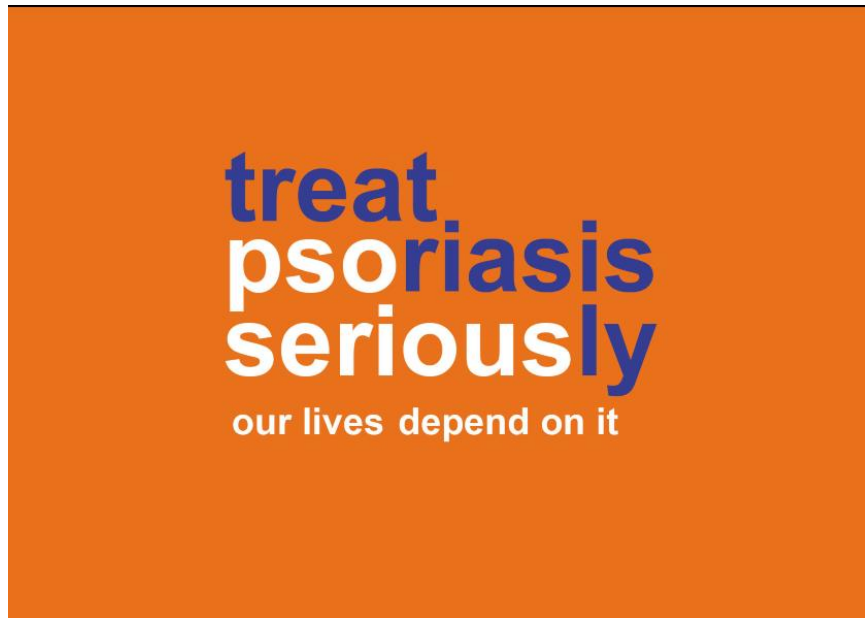


**Pso Serious 2018:
A Report on Access to Care and Treatment for
Psoriasis Patients in Canada**



**Canadian Association of Psoriasis Patients
World Psoriasis Day, October 29, 2018**



Objective of this report:

The Canadian Association of Psoriasis Patients (CAPP) originally set out to renew the 2014 Psoriasis Report Card. However, after identifying several challenges with reproducing the data in the earlier report, the CAPP Board of Directors changed the focus of this report. The revised objective is to reset the stage in evaluating the status of access to care and treatment for psoriasis patients in Canada.

Acknowledgements:

CAPP would like to thank Pat Rich for his research and writing this report. Pat is an Ottawa-based writer and editor with more than 35 years' experience reporting on, and writing about, medical and health issues.

The report author and CAPP would like to acknowledge the Canadian dermatologists who agreed to be interviewed for this report and Lynda Buske, Manager, CAPER for supplying demographic information on Canadian dermatologists.

CAPP would also like to thank the following pharmaceutical companies for contributing financially to this report:

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ISBN : tbc

EXECUTIVE SUMMARY

CAPP developed this report to highlight the changes to the care and treatment environment for psoriasis patients in Canada over the last four years. While there have been many advances in the number of treatments available, in particular biologics and biosimilars, there is still work to be done to ensure equitable access to these treatments as well as to dermatological care in Canada. In particular, it is clear that issues remain for psoriasis patients living in rural and remote parts of Canada. On a positive note, we now have a lot more patient data on the physical and emotional impacts of the disease as well as on the quality of life overall.

With the results of this report, the CAPP Board of Directors commits to taking the following actions (in no particular order) to improve the quality of life for psoriasis patients in Canada:

- Advocate for a choice of treatment on provincial formularies due to the high rate of medication fatigue encountered by patients with psoriatic diseases. The number of patients remains the same no matter how many drugs are funded by the provinces' drug plans.
- Continue to support medical students to expose them to medical dermatology and encourage them to pursue a career in medical dermatology.
- Increase awareness of the potential impact of psoriatic diseases on quality of life as well as the classes of treatments available, in particular biologics/biosimilars.
- Advocate for initiatives to encourage more teledermatology and other digital options for psoriasis patients, particularly in northern and rural communities.
- Advocate for the provinces/territories to come up with a visionary approach for biologics/biosimilars as a whole.

Pso Serious 2018: A Report on Access to Care and Treatment for Psoriasis Patients in Canada

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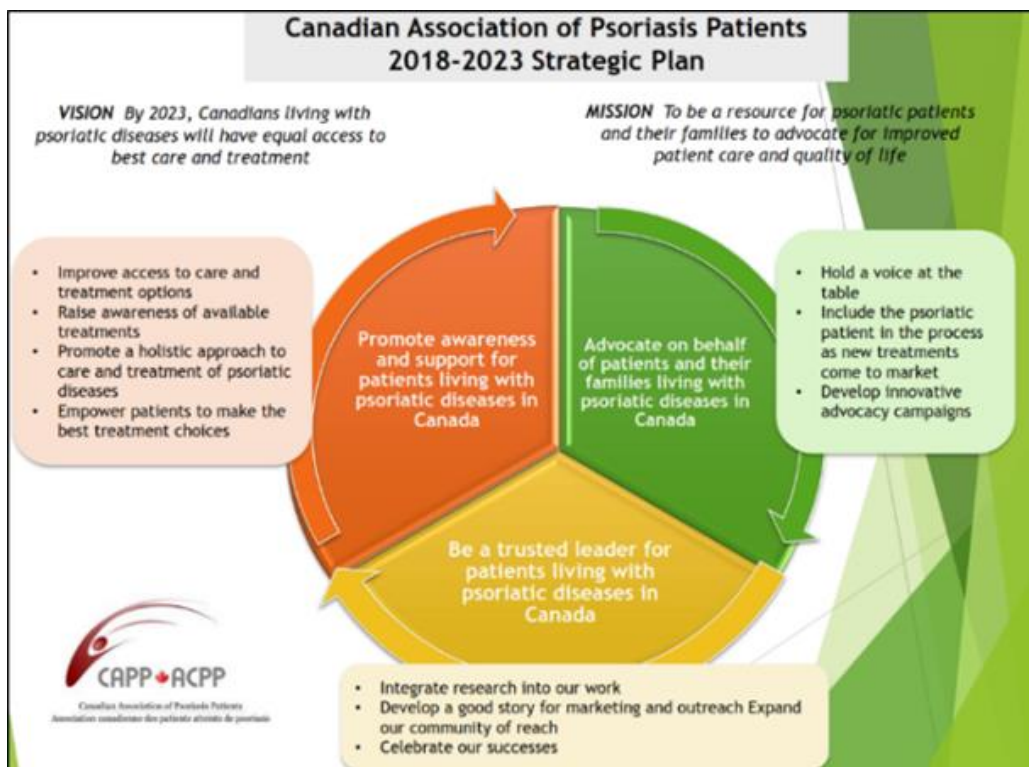
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About the Canadian Association of Psoriasis Patients

The Canadian Association of Psoriasis Patients (CAPP) is a national non-profit organization dedicated to be a resource and advocate for psoriatic patients and their families to improve patient care and quality of life. Our vision is to ensure equal access to best care and treatment for all psoriasis and psoriatic arthritis patients.

CAPP works closely with the Canadian Skin Patient Alliance (CSPA). This mutually beneficial partnership builds on the strengths of both organizations, including their complementary missions and their shared staffing model. CAPP is also proud to represent Canada as a member of the International Federation of Psoriasis Associations (IFPA).

In 2018, CAPP released a new strategic plan that focuses on the following areas: promoting awareness and support for patients living with psoriatic diseases in Canada; becoming a trusted leader for patients living with psoriatic diseases in Canada; and advocating on behalf of patients and their families living with psoriatic diseases in Canada. The data in this report is instrumental to the advocacy work outlined in the strategic plan illustrated below and will be used to advocate for better access to care and treatment for psoriasis patients.



Foreword

“Psoriasis is so much more than a skin disease.” The Canadian Association of Psoriasis Patients (CAPP) uses this tagline often as these are interesting times to be a patient living with psoriatic diseases in Canada. On one hand, there are many new and innovative treatments available, with more being introduced regularly. These advancements come with promises of a Psoriasis Area and Severity Index (PASI) score of 90 to 100! In 2014, a PASI score of 60 was considered a successful treatment. The PASI score ranges from 0 to 100, with 100 meaning clear skin. On the other hand, the number of phototherapy clinics is diminishing. There is a looming threat across Canada of non-medical switching to cheaper treatment options and it is harder to access a medical dermatologist.

At the national level of drug development, potential changes to the Patented Medicine Prices Review Board (PMPRB) may reduce access to clinical trials and new innovative drugs in Canada. The implementation of Pharmacare will inevitably restrict access to expensive medications such as biologics/biosimilars and the process to get drugs on the market continues to become longer and more complicated.

