting pain and inflammation. Ibuprofen, for example, is used for many conditions, while ketoprofen is more specific to arthritis.

Meanwhile, biologics and disease-modifying anti-rheumatic drugs (DMARDs) are used to treat the underlying condition rather than the pain. Indeed, methotrexate (a DMARD) is used to treat rheumatoid arthritis as well as psoriasis, while infliximab (a biologic) is used to treat ankylosing spondylitis, rheumatoid arthritis, and inflammatory bowel disease. But DMARDs and biologics can also be arthritis-specific, with tofacitinib and tocilizumab (a DMARD and a biologic, respectively) used to treat rheumatoid arthritis. (Tofacitinib also helps childhood arthritis.) (Please refer to Appendix C for a list of active ingredients by class.)

These classes are taken into consideration when outlining the number of claims (and reimbursement) for arthritis medications. As presented in Table 3, there were 16.5 million drug claims for arthritis medications in 2017 in Canada, representing a little more than 2.0 per cent of total drug claims. This is composed of 6.9 million (41.5 per cent) claims on public plans, 6.0 million (36.5 per cent) on private plans, and 3.6 million (22.0 per cent) as out-of-pocket claims.<sup>5</sup> Broken down by province, nearly 43.0 per cent of arthritis claims were on public plans in both Ontario and Quebec, in contrast to the 29.6 per cent in Newfoundland and Labrador.<sup>6</sup> Meanwhile, Nova Scotia and Newfoundland and Labrador had the highest proportion of claims on private plans, at 48.9 and 47.8 per cent, respectively, while a mere 34.0 per cent of claims in Quebec and Saskatchewan were on private plans. Finally, British Columbia, Saskatchewan, Manitoba, and Prince Edward Island had the highest number of arthritis claims paid out-of-pocket (approximately

5 This is based on the full cost of the claim being apportioned to the primary payer, and includes costs that patients incur when they pay first and are subsequently reimbursed or receive assistance through a patient support program.

6 Public claims for Prince Edward Island were unavailable.

one-third of claims in each province). What is more, about 529,900 arthritis medications were claimed with the Non-Insured Health Benefits program (NIHB), administered by the federal government.

Together, these claims amounted to \$1.9 billion in total reimbursement for arthritis medications (see Table 4), representing about 5 per cent of the total \$34.0 billion in prescription drug spending in Canada. This is composed of \$781.3 million (40.4 per cent) reimbursed by public plans and \$904.5 million (46.7 per cent) reimbursed by private plans. About \$248.9 million (or 12.7 per cent) were paid out-of-pocket.<sup>7</sup> The provincial

breakdown suggests that roughly 85.4 per cent of all reimbursed arthritis claims were processed by public plans in Saskatchewan, compared with only 19.8 per cent in Newfoundland and Labrador. On the private side, 63.4 per cent of all reimbursed arthritis claims were processed by private plans in New Brunswick, while 8.4 per cent were reimbursed privately in Saskatchewan. Lastly, the cost of arthritis medications paid out-of-pocket ranged from 18.8 per cent in Newfoundland and Labrador to 6.2 per cent in Saskatchewan. For comparison, the NIHB program reimbursed about \$29.0 million.

**Table 3**  
**Number of claims reimbursed for drugs used to treat arthritis, by drug plan (2017)**

Region	Total	Public plans	Private plans	Out-of-pocket
Alberta	1,462,400	550,000 (38%)	609,800 (42%)	302,500 (21%)
British Columbia	1,508,000	475,400 (32%)	530,700 (35%)	501,900 (33%)
Manitoba	463,500	148,200 (32%)	165,200 (36%)	150,100 (32%)
New Brunswick	397,900	125,700 (32%)	181,400 (46%)	90,700 (23%)
Newfoundland and Labrador	257,400	76,200 (30%)	123,000 (48%)	58,200 (23%)
Nova Scotia	380,800	131,700 (35%)	186,200 (49%)	62,900 (17%)
Ontario	6,181,800	2,630,200 (43%)	2,408,400 (39%)	1,143,100 (18%)
Prince Edward Island	55,700	n.a. (n.a.)	34,700 (62%)	21,000 (38%)
Quebec	4,886,100	2,061,300 (42%)	1,656,700 (34%)	1,168,100 (24%)
Saskatchewan	419,600	140,200 (33%)	141,800 (34%)	137,600 (33%)
NIHB program	529,900	529,900 (100%)	n.a. (n.a.)	n.a. (n.a.)
Canada	16,543,000	6,868,900 (42%)	6,037,900 (36%)	3,636,300 (22%)

Note: 2017 annualized values.

Sources: IQVIA Canada; PharmaStat Plus; The Conference Board of Canada.

<sup>7</sup> This compares with about 18.0 per cent for all reimbursed claims.

**Table 4**  
**Reimbursement cost for arthritis drugs, by drug plan (2017)**  
(\$)

Region	Total	Public plans	Private plans	Out-of-pocket
Alberta	251,911,600	120,620,500 (48%)	109,458,900 (43%)	21,832,200 (9%)
British Columbia	200,682,100	132,558,000 (66%)	37,631,000 (19%)	30,493,200 (15%)
Manitoba	69,002,500	50,118,500 (73%)	10,474,500 (15%)	8,409,500 (12%)
New Brunswick	74,284,900	15,993,200 (22%)	47,101,700 (63%)	11,189,900 (15%)
Newfoundland and Labrador	49,487,000	9,785,000 (20%)	30,386,100 (61%)	9,315,900 (19%)
Nova Scotia	83,813,300	23,575,300 (28%)	50,039,700 (60%)	10,198,300 (12%)
Ontario	667,093,700	187,832,700 (28%)	390,219,600 (58%)	89,041,400 (13%)
Prince Edward Island	6,237,700	n.a. (n.a.)	4,990,300 (80%)	1,247,500 (20%)
Quebec	442,127,000	159,688,200 (36%)	219,020,500 (50%)	63,418,300 (14%)
Saskatchewan	61,083,900	52,164,500 (85%)	5,147,000 (8%)	3,772,400 (6%)
NIHB program	28,988,900	28,988,900 (100%)	n.a. (n.a.)	n.a. (n.a.)
Canada	1,934,712,600	781,324,800 (40%)	904,469,200 (47%)	248,918,600 (13%)

Note: 2017 annualized values.

