Retrospective Database Analysis of Healthcare Resource Utilization and Costs in Patients With Vitiligo in Quebec, Canada

EE410

Presented at
ISPOR Europe
Copenhagen, Denmark • 12–15 November, 2023

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Introduction

- Vitiligo is an autoimmune disease that results in melanocyte destruction and patches of skin depigmentation[1]
- Prevalence varies geographically and by methodology, with reported diagnosed vitiligo rates in the general population typically ranging between 0.5%–2.0%[1-4]
- Patients with vitiligo may be burdened by the impact of vitiligo, the lack of available satisfactory treatment, and the presence of comorbidities[5-8]
- Evidence on vitiligo-associated burden of disease and healthcare resource utilization (HCRU) in Quebec, Canada is lacking

Objective

- This retrospective claims database analysis sought to address knowledge gaps in the Canadian vitiligo treatment landscape in Quebec by comparing HCRU and associated direct costs for patients with vitiligo to those from an age- and sex-matched control cohort

Methods

Patients and Study Design

- Data were obtained from the Quebec administrative database, *Régie de l'Assurance Maladie du Québec*, a public drug plan covering all people aged ≥65 years, beneficiaries of the social assistance program, and people without access to a private drug plan
- A subgroup of 125,000 random individuals who received ≥1 medical service between January 1, 2018 and December 31, 2019 was selected
  - From this cohort, patients with a first vitiligo diagnosis, based on the validated algorithm described below, recorded between January 1, 2010 and September 30, 2019 and ≥3 months of follow-up were selected
  - A group of age- and sex-matched controls without vitiligo or any other skin disorders based on the absence of International Classification of Diseases (ICD)-10 code L80 and ICD-9 code 709 was also selected (1:3); controls had a pharmaceutical service recorded in the same index period as the vitiligo cohort and ≥3 months of follow-up
- Vitiligo diagnosis was based on the validated algorithm, which combines ICD-9 diagnostic code 709 with use of vitiligo-related treatments such as topical calcineurin inhibitors and phototherapy,[9] or the more specific ICD-10 diagnostic code L80

Endpoints and Analysis

- Annualized all-cause HCRU was evaluated for patients with vitiligo identified based on the validated algorithm and for age- and sex-matched controls by the number and direct costs (2021 adjusted; expressed in Canadian dollars [CAN$]; reported as an average cost of visits in Quebec; actual costs are available in the database) of inpatient visits, emergency department visits, outpatient visits and procedures (including phototherapy), and other visits, as well as total direct costs of medication, services, and healthcare
- Among patients with vitiligo identified based on the validated algorithm, vitiligo-related HCRU was evaluated for 1 year before and after the first diagnosis date and for 1 year before and after the vitiligo-related treatment date using ICD-9 diagnostic code 709 or ICD-10 diagnostic code L80
  - Vitiligo-related treatments were defined as topical corticosteroids, tacrolimus, pimecrolimus, phototherapy, topical calcipotriene, oral corticosteroids, and oral immunosuppressives

Statistical Analysis

- The patient group with vitiligo identified per the validated algorithm and the matched control group were compared in terms of patient characteristics and HCRU, with chi-square tests for categorical variables and independent *t* tests for continuous variables