Yet psoriatic disease is still seen as “just a skin disease.” The quality of patients’ lives continues to be impacted by both physical and mental symptoms while they struggle to find a treatment that works for them. Discrimination remains with the preconception that people living with psoriasis are contagious and unsightly. We regularly take calls from patients who state, “I wish it was a cancer diagnosis as I would get more empathy and understanding.” We, as a patient group, still have a lot of work to do!



Dr. Morris Manolson
Co-Chair
CAPP



Eva Stordy
Co-Chair
CAPP

1. INTRODUCTION

Psoriasis is a chronic, debilitating disease that impacts more than one million Canadians of all ages and about 125 million people worldwide. There is currently no cure for psoriasis and patients may experience recurrence of symptoms throughout their life.

Psoriasis¹ is characterized by red elevated patches and flaking silvery scales. Symptoms range from mild to severe and can include:

- dry or red areas of skin, sometimes with raised edges, usually covered with silvery-white scales
- rashes on the scalp, genitals or in the skin folds
- itching and skin pain, sometimes severe
- joint pain, swelling or stiffness
- nail abnormalities

The most common sites for lesions are the elbows, knees, scalp, chest and lower back. There are several types of psoriasis with the most common being plaque psoriasis, which affects about 90 percent of psoriasis patients (unless indicated otherwise, in this report any references to psoriasis will be to plaque psoriasis).

Psoriasis is recognized by the World Health Organization (WHO) as a non-communicable disease (NCD). NCDs are chronic diseases that are not passed from person to person. They are of long duration and generally slow progression. There is a growing recognition of the association of psoriasis with other NCDs including obesity, heart disease, diabetes, Crohn's disease and kidney disease.

In addition to its physical manifestations, psoriasis can have a significant impact on the psychological health of patients with psoriasis and their families. People with psoriasis have an increased risk of depression, anxiety and suicide. According to a national patient survey², psoriasis and related conditions “impose a severe burden on the daily lives of Canadians with a history of moderate to severe psoriasis.” More than one-third of respondents viewed their psoriasis as a problem in their daily life.

“Nothing I have tried has ever worked on my psoriasis. Please find a cure.”

Skin Patient
British Columbia

Psoriasis has a genetic basis and about one-third of people with psoriasis have at least one family member with the disease. While the exact cause remains unknown, researchers believe it involves a combination of genetic, environmental and immune system factors. The condition develops when the immune system malfunctions, causing inflammation. White blood cells (T cells) in the immune system are triggered and this sets off the inflammation, which then causes skin cells to rise to the surface and shed at 10 times the normal rate.

CAPP Psoriasis Report 2014: Access to Care and Treatment of Patients in Canada

In 2014, CAPP in partnership with the Canadian Skin Patient Alliance (CSPA) issued a report on the status of psoriasis care and management in Canada.³

The report came in the wake of a World Health Organization (WHO) Resolution 67.9 on Psoriasis, which formally recognized psoriasis as a “chronic, non-communicable, painful, disfiguring and disabling disease for which there is no cure.”

Overall, the report card gave a failing grade to the majority of provinces and territories on access to dermatologists, phototherapy and treatments. The report noted that while steps had been taken to improve access to dermatological care, “psoriasis patients face long wait times for routine medical consultations.” In addition, the report highlighted the fact that the majority of provinces and territories still lacked sufficient numbers of dermatologists, and that poor access to phototherapy and “escalating barriers to access to new medications” were of great concern.

As a result of these findings, CAPP made three recommendations to the provincial and territorial governments to:

1. Improve access to dermatological care. Reduce the wait times for a routine consultation with a dermatologist to five weeks within the next three years by increasing the number of medical dermatologists.
2. Improve access to phototherapy. Ensure that every psoriasis patient has access to phototherapy by providing a clinic in every publicly funded hospital and by including home phototherapy as an insured service.
3. Improve access to medications. Fund all drugs deemed to be the standard of care without restrictions and without a time-consuming application process.

Since the release of the 2014 CAPP report, there have been no national or provincial/territorial initiatives in Canada focused specifically on psoriasis and no initiatives to specifically address the recommendations made by CAPP in the report. There have been other developments, however, indirectly related to the recommendations:

- Following adoption of the psoriasis resolution at the 67th World Health Assembly, the World Health Organization developed a *Global report on psoriasis*⁴ in 2016 and included information about psoriasis on their website to help raise awareness of the range of ways that psoriasis can affect people’s lives.
- In the wake of the resolution and the report, the International Federation of Psoriasis Associations (IFPA) created a Global Psoriasis Coalition to promote psoriasis on the international non-communicable disease policy agenda. Its current focus is on advocating to prioritize psoriasis during revisions to the WHO Global Action Plan for the prevention and control of non-communicable diseases to take place in 2018 and 2020.



- Also in 2016, *The Economist* Intelligence Unit published a report, sponsored by the pharmaceutical company, Eli Lilly, titled: *Encouraging Policy Action to Address the Psoriasis Challenge*.⁵ The report reviewed progress in dealing with psoriasis in five European countries and Canada. The report concluded that:
 - Awareness of psoriasis is low.
 - Psoriasis patient associations have laid the groundwork for better education to break down the stigma and discrimination associated with the disease.
 - Medical professionals, especially general practitioners, need to be better educated about psoriasis so that it can be diagnosed at an earlier stage.
 - Patient-centered, coordinated care is the most effective way to manage psoriasis and its comorbidities.

With specific reference to Canada, the report stated:

“There is a considerable lack of awareness of psoriasis among the general population and the medical community in Canada. This lack of awareness is seen as the reason behind the difficulty in having a psoriasis diagnosis and receiving adequate treatment...Patient advocacy groups are involved in raising psoriasis awareness, but more campaigns are required.”

- In 2016, a group of Canadian expert dermatologists published an extensive update⁶ to a set of clinical practice guidelines published in 2009, which provide the main guidance for the treatment of psoriasis by physicians today. While the update provided the most up-to-date scientific evidence on plaque psoriasis, the report from *The Economist* was critical, stating: “The guidelines lack clear criteria for the assessment of the disease or the management of adverse reactions, although they do include measures to determine treatment failure or success.”
- In 2016, CAPP worked with IPSOS, a global market research and consulting firm, on a survey to understand psoriasis patients’ usage of and satisfaction with treatments, and to uncover which resources they use to manage their condition. One of the main goals of the study was to contrast users of biologics against non-biologic users. Two in five patients often need to take time off from work as a result of their psoriasis, and non-biologic users are more likely than biologic users to believe that their psoriasis prevents them from advancing in their career.
- In 2017, the first-ever World Psoriasis Happiness Report⁷ was released by the Happiness Research Institute, in partnership with LEO Innovation Lab. The report provided an analysis of findings from online surveys completed by more than 121,800 people in 181 countries who live with psoriasis. Conducted in Canada with the support of CAPP, the survey included more than 2,250 respondents from Canada. Canada ranked fifth of the happiest countries of people with psoriasis, but the report noted that while average Canadians rated their happiness at 7.3 out of 10, respondents to the 2017 World Psoriasis Happiness survey only rated themselves at 6.1 out of 10 – a full 17 percent less than Canadians who do not suffer from psoriasis.

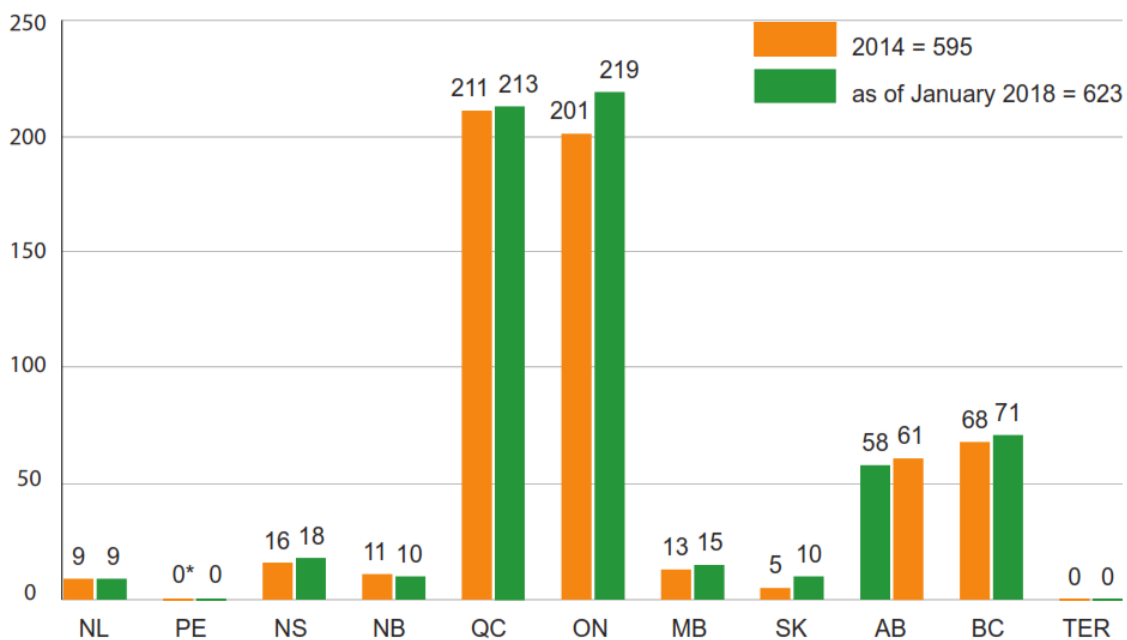
2. ACCESS TO CARE

Since 2014, the total number of dermatologists in Canada has increased, as has the number of dermatologists being trained. Patients are also able to use telemedicine and other digital services to better access care and some family physicians are now focusing on dermatologic care – another factor that is increasing access for some patients. Online direct-pay access to dermatologists and mobile apps with information for patients with psoriasis and other dermatologic conditions are also now a reality in Canada.