Sources: IQVIA Canada; PharmaStat Plus; The Conference Board of Canada.

## Private formulary coverage exceeds public

Private plans generally cover more expensive arthritis medications. (See Table 5 in the accompanying data download.) However, public plans represent a larger share of arthritis claims (41.5 per cent public versus 36.5 per cent private) even though their proportion of total reimbursement cost is lower (40.4 per cent public versus 46.7 per private). While part of this is because public programs negotiate cheaper drug prices,<sup>8</sup> it may also stem from the fact that more drugs are available for coverage on private plans. Across the country, private claimants are obtaining a wider variety of active ingredients than those with public coverage.<sup>9</sup>

Broken down by drug class, it is revealing that most of the difference between private and public plans is for analgesics. However, there are numerous ingredients in the analgesics class; smaller classes like DMARDs and biologics have only one or two additional ingredients covered privately, and those make up a larger proportion of all ingredients in the class. (See Table 6 in the accompanying data download.)

8 Council of the Federation, "The pan-Canadian Pharmaceutical Alliance."

9 Active pharmaceutical ingredients are the chemicals in drug products that make the medications work. Numerous drugs contain the same active ingredient.

Overall, there were 79 active ingredients<sup>10</sup> prescribed for arthritis treatment across Canada in 2017. Seventy-two of these active ingredients were covered on public plans and 79 of them were covered on private plans, along with 77 different medications claimed as out-of-pocket.<sup>11</sup> In Quebec, for instance, there were 68 active ingredients claimed on public plans, while only 53 active ingredients were claimed publicly in Saskatchewan. There were 79 and 77 active ingredients claimed privately and out-of-pocket, respectively, in Ontario, while only 68 and 56 active ingredients were claimed privately and out-of-pocket, respectively, in Prince Edward Island. In addition, there were 64 active ingredients claimed as part of the NIHB in 2017.

While it has been established that public formularies generally provide reimbursement for fewer active ingredients than private plans,<sup>12</sup> the difference exists in almost all classes of arthritis drugs. Several drugs highlight the gap across provinces. These include fentanyl<sup>13</sup> and tapentadol within the analgesic class; ixekizumab and sarilumab in biologics; betamethasone valerate and dexamethasone in corticosteroids; the DMARD product apremilast; and the NSAID product diclofenac. As explained earlier, at the time of these analyses, sarilumab was not covered by provincial plans as pCPA agreements had not yet been reached. Meanwhile,

negotiations for ixekizumab were recently closed, so it would not have been part of provincial plans during the time under analysis.<sup>14</sup> What is more, part of the reason for the general lack of coverage for newer agents (like sarilumab and ixekizumab) is due to the length of time it takes to go through the public reimbursement review process—anywhere from six to 48 months.<sup>15</sup>



10 The dosage form for a pharmaceutical contains the active pharmaceutical ingredient (which is the drug itself) and excipients, which are the substances of the tablet, or the liquid in which the active ingredient is suspended, or other material that is pharmaceutically inert. Drugs are prescribed primarily for their active ingredients.

11 Most active ingredients are consistent across plans. This means that the total number of active ingredients is different from the total number of active ingredients in each program.

12 An exception is Manitoba, where there were two active ingredients with claims unique to public plans, including one analgesic agent and one biologic agent.

13 Based on recent activity in fentanyl use across Canada, particularly among vulnerable populations in Alberta and British Columbia, improved access to fentanyl (among other abused substances) must be achieved with extreme caution.

14 Council of the Federation, *Pan-Canadian Pharmaceutical Alliance: Completed Negotiations*.

15 Rawson, "Regulatory, Reimbursement, and Pricing Barriers to Accessing Drugs for Rare Disorders in Canada."

**Biologics, partly due to the high cost of reimbursement, are only accessible for coverage when set terms and conditions for approval are met.**

Patients with only public coverage are more likely to pay out-of-pocket when accessing treatment for these drug products. On the high side, there were more active ingredients unique to private plans in Ontario and in Saskatchewan, while there were fewer active ingredients unique to private plans in Quebec and Nova Scotia. There are challenges in accessing products on public plans in all provinces; however, those who lived in Ontario (25 active ingredients unique to private payers) and Saskatchewan (19 active ingredients unique to private payers) face the largest hurdle.

The discrepancy can be explained by the varying formulary coverage across public plans. Of the 79 arthritis-related active ingredients prescribed by physicians in Canada, coverage by public plans ranges from 50 in Prince Edward Island to 62 in Alberta. (See [Table 7 in the accompanying data download](#).) A breakdown by drug class reveals that the number of active ingredients under the biologic and DMARD classes listed on the formularies is

relatively consistent, representing a similar group of active ingredients. The gap in biologics was primarily due to sarilumab (across the country), anakinra (several provinces), and ixekizumab (Nova Scotia), while the disparity for DMARD products was due to apremilast (across the country) and tofacitinib citrate (Prince Edward Island).

Meanwhile, the listing of NSAIDs, corticosteroids, and analgesics shows considerable variation across provinces—generally more than one-third of active ingredients within these classes approved by Health Canada are not included on public plans. What is more, Newfoundland and Labrador and Saskatchewan are the only two provinces not providing coverage for any bisphosphonate drug covered by most other public plans. This implies that, in terms of drugs available on the benefit lists, patients living in different jurisdictions with public plan coverage have varying access to certain arthritis medications.

Furthermore, although these drugs are listed on provincial formularies, individuals may still encounter obstacles. Drugs on provincial formularies are divided into three categories, based on their reimbursement status: open benefits, restricted-use benefits, and exceptional medications. (See “Definitions” for a detailed description of the terms.) While open benefits are more accessible, there are stricter terms and conditions for the reimbursement of restricted-use benefits and exceptional drugs. The different target population, clinical criteria, and quantity limit of each drug mean that accessibility varies from individual to individual and from prescription to prescription, both within and across provinces. Indeed, biologics and bisphosphonates are all designated as restricted-use drugs or exceptional

medications in each provincial plan, meaning that the patient is not granted coverage without a special authorization.

