Are there racial and sex differences in the use of oral isotretinoin for acne management in the United States?

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Background: Treatment of various diseases has been noted to vary by patient demographics. There is reason to suspect that there may be sex and racial differences in the treatment of severe acne.

Objective: We sought to determine if treatment of severe acne with oral isotretinoin varied with patient sex, race, or both.

Methods: We analyzed the demographics of patients with acne and patients using oral isotretinoin, minocycline, and tetracycline recorded in the 1990 to 1997 National Ambulatory Medical Care Survey.

Results: There were 35 million visits to physicians for the treatment of acne between 1990 and 1997, and isotretinoin was prescribed at 5.8 million (17%) of these visits. Per capita visit rates for acne among whites was 2.3 times that of blacks, and whites were 1.8 times more likely to receive isotretinoin at acne visits. Per capita, women had 1.4 times as many visits for acne as men, but men were 1.7 times more likely than women to receive isotretinoin at an acne visit. Dermatologists managed 83% of all isotretinoin visits. Dermatologists accounted for 100% of isotretinoin visits for which pregnancy prevention education and counseling was reported.

Conclusions: Patients who are black receive less oral isotretinoin than those who are white, and the expense of isotretinoin appears to be one factor in this difference. Women are less likely than men to receive isotretinoin at acne visits. Expense does not appear to be a factor in this difference. Dermatologists have more experience than nondermatologists managing acne, prescribing isotretinoin, and counseling women treated with isotretinoin concerning pregnancy prevention. Pregnancy prevention is an essential component of isotretinoin use in women that must not be ignored. (J Am Acad Dermatol 2003;49:662-6.)

Acne is one of the most prevalent disorders affecting adolescents and adults. Having acne is stressful and negatively affects one’s quality of life. Acne can be treated with a variety of medications including oral and topical treatments, oral contraceptives, and, for patients with severe acne, oral isotretinoin (Accutane). Treatment of various diseases has been noted to vary by patient demographics. For instance, there have been reports in the literature of race and sex influencing physicians’ recommendations for cardiac catheterization, treatment of ischemic heart disease, treatment of acute chest pain, coronary artery bypass grafts, and bone marrow transplantation for leukemia and lymphoma. Given the possibility of physician bias, there is reason to suspect that there could be sex and racial differences in the treatment of severe acne.

Although acne is extremely prevalent, few studies have focused on the demographics of patients using isotretinoin, the specialty of the physicians prescribing isotretinoin, or the frequency of patient education and counseling on pregnancy prevention by
physicians. Our primary hypothesis in performing this study was that there would be less use of isotretinoin in women on the basis of teratogenicity but no differences by race. To test this hypothesis we examined data from the 1990 to 1997 National Ambulatory Medical Care Survey (NAMCS).

**METHODS**

NAMCS is an ongoing survey of office-based physicians conducted by the Division of Health Care Statistics, the National Center for Health Statistics, and the Centers for Disease Control and Prevention. The sampling is limited to nonfederally employed physicians principally engaged in outpatient care activities. The multistage probability sampling design was stratified by primary sampling unit (county, contiguous counties, or standard metropolitan statistical area), then by physician practices within the sampling unit, and, finally, by patient visits within the 52 weekly randomized periods. Within small practices, a 100% sample of 1 week’s visits was possible. For very large practices, 20% of patient visits were randomly sampled. Each observation is weighted such that the resulting national estimates describe the use of ambulatory services in the United States.

Data from 1990 through 1997 contain 272,830 records used to estimate 5.8 billion of office-based physician visits in the United States. For each visit sampled, a one-page patient log was completed that included demographic data, reasons for patient visits, physicians’ diagnoses, services provided, and referral practices. We identified all visits in which isotretinoin was listed as the primary, secondary, or tertiary medication. To assess the role of medicine cost, we compared use of tetracycline and minocycline at acne visits by patients with different demographic categories. Visits with generic and brand-name mentions were combined.

On the basis of US government-estimated census populations, per capita visits within each age category were determined and reported as visits per thousand people. Population distributions were similar between 1990 and 1997, so the midpoint 1994 census was chosen. Sampling weights were applied to achieve the nationally representative estimates. Data for per capita visits by physician specialty were obtained by taking the number of physicians in a specific specialty and dividing by the total number of physicians in that specialty at the midpoint of 1994. All data management and analysis was performed with the software (Statistical Analysis System, SAS Institute, Cary, NC). For information pertaining to pregnancy testing and family planning, data first became available in the study year 1997.

**RESULTS**

**Demographics of patients using isotretinoin**

There were 5.8 million isotretinoin visits and of these visits, 5.4 million (93%) had acne vulgaris listed as the diagnosis. Other leading diagnoses for which isotretinoin visits were made included hidradenitis suppurativa (71,296 visits, 1.2%), epidermoid cyst (59,738 visits, 1%), and lichen planus (17,768 visits, 0.3%). Patients of all ages are treated with isotretinoin. The 10- to 19-year age group had the most isotretinoin visits (3.2 million, 60%), and visits decreased continuously with age in patients 20 years and older.