A survey conducted in 2017 by CAPP and the Canadian Psoriasis Network for the “*Journey to Stability*” report indicated that there are definitely access issues.⁸ Responses showed that 21 percent of patients with psoriasis had not seen a dermatologist in the past five years.

In 2017/18, there were 177 dermatologists undergoing training in Canadian medical schools.⁹ This represents an increase of 22 from the 155 who were in training in 2014/15. The need to train an increased number of dermatologists is clear when looking at the age of those in practice. Forty-eight percent of all practicing dermatologists are currently 55 years or older with more than 1 in 5 being over age 65.¹⁰

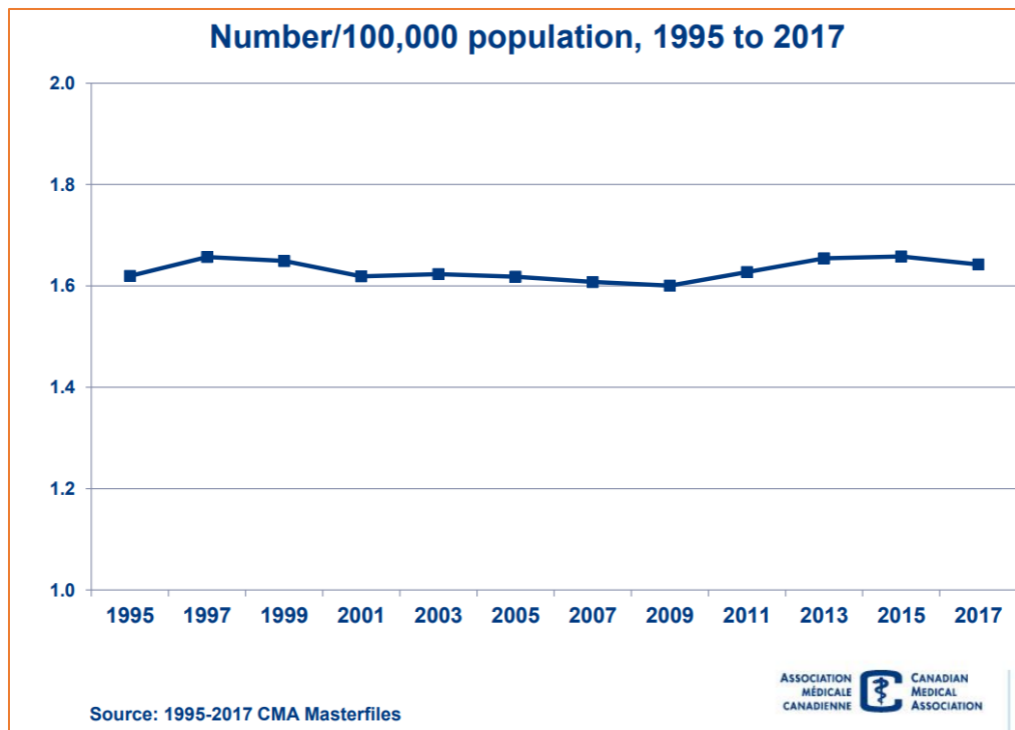
Number of dermatologists (as of January, 2018)⁸



*While not recorded by the CMA, there has been a full-time dermatologist practicing in PEI since 2015

With these slight increases, wait times to see a dermatologist have not significantly improved. In addition, the total number of dermatologists does not reflect the actual number who focus primarily on medical dermatology as opposed to cosmetology.

Based on data gathered by the Canadian Medical Association (CMA), the number of dermatologists relative to the Canadian population has remained stable over the past 20 years. A workforce survey published by the CMA indicates that 44 percent of Canadian dermatologists felt they were overworked.

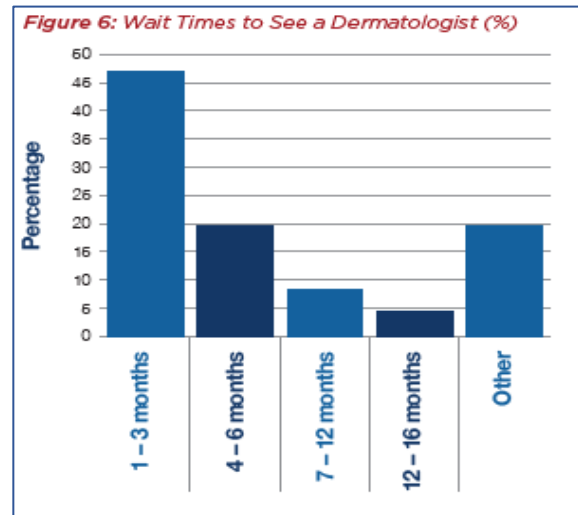


These data mask huge regional variations. A 2014 CMA survey of dermatologists¹¹ showed that 88 percent worked in urban or suburban centres while only two percent indicated they worked in geographically isolated or remote areas. There are currently no dermatologists in any of the territories, reflecting the challenges facing patients requiring dermatologic care in these areas.

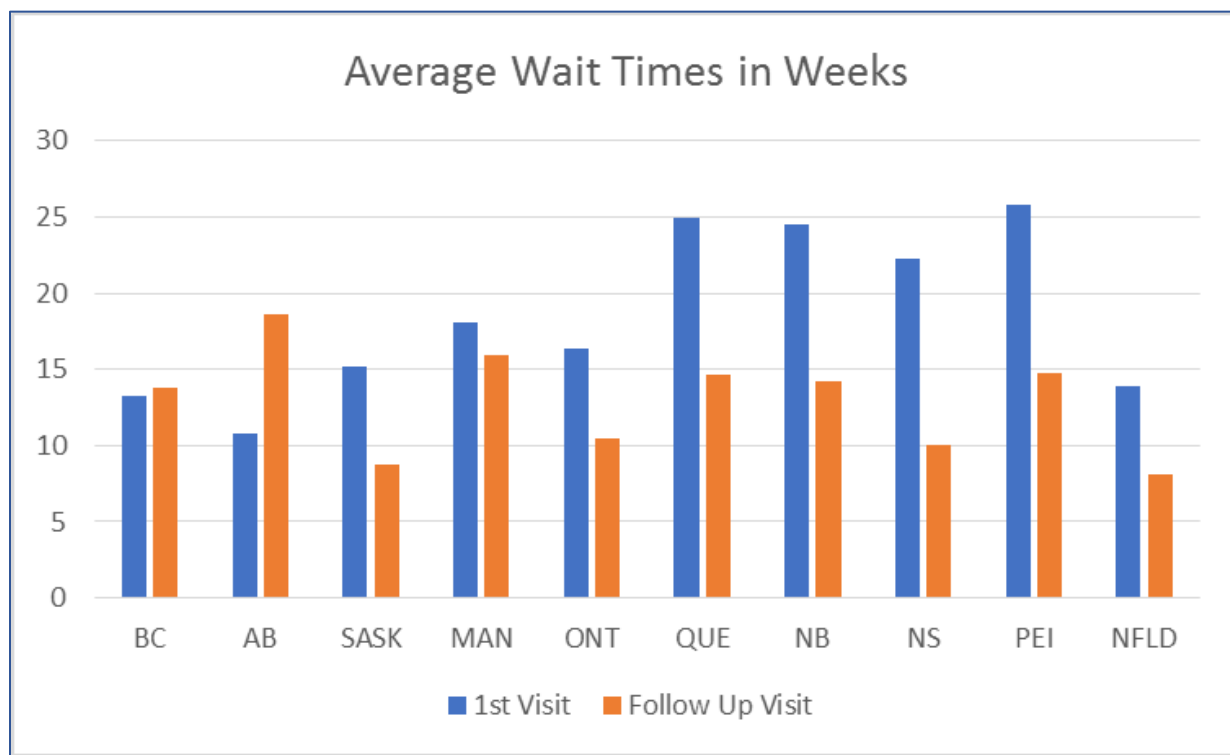
Canadian dermatologists hold different views on the accessibility of their services but all agree circumstances vary widely depending on where one lives in Canada. The benchmark for access to an initial, non-urgent consultation with a dermatologist, established in 2001, remains at five weeks and it is clear that this benchmark is still not being reached in most jurisdictions.

