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## Identifying a patient cohort responsible for a disproportionate number of lost opportunities for dermatologic care at a Veterans Affairs Medical Center

*To the Editor:* No-shows for dermatology appointments, reportedly as high as 17% to 31% in urban academic practices,[1] create lost opportunities for care, exacerbate the scarcity of dermatology access, and increase health care spending.[2] We hypothesized that lost opportunities may not be equally distributed among an entire patient population and thus sought to identify the cohort of patients that accounts for a disproportionate number of lost opportunities for dermatologic care. Identifying characteristics of the patients at highest risk of creating lost opportunities can reveal potential pathways amenable to intervention.

In this cross-sectional observational study of missed appointments for in-person, outpatient dermatology clinics at the main hospital of the Providence Veterans Affairs Medical Center (VAMC) between fiscal years 2015 and 2016, we defined a lost opportunity as a no-show (appointment neither completed nor cancelled by the patient or the clinic) or last-minute cancellation (within 24 hours of the appointment date). Our primary outcome was "multiple lost opportunities," defined as 2 or more no-shows or last-minute cancellations in the study period. Using Stata 14.1 software (StataCorp LLC, College Station, TX), we evaluated the associations between multiple lost opportunities and patient characteristics such as patient age, sex, race/ethnicity, marital status, urban residence, distance to the nearest VAMC, secondary insurance status, and previous number of missed appointments. We extracted data from the VHA Corporate Data Warehouse (CDW).[3]

In fiscal years 2015 and 2016, 5598 patients had 24,938 appointments for dermatologic care at the Providence VAMC. Of these, 16,668 appointments (66.8%) were fulfilled, 1852 (7.4%) were last-minute cancelled by the patient, and 1709 (6.9%) were no-shows. There were 628 patients (10.6%) who had multiple lost opportunities and accounted for 8676 appointments (34.8%), 1217 (65.8%) of all last-minute cancellations by the patient, and 1062 (62.1%) of all no-shows (Table I). A disproportionate number of dermatology appointments—particularly no-shows and last-minute cancellations—appear to be concentrated within a small cohort of patients. This pattern continues as the number of lost opportunities increases beyond 2.

Patients with multiple lost opportunities were more likely to be 21 to 40 years old, black, or nonmarried (Table II). This pattern is robust to thresholds of 3 and 4 lost opportunities; 6 lost opportunities was too small for significant associations to be determined ( further data provided upon request). As in other studies, younger, unmarried, and historically underserved patients were more likely to have multiple lost opportunities,[4,5] which may be explained by the presence of complex social situations and cultural barriers to accessing care. Surprisingly, distance from the VAMC was not associated with multiple lost opportunities; this may be due to the relatively small geographic area served by the Providence VAMC as well as the availability of transport services to many veterans.

Although our study is limited by our single-site sample of a veteran population in a Northeastern region, the finding that there are small cohorts of patients responsible for a large proportion of lost opportunities may be generalizable to other practice settings. Practices interested in no-show behavior may consider identifying patients who have missed more than 1 appointment and eliciting barriers to appointment fulfillment.

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**Table I.** Use of appointments among patients with multiple lost opportunities

| Variable | Appointments, No. (% of all) | | | |
|---|---|---|---|---|
| | Patients with ≥2 lost opportunities | Patients with ≥3 lost opportunities | Patients with ≥4 lost opportunities | Patients with ≥6 lost opportunities |
| Cancelled by patient | 1920 (75.9) | 1344 (65.0) | 1031 (40.7) | 819 (32.3) |
| Last-minute | 1217 (65.8) | 852 (46.1) | 648 (35.0) | 493 (26.7) |
| No-shows | 1062 (62.1) | 683 (40.0) | 494 (28.9) | 353 (20.7) |
| Fulfilled | 5694 (34.2) | 4390 (26.3) | 3513 (21.1) | 3061 (18.4) |
| Total appointments | 8676 (34.8) | 6417 (25.7) | 5038 (20.2) | 4233 (17.0) |
| Total patients | 628 (10.6) | 256 (4.5) | 125 (2.1) | 56 (0.9) |

