Burden of illness for metastatic melanoma in Canada, 2011–2013

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ABSTRACT

Background Detailed epidemiology for patients with advanced metastatic melanoma in Canada is not well characterized. We conducted an analysis of patients with this disease in the province of Ontario, with the aim being to study the presentation, disease characteristics and course, and treatment patterns for malignant melanoma.

Methods In this Canadian observational prospective and retrospective study of patients with malignant melanoma, we used data collected in the Canadian Melanoma Research Network (cmrn) Patient Registry. We identified patients who were seen at 1 of 3 cancer treatment centres between April 2011 and 30 April 2013. Patient data from 2011 and 2012 were collected retrospectively using chart records and existing registry data. Starting January 2013, data were collected prospectively. Variables investigated included age, sex, initial stage, histology, mutation type, time to recurrence, sites of metastases, resectability, and previous therapies.

Results A cohort of 810 patients with melanoma was identified from the cmrn registry. Mean age was 58.7 years, and most patients were men (60% vs. 40%). Factors affecting survival included unresectable or metastatic melanoma, initial stage at diagnosis, presence of brain metastasis, and BRAF mutation status. The proportion of surviving patients decreased with higher initial disease stages.

Conclusions Using registry data, we were able to determine the detailed epidemiology of patients with melanoma in the Canadian province of Ontario, validating the comprehensive and detailed information that can be obtained from registry data.

Key Words Metastatic melanoma, epidemiology, burden of disease, cancer registries

INTRODUCTION

Melanoma is a malignant tumour that arises from melanin-producing cells called melanocytes1–4. Approximately 90% of melanomas are cutaneous, but they can also occur at any anatomic location—for example, eye, mucosa, head and neck surfaces, and along the gastrointestinal and genitourinary tracts5,6. Cutaneous malignant melanoma (cMM) is responsible for the largest proportion (60%–80%) of skin cancer–related deaths7–11. It was estimated that, in 2012, more than 232,000 people worldwide were diagnosed with cMM and more than 55,400 died of the disease12. In Canada, an estimated 6800 new cases of cutaneous melanoma and 1150 related deaths were predicted for 201513. In addition, evidence suggests that the incidence of cMM across Canada is increasing, a trend that has also been seen in other countries worldwide13–20.

The average 5-year survival rate is 90% and up to 70% for patients presenting with stage i and ii disease respectively2,11. Historically, survival rates fell to approximately 40% among patients diagnosed with stage iii melanoma, and the 1-year survival rate after a stage iv melanoma diagnosis was 26%2,21,22. Patients with stage iv disease have a very poor prognosis, with fewer than 10% being alive at 5 years2,23–26, although recent advances in targeted and immunotherapies have significantly improved those numbers27–32. Although the activity of targeted therapies and immunotherapies in melanoma has been promising, the prognoses for long-term disease-free survival among patients with metastatic and recurrent disease remain poor33,34. Thus, an urgent unmet medical
need for effective therapies in patients with advanced melanoma still exists.

The objective of the present study was to determine the presentation, disease characteristics, disease course, and treatment patterns for cmm in Ontario.

METHODS

Epidemiologic Analysis: Melanoma-Related Disease Characteristics

The present Canadian multicentre observational prospective and retrospective study of patients with cmm used data collected in the Canadian Melanoma Research Network (cmrn) Patient Registry. Patients with cmm who were seen at 1 of 3 cancer centres between April 2011 and 30 April 2013 were identified. Patient data for 2011 and 2012 were collected retrospectively using chart records and existing registry data; all data from January 2013 onward were collected prospectively. The study investigated disease distribution in patients with melanoma according to age, sex, body region, tumour site, initial stage, histologic classification, mutation type, time to recurrence, sites of metastatic disease, resectability, and prior adjuvant and systemic therapies. All patients with confirmed melanoma and at least 12 months of follow-up data who were seen at any 1 of the 3 participating treatment centres were eligible for entry into the study. Patients who had less than 12 months’ follow-up could be included provided that they were identified as such. Patients without histologic confirmation of melanoma were excluded.

Statistical Methods

Logistic regression models for survival analyses were generated using survival at 1 and 2 years and disease-free survival at 1 and 2 years as dependent binary variables, and a selection of variables that included patient age and sex, body region, stage, and BRAF mutation status as independent variables.