Wait Times

The *Journey to Stability* report mentioned above found that wait times to see dermatologists reported by patients to be on average 1 to 3 months for 47 percent of respondents, followed by 20 percent taking 4 to 6 months. Thirteen percent took more than 7 months for their first appointment. Those who provided feedback indicated that for the most part, wait times in Canada are acceptable or that they have not yet seen a dermatologist. Some comments provided included: “Doctor will not refer me,” “psoriasis is well controlled and I don’t need to see one” and several reported as having “just given up.”



To assess wait times by province/territory, CAPP conducted an online patient survey of 209 patients from September 13 to October 5, 2018. Seventy-two (72) percent of respondents live in a city with the rest identifying as rural residents. Surprisingly, there was no correlation between living in a rural setting and longer wait times. The results did, however, show a significant difference in wait times by province, with longer wait times in the smaller provinces. Not surprisingly, there were no patient results from any of the three territories where dermatologists were not available.



Only 43 percent of the respondents to this survey stated that the wait time for them was a “reasonable” amount of time to wait to see a dermatologist. Others also mentioned the delay to see the dermatologist on the day of the appointment due to overbooking and appointments taking longer than expected. Another comment was that patients wished that they knew another referral from their family doctor would be required if they have not visited their dermatologist in the past 12 months.

The Fraser Institute released its annual report on wait times in 2017¹², which confirmed CAPP’s wait time patient data. Although dermatology is not specifically reported as a specialty area in this report, the wait time from referral by a general practitioner to consultation with a specialist increased from 9.4 weeks in 2016 to 10.2 weeks in 2017. This wait time is 177 percent longer than in 1993, when it was 3.7 weeks. The shortest waits for specialist consultations are in Ontario (6.7 weeks) while the longest occur in New Brunswick (26.6 weeks).

Interviews with prominent Canadian dermatologists confirmed the demand for dermatology services in Canada. “You can start a practice anywhere you want in the province...and as long as there are people around you will be rushed off your feet,” said Dr. Evert Tuyp, in reference to British Columbia. “You will have a five-month waiting list before you open your door even if you announce you will be opening a practice three months before you graduate,” said Dr. Gordon Searles, about opportunities in Alberta. “The outlook in Ontario for a new grad is a lot rosier than it has been for several years,” an Ontario dermatologist added.

“It has been more than a year since I have been seen so I am back to square one of the waiting game. She is an amazing doctor I just wish I had better access to her.”

Skin patient,
Nova Scotia

Dr. Harvey Lui, a Vancouver dermatologist and head of the Dermatology and Skin Science department at the University of British Columbia said access to dermatology services in British Columbia is still “at a crisis level.” In an interview, he attributed this to a lack of trained dermatologists and maldistribution of those dermatologists who are practicing in the province.

Dr. Tuyp said there is still a need to train more dermatologists noting that Canada lacks a workforce strategy for planning how many dermatologists and other specialists to train. Dermatology “is the canary in the coal mine,” he said, representing the lack of planning and the accessibility issues that will result in the future.

Dr. Benjamin Barankin, a dermatologist with the Toronto Dermatology Centre feels the increased number of dermatology graduates in recent years has improved accessibility. “Unfortunately, rural and remote areas are still underserved, but if patients are willing to travel, they can be seen in a reasonable time frame,” he added.

“The problem of underserved areas has not been solved,” said Dr. David Adam, medical director of Baywood Dermatology and assistant professor of dermatology at the University of Toronto. “And as practitioners in less well-served areas retire, they are not being replaced.”

Dr. Lui and other dermatologists interviewed stressed that wait times are variable because the seriousness of the cases also varies widely.

When it comes to access to dermatologic services, “there will always be imbalances,” said Dr. Neal Shear, a dermatologist at Sunnybrook Health Sciences Centre, professor of medicine, clinical pharmacology and toxicology at the University of Toronto and the current president of the Canadian Dermatology Association.

Dr. Wayne Gulliver, a dermatologist in St. John’s, Newfoundland, and professor of medicine at Memorial University, said the situation with respect to access to dermatology services in his province is “stable” with 8 of the 10 dermatologists in the province located in St. John’s. “Ten for 500,000 people is pretty good,” he added, noting wait times to see a dermatologist range from six weeks to six months. But the rest of the province must either travel to St. John’s or wait much longer.

Dr. Irina Turchin, a dermatologist in Fredericton, New Brunswick, stated that the access picture in New Brunswick was highly variable depending on the area of the province and severity of disease.

Teledermatology¹³

The use of telemedicine and other newer digital approaches to managing dermatologic conditions continues to attract great attention as an alternative to reduce wait times. While there have been rapid advances in telemedicine in many specialties, dermatologists in Canada have been slow to adopt this approach for a variety of reasons including the lack of infrastructure and remuneration.

The benefits of teledermatology were assessed by the Canadian Agency for Drugs and Technology in Health (CADTH) in a report published in 2010. CADTH is a national, non-profit agency, which reviews new health technologies as well as reviewing drugs and making reimbursement recommendations to Canada's federal, provincial and territorial public drug plans. A summary of the findings from that report states:

Teledermatology may be beneficial for geographically isolated patients who would not otherwise be seen by a dermatologist... The evidence shows that teledermatology consultations result in highly reliable diagnoses.¹⁴

According to the 2015 Canadian Telehealth Report, clinical services in teledermatology were available in British Columbia, Alberta, Manitoba, Ontario, Quebec and Nova Scotia. Since then, dermatology services in telehealth have been added in at least one more jurisdiction – Saskatchewan. The report indicated cameras were being used in telehealth for dermatologic purposes in the same provinces, with the exception of Nova Scotia. Dermatology services were also available through three First Nations telehealth networks in 2015 in British Columbia, Alberta and Ontario.

One of the two main teledermatology programs in Canada has been operated by the Ontario Telehealth Network (OTN) since 2011 and promotes the program by stating that

with a digital camera and web browser a primary care physician or nurse practitioner can obtain a dermatology consult from a specialist in five days or less. The other major tele dermatology program in Canada is the ConsultDerm online service developed by Dr. Jaggi Rao from the University of Alberta in Edmonton and is now being used in Alberta, British Columbia, the Northwest Territories and PEI. According to data presented in 2014, the use of ConsultDerm in Alberta reduced the average wait time to see a dermatologist from 104 days to less than three days.

In the survey on wait times, CAPP asked patients if they would consider tele dermatology as an option to reduce wait times to see a dermatologist. Forty-eight percent stated that they would consider this option, while 25 percent said they would not be comfortable and the remaining 27 percent were unsure. More information and education is needed to help patients better understand this option.

Tele dermatology has also witnessed the expansion of private digital services to serve patients directly. While more prevalent in the United States, Canada now has its own private service offering dermatology services directly to patients online. Dermago.ca offers consultation with dermatologists online for a fee in less than 72 hours.

Family Physicians

In recent years, some family physicians have taken more of an interest in offering dermatologic services as the main part of their practice. While this “focused interest” in dermatology is not yet recognized as a specific qualification by the College of Family Physicians of Canada (CFPC), some Canadian doctors have received training in other countries so they can offer more dermatologic services.

In Canada, the Primary Care Dermatology Society of Canada was founded in 2016 and is dedicated to creating “a wider awareness and appreciation of the benefits of enhanced dermatology education in primary care and the role of family physicians with a special interest in dermatology.”¹⁵

“If we train GPs (general practitioners) properly, they should be able to manage most (dermatologic) diseases,” said Dr. Shear. The Canadian Dermatology Association, of which Dr. Shear is currently president, has concerns about family physicians representing themselves as dermatologists without having proper training. However, Dr. Shear feels that in rural and remote areas where there are no qualified dermatologists, family physicians with a focused interest in dermatology could play a beneficial role.

In addition, he said, there should be a good working relationship between dermatologists and family physicians so the primary care doctors know they can refer difficult cases to a dermatologist.