There are exceptions in the NIHB program (specifically, the biologic tocilizumab), where a few products are covered by regular plans although most are also restricted to a set of reimbursement criteria. In contrast, corticosteroids can be obtained much more easily by patients due to their open coverage status in most provincial plans. In addition, while most products under the DMARD and analgesics classes are open to all prescription situations, tofacitinib (a DMARD) and fentanyl (an analgesic) are normally provided through an exceptional access program.

DMARDs and biologics are two important therapies for the treatment of rheumatoid arthritis and other inflammatory diseases. Compared with DMARDs, biologic drugs have a much faster onset of action, but also a remarkably higher price.<sup>16</sup> Biologics, partly due to the high cost of reimbursement, are accessible for coverage only when a set of terms and conditions for special authority approval is met. For example, in Alberta, patients who need a biologic therapy must complete an assessment by a specialist in rheumatoid arthritis for initiation and continued coverage. Requests are made by the specialists who send the form (ABC 60027), confirming that the patient has been tested to be refractory or intolerant to specified DMARD therapies.

Different regions have different types of coverage for biologics and DMARDs. In Alberta, British Columbia, Manitoba, and Saskatchewan, biologics are generally claimed through public plans (though Alberta also has significant claims for biologics on private plans and out-of-pocket claims). Conversely, Ontario and Quebec have biologics claimed relatively more on private plans or out-of-pocket. This is interesting, because patients must be deemed non-responsive to DMARD therapy to access biologics. In Nova Scotia, New Brunswick, and Newfoundland and Labrador, there are significantly more biologic claims than DMARD claims on both public and private plans. (See [Table 8 in the accompanying data download.](#))

Focusing only on biologics that treat arthritis, there are several instances across Canada where biologics claims are reimbursed privately and out-of-pocket, even though public coverage for the biologic is available. (See [Table 9 in the accompanying data download.](#)) The most glaring example is anakinra. This biologic was claimed in Alberta 237 times by patients in 2017 for the treatment of arthritis, with more than two-thirds (69.6 per cent) of these claims reimbursed as out-of-pocket and zero claims reimbursed by public programs (despite being part of the benefit under the provincial prescription drug plan).

Anakinra has been part of Alberta's public drug program since July 2005, and its administrative burden, eligibility criteria, and reimbursement cost are no different from other biologics used

<sup>16</sup> Indeed, biologics and biosimilar medications within this context are typically reserved for DMARD-refractory diseases, which helps to explain their higher profile and associated costs.

to treat rheumatoid arthritis.<sup>17</sup> Patients who have been reimbursed for anakinra by the public plan are not eligible for coverage of other biologics except under exceptional circumstances.<sup>18</sup> There is no reliable way for physicians to confirm who can benefit in advance from anakinra, and this may profoundly affect the prescription of this medication.<sup>19</sup> Patients may access alternative coverage in case they must switch to another medication.

Additionally, until February 2019 sarilumab was the only biologic agent without coverage by any of the provincial public drug programs. There were 1,373 sarilumab claims for arthritis treatment nationwide in 2017, with 533 (or 38.8 per cent) claims reimbursed from private plans and 840 (or 61.2 per cent) claims reimbursed out-of-pocket. This resulted in approximately \$1.6 million in out-of-pocket costs for patients (especially those with rheumatic arthritis) and \$1.0 million in private reimbursement.

Among the active ingredients in medications used to treat arthritis, there are many that are disproportionately claimed (and reimbursed) on private plans instead of public plans. (See tables 10 and 12 in the accompanying data download.) This is most apparent in analgesics and corticosteroid products used. However, among biologics, secukinumab stands out as claimed more often on private plans, even though

it is on provincial formularies. Across Canada, public claims comprise only 16.0 per cent of all secukinumab claims, with noticeably fewer relative claims in Atlantic Canada, Quebec, and Ontario.<sup>20</sup> More interesting is that Newfoundland and Labrador, Nova Scotia, and New Brunswick tend to have a larger number of active ingredients disproportionately claimed on private plans, and the total number of out-of-pocket claims outnumber the total number of public claims. It is most striking that only 13.8 per cent of adalimumab claims in Ontario are on the public plan—there are nearly as many claimed out-of-pocket. (See Table 11 in the accompanying data download.)



17 Anakinra is also used in gout management, fever control, and macrophage activation syndrome. This helps to explain why the number of reimbursement approvals for anakinra are higher than those for the other drugs displayed in Table 9 in the accompanying data download. The IQVIA data set used did not generate any public reimbursement claims for anakinra in Alberta for 2017. The answer to this is unclear, though it probably relates to the drug being under special access for our period of analysis.

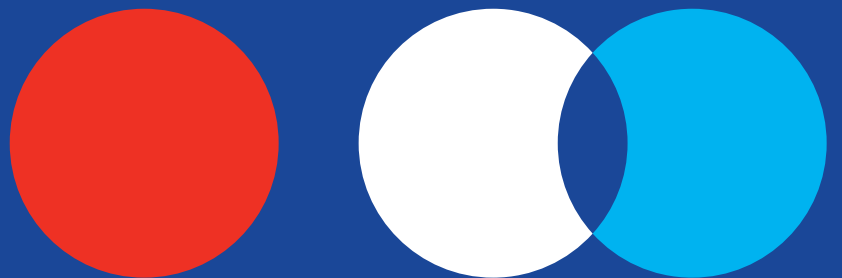
18 Joint Health, Interactive Report Card, “Alberta, Rheumatoid Arthritis, Anakinra.”

19 National Rheumatoid Arthritis Society, *Biologics... The Story So Far*.

20 Importantly, public drug plan coverage is expanding across Canada. For example; provincial plans in Ontario, British Columbia, Alberta, Saskatchewan, Manitoba, New Brunswick, Prince Edward Island, and Newfoundland and Labrador now offer cosentyx to publicly insured individuals. Source: Novartis, “Addition of Cosentyx to Drug Plan in Ontario and Across Canada.”