Results

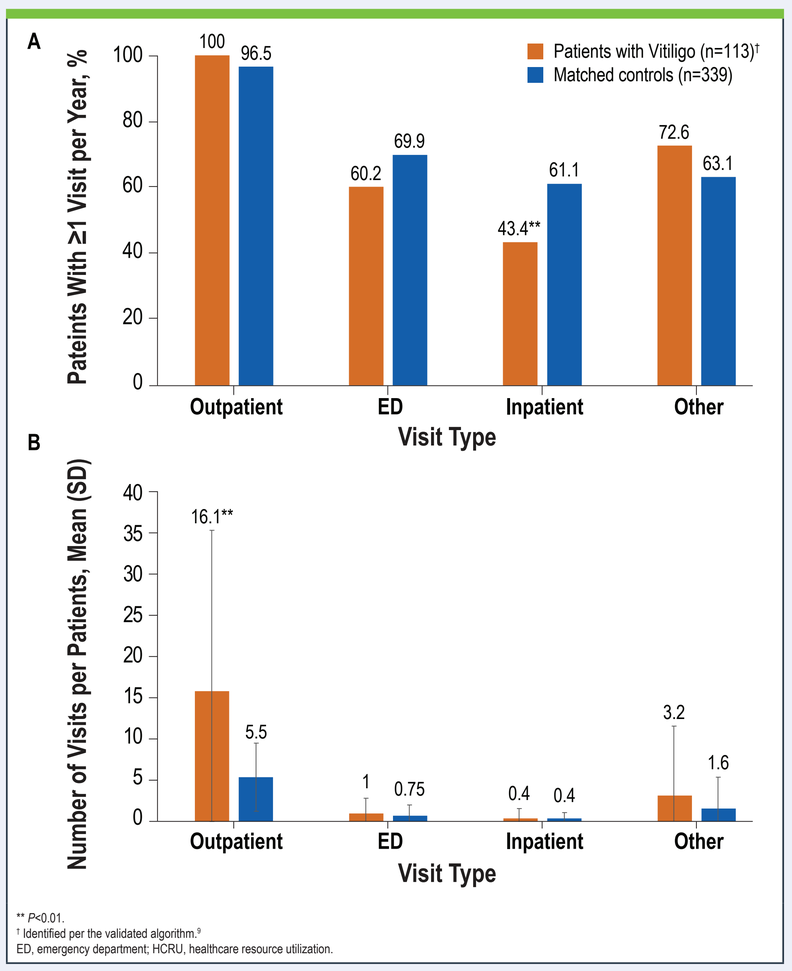
Patients

- A total of 113 patients with a vitiligo diagnosis based on the validated algorithm were identified (no patients in this analysis were identified using the ICD-10 diagnostic code L80); mean (SD) age at the index date was 50.0 (24.9) years; 40.7% were aged ≥65 years; 68.1% were female
- A total of 339 age- and sex-matched control patients were selected; mean (SD) age was 50.4 (25.3) years; 40.7% were aged ≥65 years; 68.1% were female
- Mean (SD) length of follow-up was 4.2 (2.6) years among patients with vitiligo per the validated algorithm and 7.2 (3.6) years among the control cohort

Annual HCRU

- Almost all patients with vitiligo per the validated algorithm and the matched controls had at least 1 outpatient visit per year (100% vs 96.5%, respectively); fewer patients had emergency department visits vs the matched controls (60.2% vs 69.9%), and significantly fewer patients (43.4% vs 61.1%; *P*<0.01) had inpatient visits (**Figure 1A**)
- Patients with vitiligo per the validated algorithm had a significantly higher mean (SD) number of outpatient visits per person vs matched controls (16.1 [19.8] vs 5.5 [4.2]; *P*<0.01; **Figure 1B**)

Figure 1. All-Cause Annual HCRU For (A) Patients With ≥1 Visit per Year and (B) Number of Visits per Patient