Dermatology Nurses

Increasing the number of certified dermatology nurses is also viewed as a positive move to assist in dermatology clinics. Unfortunately, it is difficult to get an estimate of the number of qualified dermatology nurses practicing in Canada.

Speaking on behalf of the Canadian Dermatology Nurses Association, Sandra Walsh said there are 44 dermatology nurses who are members of the association practicing from Manitoba east to Newfoundland.¹⁶ Not all certified dermatology nurses are members of the association and statistics are not available for nurses in the Western provinces.

Ranking of Provinces on Access to Care

Alberta ranked first overall for shortest average wait time to see a dermatologist while Prince Edward Island ranked last. This was based on the average number of weeks to see a dermatologist for a non-urgent initial consultation, according to CAPP's wait time survey results of 209 participants in 2018. There were no results for the territories as this is reflective of the fact that there are no dermatologists in those areas of Canada.

Province	Number of Respondents	Average Number of Weeks
Alberta	12	10.83
British Columbia	19	13.26
Newfoundland & Labrador	14	13.86
Saskatchewan	15	15.13
Ontario	56	16.37
Manitoba	14	18.07
Nova Scotia	12	22.25
New Brunswick	15	24.47
Quebec	30	24.94
Prince Edward Island	5	25.80

CAPP appreciates that the number of respondents per province may not be statistically significant and the results may be skewed by respondents who have had to wait a long time to see a dermatologist. However, the results are in line with the data from the other studies mentioned above and from anecdotal stories from patients. Wait times for patients is important to CAPP's vision that "by 2023, Canadians living with psoriatic diseases will have equal access to best care and treatment." Right now, patients do not have equal access to care and this needs to be addressed.

3. ACCESS TO TREATMENTS

Changes in the treatment of psoriasis have been marked by the increase in the number of treatment options available and especially the accelerating approval of new biologic therapies. For the first time some leading dermatologists such as Drs. Shear and Lui talk about the possibility of a cure for psoriasis in the not-too-distant future as biologics become more effective.

However, despite these advances, the *Journey to Stability* report showed more than a third of respondents felt their psoriasis has not been well controlled for more than 10 years and were frustrated with their access to effective treatments.

Clinical Practice Guidelines

Extensive revisions to the Canadian guidelines for psoriasis management published in 2016 demonstrate the number of advances being made in treatment for all types of psoriasis and for all areas of the body. This revised document also states: “With the increased recognition of quality-of-life issues for psoriasis patients has come a greater impetus for achieving more adequate control if this can be accomplished safely.”

A major research paper published by several leading Canadian dermatologists in 2017¹⁷ outlined several recommendations for changing clinical practice in the management of psoriasis and psoriatic arthritis that includes a focus on patient choice and quality of life. Some of those recommendations included:

- A state of clear or almost clear skin should be a therapeutic target for psoriasis regardless of the area affected.
- Because a state of remission may be difficult to reach in psoriatic arthritis, a state of minimal disease activity is an acceptable therapeutic target.
- Quality of life is an important outcome and should be included in all therapeutic targets.
- Physicians and patients must be in agreement regarding selected therapeutic targets.

Treatments and Quality of Life

The *Journey to Stability* report referenced earlier underscored the importance of addressing quality of life. When asked if psoriasis negatively impacted their lives, only 20 percent of respondents said it did not affect their daily lives in any capacity. The remaining 80 percent were negatively impacted to some extent.

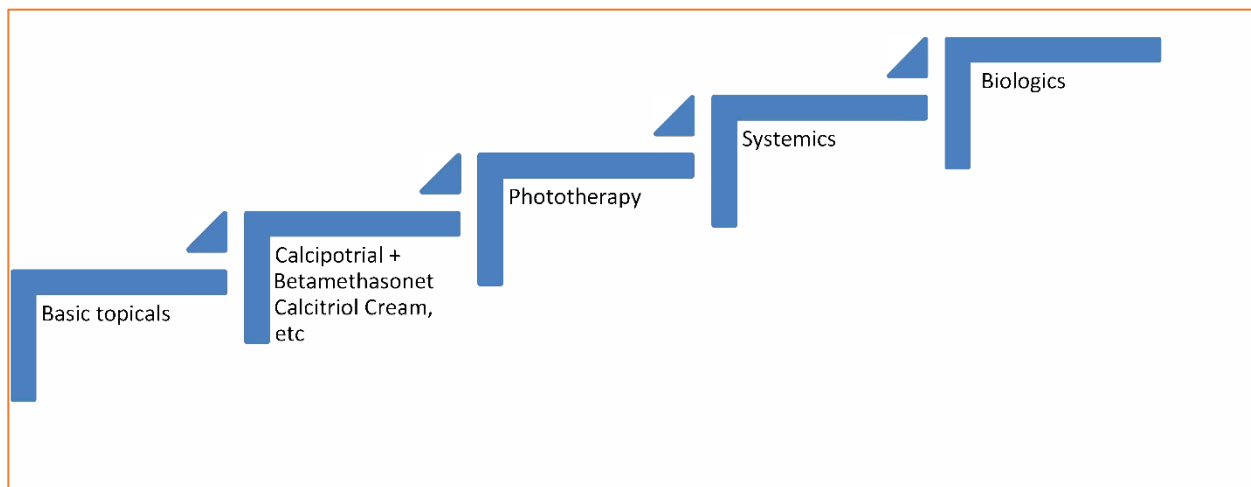
By treating patients with psoriasis effectively with biologics, dermatologists are treating the inflammation that also underlies many of the other conditions associated with psoriasis.

Dr. Gulliver noted that while many patients with psoriasis can be started and maintained well on one treatment there are now more options for more challenging treatments. “You’re not going to get everybody 100 percent better but you’re getting a lot more people under control and maintaining that control over the long term.”

The potential impact on quality of life is significant. When a biologic works well, patients can reach a Psoriasis Area and Severity Index (PASI) score of 90 to 100. This significantly changes their lives in terms of being able to work, sleep and lead a productive life.

Stepped Approach to Treatments

Another issue, particular to psoriasis patients, is the stepped approach to treatment. Patients must fail on one treatment before being prescribed the next level of treatment as illustrated below. The “step process” for treatment coverage can put undue hardship on the patient and on the health care system. If someone is living with a moderate to severe condition, it is clear that a topical will have limited effectiveness and that the health care professional should be allowed to accelerate the steps without compromising coverage.



Topical therapy

Topical therapy remains the mainstay of treatment for patients with mild to moderate psoriasis and there are many available either over the counter or by prescription.

The Promoting Patient Engagement at the Leading Edge of Topical Psoriasis Treatment (PROPEL) study published earlier this year¹⁸ surveyed Canadian dermatologists and their patients about their attitudes toward topical care. Findings from surveys of patients and dermatologists led to the conclusion that:

“Adherence to topical treatment, a significant challenge in psoriasis care, may be addressed by improving communication between caregivers and patients and/or by providing topical products with better cosmetic features and greater patient acceptability.”

At focus groups hosted by Leo Pharma in 2017, patients voiced their concerns about topical treatments and the impact on adherence. One issue identified is that each patient lives with their own individualized manifestation of the condition and no two patients are alike. Each is tasked with discovering the triggers and symptoms that make up their unique experience of the condition.

Another issue that was identified is that patients learn to tolerate their symptoms and don't strive to be symptom-free. They accept their symptoms as the default state of living with the condition and build up higher and higher pain tolerance over time. Consequently, their expectation for successful management remains low. To most, it is unimaginable to be symptom-free. Another issue is the language used such as “apply as needed” on topical packaging and in physician instructions. This gives patients permission to decide for themselves when to start and stop treatment. Patients told us that they most typically use topical treatments for management of flares, rather than for a predetermined length of time, due to cost and the inconvenience of applying topicals.

“Topical treatments don't work. Even my doctor says, “let's try this and if it doesn't work, come back and I'll give you something else to try.”

Psoriasis patient,
Toronto
Leo Focus Groups

Access to Phototherapy

Phototherapy is recommended as an effective and inexpensive form of treatment for psoriasis, which can complement treatment with topical and/or systemic drug therapy. Phototherapy includes psoralen/ultraviolet A (PUVA) and broad- and narrow-band UVB treatment. Use of phototherapy can replace or significantly slow the need for more expensive treatment.

In the CAPP wait time survey, patients were asked if they have ever used phototherapy. Only 7 percent of respondents stated that they currently use this form of treatment while another 51 percent stated that they tried it but no longer use it. These numbers are significant and speak to the difficulty in accessing phototherapy across Canada.

The map below shows the current location of known phototherapy units provided by dermatologists or health care centres in Canada:

My doctor suggested phototherapy but it was too far for me to travel. Plus I have other health problems that made this impossible.