## Section 3

# Conclusions, discussion, and policy implications





## **Approximately 6 million Canadians (one in five adults) are living with arthritis and regularly require medications to treat their condition and manage their pain. These medications include targeted treatments like NSAIDs, DMARDs, and biologics (or biosimilars), as well as analgesics and corticosteroids.**

People living with arthritis in Canada can access necessary medications through public and/or private plans, though coverage varies across plans and jurisdictions. Individuals over 65 years of age are generally enrolled in public plans, while a greater proportion of working-age Canadians are enrolled in a group plan. Employed individuals who are not enrolled in a group plan, as well as those who are unemployed, might have drug coverage through a public drug plan and/or must pay out-of-pocket for their medications. In jurisdictions with a provincial pharmacare program in place, they have access to public coverage and only need to pay out-of-pocket for drugs that are not on the public formulary. However, in provinces without a pharmacare program, such as Ontario, Saskatchewan, and Newfoundland and Labrador, public coverage is generally only accessible for more financially vulnerable or dependent groups (e.g., those living in a long-term care or special care home) or people receiving disability support. In these provinces, the only option for employed individuals without access to a group plan or unemployed individuals is to pay out-of-pocket

for their drugs. Canadians under 25 years of age generally have access to public coverage if they are not a beneficiary of their parents' group plan.<sup>1</sup> It is also possible for individuals, across all age groups, to be enrolled in both a public and a private plan, although such eligibility can vary significantly by province of residence.

The experience of Canadians with arthritis varies depending on insurance coverage. Across the country, private plan claimants can generally access a wider range of drugs than those who have only public coverage. Furthermore, public plan claimants living in certain provinces have access to more types of arthritis drugs than public claimants in other provinces. What is more, public coverage varies by province of residence. In fact, a review of different provincial formularies indicates that, independent of plan type, Canadians do not have equal access to arthritis medications across the country. Just as with public plans, access to drugs under private plans varies from one province to another, and moreover from one plan to another. Indeed, private coverage is highly dependent on plan

1 Dinh and Sutherland, *Understanding the Gap*.

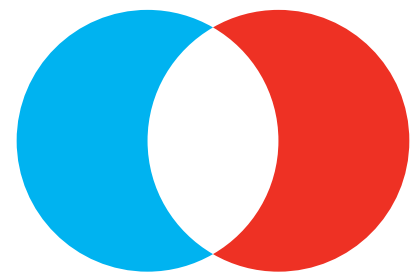
design, which varies across plan sponsors and administrators.<sup>2</sup> Accordingly, access to newer and innovative medications, such as biologics, also varies across plans and jurisdictions. It is largely attained through exceptional access only, and typically involves a more complex claims process.

There are also cost considerations. DMARDs are expensive, around \$1,500 per claim, and a public plan with a co-payment can lead to financial hardship. Biologics are even more expensive; at close to \$5,000 per claim, they are virtually unaffordable for most patients. Without being part of special authorization programs, most individuals would not be able to access these valuable treatments.<sup>3</sup>

This has several implications for a national pharmacare program. In a recent publication,<sup>4</sup> The Conference Board of Canada assessed five different pharmacare options, discussing the ease of administering each option. Some of these options saw an expanded role for the federal and provincial governments.

Indeed, all Canadians should benefit from equitable access to necessary medications. But this also means that each patient's experience must be placed at the centre—whether or not they currently have access to, or coverage of, necessary medications. Given the variable and inconsistent experiences of the 6 million Canadians living with arthritis highlighted by our analyses, equitable access through public plans alone may be difficult to achieve. The extent to which a person with arthritis can benefit from

available pharmaceutical treatment depends on whether they have access to a plan and then on plan design—these factors vary by jurisdiction, administrator, and plan sponsor. While a common national formulary would provide baseline universal coverage for all Canadians, patients' current access must not be negatively impacted. Our analysis clearly illustrates how public plans offer more limited medication options for arthritis compared with private plans. Ensuring optimal outcomes (i.e., enhance both access and affordability of necessary medications) for all Canadians will require greater harmonization of drug formularies between public and private plans and jurisdictions. A common approach to reimbursement for drugs would also be needed. Moreover, the reimbursement approach would need to be tailored to the necessary therapeutic needs of defined patient populations, particularly in the case of more expensive and newer drugs such as DMARDs and biologics, to optimize value in terms of patient outcomes and system efficiencies.



2 Persons enrolled in private drug reimbursement programs generally have different co-payment structures and annual and/or lifetime maximum restrictions to formulary medications that vary based on insurer. Typically, these restrictions are almost always less restrictive than those pertaining to the public in public programs.

3 Mukherjee and Kamal, "Sociodemographic Determinants of Out-of-Pocket Expenditures."

4 Dinh, Law, and Clement, *Assessing the Options for Pharmacare Reform in Canada*.

In addition, it must be recognized that current public plans include premiums/deductibles/co-payments that can contribute to financial barriers. For instance, Manitoba Pharmacare (which provides 100 per cent coverage) has income-based deductibles that start at 3.09 per cent of total income for families earning less than \$15,000 per year and topping out at 6.98 per cent of total income for families earning more than \$75,000 per year. Conversely, the Ontario Drug Benefit (applies to residents 65 years of age and over) has a \$100 annual deductible and a maximum \$6.11 co-payment per prescription. The Public Prescription Drug Insurance Plan in Quebec, with 100 per cent coverage and the most extensive formulary in the country, sets annual premiums between \$0 and \$616, depending on income.

For many families in Canada, out-of-pocket expenses are a major financial burden. A minor flat-rate deductible at 2.0 per cent, for example, costs the average Canadian household just under \$2,000 in out-of-pocket expenses every year.<sup>5</sup> While deductibles are lower for those most in need, even a very small amount can lead to a serious financial burden. Private plans are also subject to co-payments, spending caps, and premiums, meaning individuals on private plans can also be confronted with financial barriers in accessing medications.

Any option for pharmacare must consider patients' actual experiences with accessing necessary medications. The key points for consideration are: public plans are limiting compared with private plans; private plans universally offer more extensive coverage; access to arthritis medications through public plans varies province by province; and out-of-pocket expenses (including co-payments and deductibles) create a financial burden for patients living with arthritis.



[Download data](#)

5 Statistics Canada, *Census Profile, 2016*.

# Appendix A

# Methodology

Our research included a review of provincial drug formularies to inform an inclusive list of arthritis medications that are available for eligible public plan beneficiaries across different geographical regions. A review of the medications prescribed to patients and the corresponding reimbursement reveals how patients are obtaining their medications. Combining these reviews allowed the Conference Board to pinpoint discrepancies in coverage between public and private plans. It also permits us to isolate the possible reasons why high out-of-pocket costs exist for medications on public formularies. This helps us gain a better understanding of potential challenges that patients face based on their access to prescription drugs.