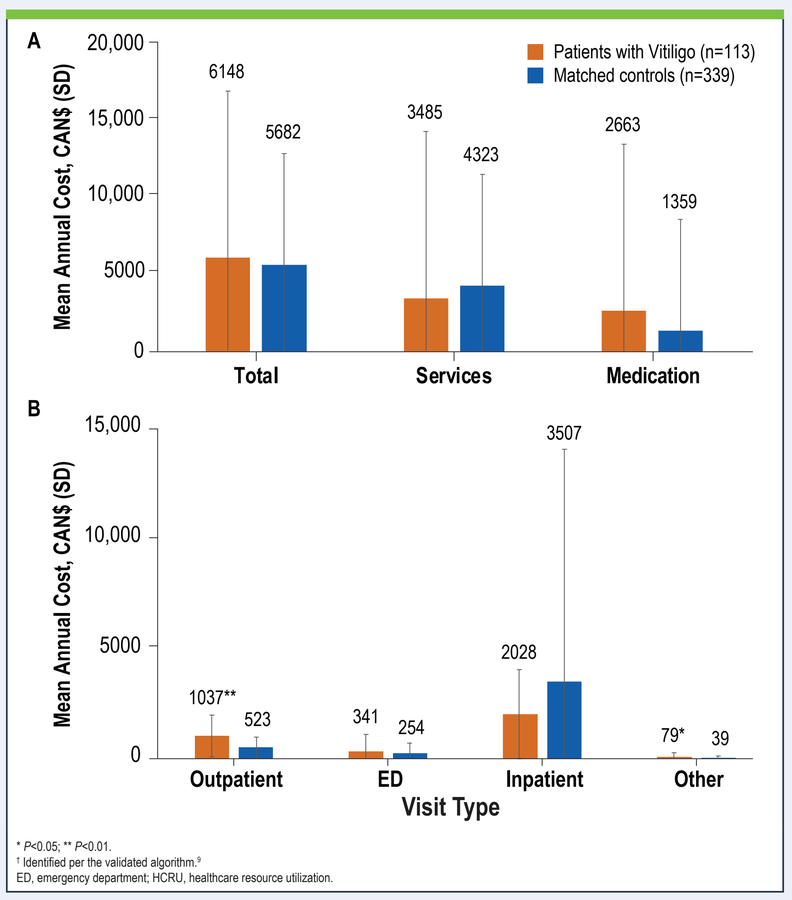


** *P*<0.01.
† Identified per the validated algorithm.[9]
ED, emergency department; HCRU, healthcare resource utilization.

Annual Total HCRU Cost

- Mean (SD) annual direct cost of total HCRU was similar among patients with vitiligo per the validated algorithm and the matched controls (CAN$6148 [CAN$12,190] vs CAN$5682 [CAN$11,669], respectively; **Figure 2A**)
- Mean (SD) outpatient visits cost more per year for patients with vitiligo per the validated algorithm than for matched controls (CAN$1037 [CAN$951] vs CAN$523 [CAN$458]; *P*<0.01; **Figure 2B**)