All analyses were 2-tailed, with \( p < 0.05 \) being set as the threshold for statistical significance, except for the inclusion and exclusion variables in multivariate models, for which \( p < 0.10 \) was used. Statistical analyses were performed in consultation with the principal investigators, using the IBM SPSS Statistics software application (version 20: IBM, Armonk, NY, U.S.A.).

RESULTS

Patient Characteristics

From the cmrn Patient Registry, a cohort of 810 patients with cmm diagnosed during 1964–2013 at 3 urban cancer treatment centres in Ontario was identified. Table 1 details the patient characteristics. Mean age in the cohort was 58.7 ± 14.8 years, and the group predominantly consisted of men (60% vs. 40%). At initial presentation, a broad spectrum of melanoma stages were represented, from stage 0 to stage iv (Figure 1). The mean time to recurrence for all patients in the cohort was approximately 5 years.

At diagnosis, 78 patients (9.6%) had stage iv disease. Of those 78 patients, 13 (1.6% of the entire cohort) had distant skin metastases and normal lactate dehydrogenase levels (M1A), 16 (2.0%) had lung metastases and normal lactate dehydrogenase levels (M1B), and 49 (6.0%) had metastases in other organs or any metastasis and high levels of lactate dehydrogenase (M1C).

The most common sites of primary disease, regardless of initial stage at diagnosis, were the extremities (27.2%), trunk (25.9%), head (16.9%), and neck (4.8%). At initial presentation, 356 of the 810 patients (44%) had metastatic melanoma, and 454 (56%) had nonmetastatic disease. In addition, 704 (87%) had resectable disease, 106 (13%) had unresectable disease, 367 (45%) had unresectable or metastatic disease, and 51 (6%) had a known BRAF mutation. It should be noted that BRAF testing was not routinely performed for most of the time period covered by our study, and mutation data were available only for patients with unresectable and metastatic disease.

Treatment Modalities

Of the 356 patients with metastatic disease and the 454 patients with nonmetastatic disease, 341 (95.8%) and 147 (32.4%) respectively had received prior systemic therapy. Thus, of the overall 810-patient cohort, 488 (60.2%) had previously received systemic therapy at the time covered by our analysis.

Of the 367 patients with metastatic or unresectable disease at initial presentation, 346 (94.3%) had received prior systemic therapy, including 22.3% who had received ipilimumab, 19.9% who had received dacarbazine monotherapy, and 17.9% who had received an investigational drug in a clinical trial. Most patients with unresectable or metastatic disease had received dacarbazine monotherapy as first-line therapy and ipilimumab as second- and other-line therapy (Table ii).

By the time of the present study, 147 patients with nonmetastatic disease at presentation had received systemic therapy. Of those 147 patients, 24.5% had received an investigational drug in a clinical trial, 22.5% had received ipilimumab, and 17.7% had received dacarbazine monotherapy.

In all 810 patients identified, treatment modalities such as radiotherapy, surgery, and systemic therapy had been commonly used. During the time covered by our analysis, more patients received radiotherapy (90.1%) than surgery (37.7%) or systemic therapy (23.5%), and few patients received all 3 treatments (8.9%). The high proportion of patients who received radiotherapy is most likely a result of the fact that the analyzed population included a large subgroup of patients with brain metastases who would have received radiotherapy. In the 182 patients who presented with stage iii or iv disease at diagnosis, both radiotherapy and surgery were most commonly used.

Factors Affecting Survival

Unresectable or Metastatic Disease

At initial diagnosis, 367 patients had unresectable or metastatic disease. The most common initial histologic subtypes for patients with metastatic or unresectable disease were superficial spreading melanoma (42.2%) and nodular melanoma (18.5%). At the time of the present analysis, the proportion of patients with unresectable or metastatic disease still alive was approximately 51%, and the estimated
### TABLE I Patient characteristics by initial stage at diagnosis