As a starting point, we compiled a list of drugs deemed necessary for the treatment of arthritis. For the purposes of this impact paper, focus was placed on the most common types of arthritis: osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, and childhood arthritis.<sup>1,2</sup> The Drug Guide from the Arthritis Foundation provides information on active ingredients<sup>3</sup> and products

used to treat these four arthritis conditions. Referencing this guideline, a comprehensive list of drugs approved for sale in Canada for these four arthritis conditions was developed. This list (hereafter named the Health Canada list) was based on the Health Canada Drug Product Database. We restricted the Health Canada list to drugs already in the Canadian market and those authorized for sale but not currently being sold (and excluded cancelled drugs). All drugs containing active ingredients for arthritis treatment are included in the Health Canada list, although they may vary in terms of dosage, form, manufacturer, and/or route of administration. In the Health Canada list, these drugs were categorized by drug class in a manner consistent with the Drug Guide. In total, we identified 94 medications used to treat arthritis across six medication groupings.

The next step involved extracting a list of drugs specific to arthritis that are listed on public plan formularies. To do this, an algorithm was created to match the Health Canada list with each provincial and federal program

1 We selected four arthritis conditions based on prevalence rates in Canada, but acknowledge the more than 100 other types of arthritis that patients live with.

2 Arthritis Society, "The Truth About Arthritis."

3 Here, the terms *active ingredients* and *different medications* are analogous to each other. We prefer to use the term *active ingredient* based on our data and information sources.

formulary (including each province's exceptional medications). Essentially, drugs on formularies containing active ingredients on the Health Canada list were identified and organized based on reimbursement status.<sup>4</sup> The algorithm identified drugs on formularies using drug identification numbers (DINs) and then re-sorted the matched drugs by active ingredients.<sup>5</sup> This two-step approach has several advantages: it places the focus on drugs that are actually available to patients through the public plans, excluding those that have been cancelled post-market, pre-market, or for safety reasons (but still listed on formularies); it identifies the benefit status of the drug;<sup>6</sup> and it improves accuracy of the data matching process.<sup>7</sup> If the algorithm were based on the active ingredient alone, it would be challenging to obtain all this information because the coverage criteria of an identical active ingredient may vary depending on its strength, route of administration, and whether it is a brand name.

Claims and reimbursement data were obtained from the PharmaStat Plus database of IQVIA Canada. The Conference Board extracted data for each drug from PharmaStat Plus based on the Health Canada list and, by merging the detailed drug information on the Health Canada list with the claims and reimbursement data, created a

comprehensive working database categorizing all drugs used to treat arthritis that were purchased in Canadian retail pharmacies in 2017.<sup>8</sup> Six drug classes were considered useful for this analysis: analgesics, corticosteroids, non-steroidal anti-inflammatory drugs (NSAIDs), disease-modifying anti-rheumatic drugs (DMARDs), biologics,<sup>9</sup> and bisphosphonates.<sup>10</sup>

It is common for arthritis patients to receive treatment consisting of a combination of these medications. While analgesics as well as corticosteroids and NSAIDs are used in short- and long-term situations to relieve pain and treat inflammation, they are typically taken in conjunction with DMARDs and biologics for the treatment of inflammatory arthritis (including rheumatoid arthritis and ankylosing spondylitis) and childhood arthritis as a "bridge therapy." Meanwhile, bisphosphonates can be added to treat persons living with inflammatory arthritis at risk of developing osteoporosis. As a result, the drug classes provide a lens to detail how patients are accessing specific parts of the necessary therapies.

Since some medications to treat arthritis are used elsewhere to treat other chronic health conditions, our claims and reimbursement data might capture arthritis medications that were used to treat patients living with different

4 Whether the coverage is open to regular public plans/sub-plans or whether special authorization is required.

5 Different DINs can share identical active ingredients.

6 Drug benefits indicate how a drug can be accessed by patients using a publicly funded formulary. For example, some drugs for arthritis might be accessible to patients with certain benefits characteristics while other drugs may be more widely accessed.

7 The active ingredients (i.e., generic names in provincial drug formularies) contained within an identical drug product can appear differently on public plan formularies compared with the Health Canada list.

8 Our data relate to all recorded arthritis drug purchases but do not capture some unrecorded purchases by pharmacies and/or parties unaffiliated with IQVIA.

9 And/or biosimilar ingredients used to treat persons with arthritis.

10 Bisphosphonates are not typically prescribed to treat arthritic conditions directly and are instead prescribed for patients with inflammatory arthritis at risk of developing osteoporosis.

health conditions.<sup>11</sup> For instance, infliximab (a biologic agent) is used for the treatment of moderate to severe rheumatoid arthritis and ankylosing spondylitis, along with other types of inflammatory arthritis. At the same time, patients with other chronic inflammatory diseases—such as Crohn’s disease, psoriasis, or ulcerative colitis—also receive the therapy. Consequently, a multiple indication rate is applied to estimate the claims and reimbursement specific to arthritis patients. For analgesics, the multiple indication rate is generally 20 per cent,<sup>12</sup> reflecting the fact that about one-fifth of users of acetaminophen and fentanyl, among others, are arthritis patients often suffering chronic pain due to their conditions. For analgesics specific to arthritis, such as buprenorphine, the multiple indication rate is 100 per cent.<sup>13</sup> The multiple indication rate is also 20 per cent for most bisphosphonates, corticosteroids, disease-modifying anti-rheumatic drugs (DMARDs), and non-steroidal anti-inflammatory drugs (NSAIDs).<sup>14</sup> The biologic indication rate is generally between 75 and 100 per cent.

In the PharmaStat Plus database, the drug claim is attributed to the primary payer responsible for the largest portion of prescription spending during the transaction at the pharmacy. That payer could be either the public or the private

drug plan, or the individual out-of-pocket. The primary payer is also assigned the entirety of the reimbursement cost incurred at the retail pharmacy, including dispensing fees.<sup>15</sup> This influences the number of claims and reimbursement expenditures in the following ways:

- Prescriptions that are publicly and/or privately insured but involve the beneficiary paying a deductible are allocated to the out-of-pocket category until the deductible is reached. They are then allotted to the public or private category, depending on the plan.
- Prescriptions paid by cash at the pharmacy but reimbursed by a public or private plan afterward are, like paper claims, attributed to the out-of-pocket category.
- Premiums and co-payments are not included in the database.