Skin Patient
New Brunswick



While a number of centres in Ontario continue to offer phototherapy, the sites are unevenly distributed across the province. “We should have access to all options that are available to treat psoriasis,” said Dr. Adam. However, this is not true of all parts of Canada although Dr. Gulliver describing access to phototherapy in Newfoundland as being “very good.”

Many Canadian patients with psoriasis face long trips to reach the nearest phototherapy unit. CAPP has heard stories from patients who drive two hours daily to receive the treatment they need. The added stress is another factor that needs to be considered when this treatment is prescribed.

Dr. Lui said access to phototherapy remains very patchy across the country and in some jurisdictions it is “dying a slow death” because of the lack of appropriate payments to dermatologists. Hospitals are closing their phototherapy units for budgetary reasons because the service is not one that keeps patients out of hospital.

While home phototherapy treatment is not covered by many private insurers, Dr. Lui said some insurers are recognizing that it is cheaper to provide this equipment than to pay for patients with psoriasis to receive biologic therapy.

Dr. Cheryl Rosen, a dermatologist at Toronto Western Hospital and head of the dermatology division for the University Health Network in Toronto, said dermatologists are now more comfortable with using home phototherapy, but she said she preferred a

patient to have one session at a monitored clinic first to make sure the therapy was effective.

Solarc Systems Inc., a Canadian manufacturer and the main supplier of home phototherapy units and supplies, estimates the sale of home phototherapy units has increased by about 5 to 10 percent annually since 2014 and that the availability of home phototherapy services across Canada remains about the same as it was five years ago.

Systemic treatments

Methotrexate, acitretin and cyclosporine remain the standards for systemic management of psoriasis either alone or in combination with other agents. Traditional systemic treatments are a form of therapy that is delivered orally (in tablet or liquid form) or through injection or intravenous infusion (drip), that work within the body as opposed to topical treatments, which are applied directly to the skin.

Apremilast was approved in 2014 as a new oral medication for patients with moderate to severe psoriasis and psoriatic arthritis. While the place of apremilast in the psoriasis treatment toolkit is debated because of its cost and effectiveness compared to biologics, its approval shows biologics are not the only class of drugs changing the management of psoriasis in Canada. Recent clinical trial data highlights that patients with moderate to severe plaque psoriasis showed meaningful improvements in skin, itch and quality-of-life measures.¹⁹

Dr. Adam talked about the impact apremilast has had on changing the treatment paradigm for psoriasis because “it greatly increased the number of people who are prescribed a systemic medication for psoriasis” as many patients are not comfortable with the idea of injections needed for a biologic.

“Once someone gets on a systemic agent it sort of gets their foot in the door and then if they are not happy enough there is a much better chance of them seeing someone who is going to prescribe a biologic.”

Biologics

The most significant development in the management of psoriasis over the past decade has been the advent of biologics – agents that block specific components of the immune system such as tumour necrosis factor alpha (TNF alpha) and interleukin 12, 17 and 23. Biologics are different from traditional systemic drugs that impact the entire immune system. Biologics, instead, target specific parts of the immune system. Biologics are large molecules manufactured using recombinant DNA technology and are used for the treatment of other autoimmune diseases such as rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis and inflammatory bowel disease.

“I don’t think any of us could ever imagine practicing and managing psoriasis without that tool (biologics) being available to us,” said Dr. Lui. “These things work.”

“The side effect profile is excellent for these medications,” said Dr. Barankin. “I’d wager that 100 percent of dermatologists would take a biologic for their psoriasis as compared to traditional drugs like methotrexate or cyclosporine.”

Here again, enthusiasm and optimism about the use of biologics by dermatologists is tempered by patient views. The *Journey to Stability* report found many patients with psoriasis who might be eligible for treatment with biologics were either not aware of the option or were not being treated with biologics.

Some biologics have also been approved for specific indications such as nail psoriasis or for specific populations such as adolescents with psoriasis. Because they are all potent medications that suppress the immune system, biologics have the potential for severe side effects so screening appropriate patients for treatment and monitoring them is important.

As Health Canada notes, these drugs are reserved for more severe or refractory forms of disease and patients must meet certain criteria for provincial reimbursement. For example, Ontario Drug Benefits will reimburse the biologic infliximab (trade name Remicade) in adults with severe plaque psoriasis only if there has been failure, intolerance or a contraindication to adequate trials of several standard therapies, including at least two systemic oral agents (i.e., methotrexate, acitretin or cyclosporine).

CAPP also notes that because there is a relatively high rate of medication fatigue encountered by patients with psoriatic diseases. They can develop a tolerance to a drug, requiring a change to another pharmaceutical, a medical switch that is crucial to tackle any associated symptoms and comorbidities.

“Our access is reasonable given that they are expensive drugs,” said Dr. Adam noting that the ability in Ontario or Canada to place someone on a biologic is easier than in many other countries. Most biologics cost between \$20,000 and \$25,000 a year although newer drugs can cost double that amount. This is in comparison to a cost of more than \$150,000 a year in the United States for some biologics used to treat psoriasis.

“I rarely see a patient I can’t get better on a biologic,” said Calgary dermatologist Dr. Kirk Barber, noting that data indicates 80 percent of Canadian dermatologists are prescribing biologics. However, Dr. Shear added, “Are there people where we don’t have biologics that work? Absolutely. There are definitely people who do not get better.”

CAPP and the CSPA held three patient focus groups in 2017 to better understand patients’ treatment journeys and to identify any issues related to how they feel about biologics. Many participants were unhappy with the results of their current treatments (topicals, phototherapy, methotrexate, etc.) but did not know there were other options to

“Biologics have completely changed my life. I am just like everyone else now. I can live my life to the fullest.”

Skin Patient
Ontario

“My biggest beef is about the cost of biologics. It means an effective treatment is out of reach for me.”

Skin Patient
British Columbia

consider. There was concern about the possible side effects of biologics and there appeared to be little known about this entire class of treatment in general.

One drawback to the current use of biologics for managing psoriasis identified by Dr. Lui was the lack of an “exit strategy” when managing patients. “It’s like insulin for diabetes. Once on insulin, always on insulin. Once on a biologic, always on a biologic.”

Biosimilars

An important issue for psoriasis patients and the health care system as a whole is that of biosimilars. These are drugs (formerly known as subsequent-entry biological drugs) that are almost exact copies of biologic drugs (reference biologic) whose patents have expired and which cost less than biologics.

Biosimilars are sometimes referred to as “generic” versions of the original or innovator drug. However, generics are exact copies of the innovator drug made with the same medicinal ingredients. Biosimilars are only similar to their reference drug since biologics are large molecules that are produced by living organisms rather than through chemical reactions, and therefore, it is not possible to make an exact copy of them.

Insurers and public drug plans are very interested in the potential for using biosimilars because of their reduced cost. However, the availability of biosimilars in Canada, especially for the treatment of psoriasis and psoriatic arthritis, has been far more limited than in other countries.

Currently in Canada, prescriptions for specific biologic drugs are not substituted at the pharmacy for a biosimilar although this does occur in some other countries. CAPP’s position on the issue is that the decision to use a biosimilar must be solely in the hands of psoriatic patients and their physician.

CAPP also makes the following points:

- CAPP recognizes the potential benefits to patients with the entry of biosimilars, including decreased health care costs and increased access. Patients should not, however, be forced to switch from one treatment therapy to another.
- A biosimilar must not be considered for automatic substitution or be interchangeable with their reference biologic by physicians, pharmacists, public or private insurers.
- Since Health Canada approves a biosimilar based on the safety and efficacy data of the reference drug, there must be a critical requirement for vigilant post-market safety reporting and monitoring for any adverse events.

The evolution in the use of biosimilars in Canada has been relatively slow with five such products approved by Health Canada since the first biosimilar (Inflectra) was approved in late 2014. This is compared to 28 products approved by the European Medicines Agency during the same period.

Health Canada issued a guidance document for companies wishing to submit a biosimilar for approval. This document states that to be eligible for approval, a suitable reference biologic drug must exist and that through extensive analysis, the biosimilar can be judged to be similar to the reference drug.

Health Canada states it has developed a robust, science-based regulatory framework for biosimilars that reflects many approaches adopted by other major drug regulatory agencies.

On the issue of substituting a biologic with a biosimilar, Health Canada says, “The authority to declare two products interchangeable rests with each province and territory according to its own rules and regulations. Health Canada recommends that a decision to switch a patient being treated with a reference biologic drug (innovator product) to a biosimilar should be made by the treating physician in consultation with the patient and taking into account available clinical evidence and any policies of the relevant jurisdiction.”

“Biosimilars are a good idea but we need more information and experience with them.”