| Characteristic                      | Stage | All (n=810) | O (n=9) | IA (n=83) | IB (n=99) | IIA (n=72) | IIB (n=62) | IIC (n=47) | IIIA (n=29) | IIIB (n=28) | IIIC (n=78) | IV (n=230) |
|-------------------------------------|-------|-------------|---------|-----------|-----------|------------|------------|------------|-------------|-------------|-------------|------------|
| All patients [n (%)]                |       | 810 (100)  | 9 (100) | 83 (100)  | 99 (100)  | 72 (100)   | 62 (100)   | 47 (100)   | 29 (100)    | 28 (100)    | 78 (100)    | 230 (100)  |
| Mean age (years)                    |       | 58.7 ± 14.8| 57.2 ± 13.99| 59.5 ± 13.99 | 60.9 ± 15.71 | 63.8 ± 13.92 | 64.1 ± 13.98 | 54.3 ± 13.72 | 58.4 ± 13.8 | 60.9 ± 15.24 | 60.6 ± 14.28 | 55.6 ± 14.37 |
| Sex [n (%)]                         |       |             |         |           |           |            |            |            |              |              |              |            |
| Men                                 |       | 485 (59.9) | 3 (100) | 41 (50)   | 56 (57)   | 40 (53)    | 43 (59)    | 26 (56)    | 18 (62)     | 21 (75)     | 45 (58)     | 139 (28.8) |
| Women                               |       | 325 (40.1) | 0 (0)   | 1 (0)     | 3 (3)     | 6 (8)      | 7 (9)      | 5 (10)     | 3 (10)      | 4 (14)      | 0 (0)       | 91 (20.2)  |
| Mean time to recurrence (years)     |       | 4.9 ± 6.7  | 0.7 ± 0 | 7.4 ± 5.02| 6.7 ± 7.92| 3.1 ± 3.17 | 2.7 ± 2.74 | 4.3 ± 3.82 | 2.1 ± 3.28  | 1.6 ± 1.49  | 3.8 ± 5.19  | 6.4 ± 8.40 |
| Mutation type [n (%)]               |       |             |         |           |           |            |            |            |              |              |              |            |
| BRAF                                |       | 51 (6.3)   | 0 (0)   | 0 (0)     | 1 (2.0)   | 2 (3.9)    | 1 (2.0)    | 4 (7.8)    | 4 (7.8)     | 2 (3.9)     | 11 (21.6)   | 12 (23.5)  |
| CKIT                                |       | 6 (0.7)    | 0 (0)   | 0 (0)     | 0 (0)     | 0 (0)      | 0 (0)      | 1 (16.7)   | 1 (16.7)    | 0 (0)       | 1 (16.7)    | 3 (50.0)   |
| NRAS                                |       | 1 (0.1)    | 0 (0)   | 0 (0)     | 0 (0)     | 0 (0)      | 0 (0)      | 0 (0)      | 0 (0)       | 0 (0)       | 0 (0)       | 1 (100)    |
| MEK                                 |       | 0 (0)      | 0 (0)   | 0 (0)     | 0 (0)     | 0 (0)      | 0 (0)      | 0 (0)      | 0 (0)       | 0 (0)       | 0 (0)       | 0 (0)      |
| GNAO                                 |       | 0 (0)      | 0 (0)   | 0 (0)     | 0 (0)     | 0 (0)      | 0 (0)      | 0 (0)      | 0 (0)       | 0 (0)       | 0 (0)       | 0 (0)      |
| GNA11                                |       | 0 (0)      | 0 (0)   | 0 (0)     | 0 (0)     | 0 (0)      | 0 (0)      | 0 (0)      | 0 (0)       | 0 (0)       | 0 (0)       | 0 (0)      |
| Metastatic [n (%)]                  |       | 356 (44.0)| 1 (0.3) | 18 (5.1)  | 31 (8.7)  | 16 (4.5)   | 26 (7.3)   | 25 (7.0)   | 10 (28.6)   | 13 (39.3)   | 17 (48.6)   | 78 (29.1)  |
| No                                  |       | 454 (56.0)| 8 (1.8) | 65 (14.3) | 68 (15.0) | 57 (12.6)  | 46 (10.1)  | 37 (8.1)   | 37 (8.1)    | 16 (41.7)   | 11 (28.6)   | 109 (40.9) |
| Resectable [n (%)]                  |       | 704 (86.9)| 9 (1.3) | 83 (11.8) | 99 (14.1) | 73 (10.4)  | 72 (10.2)  | 62 (8.8)   | 47 (6.7)    | 29 (4.1)    | 0 (0)       | 230 (33.7) |
| Yes                                 |       | 106 (13.1)| 0 (0)   | 0 (0)     | 0 (0)     | 0 (0)      | 0 (0)      | 0 (0)      | 28 (26.4)   | 78 (73.6)   | 0 (0)       | 0 (0)      |

*a Comprises ocular melanoma (n = 4, 0.5%), no primary site determined at staging (n = 26, 3.2%), and stage unknown (n = 200, 24.7%).
median survival time was 63.7 months [95% confidence interval (ci): 48.3 months to 79.2 months; Figure 2(A)].