As a result, the database captures all claims and the total reimbursement at retail pharmacies in Canada, but the amounts portioned to the public payer, private payer, and out-of-pocket are conservative estimates.<sup>16</sup>

11 Ideally, data would also be stratified based on the drug's end user and/or infusion purpose. Our data might therefore overestimate the number of claimants and reimbursement expenses related to arthritis medications.

12 A multiple indication rate of 20 per cent for analgesics represents one-fifth of Canadians who have arthritis. The 20 per cent is also applied to other classes where there are multiple uses for the same active ingredient.

13 Typically, analgesics are prescribed to patients living with arthritis irrespective of pain, thus explaining its indication rate.

14 It is significant that the multiple indicator rate for some DMARDs range between 75 and 100 per cent while others are set closer to 20 per cent.

15 We analyzed these payments using several metrics, including average reimbursement costs, which indicate the average adjusted cost for a specific prescription medication. Statistically, we use average costs where appropriate in our analysis to accommodate varying dosage sizes per reimbursement order.

16 It is true that some of our results might also overestimate costs where administrative errors have occurred or where uncaptured transactions would lower our aggregated data analyses.

# Appendix B

# Multiple indication rates

Multiple indication rates (MIRs), or indication-specific pricing, involve setting different prices for different indications distinct to patients and/or population groups. This means that some patients might pay less for a drug if they are statistically less likely to benefit from that drug's clinical benefits, while others might pay more if they are more likely to benefit from that same

drug.<sup>1</sup> As a financial model for medications pricing, MIRs provide rationale and justification for higher prices measured on patient-value; support decision-making regarding population-level medications supply; and offer patients with a revised payment model that caters to their personal characteristics.<sup>2</sup>

**Table 1**  
**Multiple indication rates**

Drug class	Average multiple indication rate	Median multiple indication rate	Lower limit value	Upper limit value
Analgesics	0.37	0.25	0.05	1
Biologics / Biosimilars	0.67	0.98	0.25	1
Bisphosphonates	0.25	0.25	0.25	0.25
Corticosteroids	0.21	0.25	0.05	0.25
Disease-modifying anti-rheumatic drugs (DMARDs)	0.34	0.25	0.05	1
Non-steroidal anti-inflammatory drugs (NSAIDs)	0.55	0.25	0.05	1
Serotonin-norepinephrine reuptake inhibitors	0.05	0.05	0.05	0.05

Source: The Conference Board of Canada.

1 Pearson, Dreitlein, and Henshall, *Indication-Specific Pricing of Pharmaceuticals*.

2 Ibid.

One major challenge related to MIRs is data analysis. Currently, there is no publicly available data source related to indication-specific pricing for drugs to treat arthritis in Canada or at the provincial level. Because of this, we derived the following values based on comprehensive discussions with procurement and arthritis drug experts at the Arthritis Society. Of course, these rates might not apply evenly across Canada, but they do represent an attempt to capture how patients are benefiting, on average, from each drug selected for analysis in this impact paper.





## Appendix C

# Active ingredients in arthritis medications

\*medications marked with an asterisk not included in reimbursement analysis

### Analgesics

Acetaminophen  
Belladonna  
Buprenorphine  
Buprenorphine (buprenorphine hydrochloride)  
Butorphanol tartrate  
Caffeine citrate  
Chlorpheniramine maleate  
Codeine phosphate  
Duloxetine\*  
Fentanyl  
Fentanyl (fentanyl citrate)  
Gabapentin\*  
Guaifenesin  
Hydromorphone hydrochloride  
Meperidine hydrochloride  
Methocarbamol  
Morphine hydrochloride  
Morphine sulfate  
Nalbuphine hydrochloride  
Oxycodone hydrochloride  
Pamabrom  
Pentazocine (pentazocine hydrochloride)  
Pentazocine (pentazocine lactate)  
Pheniramine maleate  
Phenylephrine hydrochloride

Pseudoephedrine hydrochloride  
Tapentadol (tapentadol hydrochloride)  
Tramadol hydrochloride

### Biologics

Abatacept  
Adalimumab  
Anakinra  
Certolizumab pegol  
Etanercept  
Golimumab  
Infliximab  
Ixekizumab  
Rituximab  
Sarilumab  
Secukinumab  
Tocilizumab  
Ustekinumab

### Bisphosphonates

Apo-risedronate (risedronate sodium)  
Sandoz alendronate (alendronate sodium)  
Zoledronic acid (zoledronic acid hemipentahydrate)  
Zoledronic acid (zoledronic acid monohydrate)

## Corticosteroids

Betamethasone (betamethasone dipropionate)  
Betamethasone (betamethasone valerate)  
Betamethasone acetate  
Betamethasone valerate  
Clobetasol propionate  
Cortisone acetate  
Dexamethasone  
Dexamethasone (dexamethasone sodium phosphate)  
Dexamethasone phosphate (dexamethasone sodium phosphate)  
Fludrocortisone 21-acetate  
Hydrocortisone  
Hydrocortisone (hydrocortisone sodium succinate)  
Methadone hydrochloride  
Methylprednisolone  
Methylprednisolone (methylprednisolone sodium succinate)  
Methylprednisolone acetate  
Prednisolone (prednisolone sodium phosphate)  
Prednisone  
Triamcinolone acetonide  
Triamcinolone diacetate  
Triamcinolone hexacetonide

## Disease-modifying anti-rheumatic drugs (DMARDs)

Apremilast  
Baricitinib (not currently available)  
Chloroquine  
Hydroxychloroquine  
Leflunomide  
Methotrexate  
Methotrexate (methotrexate disodium)  
Methotrexate (methotrexate sodium)  
Myochrysin (not currently available)  
Sulfasalazine  
Tofacitinib (tofacitinib citrate)