**Table II.** Adjusted odds ratios of associations between patient characteristics and multiple lost opportunities

| Variable | No. (%) | ≥2 lost opportunities | | |
|---|---|---|---|---|
| | | Odds ratio | 95% CI | *P* value |
| Age category, y | | | | |
| 21-40 | 445 (8.0) | | 1.00 [Reference] | |
| 41-64 | 1254 (22.4) | 0.69* | 0.51-0.91 | .01 |
| ≥65 | 3895 (69.6) | 0.44† | 0.32-0.59 | <.001 |
| Male sex | 5259 (93.9) | 0.79 | 0.58-1.07 | .13 |
| Race/ethnicity | | | | |
| White | 4889 (87.3) | | 1.00 (reference) | |
| Black | 151 (2.7) | 1.82‡ | 1.21-2.74 | <.001 |
| Other | 42 (0.8) | 1.00 | 0.41-2.42 | >.99 |
| Hispanic | 94 (1.7) | 1.31 | 0.75-2.29 | .33 |
| Missing | 422 (7.5) | 1.13 | 0.84-1.54 | .40 |
| Has secondary insurance | 4282 (76.5) | 1.11 | 0.89-1.39 | .36 |
| Married | 2712 (48.4) | 0.57† | 0.47-0.68 | <.001 |
| Distance to nearest VAMC | | | | |
| <5 miles | 2138 (38.2) | | 1.00 (reference) | |
| 5-10 miles | 1759 (31.4) | 1.00 | 0.73-1.35 | .49 |
| 10-20 miles | 1617 (28.9) | 0.94 | 0.67-1.29 | .93 |
| >20 miles | 84 (1.5) | 0.48 | 0.11-2.07 | .41 |
| Urban | 5026 (89.8) | 1.20 | 0.87-1.65 | .25 |
| Constant | | 0.27† | 0.17-0.43 | <.001 |
| Observations | 5598 | | | |

*CI*, Confidence interval; *VAMC*, Veterans Affairs Medical Center.
*$P < .05$.
†$P < .001$.
‡$P < .01$.

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*Disclaimer: The opinions expressed here are those of the authors and not of the Veterans Health Administration.*

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## Management of localized Merkel cell carcinoma at high-volume facilities is associated with improved survival

*To the Editor:* Merkel cell carcinoma (MCC) is a rare, aggressive malignancy that is at high risk for regional lymph node and distant metastases. In the United States, the aging population is driving brisk increases in its incidence.[1] MCC is often first evident as an indurated, painless, red-blue or skin-colored nodule. Its diagnosis is often challenging because it clinically resembles benign neoplasms such as lipomas or epidermal cysts.

Owing to its low incidence, most management recommendations are based on retrospective reviews, case series, and expert opinions.[2] Prompt diagnosis, effective management, and adherence to the limited evidence-based guidelines are imperative in patient care, although not necessarily equal among institutions. In this short analysis, we evaluated the relationship between facility case volume of localized MCC and overall survival.

The National Cancer Database (NCDB) was queried for all patients with cutaneous MCC from 2004 to 2015. NCDB is a database sourced from United States academic hospitals, Veterans Health Administration facilities, and community centers and collects approximately 70% of cancer diagnoses annually. We excluded patients with no histologic confirmation, missing American Joint Committee on Cancer staging data (Sixth and Seventh editions), undergoing palliative care, diagnosed at autopsy, showing evidence of lymph node extension, of American Joint Committee on Cancer stage III/IV, or with multiple prior cancer diagnoses.

NCDB provides a facility identification variable, which was examined for the number of MCC patients managed per year. Facilities were classified as low volume (<1 case/y), moderate volume (≥1 and ≤3 cases/y), and high volume (>3 cases/y). These frequency cutoff values were attained by calculating the tertiles of the average annual cumulative cases of localized MCC at all facilities. These case frequency designations were then rounded to the nearest whole number of cases per year for analysis.

Cox proportional hazards regression modeling determined the hazard ratios along with odds ratios and corresponding 95% confidence intervals. Variables that showed significant differences on univariate Kaplan-Meier analysis were included in the Cox regression, including age, sex, race, median income, Charlson-Deyo comorbidity index, geography, stage, tumor size (cm diameter), primary site, insurance status, academic affiliation, and treatment. $P$ values of <.05 were considered statistically significant.

The total study cohort of localized MCC patients (n = 8252) was handled at 1147 facilities (Table I). There were 998 low-volume facilities (87.0%), 123 moderate-volume facilities (10.7%), and 26 high-volume facilities (2.3%), which handled 49.1%, 28.3%, and 22.6% of the case volume, respectively. In the 12-year span, the greatest number of cases handled by 1 institution was 213 patients (17.75 cases/y).

Kaplan-Meier analysis revealed significant differences in 5-year overall survival (log-rank $P < .001$) at the low-volume (52.2%), moderate-volume (57.0%), and high-volume (64.4%) facilities. On Cox analysis, moderate volume and academic affiliation did not show significant associations with overall survival. High-volume facilities were associated with prolonged overall survival (reference: low-volume: odds ratio, 0.816; 95% confidence interval, 0.692-0.963; $P = .016$).

According to these national data, treatment of localized MCC at high-volume facilities is associated with prolonged overall survival. This conclusion is consistent with similar reports for metastatic melanoma, nonmetastatic melanoma, and other malignancies.[3] Previous studies suggest that cancer treatment practices at higher-volume centers are more likely to follow evidence-based guidelines.[4] Reports on the same physicians practicing at both high- and low-volume facilities have demonstrated improved outcomes with the provider specifically practicing at the higher-volume centers and that institutional factors independently influence outcomes.[5] We hypothesize that a greater familiarity with localized MCC lends to streamline treatments within and among a multidisciplinary team.

Limitations to this study include that NCDB does not provide information on disease-specific survival, which may overestimate mortality risk, or information on disease recurrence.

In conclusion, these findings support care consolidation or extension of these high-volume institutions to improve patient outcomes for localized MCC.