**Stage of Disease**

Of the 182 patients who had stage III or IV disease at the time of initial diagnosis, 65% had metastatic disease, and 58% had unresectable disease. The proportions of newly diagnosed and recurrent disease at presentation for those 182 patients were 48% and 52% respectively, a difference that was statistically nonsignificant (p = 0.350). The proportion of surviving patients decreased with increasing disease stage. At the end of the study, 79.9% of patients who initially presented with stage 0–IIC disease were still alive, compared with 71.0% of those who initially presented with stage III disease and 52% of those who initially presented with stage IV disease. The mean survival durations by initial disease stage were 113.3 months (95% ci: 95.6 months to 131.0 months), 76.3 months (95% ci: 59.3 months to 93.3 months), and 59.9 months (95% ci: 38.2 months to 81.7 months) for stages 0–IIC, III, and IV respectively [Figure 2(B)].

**BRAF Mutation Status**

Of the 367 patients with unresectable or metastatic disease, 107 (29.2%) were tested for BRAF mutation. Of those 107 patients, 41 (38.3%) were BRAF mutation–positive, with 19.5% (n = 8) having stage IV M1C disease. Of the patients with BRAF-mutant disease, the proportion surviving at study end was 83.8%, with a mean survival duration of 108.6 months [95% ci: 81.1 months to 136.1 months; Figure 2(C)]. The proportion of patients with known BRAF wild-type disease surviving at study end was 46.7%; their median survival duration was 61.4 months (95% ci: 45.4 months to 77.4 months). Overall, survival was 50.9% for patients with unresectable metastatic disease tested for BRAF mutation, and their median survival time was 64.6 months (95% ci: 48.9 months to 80.3 months).

Cumulative survival decreased more steadily in patients without BRAF mutation than in those with mutation, resulting in a rapid decline in survival [Figure 2(C)].

**Brain Metastasis**

The brain metastasis subgroup was defined as all patients who received brain radiotherapy. Of the 367 patients with unresectable or metastatic disease at baseline, 22.9% (n = 84) had brain metastasis, 15 of whom (17.9%) had brain metastasis at initial presentation, and 69 of whom (82.1%) subsequently developed brain metastasis. At the time of data analysis, 50.0% of those with brain metastasis at initial presentation and 50.8% of those who subsequently developed brain metastasis remained alive. The median survival durations for those patients were 14.8 months (95% ci: 0 months to 35.4 months) and 61.2 months (95% ci: 16.4 months to 106 months) respectively. Overall, survival was significantly shorter in patients with brain metastasis than in other patients [Figure 2(D)].

**Cox Proportional Hazards Model**

A Cox proportional hazards model developed to predict survival identified stage, unknown primary status, and...
brain metastasis as significant predictors of survival at 1 year (Table iii); male sex was an additional adverse prognostic factor for 2-year survival (Table iv).

**DISCUSSION**

The objective of the present study was to provide a detailed epidemiologic overview of patients with melanoma whose data were included in the cmrn at 3 separate cancer treatment centres.

The population studied appears to be similar to those captured in other melanoma registries (for example, overall melanoma incidence trends for sex, age, and disease sites)\(^ {35-41}\). Mean age was 58.7 years, and the cohort consisted predominantly of men (60% vs. 40%). A broad spectrum of initial stages was evident, although there was an intentional preponderance of patients with unresectable and metastatic disease at the time covered by our analysis. The 3 clinical investigators from whose practices the patients were principally identified are
The molecular characterization of melanoma is proving critical in its subsequent management. The use of \textit{BRAF} testing at all 3 centres has been available outside of clinical trials in Ontario only during the 2 years preceding the time of writing. Consequently, the \textit{BRAF} testing rate in this study population is low at 29%. Testing rates are expected to sharply increase into the future as patients are considered for targeted therapies; the current standard of care in Canada is to test all patients with unresectable or metastatic disease for \textit{BRAF} mutation status. In our analysis, among the patients who underwent \textit{BRAF} testing, 38.3% had \textit{BRAF}-mutant tumours, which is consistent with analyses in other epidemiologic reports \cite{35,36}. Furthermore, the availability of \textit{BRAF} inhibitors is also relatively recent, and therefore the effects of \textit{BRAF} status and targeted therapy on survival cannot be assessed in the present report; however, as additional data become available during the next year, those results might be provided.