## Non-steroidal anti-inflammatory drugs (NSAIDs)

Celecoxib  
Diclofenac potassium  
Diclofenac sodium  
Diphenhydramine hydrochloride\*  
Etodolac (not currently available)  
Flurbiprofen  
Ibuprofen  
Ibuprofen (ibuprofen sodium dihydrate)  
Ibuprofen (ibuprofen, ibuprofen potassium)  
Indomethacin  
Ketoprofen  
Ketorolac tromethamine  
Mefenamic acid  
Meloxicam  
Nabumetone  
Naproxen  
Naproxen (naproxen sodium, naproxen)  
Naproxen (naproxen, naproxen sodium)  
Naproxen sodium  
Oxaprozin (not currently available)  
Oxyphenbutazone  
Piroxicam  
Sulindac  
Tenoxicam (not currently available)  
Tiaprofenic acid

## Appendix D

# Arthritis active ingredients unique to private payers, 2017

### Alberta

**Analgesics:** acetaminophen, buprenorphine, butorphanol tartrate, caffeine citrate, fentanyl (fentanyl citrate), tapentadol (tapentadol hydrochloride), tramadol hydrochloride

**Biologics:** anakinra (recently approved for public programs), ixekizumab (now publicly available to treat persons living with psoriatic arthritis in 2019), sarilumab

**Corticosteroids:** betamethasone valerate

**DMARD:** apremilast

**NSAIDs:** diclofenac potassium, meloxicam, naproxen (naproxen sodium, naproxen)

### British Columbia

**Analgesics:** fentanyl (fentanyl citrate), tapentadol (tapentadol hydrochloride)

**Biologics:** ixekizumab, sarilumab

**Corticosteroids:** betamethasone valerate, dexamethasone (dexamethasone sodium phosphate)

**DMARD:** apremilast

**NSAIDs:** diclofenac potassium, etodolac, naproxen sodium

## Manitoba

**Analgesics:** fentanyl (fentanyl citrate), tapentadol (tapentadol hydrochloride)

**Biologics:** ixekizumab, sarilumab

**Corticosteroids:** betamethasone acetate, betamethasone valerate, dexamethasone (dexamethasone sodium phosphate), methylprednisolone (methylprednisolone sodium succinate)

**DMARD:** apremilast

**NSAIDs:** mefenamic acid, naproxen sodium

## New Brunswick

**Analgesics:** acetaminophen, buprenorphine, butorphanol tartrate, fentanyl (fentanyl citrate), tapentadol (tapentadol hydrochloride), tramadol hydrochloride

**Biologic:** ixekizumab

**Corticosteroids:** betamethasone valerate, dexamethasone (dexamethasone sodium phosphate)

**DMARD:** apremilast

**NSAIDs:** etodolac, ketorolac tromethamine

## Newfoundland and Labrador

**Analgesics:** buprenorphine, butorphanol tartrate, morphine hydrochloride, tapentadol (tapentadol hydrochloride), tramadol hydrochloride

**Biologic:** ixekizumab

**Bisphosphonate:** zoledronic acid (zoledronic acid monohydrate)

**Corticosteroids:** betamethasone valerate, dexamethasone (dexamethasone sodium phosphate)

**DMARD:** apremilast

**NSAID:** diclofenac potassium

## Nova Scotia

**Analgesics:** buprenorphine, fentanyl (fentanyl citrate), tapentadol (tapentadol hydrochloride)

**Biologics:** ixekizumab, sarilumab

**Corticosteroids:** betamethasone valerate, methadone hydrochloride

**DMARD:** apremilast

**NSAID:** diclofenac potassium

## Ontario

**Analgesics:** acetaminophen, buprenorphine, caffeine citrate, fentanyl (fentanyl citrate), morphine hydrochloride, pentazocine (pentazocine hydrochloride), pentazocine (pentazocine lactate), pseudoephedrine hydrochloride, tapentadol (tapentadol hydrochloride), tramadol hydrochloride

**Biologics:** anakinra (recently approved for public programs), ixekizumab, sarilumab (recently approved for public programs)

**Corticosteroids:** betamethasone acetate, betamethasone valerate, dexamethasone (dexamethasone sodium phosphate), methylprednisolone (methylprednisolone sodium succinate), triamcinolone diacetate

**DMARD:** apremilast

**NSAIDs:** diclofenac potassium, diphenhydramine hydrochloride, etodolac, ketorolac tromethamine, naproxen (naproxen sodium, naproxen), naproxen sodium, tenoxicam

## Quebec

**Analgesic:** belladonna

**Biologic:** sarilumab

**Corticosteroids:** betamethasone acetate, triamcinolone diacetate

**NSAIDs:** mefenamic acid, naproxen sodium

## Saskatchewan

**Analgesic:** acetaminophen, belladonna, buprenorphine, butorphanol tartrate, meperidine hydrochloride, pentazocine (pentazocine hydrochloride), tapentadol (tapentadol hydrochloride), tramadol hydrochloride

**Biologics:** ixekizumab, sarilumab

**Corticosteroids:** betamethasone valerate, dexamethasone (dexamethasone sodium phosphate), methylprednisolone (methylprednisolone sodium succinate)

**DMARDs:** apremilast, methotrexate (methotrexate sodium)

**NSAIDs:** diclofenac potassium, ketorolac tromethamine, naproxen sodium, tenoxicam

## Appendix E

# Public plans by province

The following provides a brief summary of the public plans available in each province, which provide coverage of the necessary analgesics, DMARDs, and NSAIDs for arthritis patients. It also provides a rundown of the exceptional access programs in all regions for individuals who require biologics.

### Alberta

Non-group supplementary health plans provide coverage for prescribed drugs in Alberta. The main Non-Group Coverage plan is available to residents under 65 years of age, while the Coverage for Seniors drug plan covers residents 65 years of age and above. There are several other programs, including the Widows' Pension Assured Income, palliative coverage, the Outpatient Cancer Drug Benefit Program, and the Specialized High Cost Drug Program.

Alberta-government-sponsored drug benefit plans and Alberta Blue Cross individual plans have special authorization in place for specific medications. Specific arthritis medications include anakinra and etanercept, among others. The status of the request is usually available within three to five business days. If more information is required from your doctor, it may take longer.