Dr. Ben Barankin,
Ontario

In its review of biosimilars, CADTH concludes by stating:

- Biosimilars are highly similar to the reference product in safety and efficacy but are not identical;
- Biosimilars offer a choice for patients and may improve access; and
- Biosimilars create savings that can be redirected elsewhere.

In 2016, the pan-Canadian Pharmaceutical Alliance (pCPA), which negotiates drug prices in Canada, released principles for considering biologics and biosimilars and stated: “Consistent with its mandate that includes increasing patient access to clinically and cost-effective drug treatment options, the pCPA will encourage a competitive environment that includes (biosimilar) market growth and is conducive to long-term cost reductions and sustainability for public drug plans.”

In September 2018, pCPA provided a policy update on biologics and principles for negotiating approval of biosimilars in Canada. That document noted “biologics disproportionately impact and strain health expenditure budgets” and stated that “switching of patients from a reference biologic molecule to a biosimilar may be implemented.”

A spokesperson for the Ontario Health Insurance Plan (OHIP) stated that biosimilars bring significant savings to drug plans and that Ontario, through the pCPA, is working to support the introduction and accelerated use of biosimilars in Canada. He added, “The funding criteria for every drug funded through the Ontario Drug Benefit program is determined separately. Biosimilars as a category are not all funded according to the same criteria. As such, each biosimilar that is funded for the treatment of psoriasis has its own funding criteria.”

A spokesperson for the Saskatchewan health ministry also noted that biosimilars represent “viable lower-cost alternatives” to biologics. She added that Saskatchewan

“supports the collaborative efforts of pCPA on biologics and biosimilars, and continues to work together as a collective through the pCPA on all biologics/biosimilar drug product negotiations.”

In August 2018, the Manitoba government introduced a tiered approach for paying for biologics under its Pharmacare program. This stated that new patients with psoriasis or those who had failed treatment with another biologic could receive the biosimilar Inflectra as it was classified as a Tier 1 drug. The Manitoba Health, Seniors and Active Living department notes, “Tier 1 biologic products (for the indications noted) have been determined to be the most cost-effective agents, which allows Pharmacare to achieve greater value for its publicly funded drug programs, treat more patients without increasing expenditures and retain prescriber/patient choice.”

Articles written for private drug plan managers in Canada over the past couple of years have tracked progress in the use of biosimilars in Canada. An article written in June 2018 titled “Is nudging biologic patients towards biosimilars a good choice for plan sponsors?” quotes a possible saving of between 8 and 43 percent from using available biosimilars. However, the article also quotes a number of experts who acknowledge concerns from patients about the safety and efficacy of biosimilars.²⁰

These concerns were confirmed in the *Journey to Stability* report in which Canadian patients were asked what it meant to be “stable” or “well controlled” living with moderate to severe psoriasis and the journey they take to becoming “stable” or “well controlled.” The survey found patients with psoriasis who were well controlled/stable after a lengthy and emotional journey, reacted negatively to the possibility of being switched to another medication for non-medicinal reasons. They feel that any change in medications should be decided by their physician in consultation with them.

In Canada, the first private insurance company to recommend switching to biosimilars has been Green Shield Canada, which introduced a biosimilar transition program early in 2018. Its pilot program targets patients taking Remicade and Enbrel for three conditions – rheumatoid arthritis, ankylosing spondylitis and psoriatic arthritis – and reduces reimbursement to the biosimilar price. The patient can switch to the biosimilar or remain on the biologic and pay the cost difference.

Provincial and Territorial reimbursement

The way drug coverage is currently organized in Canada has profound consequences for patients. A recent study suggests that 95 percent of Canadians (more than 34 million) are eligible for some form of prescription drug coverage²¹, but even those with drug coverage can face deductibles, co-payments and annual maximums that make affording drugs a challenge. Despite the multitude of drug plans, too many Canadians must make difficult choices, foregoing other necessities of life in order to cover the cost of drugs or leaving prescriptions unfilled because they cannot afford them.

Each province or territory covers medication differently. The following table details which medications are covered and the qualifications for public coverage. Access to standard care drugs depends on where patients live. Some are considered “Special Access (SA in table below)” or “Restricted Access (SA* in table below), which means they usually require a patient to have tried (and “failed”) other therapies first (linked to the common stepped approach to psoriasis treatments illustrated on page 18.) This table illustrates the funding status of biologics and other drugs across jurisdictions in Canada as of December 31, 2017:

Brand Name (generic name)	BC	AB	SK	MB	ON	QC	NB	PE	NS	NL	YT	NIHB
Methotrexate	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full	Full
Dovonex (calcipotriol)	Full	Full	Full	SA	SA	Full	Full	Full	SA	Full	Full	Full
Dovobet (calcipotriol + betamethasone) ointment	No	Full	Full	No	Full	SA	No	No	No	No	Full	Full
Dovobet (calcipotriol + betamethasone) gel	Full	Full	Full	SA	Full	SA	SA	SA	SA	SA	Full	Full
Silkis (calcitriol cream)	No	No	No	No	SA	Full	No	No	No	No	No	No
Tazorac (tazarotene)	Full	Full	Full	SA	No	No	SA	No	SA	SA	Full	Full
Neoral (cyclosporine)	SA	SA	SA	SA	SA	Full	Full	Full	Full	Full	Full	No
Soriatane (acitretin)	Full	Full	SA	Full	Full	Full	Full	SA	Full	Full	SA	Full
Humira (adalimumab)	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
Enbrel (etanercept)	SA	SA	SA	SA	SA*	SA	SA	SA	SA	SA	SA	No
Remicade (infliximab)	SA	SA	SA	SA	SA*	SA	SA	SA	SA	SA	SA	No
Stelara (ustekinumab)	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
Enstilar (foam) (Calcipotriene-betamethasone)	No	under review	Full	No	No	SA	No	No	No	No	Full	No
Otezla (apremilast)	No	No	No	No	No	SA	No	No	No	No	No	No
Cosentyx (secukinumab)	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA

As of Dec 31 2017

*some restrictions may apply

N.B. The Non-Insured Health Benefits (NIHB) Program is a national program that provides coverage to registered First Nations and recognized Inuit for a specified range of medically necessary items and services, including prescription medication, that are not covered by other plans and programs.

New drugs that are in the process of approval in Canada and/or on provincial formularies include:

- Siliq (brodalumab)
- Tremfya (guselkumab)

- Taltz (ixekizumab) – now approved on provincial formularies across Canada
- Duobrii (halobetasol propionate and tazarotene) – a new topical treatment
- Cimzia (certolizumab pegol)
- Tradename – tbc (risankizumab)

Patient Support Programs

In Canada, patient support programs provided by pharmaceutical companies began more than 15 years ago to support patient access to complex medications such as biologics. These programs provide a more holistic approach to patient, caregiver and physician support when specialty medications are prescribed. These services can include navigating the reimbursement process, clinic and nursing support, patient education and counselling and the connection to other social support services.

An analysis of these programs conducted through a review of studies published between 2005 and 2015 suggests they have a positive impact on patient adherence to medication regimens and clinical outcomes.²²

A study published earlier this year associated with one specific biologic (Humira) confirmed the effectiveness of an industry-sponsored patient support program to help patients maintain their use of the drug. The retrospective analysis of more than 10,000 patients showed nurse-provided coaching calls to patients in addition to other tailored interventions were 72 percent less likely to discontinue use of the drug compared to those who did not participate in a support program.

Some dermatologists who were interviewed indicated that while extra forms often need to be filled out so they can prescribe biologics to their patients with psoriasis, this was not overly onerous or hampering access to the drugs. Others felt the paperwork associated with using biologics continues to create access problems, speaking to the need of the patient support programs.

Comorbidities

There is a growing recognition of the association of psoriasis with other non-communicable diseases (NCDs) including obesity, heart disease, diabetes, Crohn's disease and kidney disease.

"There is more awareness," said Dr. Turchin when it comes to acknowledging the other medical conditions associated with psoriasis. But she said with a shortage of family physicians in the province it can be difficult to manage comorbidities such as obesity and diabetes that her patients with psoriasis may have. Dr. Barankin agreed that physicians in general are better aware of the comorbidities associated with psoriasis than they were a few years ago.

Speaking at the annual meeting of the American Academy of Dermatology this year, Dr. Alexander Egeberg, a Danish expert on psoriasis and comorbidities said, "For dermatologists, it may be relevant to do an annual screening for traditional cardiovascular risk factors – hypertension, diabetes, high cholesterol, smoking – in patients with psoriasis, and referral to either a general practitioner or a cardiologist may

be relevant in those deemed at high risk of cardiovascular disease. Moreover, since inflammatory bowel disease may be present more frequently in patients with psoriasis, gastrointestinal symptoms in these patients may warrant further investigations by a gastroenterologist.”