Patients with brain metastasis represented another important subgroup in our study, 18% of whom presented

| TABLE III | Variables in the Cox proportional hazards model for survival at 1 year |
|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Variable  | coef | exp(coef) | se(coef) | Z | Pr(>|z|) | 95% CL |
|-----------|------|-----------|----------|---|---------|--------|
| Lower     | Upper |
| Stage 0   | 1.45E+00 | 4.26E+00 | 6.88E-01 | 2.105 | 0.035276 | 1.10511 | 16.41 |
| Stage IA  | 1.54E+00 | 4.67E+00 | 4.22E-01 | 3.649 | 0.000264 | 2.03997 | 10.675 |
| Stage IB  | 1.38E+00 | 3.97E+00 | 4.07E-01 | 3.389 | 0.000701 | 1.78802 | 8.8 |
| Stage IIA | 1.37E+00 | 3.95E+00 | 4.52E-01 | 3.036 | 0.002395 | 1.62729 | 9.586 |
| Stage IIB | 9.51E-01 | 2.59E+00 | 4.69E-01 | 2.029 | 0.042466 | 1.03285 | 6.485 |
| Stage IIC | 2.96E-01 | 1.35E+00 | 4.98E-01 | 0.595 | 0.551885 | 0.50682 | 3.568 |
| Stage IIC | 6.23E-01 | 1.87E+00 | 6.90E-01 | 0.903 | 0.366291 | 0.48238 | 7.213 |
| Stage IIB | -5.19E-01 | 5.95E-01 | 7.98E-01 | -0.65 | 0.515434 | 0.12452 | 2.844 |
| Stage IIC | -1.40E+00 | 2.47E-01 | 1.06E+00 | -1.315 | 0.188404 | 0.03073 | 1.985 |
| Other at staging | -3.57E-01 | 7.00E-01 | 1.07E+00 | -0.334 | 0.738226 | 0.08646 | 5.668 |
| Stage IV | -9.47E-01 | 3.88E-01 | 5.74E-01 | -1.649 | 0.099194 | 0.12592 | 1.196 |
| PUK at staging | -1.58E+01 | 1.40E-07 | 3.03E+03 | -0.005 | 0.995848 | 0 | Inf |
| Sex (male) | -3.32E-01 | 7.18E-01 | 1.96E+00 | -1.694 | 0.090347 | 0.48862 | 1.054 |

\textit{coef} = coefficient; \textit{exp} = exponential; \textit{se} = standard error; \textit{CL} = confidence limits; \textit{PUK} = primary status unknown; \textit{Inf} = infinity.

| TABLE IV | Variables in the Cox proportional hazards model for survival at 2 years |
|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Variable  | coef | exp(coef) | se(coef) | Z | Pr(>|z|) | 95% CL |
|-----------|------|-----------|----------|---|---------|--------|
| Lower     | Upper |
| Stage 0   | 1.902 | 6.6993 | 0.5735 | 3.317 | 0.000911 | 2.17717 | 20.614 |
| Stage IA  | 1.8446 | 6.3255 | 0.323 | 5.711 | 1.12E-08 | 3.35858 | 11.913 |
| Stage IB  | 1.3345 | 4.6389 | 0.3136 | 4.893 | 9.94E-07 | 2.50879 | 8.578 |
| Stage IIA | 1.1826 | 3.2627 | 0.3426 | 3.452 | 0.000556 | 1.6672 | 6.385 |
| Stage IIB | 0.9165 | 2.5005 | 0.3493 | 2.624 | 0.008699 | 1.26093 | 4.959 |
| Stage IIC | 0.3141 | 1.369 | 0.4045 | 0.776 | 0.437478 | 0.61959 | 3.025 |
| Stage IIIA | 0.6687 | 1.9518 | 0.428 | 1.562 | 0.118219 | 0.84148 | 4.516 |
| Stage IIIB | 0.5425 | 1.7202 | 0.4648 | 1.167 | 0.243145 | 0.6918 | 4.278 |
| Stage IIC | -1.744 | 0.1748 | 1.0355 | -1.684 | 0.092141 | 0.02297 | 1.33 |
| Other at staging | -0.4679 | 0.6263 | 1.0357 | -0.452 | 0.651414 | 0.08226 | 4.768 |
| Stage IV | -0.3465 | 0.7072 | 0.4644 | -0.746 | 0.455613 | 0.28461 | 1.757 |
| Ocular at staging | 0.9495 | 2.5845 | 1.0417 | 0.912 | 0.362017 | 0.3355 | 19.91 |
| PUK at staging | 0.6024 | 1.8266 | 0.6393 | 0.942 | 0.345997 | 0.52178 | 6.394 |
| Sex (male) | -0.1018 | 0.9032 | 0.1619 | -0.629 | 0.529615 | 0.65763 | 1.241 |