Figure 2. All-Cause Annual HCRU Direct Cost (A) Overall and (B) by Visit Type

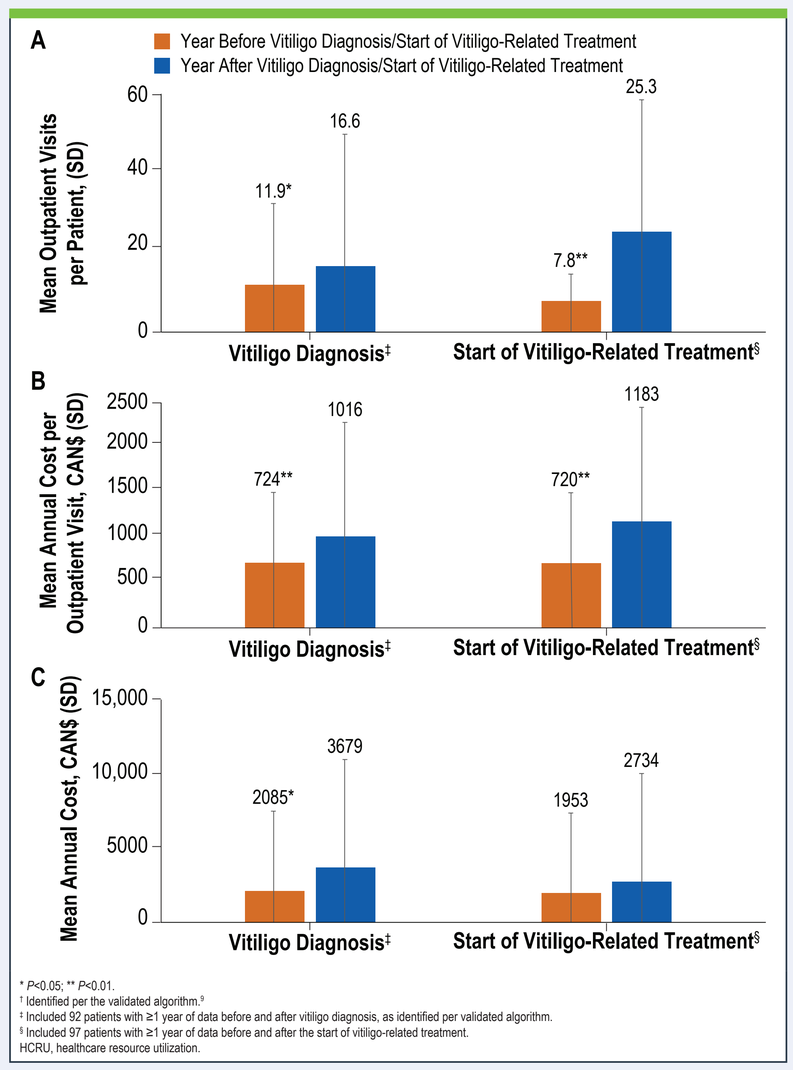


* *P*<0.05; ** *P*<0.01.
† Identified per the validated algorithm.[9]
ED, emergency department; HCRU, healthcare resource utilization.

Vitiligo-Related HCRU

- Almost all patients with vitiligo per the validated algorithm had at least 1 vitiligo-related outpatient appointment (96.5%), with only 3% requiring a vitiligo-related emergency department visit, and 2% requiring a vitiligo-related inpatient visit
- The mean (SD) number of vitiligo-related outpatient appointments was 3 (8.4), which had a mean (SD) direct cost of CAN$123 (CAN$274)
- Mean (SD) total annual direct cost of vitiligo-related HCRU was CAN$263 (CAN$568), annual direct cost of services was CAN$172 (CAN$523), and annual cost of medication was CAN$90 (CAN$189)
- The number and direct cost of outpatient visits increased significantly in the year following vitiligo diagnosis
  - Mean (SD) annual number of outpatient visits per patient increased from 11.9 (20.5) before to 16.6 (22.5) after diagnosis (*P*=0.03; **Figure 3A**); mean (SD) annual cost increased from CAN$724 (CAN$752) to CAN$1016 (CAN$11067, *P*<0.01; **Figure 3B**)
  - Total services cost also increased significantly from a mean (SD) annual cost of CAN$2085 (CAN$5583) before to CAN$3679 (CAN$9955) after vitiligo diagnosis (*P*=0.04; **Figure 3C**)
- The number and direct cost of outpatient visits increased significantly in the year following the start of vitiligo-related treatment
  - Mean (SD) annual number of outpatient visits per patient increased from 7.8 (6.8) before to 25.3 (33.2) after starting vitiligo treatment (*P*<0.01; **Figure 3A**); mean (SD) annual direct cost increased from CAN$720 (CAN$779) to CAN$1183 (CAN$1260, *P*<0.01; **Figure 3B**)
  - The total mean (SD) annual direct cost of services was CAN$1953 (CAN$5365) before starting vitiligo-related treatment to CAN$2734 (CAN$7233) after starting treatment (**Figure 3C**)

Figure 3. All-Cause HCRU Among Patients With Vitiligo† (A) Number of Outpatient Visits, (B) Direct Cost of Outpatient Visits, and (C) Total Direct Costs of All Healthcare Services



* *P*<0.05; ** *P*<0.01.
† Identified per the validated algorithm.[9]
‡ Included 92 patients with ≥1 year of data before and after vitiligo diagnosis, as identified per validated algorithm.
§ Included 97 patients with ≥1 year of data before and after the start of vitiligo-related treatment.
HCRU, healthcare resource utilization.

