BACKGROUND:
• Dimethyl fumarate (DMF) demonstrated significant efficacy in two randomized clinical trials for relapsing remitting multiple sclerosis (RRMS).\(^1,2\) However, trials included few patients of African-American (AA) and Hispanic American (HA) backgrounds.
• Recent reports of Progressive Multifocal Leukoencephalopathy (PML) in patients treated with DMF, possibly related to leukopenia developing after the start of the drug, is of concern.\(^3,4\)
• Identifying risk factors of leukopenia related to DMF may help reduce risk of PML.

OBJECTIVES:
• To evaluate DMF’s effect on leukocyte count in Caucasian–American (CA), African-American (AA), and Hispanic-American (HA) patients with MS treated at the NYU MS Care Center in New York.

METHODS:
• Retrospective chart review was performed on all clinic patients who were started on DMF in the first year of drug availability.
• Ethnicity was derived from patient self-description.
• For each patient, we extracted from the Electronic Medical Record their complete absolute leukocyte counts (ALC) before DMF was started and during DMF therapy.
• Groups were compared using unpaired t-test for continuous and Fisher exact test for categorical variables.

RESULTS:
Table 1: Demographic characteristics

<table>
<thead>
<tr>
<th></th>
<th>Caucasian Americans (CA)</th>
<th>African Americans (AA)</th>
<th>Hispanic Americans (HA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>154</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>Age ± SD; range; *p-value</td>
<td>47.3 ± 10.4; (26 – 73)</td>
<td>45.7 ± 10.2; (25 – 65); *p = 0.35</td>
<td>43.6 ± 9.8; (23-65); *p = 0.04</td>
</tr>
<tr>
<td>% Female; *p-value</td>
<td>68%</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Duration of MS ± SD; range; *p-value</td>
<td>14 ± 9.61; (2-47)</td>
<td>14±0.02; (2-47); *p = 0.88</td>
<td>15 ± 8.46; (2-46); *p = 0.68</td>
</tr>
<tr>
<td>Months on DMF ± SD; range; *p-value</td>
<td>23 ± 6.66; (1-37)</td>
<td>22 ± 4.04; (1-33); *p = 0.71</td>
<td>21 ± 9.07; (2-33); *p = 0.97</td>
</tr>
<tr>
<td>% D/C; *p-value</td>
<td>25%</td>
<td>24%; *p = 1.00</td>
<td>33%; *p = 0.26</td>
</tr>
</tbody>
</table>

*p-value as compared to CA

CONCLUSIONS:
• Statistically significant drop in ALC (p<0.0001) was seen in CA group after start of DMF; trend to significance in AA (p=0.051); and non-significant decrease in HA (p=0.15).
• No specific DMF use prior to DMF start was identified as a risk for developing leukopenia.
• Significantly more CA patients developed grade II or higher leukopenia compared to AA (p=0.004, Fisher exact test), and HA (p=0.007, Fisher exact test)
• Time to first leukopenic result varied from 324 days in AA to 404 days in CA with no significant differences noted between the 3 groups.
• Patients who developed Grade II/III leukopenia were significantly older in all 3 ethnic groups, consistent with previously reported data.\(^5\)

REFERENCES:
4. Khatr BO et al. 2015
5. Foley J et al. AAN Poster presentation 2016