These comorbidities also determine the approach to therapy for psoriasis patients. Dr. Gulliver points out that traditional systemic therapies such as methotrexate or cyclosporine are often contraindicated when a patient has a comorbidity, meaning they need to be treated with a biologic.

Psoriatic arthritis

Up to 30 percent of patients with psoriasis will develop psoriatic arthritis (PSA) making it one of the most common comorbidities associated with psoriasis and one of the more challenging comorbidities to deal with. Here, as with psoriasis itself, the advent of biologics has had a huge impact.

“There’s been a huge push for dermatologists to recognize psoriatic arthritis and get it diagnosed and treated earlier,” said Dr. Rosen. Research has also recently shown that PSA patients have musculoskeletal symptoms before they are even diagnosed with the condition.

“I think there is a much greater awareness now than in the past and those people are getting treatment and they are getting treatment fairly early,” said Dr. Tuyp. “Hopefully, that is going to make a big, big difference with regards to permanent disability.”

“The pain of PSA is unbearable. I wish someone had told me about the connection to my psoriasis earlier.”

Skin Patient
Alberta

Some dermatologists feel the management of patients with PSA has been revolutionized with the advent of biologics, which can manage both the symptoms of psoriasis and those of arthritis. For some patients with PSA, access to care is now better because getting to a dermatologist to manage their symptoms can be easier than getting access to a rheumatologist.

In Newfoundland, for example, Dr. Gulliver says access to rheumatologists to help manage patients is a challenge with waits for up to two years for a rheumatology referral. He said this is not an issue when a patient has significant psoriasis, as the necessary biologic can be prescribed by a dermatologist, but it is a problem when the patient has other non-dermatologic aspects of arthritis that need to be managed.

“With rheumatologists, their criteria for starting a patient on a biologic can often be more stringent so if their skin disease is bad I can start them before they can,” confirmed Dr. Rosen also noting that biologics are often approved for dermatologic indications before they are approved for rheumatologic indications.

4. CONCLUSION

There have been many changes to the care and treatment for psoriasis patients in Canada over the last four years. There is an increase in data from patients on the impact the disease has on overall health and quality of life. At the same time, this data highlighted the lack of awareness of the disease among the general population and medical community in Canada.

Although the number of dermatologists has increased in relation to the increase in the Canadian population, many dermatologists report that they are overworked, rural and remote areas of the country are still underserved and wait times are considerably longer than the five-week benchmark set for non-urgent consultations. It remains important to figure out how to increase the number of medical dermatologists in Canada. The introduction of teledermatology is helping to reduce wait times but this service is not well-known nor available in all parts of Canada.

The number of approved treatments has increased by 25 percent in Canada over the last four years, including new innovative drugs that are highly effective. Unfortunately, the costs are prohibitive for some patients and not all provinces and territories cover all available treatments. Quebec continues to lead the way, covering 15 of the 16 treatments fully or by special access. And access to phototherapy remains variable across the country.

With the results of this report, the CAPP Board of Directors commits to continued action to improve the quality of life for psoriasis and psoriatic arthritis patients in Canada. CAPP will review its progress in 2023 as per its vision statement “by 2023, Canadians living with psoriatic diseases will have equal access to best care and treatment.”

Footnotes

- ¹ Adapted from the Canadian Dermatology webpages on psoriasis <https://dermatology.ca/public-patients/skin/psoriasis/>
- ² Lynde, C.W., et al. The burden of psoriasis in Canada: insights from the Psoriasis Knowledge in Canada (SKIN) survey. *J Cutan Med Surg.* 13.5 (2009) 235-52 <https://www.ncbi.nlm.nih.gov/pubmed/19769832>
- ³ Psoriasis Report: Access to Care and Treatment for Patients in Canada – 2014 <http://www.canadianpsoriasis.ca/index.php/en/news/report-card>
- ⁴ World Health Organization. (2016). Global report on psoriasis. World Health Organization <http://www.who.int/iris/handle/10665/204417>
- ⁵ Encouraging Policy Action to Address the Psoriasis Challenge <https://www.eiuperspectives.economist.com/healthcare/encouraging-policy-action-address-psoriasis-challenge-1>
- ⁶ Canadian Psoriasis Guidelines Addendum Committee, 2016 Addendum to the Canadian Guidelines for the Management of Plaque Psoriasis 2009. *Journal of Cutaneous Medicine and Surgery.* 2016;20(5):375-431. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5014087/>
- ⁷ LEO Innovation Lab, The Happiness Research Institute (2017), World Psoriasis Happiness Report 2017
- ⁸ Psoriasis: Journey to Stability. National Report. Canadians Journey Living With Psoriasis 2017. *Canadian Association of Psoriasis Patients, Canadian Psoriasis Network*
- ⁹ Canadian Medical Association Physician Data Centre. Canadian Physician Statistics <https://www.cma.ca/Assets/assets-library/document/en/advocacy/01-physicians-by-specialty-province-e.pdf>
- ¹⁰ Canadian Medical Association Dermatology Profile <https://www.cma.ca/Assets/assets-library/document/en/advocacy/profiles/dermatology-e.pdf>
- ¹¹ National Physician Survey 2014 <http://nationalphysiciansurvey.ca/wp-content/uploads/2014/09/2014-MED-EN-Q5ii.pdf>
- ¹² Waiting Your Turn: Wait Times for Health Care in Canada, 2017 Report The Fraser Institute <https://www.fraserinstitute.org/categories/health-care-wait-times>
- ¹³ Adapted from unpublished Canadian Dermatology Association white paper on Telemedicine and Teledermatology
- ¹⁴ CADTH Technology Report: Teledermatology Services: Rapid Review of Diagnostic, Clinical Management, and Economic Outcomes. Issue 135. October 2010. https://www.cadth.ca/media/pdf/H0502_Teledermatology_Report_e.pdf
- ¹⁵ Personal correspondence with Susan Roberts, Executive Director, Primary Care Dermatology Association of Canada
- ¹⁶ Personal correspondence
- ¹⁷ Treating Psoriasis and Psoriatic Arthritis: Position Paper on Applying the Treat-to-target Concept to Canadian Daily Practice Dafna D. Gladman, Yves Poulin, Karen Adams, Marc Bourcier, Snezana Barac, Kirk Barber, Vinod Chandran, Jan Dutz, Cathy Flanagan, Melinda J. Gooderham, Wayne P. Gulliver, Vincent C. Ho, Chih-Ho Hong, Jacob Karsh, Majed M. Khraishi, Charles W. Lynde, Kim A. Papp, Proton Rahman, Sherry Rohekar, Cheryl F. Rosen, Anthony S. Russell, Ronald B. Vender, Jensen Yeung, Olga Ziouzina, Michel Zummer. *The Journal of Rheumatology* Apr 2017, 44 (4) 519-534; DOI: 10.3899/jrheum.161473 <http://www.jrheum.org/content/44/4/519.long>

¹⁸ Canadian Patients' Preferences in Topical Psoriasis Care: Insights From the PROPEL Surveys Ronald Vender, Melinda J. Gooderham, Lyn C. Guenther, Dimitrios Kyritsis, Jaggi Rao, Alice Kowalczyk and John Ashkenas, *Journal of Cutaneous Medicine and Surgery*, first published May 13, 2018 <https://doi.org/10.1177/1203475418773736>

¹⁹ OTEZLA (Apremilast) Showed Meaningful Improvements in Clinical and Quality of Life Measures of Psoriasis Beyond Those Captured by Assessing Skin Alone, Celgene news release, Sept. 18, 2018 <https://ir.celgene.com/press-releases/press-release-details/2018/OTEZLA-Apremilast-Showed-Meaningful-Improvements-in-Clinical-and-Quality-of-Life-Measures-of-Psoriasis-Beyond-Those-Captured-by-Assessing-Skin-Alone/default.aspx>

²⁰ Is nudging patients towards biosimilars a good choice for plan sponsors? Benefits Canada, June 29, 2018 <https://www.benefitscanada.com/news/is-nudging-biologic-patients-towards-biosimilars-a-good-choice-for-plan-sponsors-116097>

²¹ 2017 Understanding the Gap: A Pan-Canadian Analysis of Prescription Drug Insurance Coverage Conference Board of Canada, Dec. 7, 2017 <https://www.conferenceboard.ca/e-library/abstract.aspx?did=9326>

²² The impact of patient support programs on adherence, clinical, humanistic, and economic patient outcomes: a targeted systematic review *Patient Preference and Adherence* 2016:10 711-725 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4854257/pdf/ppa-10-711.pdf>