Limitations

- Limitations include those related to using administrative healthcare databases for identifying patients with vitiligo, although the validated algorithm used has been shown to have a relatively high diagnostic performance[9]
- The indication for treatments was not captured, and vitiligo-related treatments may have been prescribed for other medical conditions
- Vitiligo may be underrepresented in this data set due to the general misconception that there is a lack of appropriate therapies, which may mean that patients with the disease do not seek medical care

Conclusions

- **We observed that in Quebec, the diagnosis of vitiligo per the validated algorithm may lead to increased resource utilization and direct costs, mostly attributed to the significant increase in outpatient visits after vitiligo diagnosis**
- **Attendance at outpatient clinics could also potentially impact the productivity for these patients due to workday loss and further increase total costs associated with vitiligo**

Disclosures

JL is a shareholder of PeriPharm Inc. GW and JB are employees and shareholders of Incyte Biosciences Canada Corporation. VB is an employee of PeriPharm Inc. SK has received consulting fees from AbbVie, Amgen Inc, Aralez Pharmaceuticals Canada, Bausch Health, Boehringer Ingelheim, Bristol Myers Squibb, Celgene, Eli Lilly, Galderma, Johnson & Johnson, La Roche-Posay, LEO Pharma, Organon, Novartis International AG, Pfizer, Sanofi Genzyme, and UCB; conducted clinical trials that have received funding from AbbVie, Amgen, Bausch Health, Bristol Myers Squibb, Corbus Pharmaceuticals Holdings Inc, Eli Lilly, Janssen, LEO Pharma, Merck, Novartis, Pfizer, and UCB; received grant funding from Johnson & Johnson, LEO Pharma, and Novartis; and received salary support from the Michael Smith Foundation for Health Research. JR has received consulting fees from AbbVie, Amgen, Arcutis, Bausch Health, Boehringer Ingelheim, Bristol Myers Squibb, Eli Lilly, Incyte, Janssen, LEO Pharma, L'Oréal, NKS Health, Novartis, Organon, Pfizer, Sandoz, Sanofi Genzyme, Sun Pharma, and UCB; served as an investigator for AbbVie, Alumis, Amgen, Aristea, ASLAN Therapeutics, Bristol Myers Squibb, Celgene, Concert Pharmaceuticals, Correvitas, Incyte, Innovaderm, Janssen, LEO Pharma, Pfizer, and UCB; and served as a speaker for AbbVie, Arcutis, Bausch Health, Boehringer Ingelheim, Bristol Myers Squibb, Eli Lilly, Galderma, Incyte, Janssen, La Roche Posay, LEO Pharma, Pfizer, Sanofi Genzyme, and UCB.

Acknowledgments

This study was funded by Incyte (Wilmington, DE, USA). Writing assistance was provided by Samantha Locke, PhD, an employee of ICON (Blue Bell, PA, USA), and was funded by Incyte.

References

1. Bergqvist C, Ezzedine K. *Dermatology*. 2020;236(6):571-592. **2.** Bibeau K, et al. *J Eur Acad Dermatol Venereol*. 2022;36(10):1831-1844. **3.** Mohr N, et al. *Clin Epidemiol*. 2021;13:373-382. **4.** Nesnas J, et al. The association between mental health conditions and vitiligo: a population-based cohort study in the UK. Presented at: Virtual Vitiligo International Symposium; December 4-5, 2021. **5.** Hadi A, et al. *J Am Acad Dermatol*. 2020;82(3):628-633. **6.** Sheth VM, et al. *Dermatology*. 2013;227(4):311-315. **7.** Talsania N, et al. *Clin Exp Dermatol*. 2010;35(7):736-739. **8.** Narayan VS, et al. *J Eur Acad Dermatol Venereol*. 2021;35(3):744-748. **9.** Bell M, et al. *Arch Dermatol Res*. 2023;315(3):541-550.

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