### British Columbia

British Columbia's PharmaCare Program consists of nine separate programs. The largest is the Fair PharmaCare Program, which provides prescription drug coverage for nearly all residents. The other plans help disabled children; patients in residential care facilities; persons needing income assistance; persons in palliative care; persons needing psychiatry care; persons needing smoking cessation therapy; persons with cystic fibrosis; and persons living with HIV.

PharmaCare Special Authority authorizes coverage for patients with specific medical circumstances. However, the actual reimbursement and deductibles paid depend on the patient's PharmaCare coverage and plan. Arthritis-specific drugs like abatacept and adalimumab require the completion of a Special Authority request form, and turnaround times range from one business day for urgent requests to three to 10 business days for priority and regular medications.

### Manitoba

Manitoba Pharmacare is available to all residents who have a valid provincial health card. It is a single-payer program, with deductibles based on family income. The program includes sub-plans such as the Employment and Income Assistance

Program, the Personal Home Care Drug Program, the Palliative Care Drug Access Program, and the Home Cancer Drug Program.

For drugs not eligible under the standard formulary, or not eligible for a condition indicated in the formulary, a request for Exception Drug Status coverage is required. The specialist must apply to the Exception Drug Status office and, if coverage is approved, it is valid from the date of application.

### **New Brunswick**

New Brunswick has three main plans that provide coverage to all residents who have a valid Medicare card. The New Brunswick Prescription Drug Program (NBPDP) is available to low-income seniors as well as nursing home residents and individuals with specific medical conditions. The New Brunswick Drug Plan is available to residents who do not have private insurance, while the Medavie Blue Cross Seniors' Prescription Drug Program provides coverage for seniors without private insurance.

Drugs listed with special authorization benefits have specific criteria that must be met before they are approved for reimbursement. Specific requests under this program include drugs for Alzheimer's and smoking cessation, and for the drug filgrastim. Arthritis drugs as part of this program can be requested using the general form for other specially authorized drugs. Under exceptional circumstances, requests for drugs not listed in the formulary or for an indication not included in the special authorization criteria may be reviewed on a case-by-case basis.

### **Newfoundland and Labrador**

The Newfoundland and Labrador Prescription Drug Program (NLPDP) provides eligible residents with coverage for their prescription medications. The Foundation Plan, Access Plan, and 65Plus Plan provide insurance for seniors and those in need of financial assistance. There is also the Assurance Plan and the Select Needs Plan, which support residents experiencing high drug costs and those with cystic fibrosis and growth hormone deficiency, respectively.

Special Authorization is a process whereby beneficiaries of the NLPDP may access drugs not part of the standard program. These drugs have defined clinical criteria that must be met before approval. Every effort is made to process requests within 10 working days. Requests of a more urgent nature may be given priority and are usually assessed within 24 to 48 hours.

## **Nova Scotia**

Nova Scotia Pharmacare is available to families that have no drug coverage or if the cost of their prescription drugs becomes a financial burden. The Seniors' Pharmacare program is the most extensive, as eligibility is offered to all residents 65 years of age and older. The Family Pharmacare program is available to all residents, although it excludes those already in the seniors' program and in the other public plans.

Certain drugs are eligible for coverage only under the Exception Status Drugs program when the individual meets the criteria. Under this program, drugs for rheumatoid arthritis (rituximab, infliximab, etanercept, adalimumab, abatacept, certolizumab pegol, golimumab, tocilizumab) require a specific request form and have maximum dosage limits.

## **Ontario**

The Ontario Drug Benefit (ODB) program is designed to cover residents 65 years of age and older, while the new OHIP+ program covers individuals below 25 years of age, but not as first payer. Public coverage is also provided for residents of long-term care homes and homes for special care; recipients of professional home services and of social assistance, residents with disabilities, and recipients under the Trillium Drug Program.

The Exceptional Access Program (EAP) enables access to drugs not on the ODB formulary, or where no listed alternative is available. Specific forms are required for some drugs, including oxycodone, which is an opioid medication used to treat moderate to severe pain. Arthritis-specific forms are available thanks to the Ontario Rheumatology Association, which has helped patients living with ankylosing spondylitis, gout, psoriatic arthritis, and rheumatoid arthritis (among others) access medically necessary drugs through Ontario's EAP. The coverage date of approved EAP requests begins on the date the application was filled out, or 30 business days from the date the request was received by the program, whichever is shorter.

## **Prince Edward Island**

Prince Edward Island Pharmacare is an extensive program that provides coverage to all eligible residents of the province. However, for residents who participate in a group plan, PEI Pharmacare is not the primary payer; private plans are billed first, and PEI Pharmacare acts as the payer of last resort for all Islanders.

Some medications in the PEI Pharmacare Formulary are approved on a special authorization basis only. If physicians prescribe a drug requiring special authorization, they submit a Standard Special Authorization Request form. There are specific forms for ankylosing spondylitis, psoriatic arthritis, and rheumatoid arthritis but, if approved, there are maximum coverage limits. Even with a special request, if the medication is not on the provincial formulary, it is not eligible for coverage.



## Quebec

All Quebec residents are mandated by law to have prescription drug insurance, either through a private plan or through the public plan. Any resident who is eligible for private coverage must enroll in a private plan, and those without access to private coverage must enroll in the public plan. Failure to have prescription drug coverage in Quebec results in financial penalties equal to the amount of the public plan premiums.

The public plan covers, under certain conditions, those drugs listed as “exceptional medications,” which include arthritis drugs like abatacept, adalimumab, and certolizumab pegol. Individuals may apply for coverage of drugs not appearing on the List of Medications, but certain criteria must be fulfilled. It takes about 24 hours to respond to an urgent exceptional medication authorization request, and 48 hours to respond to other exceptional medication authorization requests.

## Saskatchewan

Saskatchewan has several drug plans available to its residents. These include the Seniors’ Drug Plan, the Children’s Drug Plan, and the Special Support Program (which helps with high drug costs). Other programs assist residents on social assistance and income supplements (for seniors), in need of emergency assistance, in palliative care, or other special beneficiaries.

Certain drugs are reviewed and recommended for coverage under the Exception Drug Status program. Drugs approved for this coverage are subject to the same deductible and co-payment as the patient’s formulary drugs. Requests are routinely backdated 30 days from the time the Drug Plan receives the request.

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