**Differences in treatment by race**

Race-specific differences in treatment with isotretinoin were found (Table I). Per capita visit rates for acne among whites was 2.3 times that of blacks. Moreover, whites were 1.8 times more likely than blacks to receive isotretinoin at acne visits (18% vs 10% of acne visits). We hypothesized that the race-specific difference in treatment is because, at least in part, of the cost of isotretinoin. To test this hypothesis, we compared the number of visits for minocycline, an expensive antiacne medication, with tetracycline, an inexpensive antiacne medication, to see whether patients who were black had fewer visits for more expensive treatments. The av-

<table>
<thead>
<tr>
<th>Race</th>
<th>Acne visits (thousands)</th>
<th>Per capita patients with acne (visits/1000 persons/y)</th>
<th>Patients receiving isotretinoin (thousands)</th>
<th>Per capita patients taking isotretinoin (visits/1000 persons/y)</th>
<th>Isotretinoin visits per 100 acne visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>30,767 (86%)</td>
<td>20</td>
<td>5437 (93%)</td>
<td>3.8</td>
<td>18</td>
</tr>
<tr>
<td>Black</td>
<td>2201 (6.3%)</td>
<td>8.8</td>
<td>226 (3.9%)</td>
<td>0.88</td>
<td>10</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>1984 (5.6%)</td>
<td>29</td>
<td>121 (2.1%)</td>
<td>1.8</td>
<td>6</td>
</tr>
</tbody>
</table>
Differences in treatment by sex

Women accounted for 61% of acne visits (Table I). Although per capita acne visits were higher for women, men were 1.7 times more likely than women to receive isotretinoin at an acne visit. Isotretinoin was prescribed at 13% of women's acne visits and at 22% of men's acne visits (Table I). Using the tetracycline/minocycline treatment ratio as a marker for effect of expense of treatment, the difference in treatment between men and women was not because of expense of care (tetracycline/minocycline treatment ratio = 1.6 for both men and women) (Table II).

Physician specialties prescribing isotretinoin and their pregnancy prevention efforts

Dermatologists prescribed isotretinoin more frequently than did any other specialty accounting for 81% of isotretinoin visits (Table III). There were at least 80-fold more isotretinoin visits per physician per year to dermatologists than to other specialists.

Data on pregnancy counseling and testing were included in the 1997 NAMCS. Dermatologists accounted for 100% of isotretinoin visits at which pregnancy tests were reported, and internists, the second leading prescriber of isotretinoin, reported none. The same results were found for the visits at which counseling and education on family planning was done.

DISCUSSION

Teenagers are the age group most frequently affected by acne vulgaris and most frequently prescribed isotretinoin. A significant proportion (40%) of treatment occurs beyond the teenaged years and into the third and fourth decades. This agrees with previous data pertaining to the use of topical tretinoin treatment in acne through the age of 40 years and confirms that acne is a problem for patients in this age group. Insurers should recognize this in their management of pharmacy benefits for acne treatment.

Racial differences in acne treatment are considerable. Compared with whites, blacks are less likely to be seen for acne, and when blacks are seen, they are less likely to receive isotretinoin. The disparity in isotretinoin use between racial groups may be because, at least in part, of the cost of isotretinoin. We hypothesized that if the race-specific differences in acne treatment were indeed a result of cost, then we should find that there are more visits for tetracycline and fewer visits for minocycline by patients who are black. The results confirmed this hypothesis: there were significantly fewer visits for minocycline than tetracycline by patients who were black. Therefore, it is possible that the affordability of acne treatment may be contributing to race-specific treatment differences.

Differences in severity of disease in different population groups could also account for racial differences in treatment, but this cannot be assessed in this study because disease severity was not assessed in the NAMCS. Other factors likely also contribute to the treatment differences. Another important consideration is that the different racial groups may have different perceptions of medical care, including different perceptions of the risk/benefit ratio of treatment and even different perceptions of trust in physicians and the medical care system. Perceptions of dermatology may be a particular concern, as the pattern of fewer visits to dermatologists by patients who are black is true for skin disease in general, not just acne. Physicians should be aware of the po-
tential for patient biases and for any biases on their own part that may have contributed to the observed treatment differences.

Sex-specific treatment differences in the management of acne with oral isotretinoin were also found. Women comprised a larger proportion of the patients with acne than did men, but accounted for a smaller proportion of patients receiving isotretinoin than did men. This difference does not appear to be as a result of expense of the drug as there was no difference between men and women in their treatment with tetracycline versus minocycline. Several other explanations could be considered for the observed differences. Isotretinoin is indicated for the treatment of severe acne; the severity of acne could be worse in men than in women. Another possibility is that there are equal amounts of severe acne in men and in women but that women are more likely to seek care for milder degrees of acne. This would explain why, overall, there were more acne visits by women than by men and less use of isotretinoin as a percentage of all acne visits.

There are also sex differences in the use of oral retinoids for women with severe psoriasis that appear to be as a result of reluctance to prescribe teratogenic agents to women of childbearing age. Isotretinoin is highly teratogenic; there may and perhaps should be greater reluctance to use this agent for women of childbearing potential with acne than for men with acne. We attempted to compare between men and women the use of other treatments suitable for women (hormonal therapy with oral contraceptives) that are not appropriate for men. A major limitation of this study is that whereas we can identify the sex difference in treatment pattern, we cannot fully characterize it.

The manufacturer of isotretinoin has provided a detailed pregnancy prevention program to use in conjunction with the drug. The data on frequency of pregnancy prevention at isotretinoin visits to dermatologists and nondermatologists are inadequate to draw firm conclusions regarding differences in the care provided. The small sample size of patients treated by nondermatologists with isotretinoin during 1997 limits the power of the study. Dermatologists clearly have more experience with both acne treatment and isotretinoin use than other physicians, however. The finding that nondermatologists did not meet dermatologists’ standard of care regarding pregnancy prevention, although not statistically significant, is worrisome and warrants further evaluation. The available data do suggest that performing counseling and testing for women at each isotretinoin visit is not currently the standard of care as practiced by physicians in the United States. Nevertheless, it is absolutely essential that physicians make every effort to assure that patients receiving isotretinoin do not become pregnant while taking the medication. Failure to do so risks both teratogenic events and potential loss of this important medication from our therapeutic armamentarium.

REFERENCES