\textit{coef} = coefficient; \textit{exp} = exponential; \textit{se} = standard error; \textit{CL} = confidence limits; \textit{PUK} = primary status unknown.
with brain metastasis at initial diagnosis. The overall rate of brain metastasis in all patients with advanced disease was 23%, which is also consistent with findings in previous reports. The overall survival of patients with brain metastasis was significantly inferior to that of patients without brain metastasis, which underscores the importance of central nervous system involvement as a poor prognostic factor in melanoma and the unmet need for more effective treatments for this patient population.

Survival rates by initial disease stage as outlined in the present study are congruent with rates described in other large cohorts of patients. In the Cox proportional hazards model, our study identified stage, unknown primary status, and brain metastasis as significant predictors of survival at 1 year. For 2-year survival, male sex was an additional adverse prognostic factor, a result that is also consistent with findings in earlier studies. Although other factors, such as treatments and mutation status, could potentially be important prognostic variables, the CMRN registry has yet to be populated with sufficient numbers of patients having adequate treatment and follow-up data to explore potential outcome variables. However, that situation is expected to change as the registry is expanded to include additional patients and lengthened follow-up information.

The primary limitation of the present study is its use of retrospective data for part of the cohort. The affected patient population was also relatively limited, coming from 3 geographic sites. Patient inclusion was based on an inception cohort, and so all patients for whom data were available in the CMRN were included. However, the data were not intended to provide a comprehensive overview either of all patients or of a specific subset of patients. Missing data were also an inherent problem of this study, as is the case in retrospective studies, which rely on the presence of information in patient records. For example, up to 103 patients in the total cohort of 810 (12.7%) and 25 patients in the unresectable metastatic subgroup of 367 (6.8%) were excluded from survival analyses because of missing values, sometimes with outliers. Because some of the excluded patients had multiple missing stratification values or data entry errors (or both), they could not be censored. Furthermore, the time limits of the study affected our ability to observe the impact of new diagnostic and treatment modalities. The proportion of patients who had undergone BRAF testing within the time period observed was not as comprehensive as might now be the case. Additionally, information related to the specific clinical trials in which patients were participating was not available, given that agents had to be coded by clinical trial number and were not identified from site to site.

Notwithstanding, our study allowed for a detailed accounting of the demographics and clinical outcomes of a large cohort of patients who were seen at 3 different institutions, and it also enabled the collection of relevant data sequentially over time, providing the ability to observe the effect of multiple sequential interventions over time. Furthermore, the study provides a foundation of CMRN epidemiologic data that will allow for comparisons with future studies to examine the impacts of novel treatments over time.

The CMRN now includes 11 cancer treatment centres across Canada. As additional data are collected by these 11 centres, a better treatment utilization profile will become available, one that includes newer agents and that captures the prevalence of genomic testing. With today’s increased interest in personalized medicine, the ability to link treatment to genetic testing and to collect prospective data will be valuable because it will allow for the comparative evaluation of the effectiveness of multiple agents. Utilization of our patient portal to collect health utility and health-related quality-of-life data will also provide a better view of the impact that both the disease and its treatment have on cost-effectiveness.

CONCLUSIONS

Our study validates the comprehensive and detailed information that can be obtained from the CMRN Patient Registry. Although extrapolations of the present findings from urban centres in Ontario to the entire Canadian melanoma population would be premature, it appears that the initial patient base of the CMRN registry can be extremely informative. The platform can provide a basis for the development of a wide variety of hypotheses that can be explored both retrospectively and prospectively. As additional data from other institutions become available, the CMRN registry will be able to provide a better profile of the melanoma population, including their treatments and outcomes, and will be an invaluable resource in advancing the management of melanoma.

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CONFLICT OF INTEREST DISCLOSURES

We have read and understood Current Oncology’s policy on disclosing conflicts of interest, and we declare the following interests: DSE received no direct funding from GlaxoSmithKline at the time of the study; TP received honoraria for participation in advisory boards for GlaxoSmithKline; MT and SV were employees of GlaxoSmithKline at the time of the study; AMJ, AH, and FG have no conflicts to disclose.

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